EFFECTS OF VERBAL FEEDBACK AND SELF-EVALUATION ON LEARNING FUNDAMENTAL BASKETBALL SKILLS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

MİNE MÜFTÜLER

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS

SEPTEMBER 2005

Approval of the Graduate School of Social Sciences

_____

Prof. Dr. Sencer AYATA
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science/Arts / Doctor of Philosophy.

_____

Prof. Dr. Feza KORKUSUZ
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

_____

Assist. Prof. Dr. Sadettin KİRAZCI
Supervisor

Examining Committee Members

Prof. Dr. Feza KORKUSUZ	(METU, PES)	_____
Assist. Prof. Dr. Sadettin KİRAZCI	(METU, PES)	_____
Assoc. Prof. Dr. F. Hülya AŞÇI	(BAŞKENT, SBB)	_____
Assoc. Prof. Dr. Şeref ÇİÇEK	(METU, PES)	_____
Assist. Prof. Dr. M. Levent İNCE	(METU, PES)	_____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Mine MÜFTÜLER
Signature :

ABSTRACT

EFFECTS OF VERBAL FEEDBACK AND SELF-EVALUATION ON LEARNING FUNDAMENTAL BASKETBALL SKILLS

Müftüler, Mine
M.S., Department of Physical Education and Sports
Supervisor: Assist. Prof. Dr. Sadettin Kirazcı

September 2005, 82 pages

The study investigated the effects of verbal feedback in KP forms and self-evaluation on learning two fundamental basketball skills, dribbling and lay-up, which were novel to the participants (N = 75) who were 4^{th} – and 5^{th} – grade level students in a public elementary school. The students were assigned to one of four different treatment groups: (a) control group, (b) verbal feedback group (VF), (c) self-evaluation group (SE), and (d) self-evaluation + verbal feedback group (SE+VF). Students' performances on each task were evaluated by two independent observers on a 5-point Likert type scale in which the scores were given from 1 representing very poor to 5 representing very well. During acquisition phase, students were given 14 trials on two separate days. However, for the retention phase, the students were given 4 trials without receiving treatment conditions. The acquisition data were analyzed with a 4 (Group) x 4 (Block) analyses of variance (ANOVA) with repeated measures on the block factor. The retention data were analyzed by, a 4 x 2 (Group x Block) repeated measure ANOVA. In the acquisition phase, subjects in the control,

VF, and SE+ VF groups performed significantly better than those in the SE group in both dribbling and lay-up tasks F (3,71) = 8.72, p < .05 and F (3,71) = 7.05, p < .01 respectively. However, in the retention phase, performance scores of the tasks for the students in VF group surpassed the other experimental groups F (3,71) = 9.42, p < .05. and F (3,71) = 4.02, p < .05 respectively.

Keywords: verbal feedback, self-evaluation, basketball skills

ÖZ

SÖZEL GERİ BİLDİRİM VE ÖZ DENETİMİN TEMEL BASKETBOL BECERİ ÖĞRENİMİ ÜZERİNE ETKİSİ

Müftüler, Mine
Yüksek Lisans, Beden Eğitimi ve Spor Bölümü
Tez Yöneticisi: Yrd. Doç. Dr. Sadettin Kirazcı

Eylül 2005, 82 sayfa

Bu çalışma sözel geri bildirimin ve öz denetimin temel basketbol becerilerinden olan top sürme ve turnikeyi öğrenme üzerine etkisini incelemiştir. İlk öğretim okulunun 4. ve 5. sınıf seviyelerinden öğrenciler bu çalışmaya katılmıştır. Bu öğrenciler dört farklı gruba ayrılmıştır: (a) kontrol grubu, (b) sözel geri bildirim alan grup, (c) bireysel değerlendirme alan grup, ve (d) hem bireysel değerlendirme alan hem de sözel geri bildirim alan grup. Öğrencilerin her becerideki performansları 5-puanlı Likert tip ölçeğe göre değerlendirilmiştir. Bu ölçekte bulunan 1 puan en zayıf performans için, 5 puan ise en iyi performans için verilmiştir. 14 deneme hakkı tanınan ve iki ayrı günde uygulanan alıştırma evresindeki performanslar 4 (Grup) x 4 (Blok), dört deneme hakkı tanınan kalıcılık evresindeki performanslar ise 4 (Grup) x 2 (Blok) tekrar ölçümlü varyans analizi ile incelenmiştir. Alıştırma evresindeki analizlere göre, bireysel değerlendirme alan öğrenciler, diğer öğrencilere kıyasla, en kötü performansı sergilemişlerdir F (3,71) = 8.72, $p < .05$ ve F (3,71) = 7.05, $p < .01$. Kalıcılık evresindeki analizlerine göre, sözel geri bildirim alan öğrencilerin top

sürme ve turnike skorları diğer gruplarda bulunan öğrencilere göre daha üstün olduğu saptanmıştır F (3,71) = 9.42, p < .05. ve F (3,71) = 4.02, p < .05.

Anahtar Kelimeler: sözel geri bildirim, bireysel değerlendirme, basketbol becerileri

ACKNOWLEDGMENTS

I would like to acknowledge the great effort of very important people from a variety of perspectives, all of whom made this research possible. First of all, I want to thank sincerely to my supervisor Assist. Prof. Dr. Sadettin Kirazcı, for providing me with the support, knowledge, advice, and criticism needed to accomplish and fulfill the degree of Master of Science in Physical Education and Sports. I am also very grateful to my other committee members; Prof. Dr. Feza Korkusuz, Assoc. Prof. Dr. F. Hülya Aşçı, Assoc. Prof. Dr. Şeref Çiçek and Assist. Prof. Dr. M. Levent İnce, for their valuable time and suggestions.

I would also give special thanks to İlker Coşkun and Ceyda Mumcu for their great patience during data collection. I am very thankful to the participants and to the school administrators Halide Edip Adıvar Elementary School for their willingness to be a part of the study.

I am most grateful for the unconditional support and encouragements to my parents, Enise and Fikret Müftüler; and to also Ferda Öztürk for her endless friendship and support, all of whom believed in my ability to write this thesis.

TABLE OF CONTENTS

LIST OF TABLES

TABLES PAGES

LIST OF FIGURES

FIGURES PAGES

LIST OF ABBREVIATIONS

Acq 1:	First acquisition day's first trial
Acq 2:	First acquisition day's last trial
Acq 3:	Second acquisition day's first trial
Acq 4:	Second acquisition day's last trial
KP :	Knowledge of Performance
KR :	Knowledge of Results
Ret 1:	Retention test's first trial
Ret 2:	Retention test's last trial
SE:	Self-evaluation, the treatment condition in which subjects were given self-evaluation of their performances only
SE+VF:	Self-evaluation + verbal feedback, the treatment condition in which the subjects were given self-evaluation and verbal feedback about their performances
VF:	Verbal feedback, the treatment condition in which subjects were given verbal feedback in knowledge of performance forms about their performances

CHAPTER I

INTRODUCTION

Amongst the movements that are performed for sport activities, recreational purposes, and even for daily lives, it is rather important to produce the most successive movements. Thus, for individuals and even practitioners and/or coaches, it is an important issue to find out the more effective and appropriate ways of improving the ability to perform and learn those movements. Most of the researchers concerning the sport-related areas have excessively investigated different methods for improving the individual's motor performance and learning. Research evidence showed that applying different teaching methods in physical education classes (Mosston & Ashworth, 1985), understanding the students' attitudes towards sport settings (Silverman, Woods, & Subramanian, 1998) were some examples that the practitioners and/or coaches have applied in order to improve the individual's motor performance and learning. Except those, understanding individual's learning process in physical education and sport setting is another important issue that the researchers have greatly examined in order to help practitioners and coaches get more knowledge about their students' learning processes.

Although there are different perspectives about the definition of learning, the most commonly used one is the behaviorist approach stating that "learning is the process by which relatively permanent changes occur in behavioral potential as a result of experience" (Anderson, 1995). The change emphasized in the definition is

called as “relatively permanent” because the temporary changes which could be occurred in an effort of learning something need to be excluded. Motivational level could be an example of temporary changes (Schmidt & Lee, 1999). Moreover, the term “experience” is added to the definition of learning because this term has a tendency to differ the behavioral changes concerning learning from those that are not. That is, most of the effective learning is caused by an end result of experience (Schmidt & Wrisberg, 2000). Effective learning should also require a change in the “potential” for behavior, not a spontaneous change in behavior. In that sense, learning refers to some underlying change and performance refers to a behavioral indication of that change.

In sport and exercise science, one of the research areas of learning is related with motor behavior, specifically motor learning where the main interest is the motor skill, which refers to “muscular movement or motion of the body required for the successful execution of a desired act” (Singer, 1989, p.26). Motor learning is defined as the changes of internal process in the capability for producing a motor task as a result of practice and experience (Schmidt & Wrisberg, 2000). With this definition in mind, the main question becomes a differentiation of motor performance from motor learning. Motor performance is the observable attempt to produce a motor task (Magill, 2001). Moreover, motor performance is always observable so that it is needed for motor learning because motor learning by itself cannot be measured. In addition, motor performance is affected by such factors as motivation, fatigue, physical condition and etc. On the other hand, motor learning is an internal process which is determined by the performer’s capability to produce a motor task and may be estimated by relatively stable performance demonstrations. One of the best ways

for practitioners and/or coaches to evaluate motor learning is to observe student's motor performance.

In addition to performance that is observed in order for measuring motor learning process, it is important to include relevant cognitive and/or affective aspects of learning (Crews, Lochbaum, & Karoly, 2001). Therefore, there would appear to be two main questions for improving the individual's motor learning process.

Firstly, one of the most common aims that practitioners determine is to make their students progress through the learning situation more efficiently and appropriately. Practitioners might guide their students a) by providing the appropriate knowledge to the students; i.e., instruction (Guadagnoli, Holcomb, & Davis, 2002), b) by using various teaching methods; e.g., modeling (Magill, 1993), c) by providing necessary amount of trials for the tasks; i.e., practice (Magill & Hall, 1990), and d) by giving essential information about the task to the students; i.e., feedback (Hebert & Landin, 1994). Except for practice, providing feedback to the learners is one of the most effective methods to improve motor skill learning (Magill, 2001a). Furthermore, feedback is divided into one of the categories, which was defined as the sensory information that arises as a result of the movement (Schmidt & Lee, 1999). This category of feedback was named as intrinsic or inherent feedback. However, the other category of feedback, sometimes named as performance-related information, informs the learner about the outcome of the performance or about what caused that outcome (Schmidt & Wrisberg, 2000). This category of feedback was named as extrinsic or augmented feedback, because it includes the information about the performance that is provided in addition to sensory feedback and comes from external sources like coach, instructor, etc. (Magill, 2001b). Therefore, for learning

to occur, individuals must receive some type of sensory information, either from intrinsic (internal feedback) or from extrinsic sources (external feedback). In a study examining the effects of external or internal feedback on learning complex motor skills, it was found that although there were no significant differences between the two types of feedback in retention scores, the group receiving external feedback outperform the internal feedback group in terms of form scores (Shea & Wulf, 1999; Wulf, McConnel, Gärtner, & Schwarz, 2002).

In motor skill learning literature, augmented feedback further divided into two general category; namely Knowledge of Results (KR), information about the outcome of the performance (Magill, 2001a), and Knowledge of Performance (KP), information about the movement characteristics and/or quality of performance (Schmidt & Wrisberg, 2000). Although these two different kinds of augmented feedback play important roles in affecting motor skill learning, knowledge of performance is more influential to facilitate individual's motor skill learning than knowledge of results (Kernodle & Carlton, 1992; Zubiaur, Ona, & Delgado, 1999). Yet in another perspective, Brisson and Alain (1997) found that KR was an important variable to learn the criterion pattern of the complex arm movement, as indicated in the result that participants receiving KR in addition to KP learned the pattern better than those not receiving KP. The authors concluded that participants used KR as a reference for interpreting KP.

Furthermore, knowledge of performance was categorized into different types as verbal feedback, videotape replays, kinematics as augmented feedback and biofeedback. Verbal feedback (Hebert & Landin, 1994; Magill, 1993) and videotape replays (Hebert, Landin, & Menickelli, 1998) were the most frequently examined in

motor skill learning literature. Early research evidence showed that videotape replays alone was not as effective as verbal feedback (Selder & Del Rolan, 1979). However, videotape replays with the attention-directing technique by providing cues (Kernodle & Carlton, 1992) and the combination of videotape replays with verbal KP (Wallace & Hagler, 1979) were shown to be more beneficial to facilitate motor learning. In addition to combining the videotape replays with verbal KP, watching the learner's own videotaped performance, named as self-modeling was rather effective than watching the same skill performed by someone else (Starek & McCullagh, 1999). As in the relation between the intrinsic and extrinsic feedback (Shea & Wulf, 1999; Wulf, et. al., 2002), and between knowledge of results and knowledge of performance (Brisson & Alain, 1997), verbal KP was needed for interpreting videotape replays.

In order to improve the individual's learning process, it is also essential to include relevant cognitive and/or affective aspects of learning (Crews, et. al., 2001). It is the physical education classes where the psychomotor, social, as well as the cognitive domains of learning could be enhanced (Garn & Byra, 2002). According to the Spectrum of Teaching Styles developed by Mosston in 1966, there were eleven teaching styles, all of which enhanced the student's learning in physical education with respect to the above domains. Therefore, it could be argued that physical education classes were also effective in improving student's cognitive aspects of learning (Hall & McCullick, 2002). In that respect, the learning of cognitive skills would have been improved by one of the effective means of making the learners actively engaged in their own learning situation, which was the self-regulation of the use of strategies to learn (Magill, 2001b). Therefore, many of the researchers

concerning the sport issues have recently studied the new topic of self-regulation, which refers to cognitive, motivational, and behavioral processes that learners use to promote their own achievement in learning process (Kitsantas & Zimmerman, 1998). Though there was a deficiency in using cognitive strategies in sport settings, self-regulation and cognitive strategies would be enhanced with proper training (Chen & Singer, 1992). According to Zimmerman (1989), the construct of self-regulation refers to the degree that individuals are metacognitively, motivationally, and behaviorally active participants in their own learning process. Previous studies in this area demonstrated that self-regulated learning strategies, which were being used in academic settings (Paris & Newman, 1990; Pintrich & De Groot, 1990; Zimmerman, 1990) as well as in physical education classes (Cleary & Zimmerman, 2001; Kermarrec, Todorovich, & Fleming, 2004), would have not only enhanced learner's cognitive characteristics (Ommunsden, 2003) but also motivational sources like self-efficacy beliefs, self-satisfaction, and intrinsic interest (Kitsantas & Zimmerman, 1998).

Although there are many self-regulatory strategies, goal-setting, self-monitoring, self-efficacy, and self-evaluation are the most frequently used ones (Zimmerman, 1989). In previous investigations, much of the interest has mainly focused on the role of goal setting (Schunk, 1990a; & 1995), self-efficacy, and self-monitoring (Schunk, 1995) on academic achievement as well as on motor skill learning (Martin & Anshel, 1995; Zimmerman & Kitsantas, 1996, & 1997).

