5-2005

The Effect of Teaching with Acoustical Guidance (TAG) on the Mastery of a Grand Rond de Jambe (En Dehors) and a Ballotte

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THE EFFECT OF TEACHING WITH ACOUSTICAL GUIDANCE (TAG) ON THE MASTERY OF A GRAND ROND DE JAMBE (EN DEHORS) AND A BALLOTTÉ

by

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Bachelor of Fine Arts, University of Montana, 1997

A Thesis

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Science

Grand Forks, North Dakota
May
2005

This thesis, submitted by Heidi Dutch Schneider, in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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Department Kinesiology

Degree Master of Science

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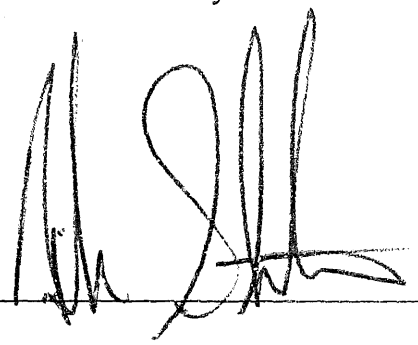
Signature 

Date 5/4/05

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ACKNOWLEDGEMENTS

To all of the following for helping in various ways:

Professors:

Martin Short, Ph.D
Sandra Short, Ph.D
Ron Brinkert, Ph.D
Michael Kirkpatrick, Ph.D

TAG Teach International Founders:

Joan Orr
Beth Wheeler
Theresa McKeon

Clicker Training Founder and Behavior Scientist:

Karen Pryor

Charters:

Kathy Schneider
Abbey Schneider

To My Family:

(Greg Schneider, Kathy Schneider, Toby Schneider, Andy Schneider, Maggie Schneider, Abbey Schneider, Earl Schneider, and Evelyn Sollom)

Thank you for instilling in me the passion for all forms of movement, dance, and athletics, the means to follow my dreams in these areas, and for teaching me to be inquisitive, ask questions, and go searching for answers.

ABSTRACT

This study examined the effect of Teaching with Acoustical Guidance (TAG) on the mastery of two ballet skills, the Grand Rond de Jambe (en dehors) and a Ballotte'. Dance technique classes still follow traditional methods of teaching and mastering skills without much integration of motor learning concepts. TAG Teach is a method that uses positive reinforcement, shaping, and a hand held device that produces an acoustic sound to mark correct behaviors at the moment they occur. The purpose of this study was to determine if TAG was a faster and more effective technique to aid in the mastery of two ballet skills.

The participants were also asked if they found TAG to boost their confidence, make them happier, make them feel that they learned more, and if they found it pleasing to use. Participants were 6 dancers who had never used TAG before their ages were 17-19. A staggered multiple baseline design was used to see the progress of the two skills from baseline to mastery. One skill was taught with TAG and the other skill was taught using the traditional teaching method. A questionnaire was given at the end of each session asking about the participants' confidence, happiness, learning, and anxiety while training with the two different methods.

Results showed that all participants mastered their TAG trained skill first, and preferred TAG to the traditional method. The participants were more confident with TAG, happier, felt they learned more, and found TAG more pleasing to use. TAG

produced more practice trials in each session with the average ratings for correct responses to those trials at a higher level than the traditional teaching method. Although both methods helped participants to master the two skills dancers preferred TAG, and it produced higher correct responses to corrections making it more effective as a teaching method.

CHAPTER I

INTRODUCTION

Traditional Dance Practices

Dance is the oldest art form, and has been around for close to 50,000 years (Gray, 1993). Dance technique classes are still being taught using almost the same strategies as they were hundreds of years ago, but now the technology is available to offer much insight into how new tools could be used in the traditional dance classroom to achieve better performances on stage. Dancers learn by observation, meaningful corrections, and long grueling hours of repetition until they find the keys to success. Dance teachers must explore potential possibilities of teaching methods that pull from science and technology, as well as from traditional dance class work.

Most dance teacher's have been dancers (Schlaich & DuPont, 1993), and have spent many years working on fine-tuning their technique and performances. The dance instructor's common teaching method is to teach from his or her own personal learning experiences in dance. Dancers are subjected to their teacher's teaching style and personal knowledge and can only hope their teacher will be a good one. There is no universal instructor's truth of how to produce great student success.

Despite knowing some of the characteristics of successful dance teachers, there is an absence of theory and training methods in dance (Schlaich & DuPont, 1993). Dance instructors are rarely introduced to motor learning concepts, sport psychology, or training

to help them teach most effectively for themselves and their dancers. There is no universal certification or prerequisites to train others in dance and only at the college level are degrees required.

Traditional dance classes are usually only 1-1/2 to 2 hours long which leaves little time to correct all aspects of alignment, aesthetics, and incorporate theory training as well as improved methods of learning that are becoming available to dance teachers through motor learning research (Krasnow & Chatfield, 1996). Teachers want to see good biomechanics and kinesiology concepts in their dancer's work, but the main goal in developing dance technique is to use it to better express one's emotions through their movements (Krasnow & Chatfield, 1996).

Motor Learning Applications to Dance

Adam's (1987) claims that knowledge of results, or feedback on dancer's performance, can expedite the dancer's learning process more than just using the repetition process. Schneider (1985) claims that repetitive practice of skills is often not enjoyable within itself for dance students. Teachers need to facilitate that motivation by adding variety, interacting with the dancers through the process, and also by allowing their dancer's to enjoy their mastery of skills before adding new ones.

Learning complex skills has many challenges and dance teachers should be aware of motor learning principles to optimize the acquisition of dance skills in their students. Many traditional dance practices may go against these principles (Enghauser, 2003). If movement skills are being taught without any regard to the learning process, the potential for optimal learning is decreased. To avoid capacity overload, teachers should allow multiple practices between instruction and feedback for processing time. Cueing, which

is concurrent correcting or directing, can be distracting and pull dancers off task, while common movement patterns that are encoded help skills to come easier to the dancer (Enghauser, 2003).

It has been found that externally focused feedback leads to more effective performance in both advanced and novice learners with a general permanent effect (Enghauser, 2003). This makes a great case for discarding aspects of current dance teaching that emphasize internal focus. We now know there has to be more external focus and external feedback.

Modeling, which is a correct demonstration of the skill, is usually demonstrated by the teacher to show the student what must be done. Students may know what they are supposed to show, but maybe completely lost as to how to get from their novice interpretation of the skill to the performance their teacher did. The students could benefit from modeling done by another student, with the teacher explaining the steps needed for the modeler to progress in the skill. Dancers can then see the process involved in the correction (Enghauser, 2003).

TAG Teach

A very exciting and new technique in teaching dance is called TAG, or Teaching with Acoustical Guidance (Wheeler, 2003) which has its roots in clicker training. Clicker training found popularity through training dogs, horses, and other animals (Pryor, 2002A). In clicker training, shaping is used to master smaller steps of the behavior through positive reinforcement to help the animals learn the desired behavior (Pryor, 1997).

TAG Teach draws on science, positive reinforcement, and a clear break down of steps. The students have control over their progress, and the teachers have a method that is based on behavior shaping research, and that is fun to use. TAG uses a hand held device to produce a clicking sound, the dancer's "get tagged" and hear the sound only when they execute moves correctly and according to the established criteria of the movement. The speed of information, for both dancer and teacher, that is shared through the use of the clicker could speed up and strengthen how dancers learn (Wheeler, 2003). TAG Teach method may provide more motivation and enjoyment for dancers as well. TAG Teach can propel the dancer's learning by providing instantaneous feedback through the marker signal (click), at the exact moment the dancer performs the correct aspect of the skill. This technique should help promote muscle memory when dancers connect what was going on in their body with the moment they heard the click. The sound of the click tells the dancer what they did was right, which provides them knowledge of results of their performance. The click is instantaneous and information rich, allowing the dancer to learn faster than repetition of skills and imagery alone or together. When the dancer receives no click, the teacher and student have a precise moment to talk about and work through.

When using TAG, the teacher sets up TAG points. A TAG point is what must be done correctly to hear the "TAG". A TAG point of "shoulders down" while doing an arabesque would be tagged if the dancer kept their shoulders down. If the dancer's shoulders were up, they would hear no sound, and know that they must keep working on the skill. All other errors must be ignored as teacher and student focus on only one aspect of the skill until it is mastered, and then they move on to another part, until the whole

picture of the skill is correct. TAG uses segmentation, also called chaining, a motor learning concept that breaks skills down into parts to learn sequentially. The student and teacher do not move on until success is captured in parts, or whole. TAG points are designed to be attainable by the student. The teacher is guiding the student to engage in goal setting, setting up TAG points (goals) that need to be attained. TAG points are rewarded. The dancer adds up their TAG points and receives rewards for their tally of TAG points. Rewards can be in the form of objects like pizza parties, gum, candy, beads, or in the form of free time, talk time, or a chance to participate in a favorite activity. Research confirms that specific, difficult goals prompt higher levels of performance than vague, do-your-best, or no goals (Burton, Naylor, & Holliday, 2001). The student should always be able to have the positive reinforcement of doing at least some aspect of the skill right, and be rewarded for that small success.

The TAG should come at the precise moment the skill is being done correctly to inform the dancer of their performance, providing instant feedback, assessment, and a positive feeling of the skill to put into muscle memory. The dancer can call upon the moment they were tagged, and remember the feeling of holding their body in the correct shape making it easier to find the next time. Dancer's can benefit from this simple feedback that says "yes that was right," or the absence of a click lets them know they are missing that component of the skill. TAG uses immediate assessments in a positive, non-judgmental way, and allows students to break down complex skills and focus on one component at a time. It also gives students and teachers a starting point for discussions on what is needed, and why. The student is no longer overwhelmed by so many corrections all at once, and gets individual attention that is not usually present in large

group dance classes, where one teacher can't get to every student, and must generalize corrections for the class (Wheeler, 2003). TAG addresses corrections on an individual basis, even though the whole class is working on the same general correction. Progress is achievable, motivating the dancer to try harder knowing they can successfully fix the corrections. TAG Teach becomes a fun motivating game for both students and teachers who are both rewarded by the dancer's success and mastery of skills.

TAG has great possibilities for dance education, although little has been written about the benefits and effectiveness of this method. Students at Wheeler's dance studio found that learning through TAG was fun. Teachers shared the tagging duties and allowed the dancers to observe each other, and the teacher herself, to help with the cognitive recognition of what aspects of the skills are most desirable (Wheeler, 2003). If the skill is unattainable at the present moment, the student is still learning when using TAG because the TAG point helps establish understanding for the dance skill (Wheeler, 2003).

Some of the problems of teaching technique to dancers, fusing science and artistic expression, could be solved through the use of TAG. Feedback, a positive atmosphere, and applying motor learning principles are three important needs for the dancer to improve and TAG can provide all three of these needs. The traditional absence of any method or concrete means of making dancers and teachers happier and better is exactly why a study on TAG appears necessary.

CHAPTER II

LITERATURE REVIEW

Current State of Dance Research

Dance is the oldest art form, and has been around for close to 50,000 years (Gray, 1993). Dance technique classes are still being taught using almost the same strategies as they were hundreds of years ago, but now the technology is available to videotape, blast digitally remastered music, and create stage sets that flame, fly, hold water, and fulfill the most vivid of imaginations. These advances in science and technology, could offer much insight into how new tools could be used in the traditional dance classroom to achieve better performances on stage. So many sports, especially at higher levels, have already been using the knowledge that scientists have discovered. Athletes today are stronger, faster, and better trained than ever before. The dance classes, and training for dancers is still the same as it was for dancers hundreds of years earlier. Dancers learn by observation, few meaningful corrections, and long grueling hours of repetition until they find the keys to success. Dance teachers must explore potential possibilities of teaching methods that pull from science and technology, as well as from traditional dance class work. The dancer's training, like the stage set, can evolve.

