TEMPLE, CAROLYN DENE. The Construction of a Film Loop and Audio Cassette Series in Beginning Synchronized Swimming Skills. 1977. Directed by: Dr. Rosemary McGee. Pp. 67.

It was the purpose of this study to construct a set of film loops and audio cassette recordings that could be used as a teaching aid in a situation where the instructor has little or no knowledge of synchronized swimming skills.

To determine the scope of this project, a questionnaire was sent to experts in the field of synchronized swimming. After evaluating the returned questionnaires, an outline of the contents was established and several filming sessions were held. A technique for synchronizing the visual film loops and the audio cassette tape recordings was then developed to meet the needs of this project.

The final film loop series was evaluated by experts in the field of synchronized swimming, audiovisual instruction, and swimming instruction. The cassettes and film loops show and explain the basic skills performed correctly, the common faults, and ways to correct the common faults. The six film loops cover the basic body positions and skills using the body positions. The judges decided that the series was acceptable for instructional use but not for commercial use. A copy of the film and cassette series is on file at Jackson Library at the University of North Carolina at Greensboro.

THE CONSTRUCTION OF A FILM LOOP

AND AUDIO CASSETTE SERIES IN
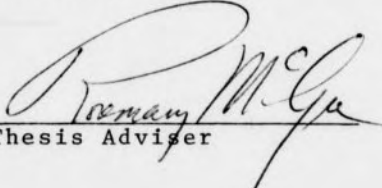
BEGINNING SYNCHRONIZED

SWIMMING SKILLS

by

Carolyn Dene Temple

A Thesis Submitted To
the Faculty of the Graduate School at
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APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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April 18, 1977
Date of Acceptance by Committee

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Man has held an interest in swimming and water activities since the beginning of human history. Stunt swimming, more specifically, was once used as a part of swimming instruction for aquatic shows. Synchronized swimming has advanced to national Amateur Athletic Union competition, competition at the Pan American Games, National Association for Girls and Women in Sport intercollegiate competition, and a present interest in making synchronized swimming a new Olympic sport.

Many aquatic instructors see synchronized swimming as an integral part of any swimming program because it develops ease and grace in the water and is an enjoyable activity for all ages and levels of swimming ability. (17, 25, 47, 48, 52.) Even with its benefits and current interest, qualified instructors are rare, and in-depth instruction is available only at a limited number of swim clubs, schools and universities. Regular swimming instructors are often hesitant to introduce synchronized swimming skills to their classes because of a lack of knowledge or ability in synchronized swimming skills.

Many studies have shown motion pictures to be beneficial in learning physical skills; they can be used to complement or replace

instructor demonstrations. After previewing available visual aids
on synchronized swimming and reviewing visual aids literature, the
author discovered that there were extremely few films on the market
for synchronized swimming. The investigator of this study perceived
this need for teaching aids in synchronized swimming and detected an
even greater lack of specialized technical aids to assist aquatic in-
structors who have a limited background of knowledge in synchronized
swimming skills. After consulting with several experts in synchro-
nized swimming, the author chose to undertake a study that would in-
vestigate the needs of these novice instructors and then construct a
specialized multi-media teaching aid that could be used in teaching
situations. Synchronized swimming instructors could use it to replace
or augment skill demonstrations. In addition, the aid would be helpful
in situations where the regular instructor has a limited background in
synchronized swimming.

STATEMENT OF PURPOSE

The purpose of this study is to construct a set of film loops and
audio cassette recordings that could be used as teaching aids in a
situation where the swimming instructor has little or no knowledge in
synchronized swimming, or for individualized instruction or independent
study. In order to fulfill this purpose, the cassettes and film loops
will show and explain the basic skills performed correctly, the common
faults, and ways to correct the common faults.

DESIGN OF THE STUDY

A questionnaire on basic skills, common faults, and corrections was sent to a panel of experts in the field of synchronized swimming. Upon analysis of the returned questionnaires, a format for six film loops and audio cassette recordings was established. The format involved three film loops on the basic body positions in synchronized swimming and three film loops on skills using the basic body positions. The returned questionnaires and a review of related literature established the most common faults and suggestions for corrective measures that were to be included in the set of film loops. An outline of the content of the film series follows:

Film 1. Basic Body Positions

      A. Front Layout
      B. Back Layout
      C. Tuck

Film 2. Basic Body Positions

      A. Front Pike
      B. Vertical

Film 3. Basic Body Positions

      A. Ballet Leg
      B. Ballet Leg, Flamingo Position

Film 4. Skills Using the Tuck Position

      A. Front Tuck Somersault
      B. Back Tuck Somersault
      C. Kip

Film 5. Skills Using the Pike Position

      A. Porpoise
      B. Front Pike Somersault

Film 6. Skills Using the Pike Position

      A. Somersub
      B. Barracuda, Front Pike

After the final construction of the film loop and cassette series, the set was sent to a panel of judges for evaluation on content and technical quality. The members of the judging panel consisted of experts in synchronized swimming, audiovisual instruction, and swimming instruction with no background in synchronized swimming.