However, there was absence in the literature investigating the role of self-evaluative strategies on motor skill learning. One of the studies investigating the effects of goals and self-evaluation on self-regulation processes and achievement

outcomes was interested in children's mathematical skills in academic context (Schunk, 1995). The findings of this study indicated that compared to performance goal, the learning goal with self-evaluative strategy resulted in higher levels of self-regulated learning. The author emphasized that providing students with learning goal and an opportunity to evaluate their own progress in learning situation improved motivation and self-efficacy. Kitsantas and Zimmerman (1998) found similar results, with respect to motor skill learning, indicating that self-evaluative recording of dart throwing performance enhanced strategy attributions which were predictive of improved self-efficacy, self-satisfaction, and intrinsic interest.

Based on the previous studies, it was obvious that feedback does have a significant effect on learning the given motor skill. Then, one may ask whether the learners would participate in their own learning situation actively or passively. Therefore, the question became whether self-regulated learning in terms of self-evaluation might have influential effects on motor skill learning.

1.1. Problems of the Study

The study investigated whether there was a significant effect of augmented verbal feedback and self-regulation on motor skill learning. Specifically, the aim was to determine whether providing verbal feedback in knowledge of performance forms to the learners and/or allowing them to evaluate their own performances would have significant effects on learning selected fundamental basketball skills. The main goal was to examine that augmented feedback as verbal feedback in knowledge of performance forms and self-regulation in terms of self-evaluation would have

influential effects on acquisition and retention of novel motor skills, in comparison to control condition.

1.2. Hypotheses of the Study

Based on the previous studies, it was expected that:

1) Subjects in verbal feedback, self-evaluation, and self-evaluation + verbal feedback groups were expected to demonstrate better performance than the subjects in control group for both dribbling and lay-up basketball skills during both acquisition and retention phases.
2) Subjects in all groups were expected to demonstrated performance improvement across the trials, as indicated in significant block main effect.
3) The feedback receiving experimental conditions (verbal feedback, self-evaluation, and self-evaluation + verbal feedback groups) were expected to perform similar during retention phase of the study.

1.3. Operational Definitions

Motor Learning: The relatively permanent changes in internal process associated with practice and experience in the capability for producing a motor task (Schmidt & Lee, 1999).

Feedback: Performance-related information about the outcome of the performance or about what caused that outcome (Magill, 2001a).

Intrinsic Feedback: Naturally occurring sensory information which comes from sources outside a person's body (exteroception) or from within the body (proprioception) when individuals perform movement (Schmidt & Wrisberg, 2000).

Augmented Feedback: Information provided about the task that is supplemental to, or augments, intrinsic feedback. It could be provided verbally or be verbalizable (Schmidt & Wrisberg, 2000).

Knowledge of Performance (KP): The type of augmented feedback that gives information about the quality of the movement or movement characteristics (Magill, 2001a).

Knowledge of Results (KR): The other type of augmented feedback which is verbal and terminal (i.e. after the movement execution). It informs the learner about the outcome of the movement in terms of environmental goals (Schmidt & Wrisberg, 2000).

Self-Regulation: Cognitive, motivational, and behavioral processes that learners use to promote their own achievement, such as goal-setting, self-monitoring, and self-evaluation (Kitsantas & Zimmerman, 1998).

Self-Evaluation: One of the self-reactive influences of self-regulation. It provides a personal guidance system for action (Bandura, 1986).

1.4. Assumptions of the Study

It is also assumed that students receiving self-evaluation treatments completed performance scoring sheet by clearly reading the statements in the sheet, and evaluating their own performances not others.

Moreover, as the students were volunteer participants in the study, then their motivational level would be kept high in order to learn the skills.

1.5. Limitations of the Study

The study was limited in that all of the students involved in the study were in elementary school at the 4th and 5th grade levels. And also, the tasks being evaluated were limited to dribbling and lay-up in basketball.

Perhaps, the provision of only the verbal feedback to the learners might not be enough to improve their motor skill learning. Thus, the novice learners, participated in this study, would also need visual demonstration, or modeling from an expert player, which was not included in the present study.

Moreover, in order to succeed in self-regulated learning, the students' goal-setting skills as well as intrinsic motivation would have been regarded in terms of their self-evaluative skills (Kitsantas & Zimmerman, 1998).

Finally, the provision of treatment conditions and the trials being given were limited due to the external constraints in real setting where the experimentation was conducted.

1.6. Significance of the Study

Most of the motor learning experiments were conducted in laboratory settings; however, this study was a real-life condition in that it was conducted in real physical education session.

It was rather important in that one of the less frequently examined strategies of self-regulation was included in the study. Self-evaluation, a kind of self-regulated learning strategy, might be necessary to improve the learner's motor skill learning and/or performance. Providing the learners with a chance to evaluate their own performance might be an important way of active learning.

CHAPTER II

REVIEW OF LITERATURE

For a practitioner and/or coach, it is very important to facilitate the learner's motor skill acquisition process. To do so, a practitioner might select from a great deal of methods which may in turn affect individual's motor behavior. One of the methods that the practitioners frequently use is providing the individual with the sources of sensory information related with the movement (Bilodeau, 1966). These sources of information which could be provided before and during or after the movement were needed to make further changes in future performance trials (Schmidt & Lee, 1999). Schmidt and Wrisberg (2000) generally defined feedback as the information about the movement that the performer produces. Previous research evidence showed that providing feedback to the learners had influential effects on motor skill learning (Magill, 2001a; Schmidt & Lee, 1999). Among those sources of performance-related information, there would appear to be two general types of feedback which will be further mentioned in the following parts of this chapter.

2.1. Types of Feedback

There are two kinds of sources of information that are relevant to the movements that the individual performs: (a) those that are available before the action and (b) those that are available during or after the action. Additionally, the term

"feedback" is further divided into two categories: intrinsic or inherent feedback and extrinsic or augmented feedback.

2.1.1. Intrinsic / Inherent Feedback

Some kinds of information about many aspects of the movements are naturally available by means of various sensory channels, which were termed as intrinsic feedback. Intrinsic or inherent feedback refers to sensory information that normally occurs when individuals perform movements and it comes from sources outside a person's body (exteroception) or from within the body (proprioception). This kind of feedback is naturally occurring while in motion by means of many of the muscles and/or sensory organs; such as Golgi tendon organs, muscle spindles, cutaneous receptors, vestibular apparatus, etc., resulting in vision, audition, touch, smell, forces in the muscles, and proprioception (Schmidt & Wrisberg, 2000).

Although this kind of sensory feedback contains great deal of necessary information regarding performance, providing the individuals with specific intrinsic feedback were not shown to have significant effects on motor skill acquisition and retention in terms of accuracy and form scores for the given task (Wulf, Gärtner, & Schwarz, 2000; Wulf, et. al., 2002). In their first attempt, Wulf, et. al., (2000) were examined the effectiveness of attentional focus induced by the feedback on complex motor skill learning. They reported that the attentional focus induced by the feedback were found to have significant effects on learning, as indicated in the overall results that external focus feedback were more effective in performance accuracy than internal focus feedback. However, the withdrawal of internal-focus feedback in

retention appeared to result in performance improvements for novices (Wulf, et. al., 2002, Experiment I).

Therefore, the effectiveness of internal feedback was addressed in Experiment II (Wulf, et. al., 2002) by reducing the relative frequency of attentional focus. The overall findings in Experiment II revealed that for learning a novel motor skill, it was more effective for performing the given task when the frequency of internal focus feedback was reduced from 100% to 33%. These earlier findings stated that individuals were able to perceive intrinsic feedback more or less directly without special assistance from other sources, like instructors, peers, etc. Therefore it could be argued that specific provision of intrinsic information might not be needed. However, it would be provided with external information from instructor, coach, mechanical device, peers, etc.

In that sense, it was very important to determine scheduling of feedback in terms of the provision of intrinsic feedback. It was assumed in the literature that learners were more likely to rely on guidance from external sources of feedback when intrinsic feedback was difficult to detect and interpret (Guadagnoli, Dornier, & Tandy, 1996; Schmidt, Young, Swinnen, & Shapiro, 1989). In another recent study which further examined the effects of task characteristics and schedules of KR on the acquisition and retention of a simple aiming task, it was found that task characteristics with the provision of intrinsic feedback, were tended to interact with the effects of various KR presentation schedules (Anderson, Magill, & Sekiya, 2001). It was argued that the dependency on KR was based not only to familiarity with task-intrinsic feedback but also to the scheduling of KR presentation.

2.1.2. Extrinsic / Augmented Feedback

In contrast to intrinsic feedback, extrinsic or augmented feedback is information provided about the task that is supplemental to, or augments, inherent feedback (Schmidt & Lee, 1999). This information about the outcome of the movement is supplied in addition to the intrinsic information. Augmented feedback is provided to the learner by some outside source; e.g. a coach, an instructor, a therapist or a mechanical device, etc. It could be provided verbally or could be verbalizable. It was well established in motor skill learning literature that augmented feedback had primary effects on learning different types of motor skills (Fredenburg, Lee, & Solmon, 2001; Hebert & Landin, 1994; Magill, 1993).

Moreover, the effectiveness of augmented feedback was recently examined by Shea and Wulf (1999) investigating the effectiveness of attention focusing on learning a complex motor skill, like balance on a stabilometer. Two groups of subjects received feedback which included two lines representing the deviations of the platform from the horizontal. One group was informed to focus their attention on their feet (internal feedback), whereas, the other group was given the feedback to be focused on the platform (external feedback). Although the feedback presented to the subjects was similar but the interpretation was different for two groups of subjects, the results revealed that external-focus feedback were shown to be more effective in balance performance than did the internal-focus feedback in retention test (Shea & Wulf, 1999).

This finding was replicated in another following two studies examining the influence of effectiveness of two kinds of feedback on learning a complex motor skill. As in the previous research (Shea & Wulf, 1999), external feedback were found

to have more beneficial effects on acquiring the performance accuracy as well as form scores, although this effect was not be kept on the retention test (Wulf, et. al., 2000). Additionally, the expertise level might not be decisive in the effects of these two kinds of feedback. Specifically, advanced players were tended to benefit similarly from the external-focus feedback with novice players in terms of accuracy and form (Wulf et. al., 2002).

With growing technology, interesting studies have recently conducted, one of which was carried out by Kawashima, et. al. (2000), investigating the effects of verbal feedback on motor learning. The authors measured changes in regional cerebral blood flow (rCBF) using positron emission tomography (PET) in order to find out the brain mechanisms underlying the effects of feedback on motor learning and learning processes. They had 9 right-handed participants in line-drawing task, in which the same verbal cue ("Hi") was given for 4 s. The results of the study showed that the percentage of correct responses was significantly higher in the case of tasks with feedback than those in the absence of feedback. The right inferior parietal and the anterior cingulated cortices, which were activated in the presence of feedback, may play an important role in representing knowledge of results during motor learning.

Moreover, appropriate feedback may facilitate motor learning. However, for especially acquiring complex motor skills, monitoring a skilled performer or visual demonstration was needed (Laguna, 2000; Magill, 1993). In a study conducted by Laguna (2000) investigating the influence of model demonstration versus feedback in knowledge of performance form, the results indicated that beginners needed more model demonstration than feedback in order to develop cognitive representation of

the motor skill. On the other hand, feedback (KP) helped the learner more in the transfer to overt movement than in the development of the cognitive representation.

Similarly, Magill studied the importance of the interaction of the visual demonstration and verbal feedback (1993). The results showed that modeling was better than verbal instructions and receiving KP was better than no KP. Additionally, the interactive results indicated that there is a redundancy in the information provided by the model and the KP. However, when regarded as alone, these two sources of information had a unique role in each case. The results were interpreted as that information derived from a model, verbal instructions and KP were all used by the novices to develop a memory representation of the motor skill. In another study examining the effects of augmented verbal feedback and monitoring a model on the learning of a complex task, the results indicated that subjects receiving verbal feedback demonstrated significantly higher movement patterns than the control group. In addition, observers performed the movement pattern well and improve their outcome scores with practice, despite not receiving augmented feedback. However, the greatest success was experienced by the group receiving both treatments, monitoring a learning model's trials and concomitant feedback and receiving augmented verbal feedback (Hebert & Landin, 1994).

In addition to examining the effectiveness of attention-focusing of augmented feedback on learning a motor task, it was rather essential to investigate the influence of two general categories of augmented feedback on motor skill learning. Motor learning researchers have usually used the terms Knowledge of Results (KR) and Knowledge of Performance (KP), both of which are extrinsic forms of feedback, to

describe the performance-related feedback considered essential for optimum learning.

2.1.2.1. Knowledge of Results

Knowledge of results is verbal or verbalizable; terminal, i.e. after the movement execution; and a kind of augmented feedback which presents information about the outcome of the movement or about achieving the goal of the performance (Magill, 2001a). For example, if a basketball coach tells the student that "you missed 2 free-shots out of 5 trials", then that coach provides performance outcome information to the student. In some situations, for example, if a therapist provides a patient about the proper leg extension performance with a "yes" or "no" response, then this patient are being presented with achievement of performance goal. In each of these cases, the individuals are shown or provided with knowledge of results.

Research evidence clearly showed that KR was beneficial for performance and learning of motor skill (Gable, Shea, & Wright, 1991). Most importantly, KR served as motivational role in learning motor skill. It was suggested that when the learners used this kind of augmented feedback to compare their movements with performance goals, they were likely to benefit from the provision of KR for achieving their goals and also for striving to achieve that goal (Magill, 2001a; Schmidt & Wrisberg, 2000; Winstein & Schmidt, 1990).

Furthermore, it was well established that the frequency of KR had significant effects on motor skill learning (Sparrow & Summers, 1992). Clear evidence was shown in earlier findings suggesting that less frequent KR (50%, 33%, and 25%) resulted in more beneficial effects on learning than highly (100%) frequent KR

(Swinnen, Schmidt, Nicholson, & Shapiro, 1990; Weeks & Sherwood, 1994). However, higher frequencies of the provision of KR were shown to be more effective in learning complex motor skill (Wulf, Shea, & Matschiner, 1998). In their study investigating the effectiveness of feedback frequency on the production of slalom-type movements on a ski-simulator, it was found that high relative feedback frequency (100%) was more effective in learning such a complex task than a reduced (50%) feedback frequency (Wulf, et. al., 1998, Experiment II). This finding suggested that there appeared to be an interaction between the task difficulty and the frequency of feedback in affecting the motor skill learning. Yet in another investigation, it was found that although there were no beneficial effects of reduced KR in acquisition and no-KR retention phases, the 67% reduced KR frequency was resulted in more accurate performance than the 100% higher KR frequency in the transfer phase (Wrisberg & Wulf, 1997).

A more recent perspective on KR was set by Brisson and Alain indicating that KR alone was not beneficial for learning motor skills. They argued that the role of KR was to serve as a reference, providing information about the outcome of the task. In order to extend the effectiveness of KR, the other type of augmented feedback, which is knowledge of performance (KP), was needed (Brisson & Alain, 1997). They further stated that although KP alone was enough for motor skill learning, the addiction of KR was resulted in improving the effectiveness of KP (Brisson & Alain, 1996).