How Dance Is Taught

Most dance teacher's have been dancers (Schlaich & DuPont, 1993), and have spent many years working on fine-tuning their technique and performances. The dance

instructor's common teaching method is to teach from his or her own personal learning experiences in dance. Dancers are subjected to their teacher's teaching style and personal knowledge and can only hope their teacher will be a good one. There is no universal instructor's truth of how to produce great student success. Dancers take classes from many teachers. If they are lucky enough to live in such a place where the opportunity exists to try many teachers, they may find which teacher has what they need.

Teacher Techniques

In the book "The Art of Teaching Dance Technique," eleven exceptional dance teachers were interviewed and observed to determine their teaching techniques (Schlaich & DuPont, 1993). The teacher's had all taught throughout the United States, as well as internationally, and were considered to be exceptional teachers and dancers (Schlaich & DuPont, 1993). The teacher's had a deep concern for others and got satisfaction in the development of students. They all had basic physical knowledge of movement and dance skills. The teacher's were all very clear on what they were looking for to perform the skill correctly and what it would take to correct any problem. The demonstrations were done with intensity and concentration. Teachers had knowledge about the possibilities and limitations in the anatomy of the human body. A positive and supportive atmosphere was fostered which helped students to "go for it" and not be afraid. The student's liked when teacher's used humor, and it helped in class, but the teacher's were all disciplined, concentrated, and patient. The teacher's always gave clear instructions and corrections. Teachers had a sense of musicality, clear counts, and had students listen for it also. The music phrases were clear and precise. Focus beyond technique was emphasized. Teachers demanded performance qualities be shown, even in technique class. The

teacher's were able to make students work hard, and they were capable of creating beautiful and exciting phrases for students. Surprisingly, with no standard method in teaching dance classes, the eleven observed professional dancers and teachers all shared these qualities. These could be key factors in teaching methods that teachers can use to create successful dancers (Schlaich & DuPont, 1993).

Despite knowing some of the characteristics of successful dance teachers, there is an absence of theory and training methods in dance. Dance instructors are rarely introduced to motor learning concepts, sport psychology, or training to help them teach most effectively for themselves and their dancers. There is no universal certification or prerequisites to train others in dance and only at the college level are degrees required.

Current State of Teaching Dance

Traditional dance classes are usually only 1-1/2 to 2 hours long which leaves little time to correct all aspects of alignment, aesthetics, and incorporate theory training as well as improved methods of learning that are becoming available to dance teachers through motor learning research (Krasnow & Chatfield, 1996). Teachers want to see good biomechanics and kinesiology concepts in their dancer's work, but the main goal in developing dance technique is to use it to better express one's emotions through their movements (Krasnow & Chatfield, 1996).

Anatomy & Art

The dance world is starting to embrace the scientific information available to them and teachers will continue trying to synthesize it to their personal teaching needs. "To be recognized as artists we communicate this experience to an audience. Dancing is an aesthetic experience for both the dancer and the observer, and dancers who do not

possess a clear level of anatomical accuracy in their dancing are not only uncomfortable in their own bodies, they are uncomfortable to watch" (Simpson, 1996, 2). Technique and emotion are often very difficult to combine and demand from dancers, because how a dance skill feels is often miles apart from how it looks. What is needed from the dancer to create the series of images they perform is half technical and half emotional. Each dancer must take their own initiative to discover and maintain the unique connections and balances within their own personal dance technique. "...Young dancers with hopes of professional careers must be guided to feel scientific truths. They need to experience the physical laws of the body in the context of the art. There must be equal time given for the realistic application of textbook science," (Simpson, 1996, 2, 3).

Dance is Seen as Sacrifice and Pain

The student acquires dance skill alone, it is ultimately their own inner driving force that brings them to class for years, through sweat, sore muscles, bloody toes, and blisters. Like trying to leap across stage, and resist gravity's pull, it is very difficult to keep fighting for optimal technique. Sometimes dancers can try repeatedly, and months later in technique class they suddenly gain control of what they have tried so hard to achieve. Sometimes the skill comes and goes depending on the day. Dancers are told that if they sacrifice enough, and are tough while painfully gaining their skills, they will then be a good dancer. The teacher can be most helpful by remaining a positive and dedicated role model for the dancer. Standing by the fact that repeating their skills over and over will bring them closer to perfecting their control over forces at work in their bodies. But what if there was a tool that could help dancers evolve faster, easier, and

with less frustration? TAG Teach is founded on using positive reinforcement to develop skills (Wheeler, 2003).

Assessment

Assessment can be a great way to involve students in the evaluation of their performance. The eleven observed teachers that were in the Schlaich and DuPont, (1993) study all shared an important teaching technique: to make it known to students exactly what was expected of them in order to execute, or correct, a desired movement. Equally important to a good performance is the knowledge of why it was good, and what the key factors were to that success. Dance students learn by observation of themselves and other dancers. They need to have a sense of the correct skill, both internally and externally, and how it looks on another dancer when it is correct. Traditional means of assessment, such as written testing, do not necessarily reflect learning of dance in a comprehensive way. The goal of assessment is to educate and improve student performance and not just audit it (Schmid, 2003). Once assessment is educative, it is then part of instruction, a major, essential, and integral part of teaching and learning. Teachers and students should be using rubrics, or their own criteria based assessments to objectively evaluate complex movement skills. Assessment can help with recognition of subtle nuances, which can foster a deeper aesthetic appreciation for dance, dancers, teachers, and audience (Schmid, 2003).

Multiple Intelligences Theory

Howard Gardener's theory of Multiple Intelligences (MI Theory) states that learning is done through seven different veins (Gardner, 1993). They include the Bodily Kinesthetic, Musical, Spatial, Linguistic, Logical-Mathematical, Interpersonal, and

Intrapersonal intelligences. His theory is that everyone learns through these different intelligences, and some people are more inclined to one, or more of these intelligences, while others might be more difficult for people to learn through. The student with a strong Bodily Kinesthetic intelligence, who was struggling in math class and introduced to an exercise involving students acting out a math problem, may be more apt to understand the problems concepts better. The students could divide, multiply, add, or subtract themselves in and out of groups, moving around the classroom representing these numeric transfers. This theory has proven an important scientific finding as to how dance and movement are helpful as learning tools, and can even enhance learning (Gilbert, 2003). This is also classic support of the idea that physical activity and PE classes enhance learning. We could also apply this theory to learning dance technique using as many veins as possible, in order to gain control over the elusive technique dancers keep chasing. TAG Teach is one more tool to use, helping dancers and teachers approach learning from a new refreshing angle. Perhaps TAG Teach even taps into a new "intelligence" of auditory marking of correct responses.

Learning Process & Progress

The traditional method of placing dancer's bodies into the correct alignment is fading. Educators are moving towards guiding the dancer into finding their own body awareness, and encouraging them to use imagery to find the right position (Krasnow & Chatfield, 1996). Solomon (1990) thought it to be beneficial for dancers to work on the strength and flexibility aspects of their technique in special venues, outside of their technique class. Many dance studios now offer classes on site like yoga or Pilates for dancers to take outside of their dance training to work on these strength and flexibility

aspects of their dancing. Knowledge of the overload effect in motor learning has made dance instructors more aware of students' need of a warm-up that is useful to finding basic technique and then progressing to the more complex spatial, rhythmic, and artistry demands (Krasnow & Chatfield, 1996).

Adam's (1987) claims that knowledge of results, or feedback on dancer's performance, can expediate the dancer's learning process more than just using the repetition process. Schneider (1985) claims that repetitive practice of skills is often not enjoyable within itself for dance students. Teachers need to facilitate that motivation by adding variety, interacting with the dancers through the process, and also by allowing their dancer's to enjoy their mastery of skills before adding new ones.

Motor Learning Concepts

Learning complex skills has many challenges and dance teachers should be aware of motor learning principles to optimize the acquisition of dance skills in their students. Many traditional dance practices may go against these principles (Enghauser, 2003). If movement skills are being taught without any regard to the learning process, the potential for optimal learning is decreased. To avoid capacity overload, teachers should allow multiple practices between instruction and feedback for processing time. Cueing, which is concurrent correcting or directing, can be distracting and pull dancers off task, while common movement patterns that are encoded help skills to come easier to the dancer (Enghauser, 2003).

Wulf and various colleagues (1998, 1999, 2001A&B) conducted studies using motor tasks. They studied external focus instructions (instructions that focus away from the body), and internal focus instructions (focusing on internal factors like muscles etc.)

to determine which was most effective. They found that external focus of attention enhances learning, yet most dance classes are taught using an internal focus, where dancers are encouraged to feel the correct placement (Enghauser, 2003). Wulf and colleagues (2002) substituted motor tasks with sport skills such as the soccer pass and volleyball serve, although these are not dance skills they are considered to be complex motor skills as are most dance skills. In this study they looked at feedback in relation to internal or external focus of attention and feedback conditions. They found that the externally focused feedback condition demonstrated a more effective performance in both advanced and novice learners with a general permanent effect (Enghauser, 2003). This makes a great case for discarding aspects of current dance teaching that emphasize internal focus. We now know there has to be more external focus and external feedback. TAG Teach uses an external focus on the clicker, with an internal focus on movement happening at the moment that the external feedback is heard. TAG Teach could be very helpful in providing external focus and feedback to dancers fast and void of extra information that clouds a correction such as excess verbal feedback.

Teachers always starting phrases on the right side may jeopardize bilateral transfer causing dancers to favor their right side turns or leaps as a result. Variability of practice helps learners in combining concepts of skills with different timings and situations. Blocked practice, practice that is always in the same order, leads to better performance initially but with weak retention (Enghauser, 2003). Random practice mixes the order of the skills worked on from class to class, which is not typically the method used in dance teaching. Most ballet classes never vary the order from barre', center floor work, to moving across the floor. Ballet classes follow a serial practice schedule, which

is practicing the same skills in the same order every class. The serial practice schedule is partially because dancers need to warm up their muscles, and stretch them out before attempting grand battements (big kicks), or grand and petit allegro (big and small jumps). Teachers could switch traditional order to randomize practice for better retention while still warming up students first (Enghauser, 2003).

Massed and distributed practice schedules are two different ways of organizing practice. Massed practice uses long, active intervals of practice with short resting periods. Distributed practice uses the same amount of practice time, but the time spent is distributed over more frequent and shorter sessions of practice (Magill, 2001). It could be useful for dancers to have the shorter learning sessions associated with distributed practice, and then have longer performance building practices.

Too much feedback is over-whelming when first learning a skill, yet teachers feel compelled to offer everything they know all at once to help the dancers, which may be hindering the learning process. TAG Teach helps the teacher focus on one important lesson at a time, chaining together the important steps to a perfect performance of a skill, which allows even the beginner student to be successful throughout the developmental stage of a skill using smaller amounts of information (Wheeler, 2003).

Modeling, which is a correct demonstration of the skill, is usually demonstrated by the teacher to show the student what must be done. Students may know what they are supposed to show, but maybe completely lost as to how to get from their novice interpretation of the skill to the performance their teacher did. The students could benefit from modeling done by another student, with the teacher explaining the steps needed for

the modeler to progress in the skill. Dancers can then see the process involved in the correction (Enghauser, 2003).

Dancers learn ballet technique while holding on to a wooden pole called the barre. These skills are then transferred to the center of the room without the barre to use for balance and eventually the skills are applied to traveling anywhere on stage while adding a performance finish. The same learning concept is applied and used in jazz, tap, and modern dance classes as well. Transfer of skills from the barre work, to center work, to the performance of a combination is expected of the dancer, and is not always easy to acquire. Teachers use part-to-whole transfer to improve these odds. There are three types of part-to-whole transfer: segmentation, fractionation, and simplification. Segmentation also called the chaining method separates the skill into parts where the learner can practice one part, and then add another part to the first (Magill, 2001). Chaining is a key component to TAG Teach. Fractionation practices the parts of individual limbs first, and then combines them for bimanual coordination. A dancer first learns the arm sequence, and then adds the leg movements to the arm movements. Simplification reduces the difficulty of the whole skill. Dancers learn turns by using simplification. The turn is simplified by balancing in the shape of the turn first, and once that is mastered, they will try to turn in that same shape. Segmentation, fractionation, and simplification are all part of learning dance technique skills that are already presently used (Krasnow & Chatfield, 1996).