CHAPTER II

REVIEW OF LITERATURE

Literature selected for review was limited to three cata-
gories: (1) Swimming and synchronized swimming, (2) the learning
process of skills, and (3) the use of audiovisual aids in education
and physical education. Each area was reviewed separately to achieve
a clearer understanding of the components that would combine to con-
struct the final product of this study. The first section, the section
on swimming and synchronized swimming, investigated the historical
development and the instructional process of synchronized swimming.
The section on the learning process of skills reviewed related litera-
ture to discover and then apply the methods best suited for presenting
the skills in the planned film loop series. Special emphasis was
placed on the part that errors play in the learning of physical skills
because the final film series would show common errors and give
suggestions for correction. This was a novel idea in instructional
media and needed research to substantiate the effectiveness of the
technique. The final section on the use of audiovisual aids in educa-
tion and physical education was investigated to develop a working
knowledge of the best methods and techniques in instructional media.
Emphasis was placed on the role of 8mm film loops in educational
practices.

SWIMMING AND SYNCHRONIZED SWIMMING

Historical Development: The origin of swimming in human history was obscure and a matter of speculation until man started leaving permanent records of his achievement.   Carvings discovered as early as 9000 BC attest to man's ancient interest in swimming. (46) Around 3000 BC, man was swimming in Greece using a stroke almost identical to the overhand stroke of today.   The ruins of Pompeii also displayed the essential features of ancient swimming similar to today's style. (16)   McVicar found a record in existence of a nobleman of the Middle Kingdom of Egypt (2160-1780 BC) whose children and the children of the King took their swimming lessons together. (34)   These early beginnings were the first ripples that spread through all cultures and civilizations.

Swimming may have evolved as a means for survival, but as man became more civilized his reasons became less urgent. Through the centuries of adjustment to movement in the water medium, man added speed swimming, various forms of stroking, and water stunts to his collection of water activities. (34)   Katharine Curtis, one of the earliest leaders in formalized instruction on synchronized swimming, found descriptions of various stunts and tricks in most of the oldest books on water activities. (13)   These stunts probably developed because people were hunting for something to do in the water other than race and get from one place to another.

The development of this form of water stunts into an organized activity originated in a variety of areas without communication. Gertrude Titus was one of the first educators to incorporate these stunts in her swimming program and used these activities as an integrated part of a professional course offered to future teachers at the Boston School of Physical Education Camp in June, 1915. (44) The type of water stunts she and other early forerunners in synchronized swimming taught were the foundations for the development of synchronized swimming as it is recognized today.

Marian Stoerker analyzed this development of synchronized swimming from the original water stunts and reported an analogy:

"It is an old principle in the development of play that the skills are developed first and then grouped into a satisfying experience. Man learned to throw a ball, then devised game situations in which to use his skill. " (44:22)

Paralleling this pattern, a style of stunt swimming was developed. In the beginning it was called "ornamental swimming" (23:3) and later "water ballet". (44) The early products consisted chiefly of many floating patterns and form swimming to move the performers from one formation to another with background music used to make the production more interesting.

Katherine Curtis founded one of the first clubs for this new form of swimming, the Tarpon Club, at the University of Chicago in 1923. (13, 51) She explained her reasons for adopting this new activity:

"Interest in speed swimming is now at its height,
but what of the many hundreds who enjoy the water
and are not built for speed? After all, is not the
ultimate goal of all swimming to develop comfort,
enjoyment, confidence, and safety in the water?
Therefore it is essential to develop ease in the
water rather than speed, and I have found stunt
swimming a most satisfactory means of reaching
that end. " (11: 49)

The term "synchronized swimming" was originated by

Norman Ross while he was announcing the program of Katherine

Curtis' Modern Mermaids at the Century of Progress Worlds Fair in

Chicago in 1933. (12, 13, 44, 51) Soon after this form of swimming

was popularized by the Billy Rose Aquacades, with a national star,

Ester Williams, emerging from his group. (44)

In colleges, swim clubs, and schools across the nation,

this form of swimming was attracting great numbers of advocates who

wanted to do more than give shows to the public. In December 1940,

at the annual Amateur Athletic Union convention in Denver, the AAU

amended its swimming rules to include synchronized swimming. The

following year it published general rules to govern the sport and gave

a list of degrees of difficulty for stunts designated for competition.