2.1.2.2. Knowledge of Performance

The other type of augmented feedback is Knowledge of Performance (KP), which is sometimes referred to as kinematic feedback because it contains information about the kinematics (pattern or speed) of the movement. KP provides information about the quality of the movement. For example, if the basketball coach, mentioned in the previous paragraph, tells the student about free-throw shooting performance "when you throw the ball to the target, you must do follow-through action in your arm, being extended as the ball leaves from your hand", then that coach now presents the student with knowledge of performance type of augmented feedback.

Research evidence clearly indicated that knowledge of performance had been shown to have learning benefits as well as knowledge of results (Brisson & Alain, 1997; Schmidt & Wrisberg, 2000). Previous findings suggested that KP was beneficial for learning when an optimal movement pattern was identified or implied (Newell, Carlton, & Antoniou, 1990). However, Brisson and Alain argued that KP contributed to learning, without identifying the movement patterns (as indicated in Newell, et. al., 1990) as a reference for interpreting KP. They further suggested that aside from the identification of movement patterns, knowledge of results were being used to calibrate the movement pattern used with the task outcome and that more effective learning was resulted in this calibration strategy (Brisson & Alain, 1996).

In each of these cases, the knowledge of performance was provided verbally, however, there appeared to be another effective way of providing KP. In previous investigations, videotape replays as augmented feedback was shown to be more effective in improving performance and learning of motor skills (Hebert, et. al., 1998; Jambor & Weekes, 1995; Kernodle & Carlton, 1992). In another perspective, the use of videotape feedback with the combination of self-modeling was also found

to be beneficial for leaning. Specifically, Starek and McCullagh (1999) argued that the provision of videotape feedback was determined by the demonstrator, indicating that the swimmers who were shown their own videotaped performance were more likely to be benefited from this kind of information than those who saw the same skill performed by another demonstrator.

Therefore, it could be argued that the importance of self by a self-determined provision of feedback was shown to have significant effects on motor skill learning (Janelle, Barba, Frehlich, Tennant, & Cauraugh, 1997). In a study maximizing the effectiveness of performance feedback with videotape replays and self-controlled learning environment, the authors found that although all KP groups benefited from verbal cuing and videotape replays, those in the self-controlled situation were more likely to learn the skill in retention phase (Janelle, et. al., 1997). They further investigated the frequency of feedback in self-controlled environments, and found that those who actively engaged in the determination of the provision of feedback were tended to require relatively less frequent feedback. The effectiveness of the reduced frequency of feedback by a self-determined situation was extended in another study, stating that those in the subject-controlled condition requested performance feedback on an average of only 7% of the total trials and they were shown to be the most accurate in retention of ability in ball tossing (Janelle, Kim, & Singer, 1995). Additionally, the self-controlled feedback was resulted in more accurate performance in novel transfer task (Chiviacowsky & Wulf, 2002). These earlier findings speculated about the importance of self-learning, which was further improved with self-regulatory learning strategies.

2.2. Self-Regulated Learning

The ability to self-regulate may have advantages in the course of an individual's mental life. Self-regulated learning was defined as metacognitively, motivationally, and behaviorally active engagements in an individual's own learning situation (Zimmerman, 1989). The theoretical background of self-regulation was generally based on Bandura's social cognitive theory (Bandura, 1986).

2.2.1. Theoretical Background of Self-Regulation

Social cognitive theory proposed that people possess self-directive capabilities that enable them to exercise some control over their thoughts, feelings, and actions by the consequences they produce for themselves. Therefore, psychological functioning is regulated by interplay of self-generated and external sources of influence. In the attainment of self-directiveness, people set certain standards of behavior for themselves and respond to their own actions self-evaluatively. Self-regulation operates through a set of sub-functions that must be developed and mobilized for self-directed change (Bandura, 1986).

2.2.1.1. Sub-Functions in Self-Regulation

The sub-functions are involved in the self-regulation of behavior by internal standards and self-incentives (Bandura, 1986). Self-evaluation, which is one of the self-reactive influences of self-regulation, provides a personal guidance system for action. The self-regulation of behavior by self-evaluative reactions is only peculiar to a human capability. The behavior displayed by human beings is extensively regulated through self-evaluation. And ongoing behavior is continuously assessed

and modified in terms of evaluative standards of adequacy. Except from providing guidance for behavior, self-evaluation also creates motivation for it. In addition to serving as guides and motivators for behavior, self-evaluations affect how much satisfaction people gain from what they do. Self-concept and self-esteem, as well as values are the general terms that are characterized largely in terms of self-evaluation.

2.2.1.2. Theoretical Models of Self-Regulation

In addition, self-regulation could be viewed in different theoretical models. In their research, Puustinen and Pulkkinen (2001) reviewed the more recent models of self-regulated learning, including those by Boekarts, Borkowski, Pintrich, Winnie, and Zimmerman.

According to Boekarts' model of adaptable learning, self-regulated learning was viewed as a balance between two types of appraisals, labeled as positively charged evaluations and negatively charged evaluations. This model was also extended, in which self-regulated learning is assumed to require an interaction between diverse, such as meta-cognitive, motivational, and emotional, control systems. The key point in this extended model is goal processes, which are found in the identification, interpretation and appraisal of the learning situation and which would further lead to goal setting and goal striving.

Similarly, Borkowski (2000), in his process-oriented model of meta-cognition, initially described the characteristics of a good strategy user or information processor. Basically, if a person successfully integrates his cognitive, motivational, personal, and situational variables, then this would establish a good information processing. Recently, Borkowski further integrate these characteristics

into a process-oriented model of meta-cognition, which defines the development of self-regulation. In this integrated model, self-regulation was described as proceeding from the learning of lower cognitive skills and becoming gradually linked to positive motivational states. Therefore, the key point in this model was formed by the links between personal and motivational variables and self-regulation.

On the other hand, Pintrich (2000) developed a general framework; i.e., in the form of a table, for self-regulated learning. According to this table, self-regulated learning included four phases, named as forethought, monitoring, control, and reflection phases. At each phase, there are four separate areas in which self-regulatory activities occur: cognitive, motivational and affective, behavioral, and contextual areas. Moreover, Pintrich analyzed the role of motivation, more specifically goal orientations in self-regulated learning. He discussed whether goal orientations (mastery and performance orientations) are related to self-regulate learning. These goal orientations, in this case, were studied from two viewpoint, approach versus avoidance viewpoint. According to the studies investigating the effectiveness of these viewpoints of goal orientations, approach viewpoints in both mastery and performance oriented students would be superior to the other goal orientations.

Likewise, Winnie's (1998) four stage model of self-regulated learning defines it as an event in which self-regulated learning is viewed as metacognitively adapting behavior which makes students to regulate their use of cognitive strategies when faced with a task. Self-regulated learning involves four stages: task definition, goal setting and planning, applying tactics and strategies, and metacognitively adapting studying techniques. In each stage, the general structure, COPES (Conditions –

Operations – Products – Evaluations – Standards) is supposed to be shared. In this model, the key point is meta-cognitive monitoring, which produces internal feedback about the differences between products and standards at each stage. Furthermore, feedback would underlie the future actions.

Finally, Zimmerman's model is based on Bandura's social cognitive theory. According to Zimmerman, self-regulation includes three classes of determinants, namely covert personal, behavioral, and environmental events. In this model, self-regulation is viewed as cyclical in nature. In other words, prior learning experience would base the adjustments in goal setting and strategy choice for the next efforts. Therefore, Zimmerman defines self-regulation as 'self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals'. There are three cyclical phases of self-regulation: forethought phase, performance phase, and self-reflection phase. Each phase includes its two different categories of processes. Forethought phase involves task analysis and self-motivation beliefs. The performance or volitional control phase includes self-control and self-observation processes. The last phase, self-reflection, contains self-judgment and self-reaction. In addition, the assumed context dependent self-regulatory skills are based on four levels of social cognitive theory: learning by modeling, imitative level of self-regulation, self-control level, and self-regulation.

2.2.2. Self-Regulated Learning in Sport Settings

Recently many of the researchers concerning the sport issues have studied the new topic of self-regulation. In these studies, there were many different perspectives about the topic. In the sport psychology domain, Zimmerman's definition is the

accepted one. Most of the related studies have used his definition. For example, in a study which have used Zimmerman's definition, "self-regulation of learning refers to cognitive, motivational, and behavioral processes that learners use to promote their own achievement, such as goal-setting, self-monitoring, and self-evaluation" (Kitsantas & Zimmerman, 1998). The construct of self-regulation refers to the degree that individuals are metacognitively, motivationally and behaviorally active participants in their own learning process (Zimmerman, 1989). Moreover, in his article about becoming a self-regulated learner, he states self-regulation as a self-directive process by which students transform their mental abilities into academic skills (Zimmerman, 2002). According to Zimmerman, learning strategies of self-regulation include self evaluating, organizing and transforming, goal-setting and planning, seeking information, keeping records and monitoring, environmental structuring, self consequating, rehearsing and memorizing, seeking social assistance, and reviewing records.

Bouffard and Dunn (1993) have defined self-regulation in their study of children's self-regulated learning of movement sequences as the students' actions and processes directed at achieving information or skill which include agency, purpose, and instrumentality perceptions. Yet, there are many other definitions. Anshel and Porter (1996) defined self-regulation as a goal-directed behavior which is occurred in the absence of immediate external constraints. In a study of feedback and self-regulation, Butler & Winnie (1995) states that self-regulation is a style of engaging with tasks in which students exercise a suite of powerful skills, such as goal-setting, strategy choice, monitoring etc. actually, in order to define self-regulation properly, cognitive engagement cannot be disregarded. In that sense, self-

regulation is referred to the actions during the actual performance of a cognitive task which allow a student to control, govern, or direct his/her own activity through self-imposed rules or regulations (Ferrari, Pinard, Reid, & Bouffard-Bouchard, 1991).

CHAPTER III

METHOD

In this chapter, the methodological procedure that was followed in the study will be introduced. It consists of five major sections. The first section will describe the participant identification, including their grade levels and total number of boys and girls. The second section will illustrate the tasks which were being evaluated in the study. The measuring procedure of the tasks and the instrumentation will be mentioned in the third section. In the fourth section, the whole experimentation procedure will be introduced in details. Finally, the last section will discuss data analysis including the statistical procedure.

3.1. Participants

The participants involved in this study were students currently enrolled in a public elementary school in Ankara. The students were selected from eight different classes at 4^{th} and 5^{th} grade levels. These grade levels were chosen because the students were expected to have no prior experience with the tasks being learned. Before collecting the data, the students from eight classes were allowed to perform each task, and their performances were evaluated. Then, based on the pre-test scores of students on each task, a total number of 75 students, 38 girls and 37 boys, were selected as participants who were expected to have no prior experience with the tasks being learned.

3.2. Task

Among the fundamental basketball skills, two of them, dribbling and lay-up were selected as tasks of the experiment. Those fundamental skills were chosen because measurement instrument related with those skills were previously developed by Çamur (2001). The students were introduced first the dribbling skill then lay-up skill because to practice lay-up skill, dribbling skill would be acquired.

3.3. Measure

After the students were given brief instructions (see Appendix A) about the tasks by the experimenter, they were expected to perform the tasks. While the students one-by-one performed the tasks, two independent observers who held 2nd level basketball trainer certificate from Turkish Basketball Federation evaluated the performance of the students. Both of the observers were proficient at their sporting and training experience.

For scoring the students' performances on each of the task, performance scoring sheets were used (Çamur, 2001). For scoring the dribbling task, performance scoring sheet including four subcategories, which were further classified into 13 related items (see Appendix B) was used. The scoring of dribbling skill is based on four basic criteria: (a) ball control, (b) stepping, (c) body posture, and (d) body coordination. Similarly, lay-up skill scoring sheet involving four subcategories, which were further classified into 18 related items (see Appendix C) was used. The lay-up skill was scored on the following four basic scoring criteria: (a) lay-up stepping, (b) jumping, (c) ball putting, and (d) landing. The performances were assessed on a 5-point Likert type scale in which scores were given from 1

representing very poor to 5 representing very well. If the behavior was not seen the score of 0 was given.

3.4. Procedure

In order to work with public elementary school students, before starting the experimentation, the author acquired oral permission from the school administrators in Halide Edip Adıvar Elementary School and formal permission from the Turkish Ministry of National Education (see Appendix E), which took approximately two month. Then a total of 170 students from eight 4^{th} and 5^{th} grade classes were pre-tested, the procedure of which will be later explained in this chapter.

Students were assigned to one of the four groups: (a) control group, (b) verbal feedback group (VF), (c) self-evaluation group (SE), and (d) self-evaluation + verbal feedback group (SE+VF). The control subjects (9 girls and 9 boys) received neither of verbal feedback nor self-evaluation. Because the students in this group were just allowed to perform tasks, this group was practice only group. In the verbal feedback group (VF), students (9 girls and 9 boys) received verbal information (see Appendix D) about their performances in knowledge of performance (KP) forms. This verbal information included at least three best and worst parts of the last performance. Each student in this group was given verbal feedback individually by the experimenter. For the remaining two groups, SE and SE+VF, the performance scoring sheet which was filled out by the students was the same with the one filled by the observers. Before these students in SE and SE+VF groups were allowed to evaluate their own performances, they were explained about how to fill the performance scoring sheet by the experimenter. A total of 20 students (9 girls and 11 boys) who were in the

self-evaluation group (SE) completed the related performance scoring sheet by themselves. A total of 19 students (10 girls and 9 boys) in the self-evaluation + verbal feedback group (SE+VF) not only were allowed to complete the performance scoring sheets but also were given verbal feedback. Because of the fact that the knowledge of performance would give information about the performances of the students, the verbal information provided to the students might give them clue about their own performances. In order to reduce the probability of getting a clue about their last performances, the students were first allowed to evaluate their own performances on each task and then received verbal information which included the best and worst parts of the last performances. All of the students were provided 4 pre-test trials, 14 acquisition trials on each consecutive day, and 4 retention trials.

Before the experimentation was carried out, a total of 170 students from the eight different 4^{th} and 5^{th} grade classes were first pre-tested. At this pre-test level, the students were given 4 trials for each task. Their performances' were evaluated according to the related performance scoring sheet. Then the scores for both of the tasks were listed from the best performance to the worst performance. In order to form a homogenous group, an average of 10 students whose performance scores were close to the mean scores of their own classes was selected from each class. According to the pre-test performance scores, the students who were above the mean scores of their own classes were regarded as having prior experience with the tasks; on the other hand, those who were below the mean scores of their own classes were expected to have no learning effect on these two motor skills. The allocation into the groups was based on the students' classes because the school administration gave permission to do so.