For example, a ballet class uses these methods by practicing skills at the barre in their rudimentary form, using it for support, and then moving those skills to center floor without a barre to hold onto. The complexity of both arms executing the movement is

added and eventually combining these skills into choreography, jumps, and full space-traveling motions. A study about learning motor skills by Wrisberg and Liu (1991) using a university physical education program has shown that increased content variety improves transfer and retention of learned skills. Dance teachers would be greatly benefited by exploring a greater range of contexts to reinforce transfer of skills (Krisnow & Chatfield, 1996) and TAG Teach could be a perfect tool for this objective.

Positive Reinforcement

The use of motor learning principles and coaching strategies are great tools to improve dance instruction. A study using 51 male little league coaches, and 542 players gave random coaches a coach-training program (CTE), and left others as a control group, at the end of the season their players were interviewed and asked about their reactions to their athletic experience (Smoll & Smith, 2002). The most positive outcomes were from coaches who used reinforcement techniques, and responded to mistakes with technical instruction. This study showed that, despite win-loss records, players had more fun had higher teammate attraction (enjoyment/friendship), low self-esteem players increased their self-esteem, and players decreased in sport performance anxiety over the course of the season with the CET trained coaches. A lower dropout rate was established as well.

Most great coaches use a mix of positive and aversive control in their coaching technique (Smith, 1986). Positive control is achieved by using positive reinforcement to gain the intended outcome, and aversive control is using negative reinforcement to get the desired outcome. Certain situations call for aversive coaching, but should never be the primary way (Smith, 1986). Positive control makes athletes happier, so they work harder for positive coaches, but there has to be effective reinforcers. Good skills must be made

known to the athlete, same as the performance measure, and they must be applied to the athlete via feedback, and there should be a reward for the right behavior, even if it's just a verbal compliment.

Positive reinforcement is the most effective way of increasing the rate of a specific behavior. Positive reinforcement builds and strengthens a behavior that it follows which works well when teaching new skills, and creating motivation to keep rehearsing the skill. Positive reinforcement produces behaviors that endure and are resistant to extinction, and the behavior can often be generalized to other settings. Best of all, positive reinforcement is efficient. It does not have to reinforce every instance to build the behavior into a habit. Positive control is fun for both the teacher and student, and makes them feel good (Ackerman, 1972).

Operant Conditioning

Operant conditioning is a set of scientific principles describing the development of behavior in which the animal operates on the environment, instead of the other way around. Operant conditioning is how animals learn in the natural world (Pryor, 2002A). Behaviors that operate or act on the environment to produce consequences, and then are affected by these consequences are called operants (Nye, 1979). "The immediate consequences of any behavior in which a person engages increase, decrease, or maintain constant the likelihood that the person will again display that behavior" (Ackerman, 1972, 13, 14).

B.F. Skinner was the first to define operant conditioning, and positive reinforcement (Nye, 1979). Skinner focused his research on observable events in an external environment. Three fundamentals from Skinner's work include: 1. Organisms,

animal and human are active, they emit behaviors; 2. Behavior emitted has consequences that may affect the future of the behavior, either an increase or decrease in likelihood that the behavior will occur again, and 3. Consequences are determined by the organism's physical and social environment (Nye, 1979).

Skinner felt the best method for showing this relationship between the environment and behavior was to control specific environmental conditions (causes) and observe the behavioral outcomes (effects). His experiments used rats and pigeons in a small, soundproof chamber later called a "Skinner Box". He would have a lever-pressing bar for the rats to push down on, and a small disk called a "key" for the pigeons to peck, when the animals emitted these behaviors a food reinforcer would come out to them. He measured the rate of behavioral responses from the animals and the frequency of specific behaviors (Nye, 1979). These animal studies provided basic knowledge of behavioral concepts that could be tested out and applied to humans.

Skinner believed that it was unnecessary, misleading, and impossible to analyze these animals' thoughts and feelings or "inner states" to find causes of behavior. The environmental conditions (reinforcement or punishment) influenced all of the behavioral responses. Skinner defined reinforcement as strengthening a behavior and this could only be considered true by observing the behavior and seeing it gain strength. Positive reinforcement is when adding something to a situation strengthens a response, and negative reinforcement is when a response is strengthened by the removal of something in the situation. Reinforcement both positive and negative is different than punishment because punishment suppresses behavior and does not strengthen it (Nye, 1979). Positive reinforcers are better than negative reinforcers because they give more consistent results.

Negative reinforcers could produce unwanted behaviors because there is something to avoid or escape.

Skinner experimented with two methods of punishment, removing a positive reinforcer, and presenting a negative reinforcer as a consequence of a response. Skinner was against punishment because it would stop behavior, but could produce another negative behavior (Nye, 1979). There are also emotional byproducts that are created for the punisher and the situation where punishment happened. Most importantly punishment indicates what not to do, and does not give any information as to what to do. Punishment used to stop behavior by threatening aversive consequences for not responding as wanted usually works immediately, but temporarily, and ill effects often follow such as producing the negative behavior for attention. Positive reinforcement is not as immediate and dramatic as punishment with its results, but produces long lasting results that are less likely to show undesirable actions and negative emotional states (Nye, 1979).

Primary reinforcers are positive things like food, water, social approval, and things that are basic to biological functioning, or negative things like shock, extreme hot or cold, hard blows, and things that bring pain to the body. A conditioned reinforcer is a stimulus that is originally neutral, but gains strength to reinforce behavior through it's pairing with one or more primary reinforcers. Conditioned reinforcers eventually can function independently in a variety of situations to produce behaviors (Nye, 1979). Skinner's rats would press the lever (conditioned reinforcer) to get food (primary reinforcer). The rats would continue to display lever-pressing behavior even when it did not produce food. Skinner noted that accidental connections, which he called

superstitious behavior, could occur when reinforcers followed responses not dependent on that response. When pigeons were presented the food hopper at regular intervals without any reference to the bird's behavior, operant conditioning would take place. The pigeon would be executing some behavior as the hopper appeared, and then as a result, repeat that behavior. If the time interval was not too long before the next hopper appearance, allowing extinction to take place, the pigeons were more likely to repeat the behavior they were doing, strengthening the response, and making it more likely for further reinforcement (Skinner, 1947). Operant extinction is when a response decreases in frequency, which usually happens because the behavior is not being reinforced any more (Nye, 1979). All responses were repeated 5 or 6 times in 15 sec. hopper appearance intervals, but after longer intervals of 10- 15 min. and after 10,000 responses, the behavior emitted was so diverse, and too much time had passed without reinforcement, so that behavior would come to extinction (Skinner, 1947). Skinner found that the effective reinforcement interval would vary between species depending on the rate of conditioning, and the rate of extinction. Once a response has been conditioned, the interval between reinforcements can be lengthened. The effect of this on the bird's behavior depends upon the rate of reinforcement, the shorter the time interval, the faster and more accurate the conditioning (Skinner, 1947). The rain dance for humans, is a similar superstitious behavior where dancing was accidentally connected to the occurrence of rain, or in sports, athletes superstitious behavior patterns are believed to cause certain outcomes in their games or performance (Nye, 1979).

Skinner stated that operant conditioning can be used to control problem behaviors by ignoring unwanted behaviors, and not reinforcing them, so that they become extinct.

Effects of extinction are more permanent than punishment. Spontaneous recoveries of behaviors sometimes appear during the extinction process and although they can be challenging to ignore, one can reinforce the opposite desired behavior. Violent, dangerous, and destructive behaviors cannot be ignored, and are harder to control through extinction (Nye, 1979).

Skinner also contends that operant conditioning can develop skills in animals, and humans through shaping (Nye, 1979). Shaping is the building of larger more complex movement cycles from smaller simpler cycles that the learner is already emitting (Ackerman, 1972). Shaping uses reinforcement to reward the steps along the way to producing a goal behavior and holds back that reinforcement for the step being worked on until it is accomplished. If a crude response gets too much reinforcement, no advancement of behavior will appear. If behavior is shaped too fast, the behavior will be lost and become extinct, if shaped too slowly the wrong thing can be reinforced (Nye, 1979).

A program that breaks down behavior (shaping), helps the learners to go at their own pace, always progressing, receiving immediate reinforcement for correct responses, keeping them busy, while completely mastering each unit before moving on to the next (Nye, 1979). The schedule of reinforcement should be continuous, but intermittent. Extinction happens more quickly if the behavior is being continuously reinforced, and then suddenly is not being reinforced (Nye, 1979). Many behaviors exist because they are reinforced occasionally. The number of responses can determine ratio reinforcement schedules. Interval and ratio schedules of reinforcement are either delivered on fixed, or variable intervals of time (Nye, 1979). Interval schedules of reinforcement are delivered

following a set interval of time, where as ratio schedules of reinforcement are delivered after a set number of behaviors. Fixed schedules of reinforcement will always follow the same set interval of time, or number of responses. Fixed-interval schedules produce persistent effort, and moderate rates of output, as time between reinforcements is always the same. Fixed-ratio schedules are delivered after the same set number of behaviors, and are extremely variable in their rate of behavior outputs. A fixed schedule of continuous reinforcement is more appropriate for building habits or new behaviors (Ackerman, 1972). Random, or variable, reinforcement is delivered through interval and ratio schedules also. Random-interval schedules of reinforcement are delivered randomly, in a specified amount of time creating a moderate behavior rate that is very stable. Random-ratio schedules of reinforcement randomly deliver reinforcement during a set number of responses producing responses that occur at a high rate, with a more stable response rate. Random schedules of reinforcement keep behavior going after it is solidly established, and is habit maintaining (Ackerman, 1972). The new behavior will weaken unless the reinforcement schedule is carefully thinned, and randomized. The reinforcement can start to be thinned after 15 reinforcer intervals, in which the behavioral rate has not dropped (Ackerman, 1972).

All behavioral responses using basic behavior knowledge and reactions are referred to as generalization, and making different behavioral responses to various stimuli is called discrimination (Nye, 1979). Stimulus control uses cues, plus behavior, followed by reinforcement, as a technique for controlling behavior. "Any technique that induces a person to make an active response to relevant cues increases the likelihood that the material will be remembered" (Ackerman, 1972, 115). Cues are stimuli and events that

precede behavior, and they only gradually become capable of controlling behavior as consequences of behavior exert more control over behavior than cues do. Cues feed forward, while reinforcers feed back, operant conditioning works with both of these concepts to send stimuli forward and back (Ackerman, 1972). Chaining is when the discriminative stimuli function as conditioned reinforcers, each behavior as part of the chain puts out consequences that are discriminative stimuli for the next behavior to occur (Nye, 1979). Reverse chaining is when the sequence is learned and reinforced from the end (back), to the beginning (front) (Ackerman, 1972). A benefit of this sequence is that the learner is always moving back into what is familiar instead of always wondering how much more there is to learn. Modeling is when the teacher provides the learner with a sample performance of the desired response (Ackerman, 1972). It must be clear what is being asked for so that there is no confusion as to what behavior to produce.

Clicker Training

Clicker training is an application of behavior analysis that was invented by Keller Breland, Marian Breland Bailey, and Bob Bailey (Pryor, 1997). Operant conditioning is used in training marine mammals using a whistle as a marker signal instead of a clicker, but uses the same principles as clicker training (Pryor, 1997). This method in dolphin training has been in use for around 40 years, but its use with children, families, and their physical activities is newer territory and there are no published research papers to support it (Pryor, 2004).

Clicker training found popularity through training dogs, horses, and other animals (Pryor, 2002A). In clicker training with animals, food is the primary reinforcer and is given to the animal for producing the wanted behavior after they hear the click. If the

animal does not produce the desired behavior, the trainer simply gives no click and no food. The trainer does nothing until the behavior they want is produced, or a close assimilation to the desired movement is shown and rewarded as a shaping step to the desired outcome. There is no punishment, deprivation, or negative reinforcement used. The sessions are brief with the trainer and animal making progress, varying the reinforcements and behaviors to be executed (Pryor, 1997). Eventually both sound (click), and object (food) become reinforcing, and the animal is participating in a learning game at a deeper level because they are making the trainer click them by displaying different behaviors. The trainer clicks at the exact moment the animal produces the wanted behavior. This almost instantaneous marker of sound is fast and reliable saying "yes, that is right, and you will be rewarded." The sound of the click is faster than words, and its speed in providing feedback is the essential part of showing the animal exactly the moment, and movement they were doing when the click, or "yes," came (Pryor, 1997). Clicker trainers are observing the phenomenon of accelerated learning in their animals through the use of this method as animals are learning behaviors in days and weeks instead of months and years (Pryor, 1997).

Once the animal has associated the behavior with the click to earn the treat, the information of that moment makes it possible, and more likely that they will keep producing that same behavior. The clicker can reinforce very tiny movements due to its split second precision (Pryor, 2002A). The clicker becomes the conditioned reinforcer, and although associated with food or praise, the marker signal (click) is what the animal wants to get (Pryor, 2001). Once the conditioned reinforcer is used to learn the behavior the trainer can delay the reinforcement without loss of performance. Conditioned

reinforcers work to keep animals trying to emit the required behavior as they are listening and actively trying to get the trainer to click them again. The trainer can unload a large amount of treats after the animal has displayed the behavior numerous times, or after each individual time the behavior is displayed (Pryor, 2002A).

Shaping is used to build a particular behavior from scratch without corrections or physical control using the animal's natural learning abilities instead of them trying to learn behaviors so they can avoid the effects of the choke collar, leash, or whip. Shaping is the mastering of smaller steps, of the behavior to help the animals learn the desired behavior (Pryor, 1997). The clicker sound, or event marker, allows the trainer to communicate a specific concept to the animal, and gives the animal a chance to communicate back to the trainer (Pryor, 1997). The animal's behavior is shaped by positive reinforcement. The clicker signal, or whistle the (conditioned reinforcer), is always followed by a primary reinforcer of food, praise, or petting. Primary reinforcers are things that the animal would want naturally so the trainers must find for themselves what things make their animal happy. Karen Pryor said, "The "click" is like an acoustic arrow; it goes right into the animal's nervous system with the message, what your body is doing at this instant has just paid off" (Pryor, 2002A, 43).

Once animals know that when they hear the click they get a treat, then the trainer can shape the next step to the behavior. Trainers use target training as a way to lead animals into desired movements. For example, the dog could be trained to come, done by target training using a stick, finger, or something that the dog will come to and touch with its nose, then hearing the click and getting its treat, the dog will come again. Once the dog is consistently coming and being rewarded the trainer can shape the next behavior of

come and sit to hear the click, trainer does not click until the dog comes and sits. The animal is learning the rules to the game being played, and tries to display what the trainer is looking for. After the dog learns the behavior of coming to the trainer and sitting, the click can be replaced with a cue like calling the animal's name, and when it comes, the treat can be replaced with a behind the ear scratch. This is where operant conditioning becomes respondent conditioning (Pryor, 2002A). Behavior analysts call a learned stimulus that triggers an operant behavior a discriminative stimulus; if the discriminative stimulus was trained through positive reinforcement, the only consequence to not producing the required behavior is no click, and no treat (Pryor, 2002A).

Misbehavior can be controlled through positive reinforcement. A signal can be established to tell the animal what they are doing is wrong, perhaps shaking your head like you would communicate a "no" to humans, this would be a conditioned negative reinforcer letting the animal know that when they saw the head shake, they would get no treat, and to stop doing what they were doing. A trainer can also use positive reinforcement to train a behavior that is incompatible with the undesired behavior. If aggressive or dangerous behavior is shown there is the time out, where the trainer packs up treats and walks away, this should be used very sparingly, because it can be distressing for the animal (Pryor, 2002A).

The only published study on the success of clicker training is a study done by Ferguson, and Rosales-Ruiz, (2001), on the problem of loading horses into a trailer. They used target training, shaping, and a clicker with treats to teach all five horses in the study to load into the trailer, load into different trailers, and load into a trailer with a different trainer. All the horses had been loaded previously into their trailers by the use

of aversive stimulation, and as a consequence had developed inappropriate behaviors. Inappropriate behaviors fell to zero immediately after the target training (Ferguson & Rosales-Ruiz, 2001).

Operant conditioning, and clicker training are good for the animals to take an active participatory role in exploring, and controlling their learning. It also gives the animal and the trainer a form of communication to understand each other. Research has shown that with animals, many short sessions are more effective than long sessions of training, and this is true for people as well (Pryor, 2002A). The trainer should review lessons occasionally, make it fun to learn as well as to teach, and always quit while ahead and there is success (Pryor, 2002A).

Clicker training can be used for training individuals with mild to profound retardation, stroke victims, autistic children, the deaf, and those in need of neurological or physical training. In some of these cases verbal and social reinforcers are not possible to use, but the clicker can bypass that problem. The marker signal could be the blink of a LED light, a tap on the shoulder, or anything that can be as fast and efficient as a marker. Words are often slowing, ignored, misunderstood, and not near as timely as a marker. Shaping is much easier and faster without the use of words (Pryor, 2004).

The coaching of children is still rooted in traditional methods of multiple verbal corrections technique, and it is due for a revolution. It seems coaches are forced with the pressure of today's society to produce kids with exceptional skills in whatever way possible, and to ignore those who show little talent focusing on them just having fun. Coaches teach through correction, which is slow, cumbersome and too critical. Research is showing that short-term intense focus on a sport improves skills, but long-term skill

development can be reduced by too intense of training early on (Clayton, 2004). If it is just for fun, coaches are too easy on athletes, and if they want to get the win and the better performances, they believe they have to push the children. Children quit when they don't win, because only winning is considered successful. Performance-based coaching is leading to burnout for kids and coaches (Clayton, 2004).

TAG Teach

A very exciting and new technique in teaching dance is called TAG, or Teaching with Acoustical Guidance (Wheeler, 2003). TAG Teach draws on science, positive reinforcement, and a clear break down of steps. The students have control over their progress, and the teachers have a method that is based on behavior shaping research, and that is fun to use. TAG uses a hand held device to produce a clicking sound, the dancer's "get tagged" and hear the sound only when they execute moves correctly and according to the established criteria of the movement. The speed of information, for both dancer and teacher, that is shared through the use of the clicker could speed up and strengthen how dancers learn (Wheeler, 2003). TAG Teach method may provide more motivation and enjoyment for dancers as well. TAG Teach can propel the dancer's learning by providing instantaneous feedback through the marker signal (click), at the exact moment the dancer performs the correct aspect of the skill. This technique should help promote muscle memory when dancers connect what was going on in their body with the moment they heard the click. The sound of the click tells the dancer what they did was right, which provides them knowledge of results of their performance. The click is instantaneous and information rich, allowing the dancer to learn faster than repetition of skills and imagery alone or together. When the dancer receives no click, the teacher and

student have a precise moment to talk about and work through. When using TAG, the teacher sets up TAG points. A TAG point is what must be done correctly to hear the "TAG". A TAG point of "shoulders down" while doing an arabesque would be tagged if the dancer kept their shoulders down. If the dancer's shoulders were up, they would hear no sound, and know that they must keep working on the skill. All other errors must be ignored as teacher and student focus on only one aspect of the skill until it is mastered, and then they move on to another part, until the whole picture of the skill is correct. TAG uses segmentation, also called chaining, a motor learning concept that breaks skills down into parts to learn sequentially. The student and teacher do not move on until success is captured in parts, or whole. TAG points are designed to be attainable by the student. The teacher is guiding the student to engage in goal setting, setting up TAG points (goals) that need to be attained. TAG points are rewarded. The dancer adds up their TAG points and receives rewards for their tally of TAG points. Rewards can be in the form of objects like pizza parties, gum, candy, beads, or in the form of free time, talk time, or a chance to participate in a favorite activity. Research confirms that specific, difficult goals prompt higher levels of performance than vague, do-your-best, or no goals (Burton, Naylor, & Holliday, 2001). The student should always be able to have the positive reinforcement of doing at least some aspect of the skill right, and be rewarded for that small success. The TAG should come at the precise moment the skill is being done correctly to inform the dancer of their performance, providing instant feedback, assessment, and a positive feeling of the skill to put into muscle memory. The dancer can call upon the moment they were tagged, and remember the feeling of holding their body in the correct shape making it easier to find the next time. Dancer's can benefit from this simple feedback

that says "yes that was right," or the absence of a click lets them know they are missing that component of the skill. TAG uses immediate assessments in a positive, non-judgmental way, and allows students to break down complex skills and focus on one component at a time. It also gives students and teachers a starting point for discussions on what is needed, and why. The student is no longer overwhelmed by so many corrections all at once, and gets individual attention that is not usually present in large group dance classes, where one teacher can't get to every student, and must generalize corrections for the class (Wheeler, 2003). TAG addresses corrections on an individual basis, even though the whole class is working on the same general correction. Progress is achievable, motivating the dancer to try harder knowing they can successfully fix the corrections. TAG Teach becomes a fun motivating game for both students and teachers who are both rewarded by the dancer's success and mastery of skills.

TAG has great possibilities for dance education, although little has been written about the benefits and effectiveness of this method. Students at Wheeler's dance studio found that learning through TAG was fun. Teachers shared the tagging duties and allowed the dancers to observe each other, and the teacher herself, to help with the cognitive recognition of what aspects of the skills are most desirable (Wheeler, 2003). If the skill is unattainable at the present moment, the student is still learning when using TAG because the TAG point helps establish understanding for the dance skill (Wheeler, 2003).

Some of the problems of teaching technique to dancers, fusing science and artistic expression, could be solved through the use of TAG. Feedback, a positive atmosphere, and applying motor learning principles are three important needs for the dancer to

improve and TAG can provide all three of these needs. The traditional absence of any method or concrete means of making dancers and teachers happier and better is exactly why a study on TAG appears necessary.

CHAPTER III

PURPOSE

The purpose of this study was to determine if TAG Teach was more effective, faster, and more likely to produce quality corrections in the mastery of two ballet skills. Another element was to determine if the participants found TAG Teach pleasant to use, or if it boosted their confidence and happiness, and it they felt they learned more using the TAG Teach method.

Hypothesis

It is hypothesized that TAG Teach methods will quicken the dancers' rate of skill mastery, stabilize faster and at a higher level, have higher average ratings for correct responses, as well as bringing more confidence and happiness to the participants and the learning process. It is also hypothesized that the participants will feel like they learned more using TAG Teach and find it more pleasing. With the lack of a present effective method to teach dance, it is of much importance that a study of this nature be conducted to pursue the possibility of a better way to teach not only dance, but also all complex gross-motor skills.

CHAPTER IV

METHOD

Participants

The participants were 6 female studio dancers, ages ranging from 17-19 years old. All participants were enrolled in a ballet class that met once a week with the same instructor conducting the study. The dancers had all been in that same class for a year and a half. The ballet class they were enrolled in was an intermediate/advanced level class. For ease of reading, the participants will be referred to as: Dancer A, Dancer B, Dancer C, Dancer D, Dancer E, and Dancer F. All the dancers were experiencing TAG training for the first time in this study.

General Procedure and Setting

The two skills in the study were picked because the dancers were unfamiliar with them. These skills were the Ballotte' and the Grand Rond De Jambe En Dehors. Only the right sides of these steps were studied and the left sides were ignored. The participants were asked to not practice these skills outside their time in the study, and were asked at each session if they had practiced outside of the study, and all the participants always said "no." The participants drove themselves to the University of North Dakota where all sessions took place. The participants under 18 years of age had a signed parental consent form to participate. Approval to conduct the study was granted by the IRB (IRB-200412-195). There was always the teacher, a charter, and the

participant in the room. The charter recorded all corrections and responses and informed the teacher when the time was up. All the participants met individually with the teacher and the charter for all sessions. Dancers faced the mirror as it is in traditional settings of learning dance techniques and taking classes. The teacher was a TAG certified instructor who had a B.F.A. in Dance and over 7 years experience with teaching dance. Each participant attended one baseline assessment session and one twenty-minute session twice a week until the two skills were mastered. All testing was carried out over 6 weeks. In that time Dancer D had five sessions and a baseline assessment, Dancer B and Dancer C had four sessions and a baseline assessment, and Dancer A, Dancer E, and Dancer F had three sessions and a baseline assessment. The different amount of sessions were due to individual differences in learning which reflected the time needed for each participant to reach mastery. A Sony® TRV22 video camera mounted on a tripod was set up behind the dancer for the baseline assessment and all sessions, and recorded the behavior of the participants and the instructor. All teaching, and testing was videotaped, for further analysis of Interobserver Agreement.