Seven days after the pre-test trials, students were allowed to practice each task on two consecutive days (i.e. on Monday & Tuesday) for acquisition phase. Before the acquisition tests started, the learners were briefly introduced the aim and procedure of the experiment. The experimenter not only introduced the tasks but also demonstrated how to do the tasks to the students. Then the students were asked to perform the tasks by making two trials without being evaluated. The experimentation was began with dribbling task in the first class session, in which the students were arranged in a row in the middle of the field and were allowed to dribble the ball in 9 meters long one by one with their dominant hand. In the next hour, the other task, lay-up was first introduced, then performed and being evaluated. They were again arranged in a row near the shooting line and did lay-up. The right-handed students approached to the basket in the right direction while the left-handed students did lay-up from the left direction of the field. Figure 2 shows the students' position in the field for both lay-up and dribbling tasks. Each group was given 14 acquisition trials. While performing the skills, two observers independently measured the performances of each student in accordance with the related performance scoring sheet. The observers were asked to evaluate each student's 1^{st} and 14^{th} trials. For the VF and SE+VF groups, the observers were also asked to evaluate the students' 2^{nd}, 6^{th}, and 10^{th} trials of the tasks in order to provide verbal information about these trials. Observers were evaluated the most critical errors being demonstrated by the students in these trials. The verbal information was provided individually to the corresponding students by the experimenter.

Except for the control group, the other three groups received the treatments after the 2^{nd}, 6^{th}, and 10^{th} trials. More specifically, the students in the verbal feedback

group received verbal information about the last 2nd, 6th, and 10th performances of the tasks. The students in the self-evaluation group were asked to evaluate their own last 2nd, 6th, and 10th trials by completing the related performance scoring sheets. In the self-evaluation + verbal feedback group, the students were first completed the related performance scoring sheet and then received verbal feedback after the 2nd, 6th, and 10th trials.

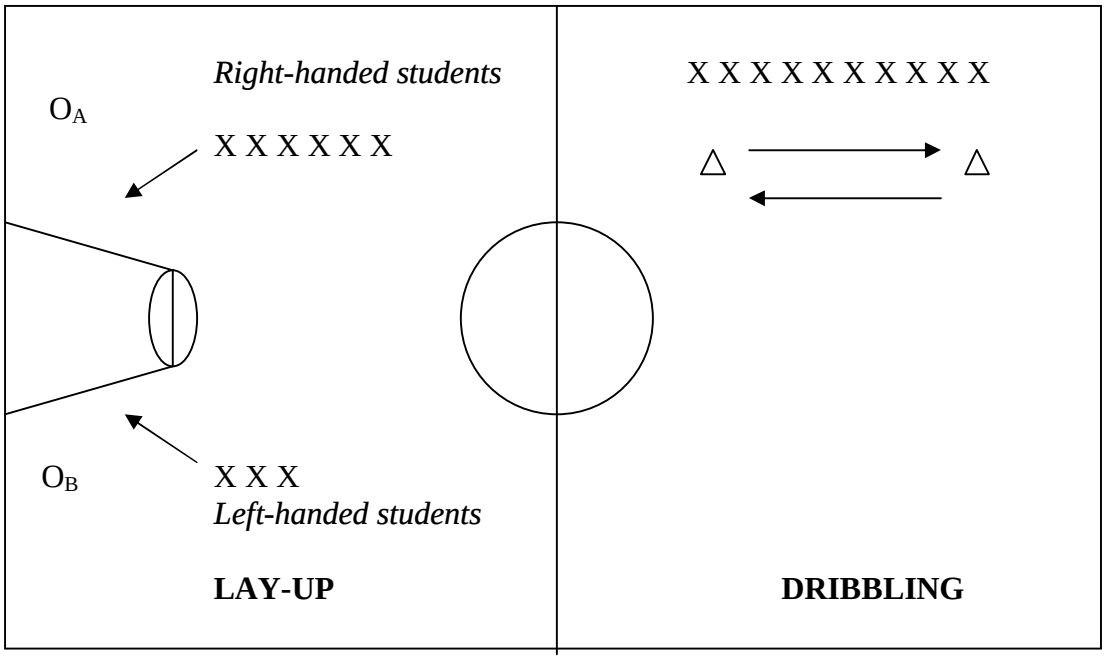


Figure 1. Students' settlement in the field while experimentation was conducted

Seven days after the first practice day, the retention trials were done (i.e. on the following Monday). In the retention test, the students were arranged in a row for dribbling and lay-up same as with the acquisition tests. However, the students were neither introduced the tasks again nor given the treatments. They were just allowed to perform the tasks. The students were given 4 trials for each task. The observers were asked to evaluate the students' 1st and 4th trials of the tasks. Because there was a

few number of trial, retention test session was applied for two groups of students in one class hour for dribbling task and the other next class hour for lay-up task.

Students in the control group and verbal feedback group were given their acquisition trials on the first week of Monday and Tuesday, and retention trials on the second week of Monday. The other two groups, self-evaluation group and self-evaluation + verbal feedback group, were taken for acquisition trials on the second week of Monday and Tuesday, and retention trials on the third week of Monday. Therefore, the whole experimentation was completed in three weeks time. However, each student would have just been called for the experimentation session for three times in two consecutive weeks.

3.5. Statistical Analysis

During each acquisition phase, four groups of subjects' first and last trials were evaluated, resulting in four blocks of trial. Therefore, in order to determine whether there was a significant effect for the treatment conditions on dribbling and lay-up performances, data were analyzed by 4 x 4 (Group x Block) analyses of variance (ANOVA) with repeated measures on the block factor. On the retention phase, subjects' first and last trials were evaluated, resulting in two blocks of trials. To determine whether there was a main effect of the treatment conditions on long-term retention of the two skills, data were analyzed by 4 x 2 (Group x Block) ANOVA with repeated measures on the last factor. For significant group main effects, Tukey's honestly significant difference (HSD) follow-up analysis was applied. However, the significant main effect for blocks was further analyzed with

one-way ANOVA using Tukey's HSD follow-up procedure. The significance level was set at .05.

CHAPTER IV

RESULTS

Participants' performances on both dribbling and lay-up skills were measured in two acquisition phases and a retention phase. For each of the experimentation day, participants' first and last trials were evaluated. On the whole, therefore, each participant was evaluated for six times for both dribbling and lay-up trials. The dependent variables were the performance scores on both tasks in each test.

The acquisition and retention data were analyzed using two-way repeated measure ANOVA. Further analyses were conducted with using Tukey's honestly significant difference (HSD) follow-up comparisons, if any significant differences were observed. The acquisition trial tests were analyzed by 4 x 4 (Group x Block) ANOVA in which repeated measures were applied on the last factor. Retention trial test was analyzed by 4 x 2 (Group x Block) ANOVA in which repeated measures were conducted on the last, trial block factor.

4.1. Acquisition Phase

4.1.1. Dribbling task

For acquisition data analysis of dribbling task, a 4 x 4 (Group x Block) ANOVA with repeated measures on the second factor showed significant main effects for groups, F (3,71) = 8.72, $p < .05$. Tukey's HSD follow-up tests indicated that dribbling scores of the control group (M = 33.35; SD = 5.96), verbal feedback

group (M = 36.0; SD = 6.02), and the self-evaluation + verbal feedback group (M = 33.60; SD = 3.41) were better than the self-evaluation group (M = 30.42; SD = 4.87). There were no significant differences between the control, verbal feedback and self-evaluation + verbal feedback groups. Mean scores and standard deviations for four groups of subjects' dribbling task on acquisition phase were presented in Table 1.

Table 1. Four groups' dribbling performances on acquisition and retention tests

		Trials					
Groups		Acq 1	Acq 2	Acq 3	Acq 4	Ret 1	Ret 2
Control	M	29.56	30.42	35.03	38.39	29.94	31.06
	SD	4.57	5.49	4.53	4.77	3.38	3.50
Verbal	M	30.72	34.53	37.19	41.56	36.06	35.00
Feedback	SD	4.55	4.75	4.57	4.63	4.13	4.60
Self –	M	25.80	28.75	32.68	34.45	30.80	31.28
Evaluation	SD	4.52	2.78	3.22	3.46	3.05	2.44
Both	M	31.13	34.50	33.90	34.87	31.26	32.92
(SE+VF)	SD	2.54	2.15	3.44	4.04	2.31	3.20

Note: SE+VF represents the group receiving self-evaluation and verbal feedback. Acq 1 & Acq 2 represents First Acquisition day's First & Last Trials, respectively. Acq 3 & Acq 4 represents Second Acquisition day's First & Last Trials, respectively. Ret 1 represents Retention test's First Trial and Ret 2 represents Retention test's Last Trial. M represents mean scores of performances. SD represents standard deviations of performances.

Moreover, the ANOVA results indicated that there was significant main effect for blocks, F (3,213) = 128.18, $p < .05$. The main effect for block was further analyzed with one-way ANOVA using Tukey's HSD follow-up procedure. Specifically, in the First Acquisition day's First Trial, that is Acq 1, the dribbling performance scores of the control group (M = 29.56; SD = 4.57), the verbal feedback group (M = 30.72; SD = 4.55), and the self-evaluation + verbal feedback group (M =

31.13; SD = 2.54) were better than the self-evaluation group (M = 25.8; SD = 4.52). In the First Acquisition day's Last Trial (Acq 2), the verbal feedback group (M = 34.53; SD = 4.75) and the self-evaluation + verbal feedback group (M = 34.5; SD = 2.15) performed better than the control group (M = 30.42; SD = 5.49) and also the self-evaluation group (M = 28.75; SD = 2.78). In the Second Acquisition day's First Trial (Acq 3), only the verbal feedback group (M = 37.19; SD = 4.57) performed significantly better than the self-evaluation group (M = 32.68; SD = 3.22). And finally, compared to the self-evaluation (M = 34.45; SD = 3.46) and self-evaluation + verbal feedback groups (M = 34.87; SD = 4.04), students in the verbal feedback group (M = 41.56; SD = 4.63) exhibited better performance on the Second Acquisition day's Last Trial (Acq 4). Additionally, the dribbling performance scores of control group (M = 38.39; SD = 4.77) were better than that of self-evaluation group in this trial. The significant main effect for blocks in acquisition data analysis was also presented in Table 2.

Table 2. Acquisition results for dribbling task repeated measures ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*Sig of F*
		Between	Subjects		
Groups	298.90	3	99.64	8.72	.01*
Error Between	811.67	71	11.43		
		Within	Subjects		
Blocks	266.45	3	888.82	128.18	.01*
Blocks by Groups	469.90	9	52.21	7.53	.01*
Error Within	1476.94	213	6.93		

*Denotes significant difference at the 0.05 level of significance

Finally, the statistical analyses also showed significant blocks by groups interaction, F (9,213) = 7.53, p < .05. This significant interaction results revealed that although the performance of self-evaluation + verbal feedback group increased in the first acquisition day's last trial as in that of verbal feedback group, this group was then gradually decreased their performance scores across the second acquisition day's trials. The finding that these subjects' acquisition performance was degraded across the trial blocks was implied that receiving both self-evaluative treatment and verbal feedback had detrimental effects on acquiring the dribbling skill. However, although the control subjects demonstrated poorer performance than the self-evaluation + verbal feedback group in Acq 1 and Acq 2, they were more likely to improve their performances at the second acquisition day trials than the students receiving both of the treatments. This finding was graphically presented in Figure 3.

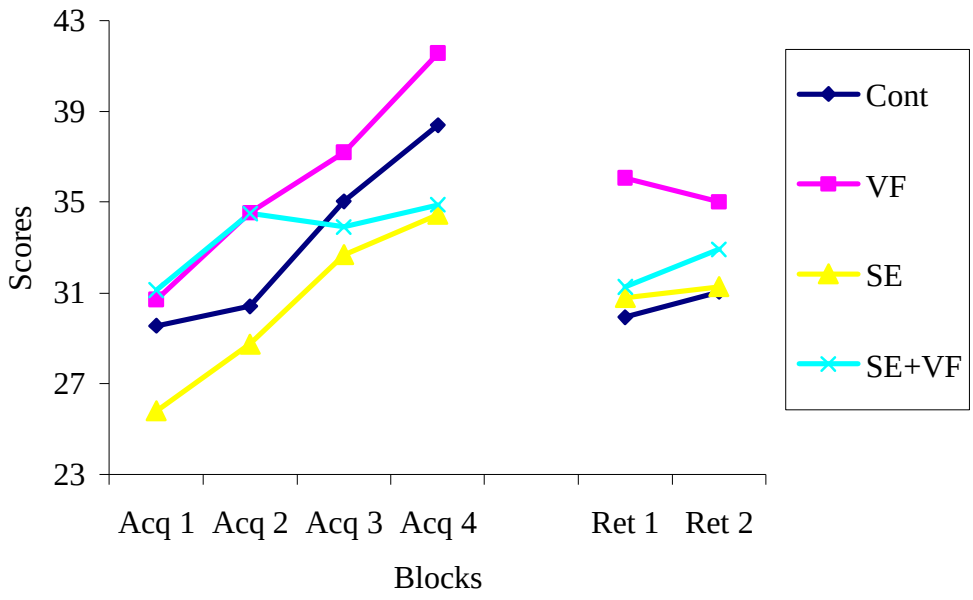


Figure2. Mean scores of dribbling skill for acquisition and retention phases

4.1.2. Lay-up task

For acquisition data analysis of lay-up task, a Group x Block (4 x 4) Repeated Measures ANOVA in which repeated measures was conducted on the second factor showed significant main effect for groups, F (3,71) = 7.05, $p < .01$. The post-hoc test of Tukey's HSD revealed that the lay-up scores of control group (M = 35.63; SD = 8.96) and self-evaluation + verbal feedback group (M = 38.11; SD = 8.04) were better than that of self-evaluation group (M = 30.31; SD = 7.87). However, no statistically significant differences between the control, verbal feedback and self-evaluation + verbal feedback groups were found. Mean scores and standard deviations for four groups of subjects' lay-up task on acquisition phase were presented in Table 3.

Table 3. Four groups' lay-up performances on acquisition and retention tests

		Trials					
Groups		Acq 1	Acq 2	Acq 3	Acq 4	Ret 1	Ret 2
Control	M	30.89	34.75	37.72	39.14	34.31	35.83
	SD	8.43	6.77	8.41	10.25	7.66	6.88
Verbal	M	26.36	28.89	37.72	44.17	41.69	45.25
Feedback	SD	7.64	7.57	8.67	7.18	4.89	7.71
Self –	M	24.83	27.73	33.50	35.20	29.45	33.73
Evaluation	SD	6.88	5.85	6.52	7.70	7.36	7.67
Both	M	36.68	41.54	34.82	39.42	28.66	31.61
(VF + SE)	SD	7.90	7.41	5.45	9.73	4.38	6.57

Note: SE+VF represents the group receiving self-evaluation and verbal feedback. Acq 1 & Acq 2 represents First Acquisition day's First & Last Trials, respectively. Acq 3 & Acq 4 represents Second Acquisition day's First & Last Trials, respectively. Ret 1 represents Retention test's First Trial and Ret 2 represents Retention test's Last Trial. M represents mean scores of performances. SD represents standard deviations of performances

The ANOVA analyses also indicated that there were significant main effects for blocks, F (3,213) = 32.05, $p < .05$. Specifically, in the First Acquisition day's First Trial, students in the self-evaluation + verbal feedback group (M = 36.68; SD = 7.9) performed significantly better than those in the self-evaluation group (M = 24.83; SD = 6.88) and even in the verbal feedback group (M = 26.36; SD = 7.64). In the First Acquisition day's Last Trial, the self-evaluation + verbal feedback group (M = 41.54; SD = 7.41) significantly out-performed the control group (M = 34.75; SD = 6.77), the verbal feedback group (M = 28.89; SD = 7.57) and the self-evaluation group (M = 27.73; SD = 5.85). Moreover, the control group performed significantly better than the self-evaluation group. However, in the Second Acquisition day's First Trial, no statistically significant differences found between the four groups. And finally, in the Second Acquisition day's Last Trial, only the performance scores of the verbal feedback group (M= 44.17; SD = 7.18) were significantly better than that of the self-evaluation group (M = 35.2; SD = 7.7). The significant blocks effect in acquisition phase was also indicated in Table 4.

Table 4. Acquisition results for lay-up task repeated measure ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*Sig of F*
		Between	Subjects		
Groups	622.70	3	207.57	7.05	.01*
Error Between	2091.18	71	29.45		
		Within	Subjects		
Blocks	3864.23	3	1288.08	32.05	.01*
Blocks by Groups	2456.67	9	272.96	6.79	.01*
Error Within	8561.60	213	40.20		

*Denotes significant difference at the 0.05 level of significance

Besides, the repeated measures ANOVA indicated significant blocks by groups interaction, F (9,213) = 6.79, $p < .05$. As can be graphically presented in Figure 4, the performance of self-evaluation + verbal feedback group was more likely to fluctuate across the acquisition trials. Specifically, although their performance on lay-up task was above the other subjects in the first acquisition day's trials, their performance was suddenly dropped off in the second acquisition day's first trial, resulting in poorer performance scores than verbal feedback and control conditions. However, those in the self-evaluation + verbal feedback group again achieved the more or less the similar scores with the control subjects in Acq 4. On the other hand, the subjects in the verbal feedback group were demonstrated gradual increase in lay-up performance across the acquisition blocks, thus resulting in the best performance, in comparison to the other subjects in Acq 4. In respect to compare the performances of self-evaluation + verbal feedback condition with verbal feedback condition, they surpassed the verbal feedback group in Acq 1 and Acq 2; however, in the second acquisition day's trials, the performance scores of verbal feedback condition were likely to be better than that of self-evaluation + verbal feedback group. Therefore, the finding that the overall mean scores of this group in acquisition trials was better than that of verbal feedback and self-evaluation groups as indicated in the significant group differences was not representative for the actual scores across the trials.

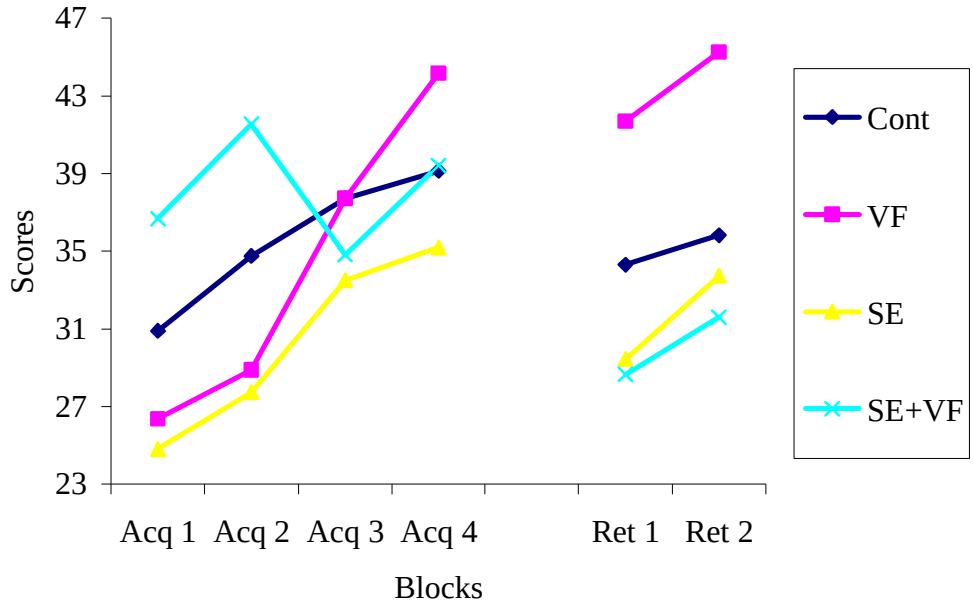


Figure 3. Mean scores of lay-up performance for acquisition and retention phases

4.2. Retention Phase

4.2.1. Dribbling task

For dribbling scores, the analyses indicated that there was a statistically significant effect for groups, F (3,71) = 9.42, p < .05. Tukey's HSD follow-up procedure showed that dribbling scores of verbal feedback group (M = 35.53; SD = 4.34) were better than that of control group (M = 30.5; SD = 3.44), self-evaluation group (M = 31.04; SD = 2.74), and also self-evaluation + verbal feedback group (M = 32.09; SD = 2.88). On the other hand, there were no statistically significant differences between control, self-evaluation and self-evaluation + verbal feedback groups.

The ANOVA results revealed that there was also a significant main effect for blocks by groups interaction, F (3,71) = 4.02, p < .05. However, main effect for

blocks slightly failed significance, F (1,71) = 3.58, p = .06. The retention analysis in repeated measures ANOVA for dribbling task was presented in Table 5.

Table 5. Retention results for dribbling task repeated measure ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*Sig of F*
		Between	Subjects		
Groups	278.39	3	92.80	9.42	.01*
Error Between	699.30	71	9.85		
		Within	Subjects		
Blocks	11.20	1	11.20	3.58	.06
Blocks by Groups	37.75	3	12.58	4.02	.01*
Error Within	222.49	71	3.13		

*Denotes significant difference at the 0.05 level of significance

4.2.2. Lay-up task

For lay-up task, repeated measure ANOVA revealed that there was a significant main effect for groups, F (3,71) = 17.74, p < .05. Tukey's HSD follow-up procedure indicated that lay-up retention scores of verbal feedback group (M = 43.47; SD = 6.61) were better than that of control group (M = 35.07; SD = 7.22), self-evaluation group (M = 31.59; SD = 7.73), and also self-evaluation + verbal feedback group (M = 30.13; SD = 5.70). However, there was no significant difference between the control, self-evaluation, and self-evaluation + verbal feedback groups.

Although there was a statistically significant main effect for blocks, F (1,71) = 20.65, p < .05, blocks by groups interaction failed significance, F (3,71) = .74, p = .53. Tukey's HSD post-hoc analyses conducted in one-way ANOVA for the significant main effect for blocks indicated interesting results. In the Retention day's

First Trial, that is Ret 1, verbal feedback group (M = 41.69; SD = 7.66) showed significantly better performances than control group (M = 34.31; SD = 7.66), self-evaluation group (M = 29.45; SD = 7.36), and self-evaluation + verbal feedback group (M = 28.66; SD = 4.38). In addition, the performance scores of control group were better than that of self-evaluation + verbal feedback group. Similarly, in the Retention day's Last Trial, that is Ret 2, the verbal feedback group (M = 45.25; SD = 7.71) out-performed the control group (M = 35.83; SD = 6.88), the self-evaluation group (M = 33.73; SD = 7.67), and even the self-evaluation + verbal feedback group (M = 31.61; SD = 6.57). Table 6 showed the repeated measure ANOVA results for the retention scores for lay-up task.

Table 6. Retention results for lay-up task repeated measure ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*Sig of F*
		Between	Subjects		
Groups	1974.68	3	658.23	17.74	.01*
Error Between	2634.54	71	37.11		
		Within	Subjects		
Blocks	354.24	1	354.24	20.65	.01*
Blocks by Groups	38.14	3	12.71	.74	.53
Error Within	1218.18	71	17.16		

*Denotes significant difference at the 0.05 level of significance

CHAPTER V

DISCUSSION

For an individual to be successful in sport settings, it is important to enhance his or her motor skill learning. One of the methods that were used to improve motor performance was providing the learners with information about their performances and/or performance outcomes; that is feedback (Laguna, 2000; Weeks & Kordus, 1998; Zubiaur, et. al., 1999). Moreover, the researchers have recently tried to find an answer to the question whether the learners were taken passive roles in their learning situation or not. In that respect, the effects of self-regulation on performance enhancement have been investigated (Bouffard & Dunn, 1993; Cleary & Zimmerman, 2001; Kermarrec, et. al., 2004; Kitsantas & Zimmerman, 1998). Therefore, the purpose of the present study was to investigate whether giving verbal feedback in knowledge of performance forms to the learners and/or treating them as active-participants in their own learning situation has significant effects on fundamental basketball skill learning.

Based on the previous studies, there was expected to be significant differences between treatment conditions. Specifically, those receiving neither verbal feedback nor self-evaluation were to be expected to demonstrate the poorest performance at dribbling and lay-up skills during acquisition and retention tests. The overall results indicated that although significant main effect for groups was found, receiving self-evaluation treatment only would not be likely to have significant

effects on acquiring the given tasks than receiving neither of the treatments. Specifically, for acquisition analyses, the students in the verbal feedback condition, self-evaluation + verbal feedback condition and even the control condition performed similarly and better than those receiving self-evaluation only. This finding was partially opposite to the first hypotheses in that the control subjects were expected to demonstrate the poorest performance, compared to the other experimental conditions, during acquisition tests. This result was also contradictory to the previous studies. For example, in a study examining the effects of verbal feedback and monitoring a model's trials on learning a complex motor skill, it was found that compared to control subjects, learners provided with verbal feedback exhibited better movement patterns during acquisition and retention trials (Hebert & Landin, 1994). However, in some situations verbal feedback in knowledge of results form would be redundant for skill learning. Especially for learning an anticipation timing skill, verbal KR was provided learners with too much information, resulted in detrimental effects on learning this kind of motor skill (Magill, Chamberlin, & Hall, 1991). However, it cannot be concluded that verbal information would always redundant for all motor skill learning. The researchers should have paid more attention to investigate which kinds of skills would be affected by verbal feedback.

It was well established in the literature that the usefulness of verbal KR was increased with reducing the frequency (Lai, & Shea, 1999; Weeks, & Sherwood, 1994). However, the effects of reduced KR scheduling were still equivocal in that if it was examined with respect to age levels of the learners. Wishart and Lee (1997) found that the KR relative frequencies did not have differential effect on performance for both the younger and older subjects. Therefore, it should be kept in

mind that while providing KR schedules, the learners' age level should be more carefully reconsidered.

Yet in another perspective, presenting augmented feedback in different forms was resulted in affecting complex motor skill learning. Like in the study examining the usefulness of augmented feedback, providing the learners with verbal information was not shown to be effective in learning complex skill. Rather, it was indicated that presenting the learners with virtual environments was more likely to be resulted in affecting learning this kind of motor skill (Todorov, Shadmehr, & Bizzi, 1997). In that sense, the effect of verbalized information provided to the learners was still conflicting if verbal information was compared to visual information. For example, Wood, Gallagher, Martino, and Ross (1992) examined the kinematic feedback effects on a complex motor skill. It was emphasized that for acquisition scores of the task, subjects in the verbal feedback and control conditions exhibited larger errors than those in the groups receiving kinematic information visually. This implied that the verbalized kinematic information was not sufficiently enough for modifying movement patterns rather students were more likely to benefit from visual information in kinematic forms for acquiring the skill.

On the other hand, for retention of the given tasks, the group whose subjects were given verbal information about their performances surpassed the other groups. Moreover, difference between the groups, namely control, self-evaluation and self-evaluation + verbal feedback, failed statistical significance. This indicated that the control subjects unexpectedly did not demonstrated the poorest performance than experimental groups except for verbal feedback condition. Therefore, the hypothesis stating that the experimental groups be expected to demonstrate better performance

than the control condition during acquisition and retention tests was partially supported in that only the verbal feedback condition outperformed the control subjects in retention test. Wood et al. (1992) showed that the poorest performance demonstrated in the retention phase was belonging to the control subjects. Additionally, they emphasized the insufficiency of verbal feedback by the fact that the students had to perform a translation of the verbal information before it was usable which required the need for visual information.

Moreover, for the retention scores, the students receiving self-evaluation treatments could not reach significance level in surpassing the control subjects. According to McCombs and Marzano (1990), students' self-regulated learning was based on self-beliefs, self-goals, and self-evaluations. Additionally, they stated that self-regulated learning requires the students' cognitive skills as well as their motivational states. Moreover, setting more realistic, challenging but attainable goals would lead students more self-efficacious (Schunk, 1990a), more motivated on the tasks (Schunk, 1990b), and higher self-evaluative strategy use (Schunk, 1995). These earlier findings implied that one of the strategies, which is the goal-setting was affected by and the effect of other self-regulation skills.

However, in the present study, the results were not in line with the previous studies in that self-regulation skills were not found effective in improving the students' motor performances. There might have been many explanations for this finding. One explanation was more often related with the students' academic capabilities emphasizing that most of the theorists, like Zimmerman stated that youngsters cannot self-regulate their learning in academic settings (Zimmerman, 1990). For example, in the study examining developmental changes underlying

children's capability to self-regulate their own learning, it was found that before the age of 7, students were not likely to use self-regulatory strategies appropriately (Paris & Newman, 1990). In another study; 5th, 8th, and 11th graders of girls and boys were examined in terms of the relation of grade, sex, and giftedness in self-efficacy and self-regulatory strategy use (Zimmerman & Martinez-Pons; 1990). The overall results showed that there was significant differences in terms of students age level, gender, and giftedness. Specifically, the students in 11th grade surpassed those in 8th grade, who in turn surpassed the students in 5th grade on the measures of self-regulatory strategy use. This implied that the more the students' age increased, the more their use of self-regulatory strategy become effective in academic tasks. These earlier studies indicated that in order to measure self-regulated learning strategies appropriately, the students' age level as well as gender differences must be taken into consideration.

Similar results were found in motor behavior research. For example, the study examining children with different age level in terms of adopting self-regulatory learning strategies in order to recall movement sequences stated that compared to children in grade 1, who were approximately 6 years old; children in grade 4, who were approximately 9 years old, more frequently used many of self-regulatory learning strategies like self-checking strategies (Bouffard & Dunn, 1993). This finding suggested that as children get older, they tended to use self-regulated learning strategies more variously and more frequently.

The other explanation why self-regulatory strategy was insufficient would be related with students' expertise level in motor skills (Ferrari et al., 1991; Ferrari, 1999). According to the previous studies, compared to novices and non-experts,

expert athletes were more likely to use self-regulatory strategies in their motor skill learning. For example, Cleary and Zimmerman (2001) investigated differences among basketball experts, non-experts, and novices regarding the quality and quantity of their self-regulated learning during practicing free-throw shooting skill. They measured the subjects' self-regulatory strategies including self-efficacy, self-satisfaction, goal setting, strategy choice, and attributions. The overall results demonstrated that compared to non-experts and novices, expert basketball players were found to choose more specific, technique-oriented processes in practice session, have higher self-efficacy perceptions, set more specific goals, and choose efficient learning strategies. Taken together, expert basketball players seemed to have greater advantage in improving and maintaining higher level of skill and motivation as well as a higher quality of self-regulation during practice.