Dependent Measures

Data obtained from the sessions included the following: (a) the number of corrections for each skill; (b) points for each trial in each correction where participants received 1 point if they mastered the correction, and 0 points if not; (c) answers to a questionnaire that inquired about confidence, happiness, and quality of learning. The confidence questions were on a 10-point Likert Scale ranging from 0 (*not confident at all*) to 10 (*extremely confident*). Happiness questions ranged from 1 (*not happy at all*) to 5 (*extremely happy*). "Do you feel like you learned more using the TAG method?" "Do

you feel like you learned more using the traditional method?" These were questions that were asked and rated on a 5point scale with 1 (*strongly disagree*) to 5 (*strongly agree*). The questions of how they felt using TAG, and how they felt using the traditional teaching method were rated from 1 (*very frustrated*) to 5 (*very pleasing*). One questionnaire is included in Appendix A. All the participants were asked upon mastery of both skills, which method they preferred and also which skill they perceived as more difficult to master.

Design and Procedure

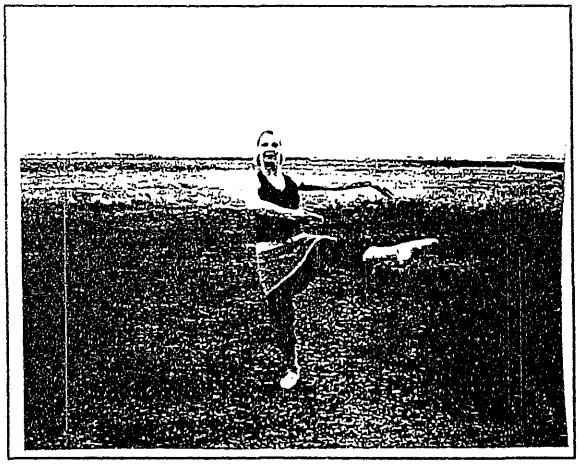
A staggered multiple baseline across subjects design was used. This design teaches two skills simultaneously but introduces TAG training at different points in each skill. A staggered multiple baseline across subjects design, as explained by Dr. M.A. Kirkpatrick, "allows for implementation of interventions at different times to account for practice and order effects." He goes on to say, "Replications across subjects further strengthen claims for causality in instances where treatments cannot be withdrawn or reversed owing to the relative permanence of learning" (personal communication, December 6, 2004). Each participant started each session with their TAG skill first so that the chances were greater that the TAG skill would be mastered first. After the participants reached mastery with TAG training for the targeted skill, TAG was added to the other "control" skill. The purpose of applying TAG training to the control skill was to control for the implementation of TAG training to account for practice, order effects, and the relative permanence of learning. When TAG training was applied to the control skill it would show if TAG caused a jump in the rate of correct responses, showing that the rate increase was due to the introduction of the TAG training on the control skill. The

Grand Rond De Jambe En Dehors and Ballotte' are described and shown on the following page (See Figures 1 & 2). Of the 6 participants, three started with TAG training for the Grand Rond De Jambe En Dehors and not for the Ballotte' (Dancer A, Dancer B, and Dancer C), and the other three started with TAG training for the Ballotte' and not the Grand Ronde De Jambe En Dehors (Dancer D, Dancer E, and Dancer F).

The data-recording procedure used was event recording (occurrence or nonoccurrence) of the correction being asked for. During the five trials for each correction, a score was given with a zero if no correction was observed and a one if the correction asked for was fixed. For example, Dancer A was given a correction to "keep hips level in passe'," she then had five trials to master that correction. She was given a zero or a one depending on her performance with a total possible of five points for each correction. During the baseline assessment, the participants were asked to demonstrate the two skills. The baseline assessment was described as 10 trials for each skill. The baseline scores were similar, a zero was given if the skill was not shown correctly and a one if performed perfectly with a possible high score of 10. None of the dancers received any scores higher then zero in the baseline assessment due to the fact that the skills were new to them. The two twenty-minute sessions a week spent 10 minutes on each skill. The number of trials depended on the availability of time to complete trials before the 10 minutes were up. Each trial consisted of the instructor providing the correction (TAG) or corrections (traditional method) of the skill and the dancer's five chances to correct the correction(s). The instructor would start each skill's 10-minute trial period with naming the skill and a demonstration of it. The instructor then asked the participant to show them the skill one time; this gave the instructor the first correction(s). Corrections were given

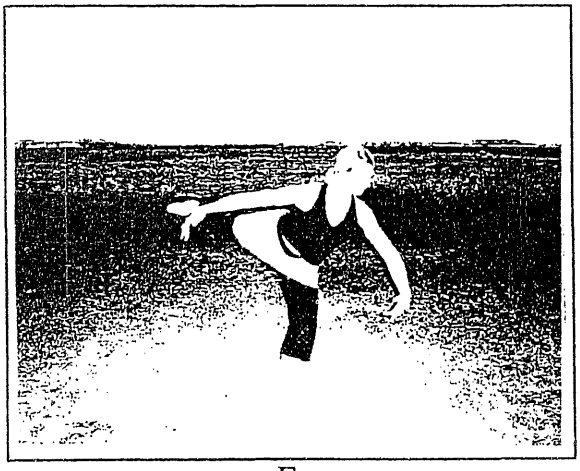
A

B



C

D



E

Figure 1. A) The Ballotte´ skill is a jump where the dancer starts on two feet, B) jumps, C) lands on one foot, D) jumps, E) lands on the other foot in a balanced arabesque´.

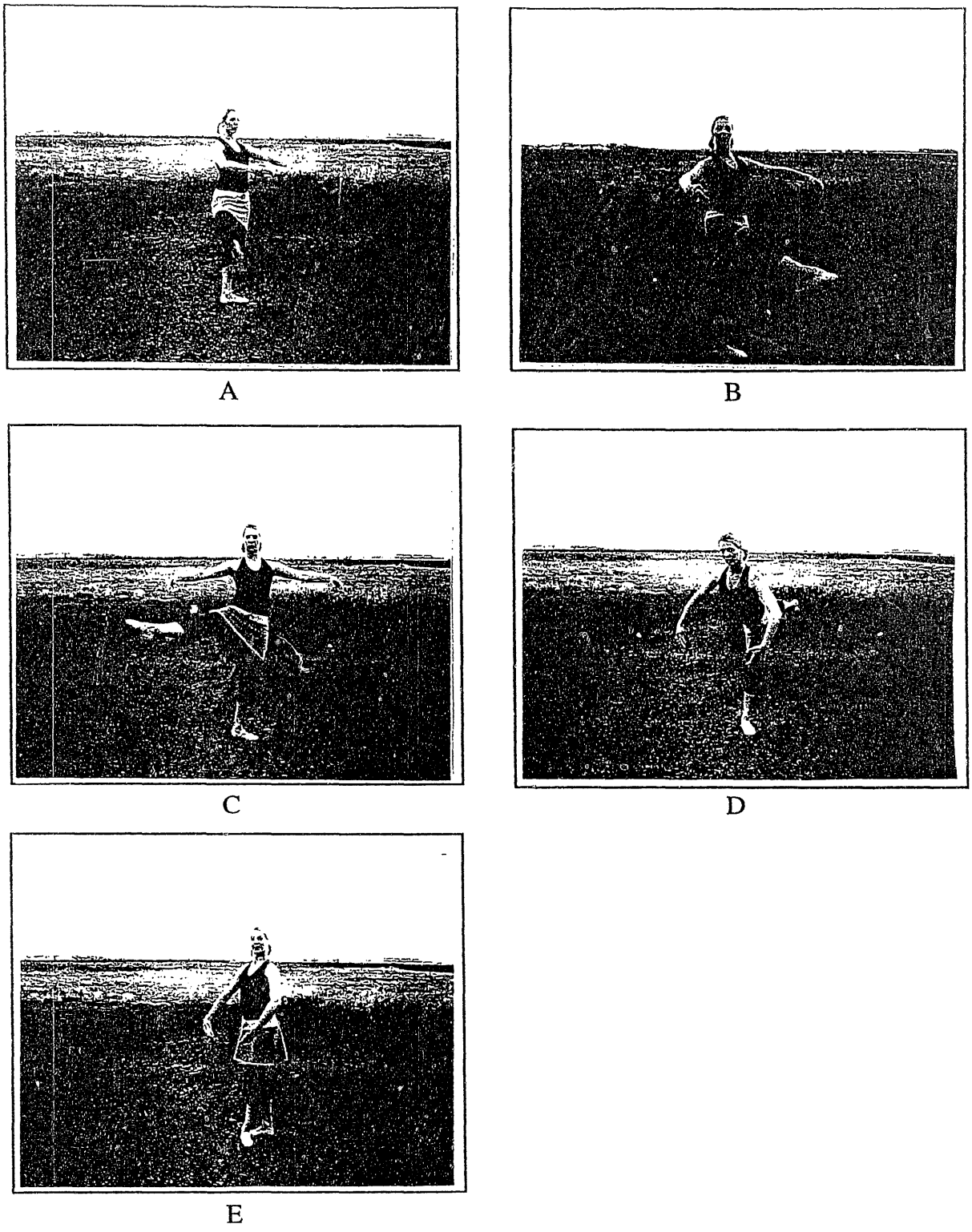


Figure 2. A) The Grand Rond De Jambe En Dehors starts in ballet 5th foot position, the dancer carries the right leg to passe´, B) extends the right leg to the front of the body, C) carrying it to ballet 2nd foot position (side), D) lifting it up and to the back arabasque´ position, E) and finally closing in ballet 5th foot position with the right foot closed in back.

like "keep standing leg straight," "land in a deep plea' (French ballet term for a bending of the knees)," or "point toes in the air." With TAG only one correction at a time was delivered, with the traditional method more than one correction was given. If after five trials with four of the five correction attempts executed correctly, the instructor moved on to the next correction. If the correction was not mastered in four out of five trials the instructor broke down the correction initiating a new five trials with a different correction. Once the instructor could not find any more corrections of the skill, the participant was allowed a mastery trial in which four out of the five total skill demonstrations had to be free of needing correcting in order to determine that the skill was mastered. If the skill was not mastered, the instructor went back to correcting the problem(s) with another five trials per correction until a mastery attempt was tried again.

Each skill received 10 min. of training time during each session, until mastery of the skill was observed. If the TAG trained skill established mastery first, then at that time the experimenter applied TAG training to the "control skill," until mastery was achieved. Regardless of what training method was being used for the skill, all corrections and mastery attempts had only five trials.

The definition of the TAG training treatment is defined as shaping the skill by using TAG points, this is pinpointing a single aspect of the skill that is desired and not being executed correctly and asking for the dancer to show the TAG point in order to receive a TAG delivered acoustically in the moment of execution and be rewarded for that TAG. The charter would give the participant a "1" if they got TAGGED, and a "0" if not. The definition of traditional correction based training is defined as correcting multiple aspects of the skill by using verbal correcting after the skill is executed; if the

corrections were done correctly the instructor said only, "That was right" and it was scored as a "1." If the corrections were not seen, the instructor would say the next trial number and the dancer would proceed with another try and the charter gave the participant a "0" score. Within the 10 minutes of training for each skill all corrections and their five trials were recorded. The number of sessions until mastery of the skill was observed and recorded too.