Moreover, similar findings were expressed in another study examining the efficacy of one of the self-regulation model developed by Kirshenbaum and Wittrock (1984) by comparing the competitive swimmers with regard to expertise level and gender on their behavioral tendencies and psychological characteristics (Anshel & Porter, 1996). Particularly, compared to non-elite swimmers, elites were more likely to use three aspects of self-regulation model; namely problem identification, commitment, and execution indicating that elite swimmers appeared to have more effective self-regulatory strategy use than non-elite swimmers.

These earlier findings related with the expertise level implied that the novices' inefficiency of self-regulatory strategy use might be dependent upon the absence of relevant cognitive knowledge for the given tasks. Additionally, the present result indicating that students receiving self-evaluation treatments could not

reach significance level in surpassing the control subjects and that students provided with verbal information about their performances outperformed the other students might be explained by the fact that novice athletes were more likely to depend on external feedback provided by instructor and/or coach (Ferrari, et al., 1991).

The general findings implied that the learners were more likely to benefit from a standard way of instruction, i.e., providing them with verbal information about their performances. Although there was no specific investigation comparing the self-evaluation with verbal feedback, in the present study, the subjects receiving either self-evaluation or verbal feedback were expected to demonstrate better performances in the given tasks. Because their performances were more likely to fluctuate across trials, the last expectation was not achieved.

Taken together, this study was important in providing methodological implications for future research. The most evident was that the subjects' age level as well as their expertise level in the motor task might be the self-regulatory learning strategy's determiners, which would be taken into consideration in future researches. Moreover, self-regulation of learning was determined by students' goal setting which in turn affected by their intrinsic interest (Zimmerman & Kitsantas, 1996). For example, one of a specific student, who at first keen on being participated in the present study, and later wanted to be out of the study on her own request, explained about the meaningless of being participated in the study. Therefore, it is rather important to provide the learners with specific and achievable goals which in turn increased their intrinsic interest and thus adherence to participation in sporting contexts. Besides, for the provision of verbal feedback which was found to be the

most influential method in the present study, the students' age level as well as the scheduling of feedback must be considered carefully.

REFERENCES

Anderson, D.I., Magill, R.A., & Sekiya, H. (2001). Motor learning as a function of KR schedule and characteristics of task-intrinsic feedback. *Journal of Motor Behavior, 33(1),* 59 – 66.

Anderson, J.R. (1995). *Learning and memory: An integrated approach*. John Wiley and Sons: New York.

Anshel, M.H., & Porter, A. (1996). Efficacy of a model for examining self-regulation with elite and non-elite male and female competitive swimmers. *International Journal of Sport Psychology, 27,* 321 – 336.

Bandura, A. (1986). *Social foundations of thought and actions: A social cognitive theory*. Prentice Hall: Englewood Cliffs, NJ.

Bilodeau, I.M. (1966). Information feedback. In E.A. Bilodeau (Ed.), *Acquisition of skill* (pp. 255 – 296). New York: Academic Press.

Bouffard, M., & Dunn, J.G.H. (1993). Children's self-regulated learning of movement sequences. *Research Quarterly for Exercise and Sport, 64(4),* 393 – 403.

Brisson, T.A., & Alain, C. (1996). Knowledge of performance provided without criterion information enhances the learning of a coincident timing task. *Research Quarterly for Exercise and Sport, 67,* 458 – 464.

Brisson, T.A., & Alain, C. (1997). A comparison of two references for using knowledge of performance in learning a motor task. *Journal of Motor Behavior, 29,* 339 – 350.

Butler, D., & Winne, P.H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research, 65(3),* 245 – 281.

Chen, D., & Singer, R.N. (1992). Self-regulation and cognitive strategies in sport participation. *International Journal of Sport Psychology, 23,* 277 – 300.

Chiviacowsky, S., & Wulf, G. (2002). Self-controlled feedback. Does it enhance learning because performers get feedback when they need it? *Research Quarterly for Exercise and Sport, 73(4),* 408 – 415.

Cleary, T.J., & Zimmerman, B.J. (2001). Self-regulation differences during athletic practice by experts, non-experts, and novices. *Journal of Applied Sport Psychology, 13,* 185 – 206.

Crews, D.J., Lochbaum, M.R., & Karoly, P. (2001). Self-regulation: Concepts, methods, and strategies in sport and exercise. In R.N., Singer, H.A., Hausenblas, & M.J., Cristophers (Eds.). *Handbook of Sport Psychology* (pp. 566 – 581). New York: Wiley

Çamur, H. (2001). Basketbolda dribling ve turnike becerilerinin öğretiminde canlı, videolu ve canlı + videolu dönütün başarıya etkisi. Unpublished master's thesis, Hacettepe University, Ankara, Türkiye.

Ferrari, M. (1999). Influence of expertise on the intentional transfer of motor skill. *Journal of Motor Behavior, 31(1),* 79 – 85.

Ferrari, M., Pinard, A., Reid, L., & Bouffard-Bouchard, T. (1991). The relationship between expertise and self-regulation in movement performance: Some theoretical issues. *Perceptual and Motor Skills, 72,* 139 – 150.

Fredenburg, K.B., Lee, A., & Solmon, M. (2001). The effects of augmented feedback on students' perceptions and performance. *Research Quarterly for Exercise and Sport, 72(3),* 232 – 242.

Gable, C.D., Shea, C.H., & Wright, D.L. (1991). Summary knowledge of results. *Research Quarterly for Exercise and Sports, 62,* 285 – 292.

Garn, A., & Byra, M. (2002). Psychomotor, cognitive, and social development spectrum style. *Teaching Physical Elementary Physical Education, 13(2),* 8 – 13.

Guadagnoli, M.A., Dornier, L.A., & Tandy, R.D. (1996). Optimal summary length for summary knowledge of results. The influence of task-related experience and complexity. *Research Quarterly for Exercise and Sport, 64,* 217 – 222.

Guadagnoli, M.A., Holcomb, W., & Davis, M. (2002). The efficacy of video feedback for learning the golf swing. *Journal of Sport Sciences, 20,* 615 – 622.

Hall, T.J., & McCullick, B.A. (2002). Discover, design, and invent: Divergent production. *Teaching Physical Elementary Physical Education, 13(2),* 22 – 24.

Hebert, E.P., & Landin, D. (1994). Effects of a learning model and augmented feedback on tennis skill acquisition. *Research Quarterly for Exercise and Sport, 65(3),* 250 – 257.

Hebert, E., Landin, D., & Menickelli, J. (1998). Videotape feedback: What learners see and how they use it. *Journal of Sport Pedagogy, 4,* 12 – 28.

Jambor, E.A., & Weekes, E.M. (1995, February). Videotape feedback: Make it more effective. *Journal of Physical Education, Recreation, and Dance, 66,* 48 – 50.

Janelle, C.M., Barba, D.A., Frehlich, S.G., Tennant, L.K., & Cauraugh, J.H. (1997). Maximizing performance feedback effectiveness through videotape replay and a self-controlled learning environment. *Research Quarterly for Exercise and Sport, 68(4),* 269 – 279.

Janelle, C.M., Kim, J., Singer, R.N. (1995). Subject-controlled performance feedback and learning of a closed motor skill. *Perceptual and Motor Skills, 81,* 627 – 634.

Kawashima, R., Tajima, N., Yoshida, H., Okita, K., Sasaki, T., Schormann, T., Ogawa, A., Fukuda, H., & Zilles, K., (2000). The effect of verbal feedback on motor learning – A PET study. *NeuroImage, 12,* 698 – 706.

Kermarrec, G., Todorovich, J.R., & Fleming, D.S. (2004). An investigation of the self-regulation components students employ in the physical education setting. *Journal of Teaching in Physical Education, 23,* 123 – 142.

Kernodle, M.W., & Carlton, L.G. (1992). Information feedback and the learning of multiple-degree-of-freedom activities. *Journal of Motor Behavior*, *24*, 187 – 196.

Kirschenbaum, D.S., & Wittrock, D.A. (1984). Cognitive-behavioral interventions in sport: A self-regulatory perspective. In J.M. Silva & R.S. Weinberg (Eds.), *Psychological foundations of sport* (pp. 81-98). Champaign, IL: Human Kinetics.

Kitsantas, A., & Zimmerman, B.J. (1998). Self-regulation of motoric learning: A strategic cycle view. *Journal of Applied Sport Psychology, 10*, 220 – 239.

Laguna, P.L. (2000). Model demonstration versus feedback (KP) in motor skill acquisition and performance. *Journal of Sport and Exercise Psychology*, *22(Supplement)*, S64, NASPSPA Abstracts.

Lai, Q., & Shea, C.H. (1999). The role of reduced frequency of knowledge of results during constant practice. *Research Quarterly for Exercise and Sport*, *70(1)*, 33 – 40.

Magill, R.A. (1993). Modeling and verbal feedback influences on motor skill learning. *International Journal of Sport Psychology*, *24(3)*, 358 – 369.

Magill, R.A. (2001a). *Motor learning: Concepts and application* (6^{th} Ed.). The McGraw Hill, New York.

Magill, R.A. (2001b). Augmented feedback in motor skill acquisition. In R.N. Singer, H.A., Hausenblas, & C.W. Janelle (Eds.), *Handbook of Sport Psychology* (pp. 86 – 114). New York: Wiley.

Magill, R.A., Chamberlin, C.J., & Hall, K.G. (1991). Verbal knowledge of results as redundant information for learning an anticipation skill. *Human Movement Science*, *10*, 485 – 507.

Magill, R.A., & Hall, K.G. (1990). A review of the contextual interference effect in motor skill acquisition. *Human Movement Science, 9*, 241 – 289.

Martin, M.B., & Anshel, M.H. (1995). Effect of self-monitoring strategies and task complexity on motor performance and affect. *Journal of Sport and Exercise Psychology, 17,* 153 – 170.

McCombs, B.L., & Marzano, R.J. (1990). Putting the self in self-regulated learning: The self as agent in integrating will and skill. *Educational Psychologist, 25(1),* 51 – 69.

Mosston, M., & Ashworth, S. (1985). Toward a unified theory of teaching. *Educational Leadership, 42(8),* 31 – 34.

Newell, K.M., Carlton, M.J., & Antoniou, A. (1990). The interaction of criterion and feedback information in learning a drawing task. *Journal of Motor Behavior, 22,* 536 – 552.

Ommundsen, Y. (2003). Implicit theories of ability and self-regulation strategies in physical education classes. *Educational Psychology, 23(2),* 141 – 157.

Paris, S.G., & Newman, R.S. (1990). Developmental aspects of self-regulated learning. *Educational Psychologist, 25(1),* 87 – 102.

Pintrich, P.R., & De Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82(1),* 33 – 40.

Puustinen, M., & Pulkkinen, L. (2001). Models of self-regulated leaning: A review. *Scandinavian Journal of Educational Research, 45(3),* 269 – 286.

Schmidt, R.A., & Lee, T.D. (1999). *Motor control and learning: A behavioral emphasis* (3rd Ed.). Human Kinetics, Champaign, IL.

Schmidt, R.A., & Wrisberg, C.A. (2000). *Motor learning and performance: A problem based learning approach* (2nd Ed.). Human Kinetics, Champaign, IL.

Schmidt, R.A., Young, D.E., Swinnen, S., & Shapiro, D.C. (1989). Summary knowledge of results for skill acquisition. Support for the guidance hypothesis. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 15,* 352 – 359.

Schunk, D.H. (1990a). Goal-setting and self-efficacy during self-regulated learning. *Educational Psychologist, 25(1),* 71 – 86.

Schunk, D.H. (1990b). Introduction to the special section on motivation and efficacy. *Journal of Educational Psychology, 82(1),* 3 – 6.

Schunk, D.H. (1995). Learning goals and self-evaluation: Effects on children's cognitive skill acquisition. *Paper presented at the annual meeting and exhibit of the American Educational Research Association* (San Francisco, CA, April 18 – 22).

Selder, D.J., & Del Rolan, N. (1979). Knowledge of performance, skill level and performance on the balance beam. *Canadian Journal of Applied Sport Sciences, 4,* 226 – 229.

Shea, C.H., & Wulf, G. (1999). Enhancing motor learning through external-focus instruction and feedback. *Human Movement Science, 18,* 553 – 571.

Silverman, S., Woods, A.M., & Subramanian, P.R. (1998). Task structures, feedback to individual students, and student skill level in physical education. *Research Quarterly for Exercise and Sport, 69,* 420 – 424.

Singer, R.N. (1989). *Motor learning and human performance* (3rd Ed.). New York: MacMillan.

Sparrow, W.A. & Summers, J.J. (1992). Performance on trial without knowledge of results (KR) in reduced relative frequency presentations of KR. *Journal of Motor Behavior, 24,* 197 – 209.

Starek, J., & McCullagh, P. (1999). The effect of self-modeling on the performance of beginning swimmers. *The Sport Psychologist, 13,* 269 – 287.

Swinnen, S.P., Schmidt, R.A., Nicholson, D.E., & Shapiro, D.C. (1990). Information feedback for skill acquisition: Instantaneous knowledge of results degrades learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 16,* 706 – 716.

Todorov, E., Shadmehr, R., & Bizzi, E. (1997). Augmented feedback presented in a virtual environment accelerates learning of a difficult motor task. *Journal of Motor Behavior, 29(2)*, 147 – 158.

Wallace, S.A., & Hagler, R.W. (1979). Knowledge of performance and the learning of a closed motor skill. *Research Quarterly, 50*, 265 – 271.

Weeks, D.L., & Kordus, R. N. (1998). Relative frequency of knowledge of performance and motor skill learning. *Research Quarterly for Exercise and Sport, 69(3)*, 224 – 230.

Weeks, D.L., & Sherwood, D.E. (1994). A comparison of knowledge of results scheduling methods for promoting motor skill acquisition and retention. *Research Quarterly for Exercise and Sport, 65(2)*, 136 – 142.

Winstein, C.J. & Schmidt, R.A. (1990). Reduced frequency of knowledge of results enhances motor skill learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *16*, 667 – 681.

Wishart, L.R., & Lee, T.D. (1997). Effects of aging and reduced relative frequency of knowledge of results on learning a motor skill. *Perceptual and Motor Skills, 84*, 1107 – 1122.

Wood, C.A., Gallagher, J.D., Martino, P.V., & Ross, M. (1992). Alternate forms of knowledge of results: Interaction of augmented feedback modality on learning. *Journal of Human Movement Studies, 22*, 213 – 230.

Wrisberg, C.A. & Wulf, G. (1997). Diminishing the effects of reduced frequency of knowledge of results. *Journal of Motor Behavior, 29*, 17 – 26.

Wulf, G., Gärtner, M., & Schwarz, A. (2000). Advantages of external focus feedback in learning a complex motor skill. *Journal of Sport and Exercise Psychology, 22(Supplement)*, S119, NASPSPA Abstracts.

Wulf, G., McConnel, N., Gärtner, M., & Schwarz, A. (2002). Enhancing the learning of sport skills through external-focus feedback. *Journal of Motor Behavior, 34(2)*, 171 – 182.