Dancers also completed a questionnaire that asked questions about their enjoyment, frustration, confidence, and if they learned more while using the TAG method, or while using the traditional teaching method. Participants were rewarded at the end of each session by cashing in their accumulated TAG points for various dollar bin prizes like fancy pens, jewelry cases, note pads, water bottles, and decorated beaded and leather bags. The participants had to get 30 TAGS each session to get the dollar bin prizes, and fewer than 30 TAGS would have attained the participant either gum, or a sport drink, but all the girls attained a minimum of 30 TAGS every session. The participants were also paid $25.00 each for participating in the study.

Interobserver Agreement

The dancer's performance of a Ballotte and a Grand Rond De Jambe En Dehors was rated on a 1-5 scale; this was done for the first baseline trial of the skill and again at the end of the study using the final mastery trial, providing a pre and post test of the performance. Three observers rated the dance skills by watching the videotape of the skills. The observers viewed the tape together, and rated the skills individually. The observers were the experimenter, who was also the instructor, another dance teacher, and the charting assistant. Taking the total number of agreements, divided by the sum of both

agreements and disagreements, and then multiplying that number by 100% established interobserver agreement on the pre and post-test scores for the skills. For the pre-test (baseline), the agreement value was 83.3%. There were 24 possible agreements and disagreements and judges agreed on 20 and disagreed on four. The disagreements were never further away from another judge's score by more then one number difference. The scale used was a 1-5 scale with one representing basic skill observation and a five being an observed mastered skill. Interobserver agreement was at 100% for the post-test scores.

CHAPTER V

RESULTS

Figures 3-8 show the number of average correct responses across all trials for each day, with correct responses of the two skills during baseline and intervention for Dancer A, Dancer B, Dancer C, Dancer D, Dancer E, and Dancer F respectively. All of the participants had higher average ratings for correct responses for each trial, on all days using TAG (see Table 1). The participants TAG skill was always mastered first, including Dancer A who mastered the traditional teaching skill in less total trials then the TAG skill, but started her last session with the TAG skill first and mastered it first that day. That is on day three, Dancer A mastered her TAG skill first, and on her first demonstration for the traditional teaching method skill no correction was needed and she was allowed a mastery attempt and she successfully demonstrated the mastery criteria. All participants started each day with their TAG skill first, and the traditional teaching skill second. Each participant was given a correction and had five trials to master that correction. They had 10 minutes for multiple corrections of their TAG skill and 10 minutes for multiple corrections for their traditional teaching skill, this continued for multiple sessions until both skills were mastered. Once the participant mastered their TAG skill first, TAG was then applied to the traditional teaching skill, to see if the TAG treatment would show a spike in the correct response ratings once applied to the traditional teaching skill. The average ratings for correct responses did rise for all

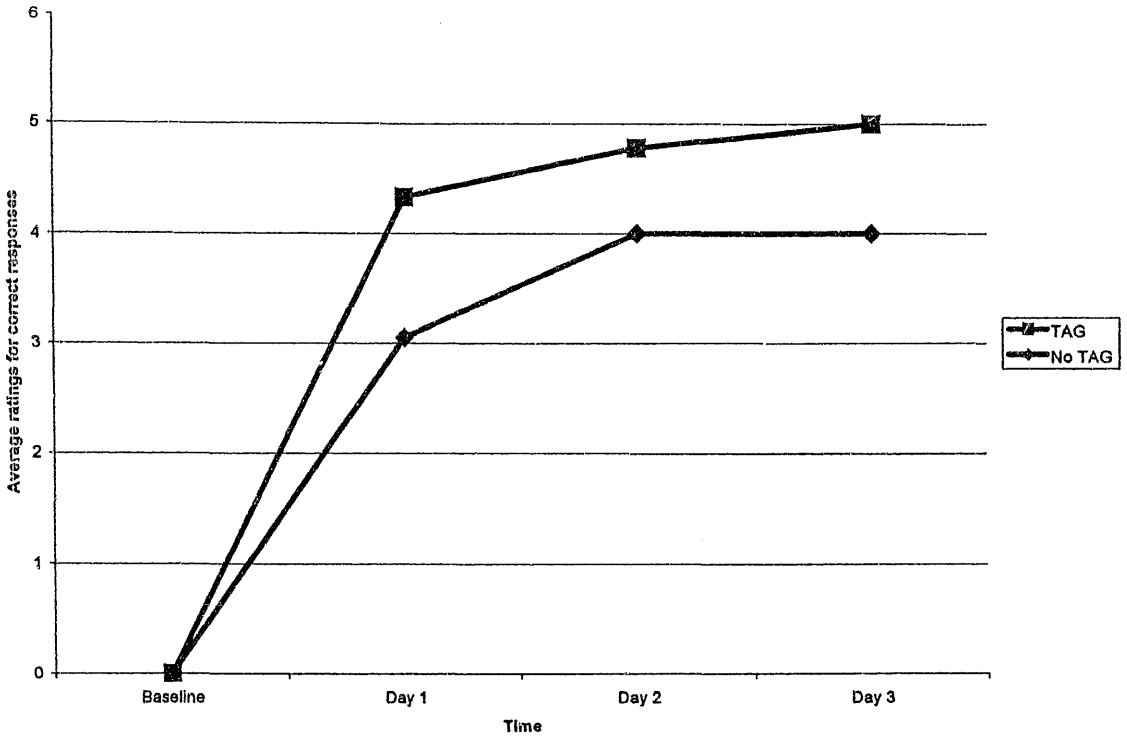


Figure 3. Participant A.

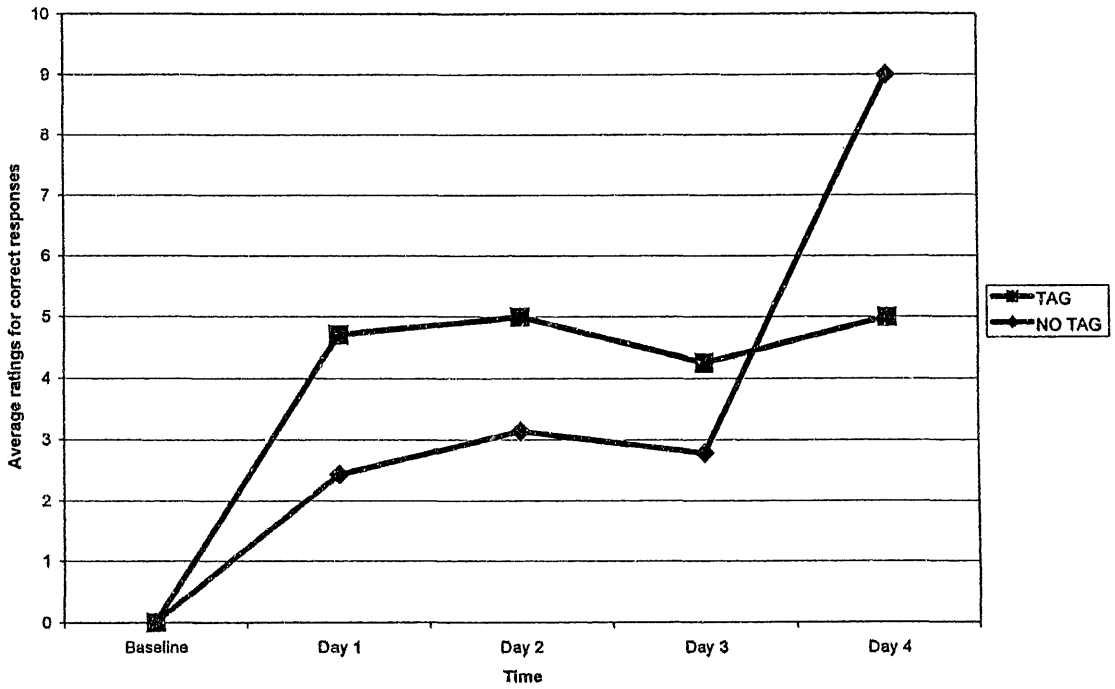


Figure 4. Participant B.

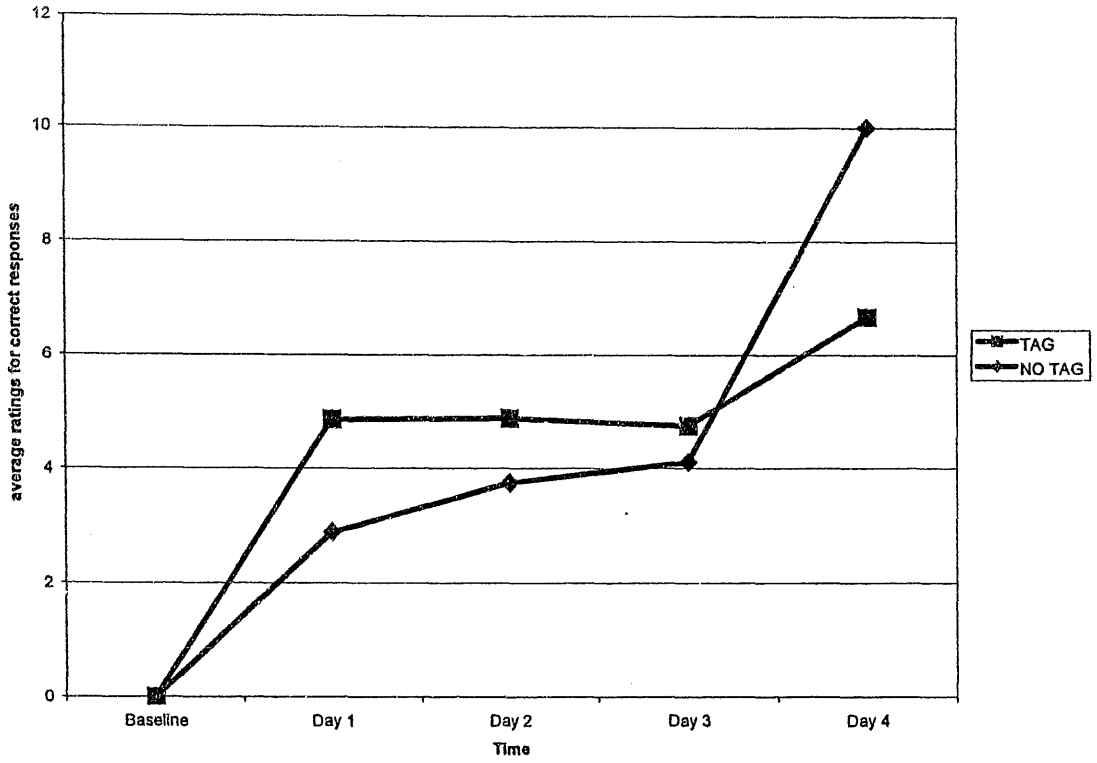


Figure 5. Participant C.

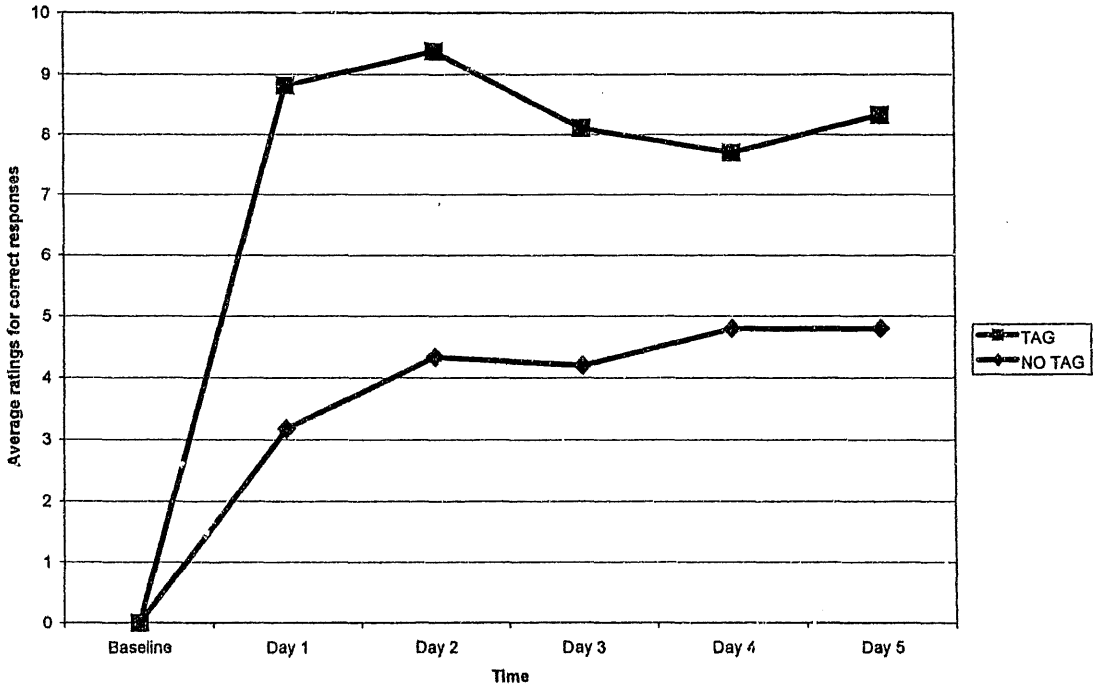


Figure 6. Participant D.