Wulf, G., Shea, C.H., & Matschiner, S. (1998). Frequent feedback enhances complex motor skill learning. *Journal of Motor Behavior, 30*, 180 – 192.

Zimmerman, B.J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*, 329 – 339.

Zimmerman, B.J. (1990). Self-regulated learning and academic achievement. An overview. *Educational Psychologist, 25(1)*, 3 – 17.

Zimmerman, B.J., & Kitsantas, A. (1996). Self-regulated learning of a motoric skill: The role of goal-setting and self-monitoring. *Journal of Applied Sport Psychology, 8*, 60 – 75.

Zimmerman, B.J., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology, 89(1)*, 29 – 36.

Zimmerman, B.J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology, 82(1)*, 51 – 59.

Zubiaur, M., Ona, A., & Delgado, J. (1999). Learning volleyball serve: A preliminary study of the effects of knowledge of performance and of results. *Perceptual and Motor Skill, 89*, 223 – 232.

APPENDICES

APPENDIX A

INSTRUCTIONS

Instruction for all subjects:

In these experimentation sessions, you will be introduced with two of the fundamental basketball skill. In the first class hour, you will practice the dribbling task. Then, in the second hour you will practice the lay-up task. After the experimenter gives the instructions about the tasks and demonstrates how to do it, you will perform two trials without being evaluated. Then you will be given the actual performance trials with being evaluated, the total number of which will be 14 in one class session.

Dribbling Task

Dribbling task is usually used in order to carry the ball from your own field to the opponent's field. Especially when beginning a counterattack, one of our teammates has got the ball under control and start to dribble the ball to pass through the opponent's field. In basketball, dribbling task is the most basic skill in that it is needed almost all of the other tasks, like lay-up. While dribbling, you should have paid attention to the following points:

- Firstly, the ball is required to be under control.

- While dribble the ball, it should be in front and side of your body.
- You should keep the ball under control with your fingers not with the palm.
- The power which is used to dribble the ball comes from your elbow first and your wrist next.

The following points are used for stepping while dribbling, after the ball control has been achieved:

- In order to move your body easily, step with the knees slightly bent
- Do not step far away
- While dribbling, your tiptoe points straight
- While dribble the ball, your knee bent toward the front

While dribble the ball, you should have taken care of your body posture and coordination. For body posture, you should follow the points listed below:

- In order not to lose your balance, you should have kept the center of gravity into your hip
- You should have kept your body slightly bent toward the front
- In order to look straight, your shoulder and head up

For body coordination, you should follow the points listed below:

- In order to move with ease while in motion in dribbling, the whole body should bounce slightly from your knees
- Your body is not to be shortened

Lay-up Task

Lay-up skill is used for penetrating through the opponent's defense while in counterattack. The other feature of lay-up skill is that you can make maximum two

steps without dribbling. However, this movement should be toward scoring. After making two steps, you must have left the ball to the rim or to your teammate.

When you begin to make the lay-up stepping, you should be careful about the followings:

- You should hold the ball into the abdominal line
- When you perform the right (or left) lay-up, you must start stepping with right (or left) foot
- You must make maximum two steps, and in the third step, you must leave the ball to the rim or to your teammate

After you complete the lay-up stepping, you begin to jump through the target as far as you can. You should also be careful about jumping in that:

- In the right (or left) handed-students must choose their right (or left) foot as jumping-foot
- Yu must jump through the basket with your selected jumping-foot
- You should pull the other left (or right) knee into abdominal level
- The jumping-foot, your body, and waist must be stretched
- Look toward the rim and jump as far as you can

While in ball-putting;

- In order to achieve scoring, you should leave the ball into the highest peak
- Your body should reach over to the basket
- The ball must be lifted up from the abdominal level toward the basket
- Your shoulder must be slightly rotated toward the basket

After you put the ball, you should be careful about the landing in that;

- In order to land gently, bend your knee slightly while in landing.

- In order to get balanced, you should lower the arm that you have lifted to put the ball to the target

APPENDIX B

PERFORMANCE SCORING SHEET FOR DRIBBLING TASK

TOP SÜRME

Açıklama : Bu ölçek 0' dan 5'e kadar derecelendirilmiştir. Yapılan hareketin doğruluğuna göre lütfen bu derecelendirmeyi kullanın. İstenilen davranış gösterilemiyorsa "**0**"ı ve davranışın yapılış düzeyine göre; **1: Çok zayıf, 2: Zayıf, 3: Orta, 4: İyi, 5: Çok iyi** şeklinde puanlayın.

Öğrencinin Adı-Soyadı: **Uzman:**_____

Sınıfı :

A) TOP KONTOLÜ

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Top önde dribling yapıyor						
2) Topa bakmıyor						
3) Top avuç içi değmeden, parmak ucuyla dribling yapıyor						
4) Önce dirsek sonra el bileğinden top yere bir açı ile itiyor (Top sürme tekniği)						
TOPLAM						

B) ADIMLAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Dizler bükük şekilde adımlama yapıyor						
2) Ayakları çok açmıyor						
3) Ayak uçları karşıya bakıyor						
4) Dizlerden öne doğru bir açı yapıyor						
TOPLAM						

C) VÜCUT POZİSYONU

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Ağırlık merkezini kalçada tutuyor						
2) Vücut öne eğik şekilde hareket ediyor						
3) Kafa ve omuz yukarıda karşıya bakıyor						
TOPLAM						

D) KOORDİNASYON

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Dizlerden tüm vücudun hafifçe yaylanıyor						
2) Vücut serbest olarak hareket ediyor (kasılmaz)						
TOPLAM						

APPENDIX C

PERFORMANCE SCORING SHEET FOR LAY-UP TASK

TURNİKE

A) ADIMLAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Topu karın hizasında tutuyor						
2) Sağ turnikeye girer iken sağ ayak ile harekete başlıyor						
3) İki adım atıyor						
4) Dizler öne doğru açı yapacak şekilde yere temas ediyor						
TOPLAM						

B) SIÇRAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Diz karna doğru çekiliyor						
2) Sıçrama ayağını düz (gergin) tutuyor						
3) Vücut (bel), gergin tutuyor						
4) Kafa çembere bakıyor						
5) En yüksek noktaya ulaşmaya çalışıyor						
TOPLAM						

C) TOP BIRAKMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Vücut çembere doğru uzanıyor						
2) Kol yukarıda düz (gergin) tutuyor						
3) Topu karın hizasından yukarı doğru çıkartıyor						
4) Top bırakılırken avuç içi kendisine bakıyor						
5) Bileği kendine doğru çekiyor (Bombe vermek için)						
6) Omzu çembere doğru hafifçe dönüyor						
TOPLAM						

D) YERE DÜŞÜŞ

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Sıçranılan ayak ile yere düşüyor						
2) Denge için kolları aşağı çekiyor						
3) Yere düşüşte dizini hafifçe büküyor						
TOPLAM						

APPENDIX D

VERBAL FEEDBACK

Augmented feedback in knowledge of performance forms was provided to the subjects receiving verbal information about their dribbling and lay-up performances. These subjects were belonging to the two different groups, namely verbal feedback group and self-evaluation + verbal feedback group.

Dribbling Task

The following information was provided verbally about the corresponding subjects' dribbling performance:

A – Ball Control

1) Push the ball to the ground more powerfully
2) Dribble the ball in front and side of your left / right leg
3) Look straight toward the field not to the ball
4) The ball not contact to your palm
5) Push the ball straight to the ground with your arm where the power coming from your elbow first to your wrist next.

B – Stepping

1) Step with your knee bent
2) Do not step too far away from your feet
3) While dribbling, your tiptoe point straight

4) While dribbling, your knee bent toward the front

C – Body Posture

1) Keep center of gravity into your hip
2) Do not move with your head bent down
3) Your head and shoulder up and look straight

D – Body Coordination

1) Bounce slightly your whole body from your knees
2) Your body not being shortened

Lay-up Task

The following information was provided verbally about the corresponding subjects' lay-up performance:

A – Lay-up Stepping

1) Hold the ball within the abdominal line
2) While performing right (or left) lay-up, begin with right (or left) foot in stepping
3) Make two steps
4) If you have began with right (or left) foot, end the lay-up with right (or left) foot

B – Jumping

1) Pull your knee toward the abdominal line
2) Keep your jumping foot stretched and straight
3) Keep your body and waist stretched
4) Look at toward the rim

C – Ball Putting

1) Extend your body toward the rim as far as you can
2) Keep your arm up, straight, and stretched
3) Level up the ball from the abdominal line toward the rim
4) While putting the ball into the rim, your palm be pointed at you
5) Turn your shoulder slightly toward the rim

D – Landing

1) Land with one foot which is the jumping foot
2) Bend your knee slightly while in landing
3) Take your arms down for balancing

APPENDIX E

FORMAL CORRESPONDENCES

Orta Doğu Teknik Üniversitesi
Eğitim Fakültesi
Beden Eğitimi ve Spor Bölümü
06531 Ankara/TÜRKİYE
Tel (0312) 2104016
Fax (0312) 2101255

Middle East Technical University
Faculty of Education
Physical Education & Sports Dept.
06531 Ankara/TURKEY
Tel +90 (0312) 2104016
Fax +90 (0312) 2101255

09.12.2004

Sayı:BESB/2004/320

Konu:

İL MİLLİ EĞİTİM MÜDÜRLÜĞÜ'NE,
ANKARA

Bölümümüz yüksek lisans öğrencilerinden Mine Müftüler'in "Sözel Geribildirim ve Öz Değerlendirmenin Öğrenme Üzerine Etkisi" konulu bilimsel araştırma projesi kapsamında, ilköğretim seviyesindeki öğrencilere bazı ölçümler yapılması gerekmektedir. Bu çalışmanın gerçekleşebilmesi için Çankaya İlçe Milli Eğitim Müdürlüğü'ne bağlı olan Halide Edip Adıvar İlköğretim Okulu öğrencilerinin temel basketbol becerileri ölçülecektir. Ek 1'de sunulan ölçümlerin Ek 2'de sunulan ölçüm aracı ile uygulanabilmesi için gereğinin yapılmasını bilgilerinize arz ederim.

Saygılarımla

Prof.Dr.Feza KORKUSUZ
Beden Eğitimi ve Spor
Bölümü Başkanı V.

Ek 1: Tez önerisi
Ek 2: Ölçüm aracı

Email: pes@metu.edu.tr

EK – 1

Sözel Geribildirim ve Öz-Düzenlemenin Öğrenme Üzerine Etkisi

1. Amaç ve Gerekçe

Günümüzde beden eğitimi öğretmenlerinin veya antrenörlerin karşılaştığı temel sorunlardan birisi; öğrencilerin yeni fiziksel beceri öğrenme süreçlerini en uygun ve etkili şekilde kullanılmasını sağlayabilmektir. Bunun için öğrenilecek beceriye yönelik alıştırma yapmak, gerekli bilgiyi sağlamak, çeşitli öğretme metotlarını kullanmak, yapılan hareket hakkında geri bildirim vermek ve bunun gibi birçok yöntem kullanılmaktadır. Bütün bu yöntemler bireylerin daha iyi performans sergileyebilmesi için kullanılmaktadır. Özellikle alıştırma yapmak ve geri bildirim vermek en iyi öğrenme durumu için sıkça kullanılan yöntemlerden birisidir. Bunlardan geri bildirim sağlamanın fiziksel beceri öğrenme üzerinde önemli bir etkisi vardır. Geri bildirim görsel ve sözel olmak üzere iki çeşitte öğrencilere verilebilir. Geri bildirimler öğrencinin yaptığı hareketin süreci (knowledge of performance – KP) ve/veya sonucu (knowledge of result – KR) hakkında, öğretmen ve/veya antrenör tarafından verilir. Bunların dışında çözülmesi gereken önemli sorunlardan bir diğeri ise: bireyler/öğrenciler öz-düzenlenmiş öğrenmeye (self-regulated learning) aktif olarak mı katılıyorlar? Yoksa sadece dışarıdan gelen bilgiyi pasif olarak mı öğreniyorlar?

Yukarıda belirtilen sorulara ve önbilgiye dayanarak bu çalışmanın amacı belirlenmiştir. Temelde iki amaç bulunmaktadır. 1) Sözel geri bildirimin yeni fiziksel beceri öğrenme üzerindeki etkisini incelemek ve 2) bu esnada öğrencilerin kendi bireysel değerlendirmesini (self-evaluation) yapmalarını sağlayarak bunun öğrenme üzerindeki etkisini araştırmaktır.

2. Tanım

a) Konu ile ilgili literatüre taraması; konunun güncel durumu ve bulunduğu aşama

Genel olarak öğrenmenin tanımı: bireylerin davranışlarında istendik yönde kalıcı değişiklikler yapmaktır. Aynı tanımın beceri öğrenme için de geçerli olduğunu düşünürsek, sporun temel amaçlarından birinin etkili ve kalıcı performans değişiklikleri olduğunu söyleyebiliriz. Sporda beceri öğrenmede etkili ve kalıcı performans değişikliklerini ölçebilmek için hatırlama (retention) testleri uygulanmıştır. Bu testler, alıştırma (acquisition) testlerinden sonra, aynı hareketler

üzerine ölçülen testlerdir. Bu konuda yapılan araştırmalara göre, beceri öğrenmeyi etkileyebilecek birçok faktörün olduğu da gözlenmiştir. Bu faktörlerin arasında, alıştırma yapmanın yanı sıra yapılan performans hakkında verilen geri bildirim de önemli rol oynamaktadır (Schmidt & Wrisberg, 2000). Geri bildirimler genelde daha etkili öğrenme sağlamak ve dolayısıyla performansı artırmak için iki çeşitte ve değişik sıklıklarla verilmektedir (Weeks & Kordus, 1998; Hebert & Landin, 1994). Bu çalışmanın amacına da bağlı olarak, sözel (verbal) geri bildirim sağlanacaktır. Sözel geri bildirimler çeşitli formlarda öğretmen ve/veya antrenör tarafından verilir. Bu tarz geri bildirimler öğrencilerin performansları hakkında bilgi sağladığı için öğrenme üzerinde etkisi olduğu ortaya konulmuştur (Hebert & Landin, 1994; Wrisberg, Dale, Liu, & Reed, 1995). Yapılan bir çalışmada, sözel geri bildirim alan bir grubun performansının hiç geri bildirim almayan gruptan (kontrol grup) daha iyi olduğu sonucuna varılmıştır (Hebert & Landin, 1994). Hareketin süreci hakkında verilen sözel geri bildirim, bir hata oluştuğunda ve bireyin bu hatasını uygun şekilde düzeltebilmesi için bilgi sağladığından, özellikle yeni fiziksel beceri öğrenmede oldukça etkili olduğu gözlenmiştir (Kernodle & Carlton, 1992; Newell & Carlton, 1987).