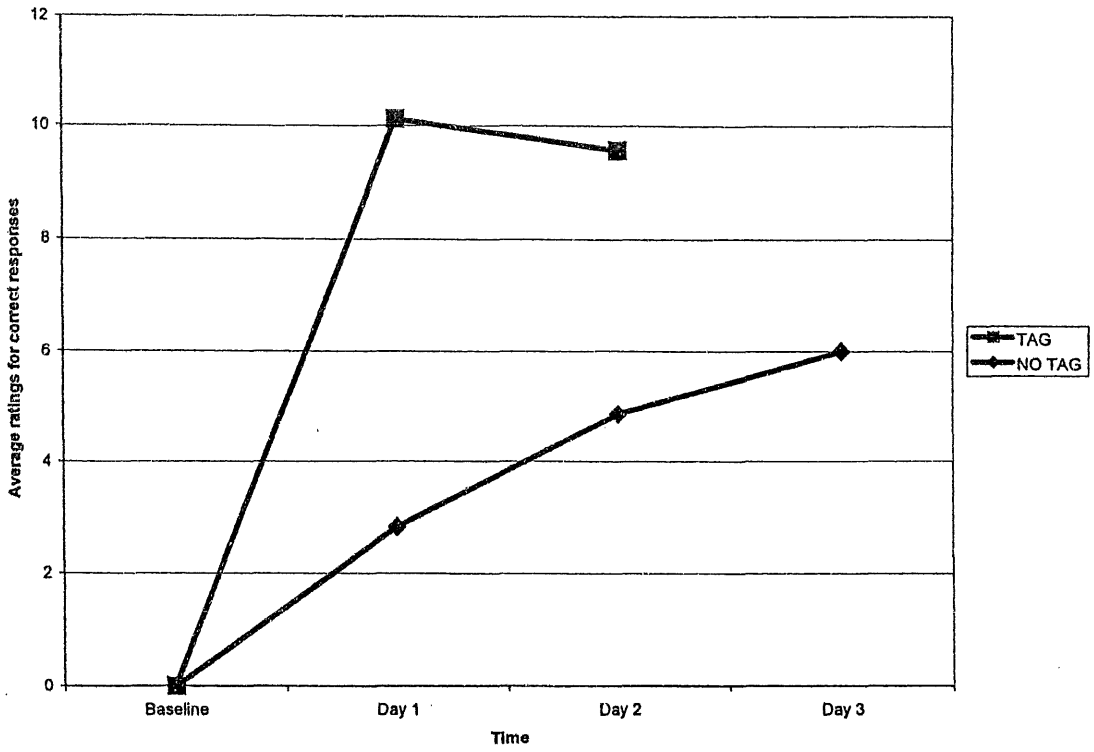


Figure 7. Participant E.

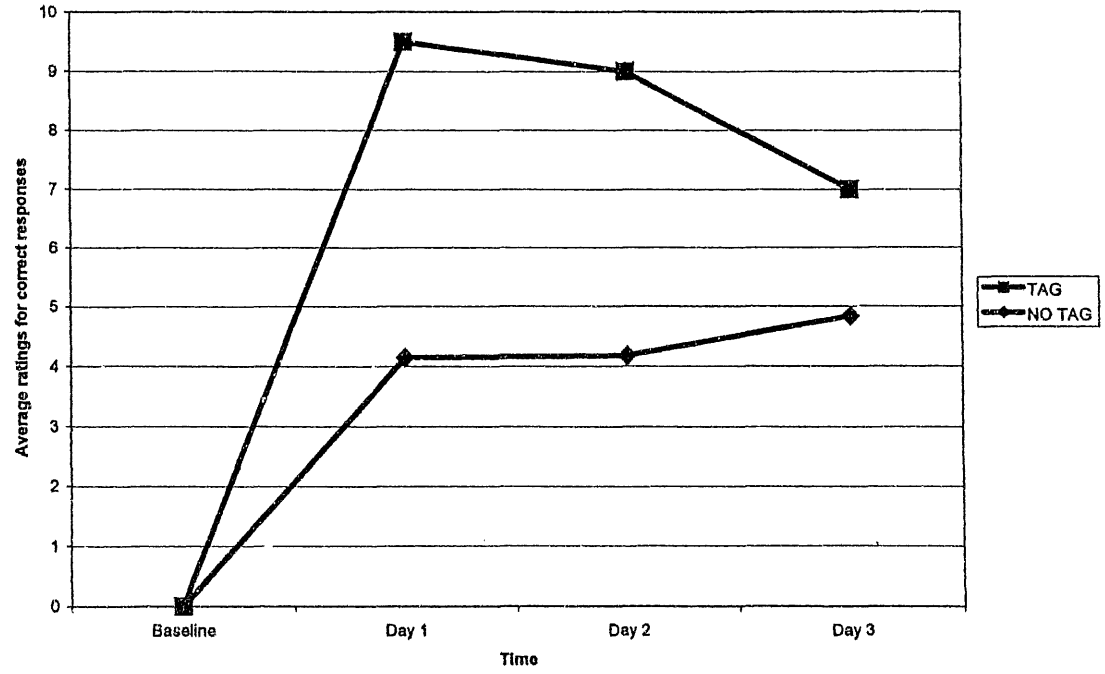


Figure 8. Participant F.

Table 1. Average Ratings for Correct Responses and Number of Days Until Mastery.

Person	Skill	Tag/ no Tag	Base-line score	Corr. day 1	Aver. Corr. day 1	Corr. day 2	Aver. Corr. day 2	Corr. day 3	Aver. Corr. day 3	Corr. day 4	Aver. Corr. day 4	Corr. day 5	Aver. Corr day 5	Trial when mastery obtained
A	GRJ	Tag	0	6	4.33	9	4.78	2	5.00					20
A	B	NT	0	8	3.05	8	4.00							18
B	GRJ	Tag	0	7	4.71	7	5.00	4	4.25	2	5.00			26
B	B	NT	0	7	2.43	7	3.14	8	2.88	2 *	9.00			22 + 3 TAG
C	GRJ	Tag	0	7	4.86	8	4.88	8	4.75	3	6.67			28
C	B	NT	0	9	2.89	12	3.75	9	4.11	6 *	10.00			30 + 7 TAG
D	B	Tag	0	11	8.82	8	9.38	9	8.11	10	7.70	6	8.33	49
D	GRJ	NT	0	6	3.17	6	4.33	5	4.20	5	4.80	5 *	4.80	26 + 6 TAG
E	B	Tag	0	9	9.56	7	9.57							17
E	GRJ	NT	0	6	2.83	7 *	4.86	5	6.00					6 + 13 TAG
F	B	Tag	0	10	9.50	8	9.00	10	7.00					30
F	GRJ	NT	0	7	4.14	6	4.17	6 *	4.83					14 + 7 TAG

Note: * indicates when TAG was applied

participants except Dancer A, who never had TAG applied to the traditional teaching skill.

Dancer A mastered the TAG skill first, and the traditional teaching skill second. Dancer A mastered the TAG skill on the 20th set of trials. She mastered the traditional teaching skill on the 18th set of trials. Her average ratings for correct responses were higher for the TAG skill (see Figure 3). When asked which skill she perceived as harder to learn, she chose the traditional teaching method skill. She preferred TAG to the traditional teaching method. When asked what she liked most about TAG, she said she liked the moment she heard the TAG sound and knew she had done the movement correctly. She thought that TAG feedback was more helpful to her then a "good" comment from a teacher. She said that "good" could have several meanings to her, like was that "good" motivation or "good" execution that she had performed.

Dancer B mastered the TAG skill first, and the traditional teaching method skill with a switch to TAG method skill, was mastered second. Dancer B mastered the TAG skill on the 26th set of trials. She mastered the traditional teaching skill after 22 sets of trials using the traditional teaching method, and on her 3rd set of additional trials switching to TAG method for the same skill, for a total of 25 sets of trials. It is unknown how many more trials the traditional teaching method skill would have taken if the switch to TAG method had not occurred. Her average ratings for correct responses were higher for the TAG skill. Dancer B had a sharp rise in her average ratings for correct responses after TAG method was applied to the traditional teaching skill (see Figure 4). When asked which skill she perceived as harder to learn she chose the traditional teaching

method skill. She preferred TAG to the traditional teaching method. When asked what she liked most about TAG, she said she liked the rewards the best.

Dancer C mastered the TAG skill first, and the traditional teaching method skill with a switch to TAG method skill, was mastered second. Dancer C mastered the TAG skill on the 28th set of trials. She mastered the traditional teaching skill after 30 sets of trials using the traditional teaching method, and on her 7th set of additional trials after switching to TAG method for the same skill. Dancer C also had a sharp rise in her average correct responses after TAG method was applied to the traditional teaching skill (see Figure 5). Her average ratings for correct responses were higher for the TAG skill. When asked which skill she perceived as harder to learn, she chose the traditional teaching method skill. She preferred TAG to the traditional teaching method. When asked what she liked most about TAG, she said that with TAG, the corrections were specific and not delivered all at once like in traditional teaching and it was easier to correct her mistakes. She also appreciated the more meaningful feedback that TAG gave and that teachers just saying "good" did not.

Dancer D mastered the TAG skill first, and the traditional teaching method skill with a switch to TAG method skill, was mastered second. Dancer D mastered the TAG skill on the 49th set of trials. She mastered the traditional teaching skill after 26 sets of trials using the traditional teaching method, and on her 6th additional set of trials after switching to TAG method for the same skill. It is unknown how many more trials the traditional teaching method would have taken without a switch to the TAG method. Her average ratings for correct responses were higher for the TAG skill (see Figure 6). When asked which skill she perceived as harder to learn, she chose the TAG method skill.

However, she preferred TAG to the traditional teaching method. When asked what she liked most about TAG, she said that she like the acoustic sound. The sound made her think about where in her movement she was at, and what was happening.

Dancer E mastered the TAG skill first, and the traditional teaching method skill with a switch to TAG method skill, was mastered second. Dancer E mastered the TAG skill on the 17th set of trials. She mastered the traditional teaching skill after 6 sets of trials using the traditional teaching method, plus 13 additional sets of trials using TAG method for the same skill. Dancer E showed a rise in her average ratings for correct responses once TAG method was applied to the traditional teaching skill (see Figure 7). Her average ratings for correct responses were higher for the TAG skill. When asked which skill she perceived as harder to learn, she chose the traditional teaching method skill. She preferred TAG to the traditional teaching method. When asked what she liked most about TAG, she said that she liked the motivation she felt to hear the sound from the clicker. She really enjoyed hearing the sound and knowing she was right.

Dancer F mastered the TAG skill first, and the traditional teaching method skill with a switch to TAG method skill, was mastered second. Dancer F mastered the TAG skill on the 30th set of trials. She mastered the traditional teaching skill after 14 sets of trials using the traditional teaching method, and on her 7th additional set of trials after switching to TAG method for the same skill. Dancer F also shows a rise in her average ratings for correct responses once TAG was applied to the traditional teaching method skill (see Figure 8). Her average ratings for correct responses were higher for the TAG skill. When asked which skill she perceived as harder to learn she chose the traditional teaching method skill. She preferred TAG to the traditional teaching method. When

asked what she liked most about TAG, she said that she liked the instantaneous sound of the clicker. She could feel in her body what she was doing at the moment of the sound and felt she was muscle-memorizing the correction faster.

Analysis done on the questionnaire measures was done by using a one way ANOVA to look at differences in confidence scores. Confidence ratings were averaged over all sessions, so that each participant had one average confidence rating for TAG and one for NO TAG. Results showed that the average confidence ratings were higher for TAG ($M = 8.59$, $SD = .41$) compared to the traditional teaching method ($M = 8.12$, $SD = .84$). Although the participants were more confident using TAG, these results were not statistically significant ($F(1,11) = 1.51$, $p = .25$).

For happiness, the same analysis was run. Results showed that the average happiness ratings were higher for TAG ($M = 4.27$, $SD = .36$) compared to the traditional teaching method ($M = 3.96$, $SD = .40$). Although the participants were happier using TAG, these results were not statistically significant ($F(1,11) = 1.90$, $p = .20$).

For which method they felt like they learned more from, a one way ANOVA showed that the average ratings were higher for feeling like they learned more from TAG ($M = 3.94$, $SD = .82$) compared to the traditional teaching method ($M = 3.69$, $SD = .90$). Although participants felt they learned more using TAG, these results were not statistically significant ($F(1,11) = .24$, $p = .64$).

For frustration / anxiety while using TAG, results showed that the average ratings were higher for finding pleasure while using TAG ($M = 4.31$, $SD = .55$) compared to the traditional teaching method ($M = 3.90$, $SD = .65$). Although the participants were less

frustrated using TAG, these results were not statistically significant (F (1,11) = 1.39, p = .27).

A repeated measures MANOVA was run for the two skills, Grand Rond de Jambe (en dehors) and Ballotte', by two times, baseline and post-test. The analysis was statistically significant for time (Wilks Lambada (1,10)=152.70, p= .00), showing that the dancers improved their skill performance from the baseline to the post-test. The mean judges' ratings for the Grand Rond de Jambe (en dehors) for the baseline were (M = 2.11, SD = .86) and for the post-test were (M = 5.00, SD = .00). The mean judges' ratings for the Ballotte' for the baseline were (M = 2.06, SD = .77) and for the post-test were (M = 5.00, SD = .00). There were no differences in judges' ratings according to the dance skill (GRJ = 2.1, BAL = 2.06) at the baseline showing that there was no difference in difficulty level between the two skills. At the post-test, all dancers received a rating of five by all three judges for both skills showing that they agreed that mastery was achieved.

CHAPTER VI

DISCUSSION

The use of TAG Teach and the traditional teaching method in order to master two ballet skills was the basis of this study. The main question being asked was if TAG Teach was more efficient and strong as a teaching technique. Another aspect of this study was to determine if TAG Teach made dancers happier, boosted their confidence, made them feel like they learned more, and was pleasing to use. Results showed that both teaching methods systematically increased participants' correct responses to corrections all the way to mastery of the skills. Therefore, one may conclude that both procedures are effective in the mastery of the Grand Rond de Jambe (en dehors), and the Ballotte'. Furthermore, all 6 participants mastered the skill trained with TAG method first. All participants had higher average ratings for correct responses while using the TAG method. All participants preferred the TAG method to the traditional teaching method. Interestingly, all participants except for Dancer D, perceived the skill they were not given TAG treatment for as harder to master. The study had controlled for order effect by having Dancer A, Dancer B, and Dancer C receive TAG method for the Grand Ronde de Jambe (en dehors), and having Dancer D, Dancer E, and Dancer F receive Tag method for the Ballotte'. So it can be said that all participants found the traditional teaching skill harder regardless of the actual difficulty level that might have existed between the two skills, except for Dancer D. A possible explanation for this could be that

it took Dancer D 49 sets of trials to master the TAG treatment skill and the other skill might have appeared to come much faster and easier once the traditional teaching skill was switched to the TAG method, and acquisition accelerated. Without the switch to TAG method, on the traditional teaching method skill, it is not known how much longer skill acquisition would have taken, especially at a lower average for correct responses rating. There were differences in the time it took to execute both skills, and some participants executed things faster or slower then the next. Some paused between executions in their sets of trials while others executed one attempt after another with little pause in between. This is a factor in the different amounts of sets of trials between skills and participants. Dancer A had her Grand Rond de Jambe (en dehors) as her TAG skill and it is a slow balanced movement that could explain the higher number of sets of trials. The quick Ballotte' used less sets of trials, but Dancer A was almost equal in her sets of trials to mastery for both the skills. Dancer D had the Ballotte' as her TAG method skill, which is a jump and can be executed much faster then the Grand Rond de Jambe (en dehors), which is a factor in the higher number of trials. Dancer E also had the Ballotte' as her TAG skill, which explains the higher set of trials number for the TAG skill. Dancer F also started with the Ballotte' being her TAG skill and the quickly executed jump tallied up a high number of sets of trials. It is also noted that all participants except for Dancer C, had their TAG skill produce more correction trials with higher accurate response rates in the same 10-minute time frame as the traditional teaching method. TAG skills had more correction trials with higher quality correction responses making it a more efficient learning method.

The findings in this study support the hypothesis that TAG Teach method could accelerate learning of complex gross motor skills for dancers. The average ratings for correct responses to corrections were shown to be higher with the TAG Teach method from the beginning of the skill training until the mastery of the skill. It could be inferred that the quality of understanding and executing corrections is greatly increased by using TAG Teach to develop complex gross motor skills. The present findings show that TAG Teach is a more efficient correction method than multiple, verbal correcting which was called the traditional teaching method in this study.

The present study is the first to look at TAG Teach method, and its effects on learning two different ballet skills in studio dancers. Several factors may account for the success of TAG Teach with the participants: (a) only one correction being delivered at a time; (b) the instant sound marker delivered as the correct behavior is being displayed, thus marking the moment for the dancer and making it easier to find that moment the next time; (c) positive reinforcement for correct behavior; and (d) an in-depth understanding of what exactly is being asked for from the dancer in order to perform the skill correctly.

The participants all liked TAG better for their own various reasons, but a common comment was that they liked the sound from the clicker and the more accurate feedback. Dancer B liked the prizes, and Dancer E liked the motivation she felt while trying to attain a click (TAG) for her correction. All participants liked the TAG Teach method more perhaps proving that TAG Teach is more enjoyable then the traditional teaching method. The present study also looked at the confidence, happiness, perception of learning quality, and anxiety in the participants while using TAG. The participants were all more confident with their TAG skill except for Dancer D with a very small difference

in confidence ratings of 9.4 and 9.2. Dancer B had equal ratings of confidence for both skills. The questionnaire results were not statistically significant, but this could be because of the small sample size of participants, if this study was repeated with more participants these results could be found to be statistically significant. On average all dancers were happier using TAG. Scores were always three or higher for participants happiness while using TAG. Dancer C was equally happy with both methods used. When asked which method they liked best all participants chose TAG Teach method. All of the participants felt they learned more with the TAG method. Interesting that the participant's ratings on the questionnaire do not show the significant difference in effectiveness in the two different methods that Figures 1-6 show. The dancers did not perceive how much faster and more effectively they learned with TAG. The participants all found TAG more pleasing to use than the traditional teaching method. Dancer D found them both equally pleasing. By the end of the study all dancers had rated their TAG skill as "very pleasing" the highest score possible on the Likert scale used to measure the participants frustration/anxiety. The positive reinforcement and quality feedback aspects of TAG made the participants more confident, happier, they also felt they learned more, and felt less frustrated. TAG corrections were technical, specific directions and the acoustic sound had specific meaning that said, "yes," correct. These positive aspects relate to findings from the coaching behavior research and intervention in youth sports study mentioned earlier (Smoll & Smith, 2003). In that study they found that general encouragement (high or low), was linked to negative attitudes in the athletes. TAG provides specific encouragement and technical corrections that help participants enjoy the learning process and react to corrections more accurately. Since dancers learn

through multiple repetitions of skills, which as a method was found to be not especially enjoyable or fun (Schneider, 1985), TAG is a tool that can add enjoyment to the learning process.

Peer tagging is used in TAG Teach, which allows the dancers to be tagged/clicked by another dancer for a skill, and also to tag/click another dancer in return. This process helps the students feel the execution of a skill, and to see another's execution of the skill. This facilitates learning in students through observation of the learning process (Wheeler, 2003). It is important to use many different learning techniques so all types of dancer's learning styles are reached (Enghauser, 2003). Students can TAG each other so they learn both externally and internally about the skill. Peer tagging uses peer assisted learning which is very useful as children learn very effectively from their peers (Ackerman, 1972). The students can observe the correct or incorrect skill by others and use that information to apply to their own performance. This can keep class moving, and everyone is receiving corrections and learning. This is another aspect of TAG Teach that could add to dancer's enjoyment and learning while providing a different venue of feedback.

Could the novelty of TAG wear off for participants? Could they get sick of the TAG Teach method? These are good questions about TAG Teach method and its effectiveness. Any thing can be overu ·d and one can become tired with the repetitious and same order of events day after day. TAG Teach is a great tool to add to the traditional teaching method to add variety, feedback, quality learning, and accurate performances. TAG should be implemented to technique class when the teacher needs something accomplished fast and accurately, when dancers are frustrated, confused, or

not getting the skill. TAG Teach should never get to the point of being sick of it. TAG Teach provides all things the traditional teaching method is missing. TAG Teach is positive, motivating, gives clear feedback, is rewarding, breaks down skills making them attainable, and the acoustic sound alone gives immediate potent feedback for the user. It can break up the mundane, same order of class that is the current order of dance classes. Most importantly TAG Teach helps clear up communicative misunderstandings and confusion of corrections, corrections are simply stated through immediate knowledge of specific results by use of acoustic sound. The dancer has no guesswork as to what the teacher meant, or if the general correction given was directed to them. TAG should be used to aid in the mastery of motor learning skills and develop them in a positive and fun manner.

Based on these findings, future research on the effect of motivation while using the TAG Teach method should be explored. While using TAG Teach method one dancer said the sound of the clicker motivated her, another liked the prizes best. Perhaps that was their motivation for learning the skills. There are more questions to be asked on the subject of motivation. For dancers, their main practice schedule is fixed. Practice is always delivered in the same order, success gained mostly through repetition of the skills with an onslaught of multiple corrections and a "good" delivered here and there. Where do dancers find the motivation for and the dedication to their sport? Could TAG Teach be more motivating to dancers than the traditional dance setting? Other avenues for future research include asking instructors if they also find working with the TAG Teach method to be more motivating, fun, and meaningful. How TAG Teach method influences

learning choreography. How effective peer tagging is. How TAG Teach affects other sports and learning scenarios.

APPENDIX
QUESTIONNAIRE

PLEASE CIRCLE YOUR ANSWER FOR THE FOLLOWING:

1. How confident are you today with your final performance of your Grand Rond de Jambe (en dehors)?

0	1	2	3	4	5	6	7	8	9	10
Not confident at all										Extremely confident

2. How confident are you today with your final performance of your Ballotte'?

0	1	2	3	4	5	6	7	8	9	10
Not confident at all										Extremely confident

3. How happy were you while working on your Grand Rond de Jambe (en dehors)?

1	2	3	4	5
Not happy at all	Somewhat happy	Happy	More than happy	Extremely Happy

4. How happy were you while working on your Ballotte'?

1	2	3	4	5
Not happy at all	Somewhat happy	Happy	More than happy	Extremely Happy

5. Do you feel like you learned more using the TAG method?

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. Do you feel like you learned more using the traditional teaching method?

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. How did you feel using the TAG method?

1	2	3	4	5
Very Frustrated	Frustrated	Neutral	Pleasing	Very Pleasing

8. How did you feel using the traditional teaching method?

1	2	3	4	5
Very Frustrated	Frustrated	Neutral	Pleasing	Very Pleasing

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