Buna ek olarak, öğrencilerin kendi öz-düzenlenmiş öğrenmelerine aktif olarak katılmalarını sağlamak, yeni fiziksel beceri öğrenmenin etkili ve kalıcılığı üzerinde önemli rol oynamaktadır (Bouffard & Dunn, 1993; Baker, Coté, & Abernethy, 2003; Zimmerman & Kitsantas, 1996). Öğrencilerin kendi öz-düzenlemelerine katılmaları, onların motivasyonunu, kendilerine olan güvenini (Zimmerman & Kitsantas, 1996), ve yapılacak hareket hakkındaki bireysel düşüncelerini (Cleary & Zimmerman, 2001) olumlu yönde etkilemektedir. Aynı zamanda hem yeni beceri öğrenmede (Zimmerman & Kitsantas, 1996) hem de karmaşık (complex) beceri öğrenmede (Wulf & Toole, 1999) ve küçük yaştaki çocukların hareket sırasını öğrenmede (Bouffard & Dunn, 1993) önemli bir etkisi bulunmaktadır.

Bu çalışmanın amacına bağlı olarak ve edindiğimiz önbilgiye dayanarak, yapılacak olan çalışmada ilk öğretim 5 ve 6 seviyesindeki 80 öğrenciye temel basketbol becerilerinden olan top sürme ve turnike öğretilecektir. Yapılacak olan çalışmanın amacına göre deneklerin ortak özelliğinin bu becerileri daha önceden öğrenmemiş olması gerekmektedir. Öğrencilerin performansları amaca uygun olarak

uyarlanmış olan performans değerlendirme ölçeğine göre ölçülecektir (bkz. Ek 2). Denekler dört farklı gruplara rasgele yöntemle atanacaktır. Gruplar a) sadece sözel geri bildirim alan, b) hem sözel geri bildirim hem de bireysel değerlendirme alan, c) sadece bireysel değerlendirme alan ve d) kontrol grubu olmak üzere toplam dört grup oluşturulacaktır. Beceriler öğretmen veya antrenör tarafından öğretilecektir. Sözel geribildirimler öğrencilerin yaptığı her 5 denemeden sonra performanslarındaki hatalar hakkında verilecektir. Sözel geribildirimler öğrencilere iki farklı basketbol uzmanı tarafından birebir olarak sunulacaktır. Bireysel değerlendirmeler ise yine aynı şekilde her 5 denemeden sonra verilecektir. Performans değerlendirmeleri de aynı basketbol uzmanları tarafından yapılacaktır. Performans ölçümlerinde alıştırma (acquisition) ve hatırlama (retention) testlerinin uygulanması planlanmaktadır. Bir haftalık alıştırma testlerinin ardından hatırlatma testlerine geçilecektir. Alıştırma testlerinde öğrencilere 15 deneme hakkı tanınacaktır. Bu esnada; uzmanlar performans değerlendirmesini yaparken, sadece sözel geribildirim alan gruptaki öğrenciler her 5 denemeden sonra sözel geri bildirim alacaktır. Hem sözel geribildirim hem de bireysel değerlendirme alan gruptaki öğrenciler de 5 denemeden sonra sözel geribildirim ve bireysel değerlendirme alacaktır. Sadece bireysel değerlendirme alan gruptaki öğrenciler ise yine her 5 denemeden sonra kendi performanslarını değerlendireceklerdir. Kontrol grubundaki öğrencilere de sadece 15 deneme hakkı tanınacaktır, bu öğrenciler performansları hakkında herhangi bir bilgi almayacaklar veya kendi performanslarını değerlendirmeyeceklerdir. Böylelikle ilk üç gruptaki her öğrencinin toplam üç adet geribildirim alma ve/veya kendi performanslarını değerlendirme süreci olacaktır. Son alıştırma testlinden 48 saat sonra da hatırlama testleri verilecektir. Hatırlama testlerinde öğrencilere 10 deneme hakkı verilecektir. Bu testlerde öğrencilere herhangi bir geribildirim ve/veya bireysel değerlendirme verilmeyecektir. Böylelikle bir hafta boyunca öğretilen becerinin kalıcılığı ölçülecektir. Sonuç olarak, gruplar arasındaki performanslar karşılaştırılarak sözel geribildirim ve/veya bireysel değerlendirmenin basketboldaki temel becerileri öğrenmenin üzerindeki kalıcılık etkisi değerlendirilecektir.

b) Önerilen konunun güncel ve evrensel noktada ürettiği ek bilgi ve/veya teknoloji

Son zamanlarda gelişen teknolojiyle birlikte, dünyanın her yerinde yapılan çeşitli spor müsabakalarını takip etme olanağımız artmıştır. Böylelikle dünyanın dört bir tarafında mücadele eden sporcuların performanslarını analiz etme imkanı da doğuyor. Genel olarak bakıldığı zaman hemen her sporcunun yüzyıllar öncesinde performans sergileyen sporculardan daha üstün başarılar gösterebildiğini söyleyebiliriz. Her geçen yıl kırılan dünya rekorları da bunu kanıtlanmaktadır. Bu noktada akla gelen ilk soru bu değişimin, ya da başka bir deyişle bu gelişimin, nasıl ve nereden kaynaklandığıdır. Elbette ki bu sorulara çeşitli bakış açılarıyla cevap vermek mümkündür ama sporda beceri öğrenme alanı ile cevap verilmek istenirse karşımıza ortak cevaplar çıkmaktadır. Bunlardan en önemlilerinden biri olan geri bildirim vermek performans artırma da önemli bir rol oynamaktadır. Geçmişte yapılan birçok araştırma bizi bu ortak cevaba götürmektedir. Yapılacak olan araştırmanın da amacına bağlı olarak, bir de spor psikolojisi alanından bakıldığı zaman karşımıza yine ilginç sonuçlar çıkıyor. Sporcuları ulaşmak istedikleri en üst performans için gerekli olabilecek yeterli öğrenme sürecini kendilerinin düzenlemesi onların hem motivasyon düzeylerini artırmakta hem de öğrenme seviyelerini ve performanslarını artırmakta. Yapılması planlanan çalışma en etkili ve kalıcı öğrenme sürecinin nasıl sağlanabileceği konusunda ek bir bilgi üretmektedir.

Kaynakça

Bouffard, M., & Dunn, J. G. H. (1993). Children's self-regulated learning of movement sequences. *Research Quarterly for Exercise and Sport, 64,* 393-403.

Carnahan, H., Craig, H., & Lee, T. D. (1996). Delayed visual feedback while learning to track a moving target. *Research Quarterly for Exercise and Sport, 67,* 416-423.

Cleary, T. J., & Zimmerman, B. J. (2001). Self-regulation differences during athletic practice by experts, non-experts, and novices. *Journal of Applied Sport Psychology, 13,* 185-206.

Hebert, E. P., & Landin, D. (1994). Effects of a learning model and augmented feedback on tennis skill acquisition. *Research Quarterly for Exercise and Sport,65,* 250-257.

Janelle, C. M., Barba, D. A., Frehlich, S. G., Tennant, L. K., & Cauraugh, J. H. (1997). Maximizing performance feedback effectiveness through videotape replay and a self-controlled learning environment. *Research Quarterly for Exercise and Sport, 68,* 269-279.

Kernodle, M. W., & Carlton, L. G. (1992). Information feedback and the learning of multiple-degree-of-freedom activities. *Journal of Motor Behavior, 24,* 187-196.

Kitsantas, A., & Zimmerman, B. J. (1998). Self-regulation of motoric learning: A strategic cycle view. *Journal of Applied Sport Psychology, 10,* 220-239.

Newell, K. M., & Carlton, M. J. (1987). Augmented information and the acquisition of isometric tasks. *Journal of Motor Behavior, 19,* 4-12.

Schmidt, R. A., & Wrisberg, C. A. (2000). Motor learning and performance, 2nd Ed. Human Kinetics: Champaign, IL.

Weeks, D. L., & Kordus, R. N. (1998). Relative frequency of knowledge of performance and motor learning. *Research Quarterly for Exercise and Sport, 69,* 224-230.

Wrisberg, C. A., Dale, G. A., Liu, Z., & Reed, A. (1995). The effects of augmented information on motor learning: A multidimensional assessment. *Research Quarterly for Exercise and Sport, 66,* 9-16.

Wulf, G., & Toole, T. (1999). Physical assistance devices in complex motor skill learning: Benefits of a self-controlled practice schedule. *Research Quarterly for Exercise and Sport, 70,* 265-272.

Zimmerman, B. J., & Kitsantas, A. (1996). Self-regulated learning of a motoric skill: The role of goal setting and self-monitoring. *Journal of Applied Sport Psychology, 8,* 60-75.

EK – 2

TOP SÜRME

Açıklama : Bu ölçek 0’ dan 5’e kadar derecelendirilmiştir. Yapılan hareketin doğruluğuna göre lütfen bu derecelendirmeyi kullanın. İstenilen davranış gösterilemiyorsa “**0**”ı ve davranışın yapılış düzeyine göre; **1: Çok zayıf, 2: Zayıf, 3: Orta, 4: İyi, 5: Çok iyi** şeklinde puanlayın.

Öğrencinin Adı-Soyadı: **Uzman:_____**

Sınıfı :

A) TOP KONTOLÜ

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Top önde dribling yapıyor						
2) Topa bakmıyor						
3) Top avuç içi değmeden, parmak ucuyla dribling yapıyor						
4) Önce dirsek sonra el bileğinden top yere bir açı ile itiyor (Top sürme tekniği)						
TOPLAM						

B) ADIMLAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Dizler bükük şekilde adımlama yapıyor						
2) Ayakları çok açmıyor						
3) Ayak uçları karşıya bakıyor						
4) Dizlerden öne doğru bir açı yapıyor						
TOPLAM						

C) VÜCUT POZİSYONU

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Ağırlık merkezini kalçada tutuyor						
2) Vücut öne eğik şekilde hareket ediyor						
3) Kafa ve omuz yukarıda karşıya bakıyor						
TOPLAM						

D) KOORDİNASYON

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Dizlerden tüm vücudun hafifçe yaylanıyor						
2) Vücut serbest olarak hareket ediyor (kasılmaz)						
TOPLAM						

TURNİKE

A) ADIMLAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Topu karın hizasında tutuyor						
2) Sağ turnikeye girer iken sağ ayak ile harekete başlıyor						
3) İki adım atıyor						
4) Dizler öne doğru açı yapacak şekilde yere temas ediyor						
TOPLAM						

B) SIÇRAMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Diz karna doğru çekiliyor						
2) Sıçrama ayağını düz (gergin) tutuyor						
3) Vücut (bel), gergin tutuyor						
4) Kafa çembere bakıyor						
5) En yüksek noktaya ulaşmaya çalışıyor						
TOPLAM						

C) TOP BIRAKMA

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Vücut çembere doğru uzanıyor						
2) Kol yukarıda düz (gergin) tutuyor						
3) Topu karın hizasından yukarı doğru çıkartıyor						
4) Top bırakılırken avuç içi kendisine bakıyor						
5) Bileği kendine doğru çekiyor (Bombe vermek için)						
6) Omzu çembere doğru hafifçe dönüyor						
TOPLAM						

D) YERE DÜŞÜŞ

Gözlenecek Davranışlar	**0**	**1: Çok zayıf**	**2: Zayıf**	**3: Orta**	**4: İyi**	**5: Çok iyi**
1) Sıçranılan ayak ile yere düşüyor						
2) Denge için kolları aşağı çekiyor						
3) Yere düşüşte dizini hafifçe büküyor						
TOPLAM						

T.C.
MİLLİ EĞİTİM BAKANLIĞI
Araştırma, Planlama ve Koordinasyon Kurulu Başkanlığı

SAYI : B.08.0.APK.0.03.01.10/ 5474 24.12./2004
KONU : Araştırma İzni

ANKARA VALİLİĞİNE
(İl Milli Eğitim Müdürlüğü)

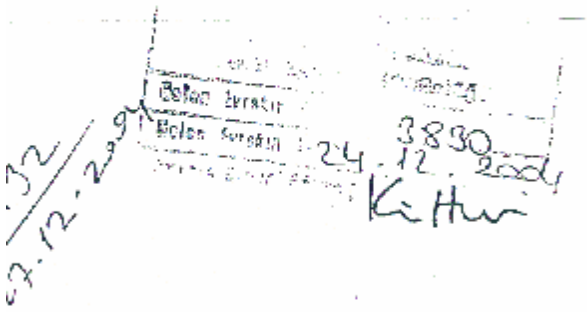
İLGİ : Ankara Valiliği İl Milli Eğitim Müdürlüğü'nün 15.12.2004 tarih ve B.8.4.MEM.4. 06. 00.11.070/4336-11977 sayılı yazısı.

Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Bölümü Yüksek Lisans programı öğrencisi Mine MÜFTÜLER'in "Sözel Geri Bildirim ve Öz Değerlendirmenin Öğrenme Üzerine Etkisi" konulu tez anketini Ankara Halide Edip Adıvar İköğretim Okulunda uygulama izin talebi incelenmiştir.
uygulama izin talebi incelenmiştir.

Araştırma sonucunun bir örneğinin Bakanlığımıza verilmesi kaydıyla araştırmanın yapılması uygundur.
Bilgilerinizi ve gereğini rica ederim.

Nurettin KONAKLI
Bakan a.
Kurul Başkanı V.

EK :
Ek-1 Anket Formu (1 Adet-2 Sayfa)



M.E.B. Araştırma, Planlama ve Koordinasyon Kurulu Başkanlığı Bakanlıklar / ANKARA
Tel : 425 00 86 – 425 33 57
Faks : 418 04 01
E Posta : apk@meb.gov.tr
İnt.adresi : www.meb.gov.tr
DANIŞMA 444 0 632 HATTI

EĞİTİM
FAKÜLTESİ DEKANLIĞI
Ev. Arş. Md. Saat :

T.C.
ANKARA VALİLİĞİ
Milli Eğitim Müdürlüğü

28.12.2004

BÖLÜM : Kültür
SAYI : B.08.4.MEM.4.06.00.11-070/ 6554
KONU : Araştırma

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE
Eğitim Fakültesi Dekanlığı
(Beden Eğitimi ve Spor Bölümü)

İLGİ: 09.12.2004 tarih ve BESB/2004/320 sayılı yazınız.

Üniversiteniz; Beden Eğitimi ve Spor Bölümü Yüksek Lisans programı öğrencisi Mine MÜFTÜLER'in, tez anketini İlimiz Hulide Edip Adıvar İlköğretim Okulu'nda uygulayabilmelerine ilişkin Bakanlığımız, Araştırma, Planlama ve Koordinasyon Kurulu Başkanlığı'nın 24.12.2004 tarih ve 5474 sayılı yazısı ekte gönderilmiştir.

Araştırma sonucunun bir örneğinin, Bakanlığımıza gönderilmesini arz ederim.

Erol ORTAKAYA
Müdür a.
Milli Eğitim Müdür Yardımcısı

EKİ:1- Bakanlık Emri

04.01.05 000145

BES Bölümüne iletelim. 4/1/05 4/1/05

Milli Eğitim Müdürlüğü Kültür Evi
06500- Beşevler/ANKARA
212 48 42 – 413 37 84 - 212 56 60/184 Fax. 0 (312) 212 78 23
kultur06@meb.gov.tr
ankara.meb.gov.tr