These rules for competition paralleled those in formal gymnastics

and figure skating because these sports also stressed the development

of technique and rhythmic ability on the part of the performer. (25, 51, 55)

After exhibitions by United States and Canadian champions

at the Pan-American Games in 1951, synchronized swimming was

voted an official competitive event for the following Pan-American Games, and in 1955 the first regular competition began. (25, 19, 51)

In 1955, another form of stunt swimming was presented on an international level. Called Aquatic Art, it stressed creativity in performance in addition to the execution of stunts. (24) Established as the governing body, the International Academy of Aquatic Art developed its own rules for competition reflecting its own ideals. (24, 51)

Synchronized Swimming Instructions. Synchronized swimming is a sport that has much to offer swimmers of all ages and levels of ability. It develops endurance, strength, rhythm, and ease in the water. (17, 25, 47, 52) It also provides an outlet for aquatic skill development, competition, and pleasure for those not capable of speed swimming. (11) Even with the beneficial assets, synchronized swimming has reached only a minute portion of swimming classes mainly because of the shortage of instructors who have a working knowledge of synchronized swimming. Vickers reported that even teachers who know the benefits are often "hesitant to offer synchronized swimming because of a lack of knowledge of beginning techniques." (49:32) To help alleviate this problem, Aitken suggested that all physical education majors should be familiar with synchronized swimming as a part of their aquatic training. (1)

The basic skills and movements in synchronized swimming are the vocabulary for building the more difficult movement patterns

and skills, and therefore, are the most essential to learn correctly.

Most authors agreed that this knowledge of the basic positions and

skills is the starting point for instruction in synchronized swimming.

(23, 24, 39, 41, 43)   Vickers pointed out:

> "A thorough knowledge of the basic movements
> and positions, as well as a complete understanding
> of the methods of teaching these fundamentals,
> will equip the teacher with sufficient skill to
> advance to any level, including that of coaching
> the competitive synchronized swimmer." (51:36)

The importance of these basic positions was further emphasized by

George Rackham:

> "For the successful performance of the many
> figures incorporating them, it is essential that
> the performer is able to assume each of the basic
> positions and hold them stationary in balance and
> under control." (39:42)

Research in the area of synchronized swimming is almost

non-existent. The investigator of this study found one research pro-

ject in synchronized swimming, and it underlined the importance of

the basic skills. In this one study, Durrant developed a method of

judging synchronized swimming not dependent upon experience and

training in advanced techniques of performance. She proposed and

validated a judging tool using the basic synchronized swimming skills

and body positions as reference points. Her system could aid a non-

experienced judge reliably evaluate advanced skills. She proved that by

knowing the basic positions, their order of appearance in a skill, and

the degree of difficulty in getting from one position to the next, a novice judge would be able to recognize and judge different levels of performance. (17)

THE LEARNING PROCESS OF SKILLS

Learning Methods. Most authors agreed that the basic synchronized swimming skills provide the foundation for the development of the rest of the sport, and therefore need to be learned correctly. (13, 23, 24, 39, 43) The strength of this foundation is determined by the method of instruction or the lack of instruction in learning these skills. Counsilman explained:

> "There appears to be a limit to the acquisition
> of motor skills without instruction or guidance.
> The limit may vary from one person to the next,
> and the guidance the person receives may be self-
> administered, from his coach, from visual aids,
> or from watching other swimmers, but it can help
> him acquire better or worse techniques depend-
> ing upon the quality of guidance." (8:174)

Robb contended that, in order to help the individual process information, the teacher or coach must be aware of the critical components of the task. (40) Methods of teaching these critical components influence the degree and ease of skill learning. Considerable research has been given to the whole and part method of teaching a skill, with advantages found for both methods. The part method is characterized by learning the skill in segments until the learner has progressed to the total skill. The part method enables the performer

to concentrate on simpler segments of the total skill. (30) The whole method tends to show the total picture and allows the performer to associate the skill in an entire sequence. (30)

The research that was reviewed pointed out the great diversity of opinions by authorities. Cox (9) found that evidence for dividing a long serial task into shorter groups of steps was ambiguous. His study showed that dividing the task into operant spans to be no more nor less efficient than when the learner is presented the whole task. Kinglsey (29) had results which indicated that in short and simple tasks the advantages would be in the whole method, and that in more complex tasks, a combination of the two methods with a progressive part method is superior. Kingsley also found evidence showing a combination of the two methods to be best so the learner can examine the whole to get a general idea, and then divide it into parts and learn the skill in parts. At the conclusion, the whole is reviewed for adequate organization of the parts. (29) This method of combining whole and part methods was chosen as the format for the construction of the film loop series in the present study.

At least two other factors were found to influence the learning of a physical skill. The first factor, or knowledge "how" a skill is performed, was found to be basic to the learning of any movement pattern. (30) Counsilman explained it in detail:

"When a swimmer is first introduced to a new
skill, assuming he has little idea of it or a wrong
impression of how it should be done, he must be
made to understand how it should be performed.
The idea can be presented in four ways:

1. Actual visualization...moving pictures,
   still pictures, charts, and demonstration
   of the actual skill.

2. Verbalization.

3. Getting the 'feel' of the movement...
   practice of movements and positions out
   of the water help.

4. Mental practice or contemplative analysis."
   (8:186)

Mohr (35) and Silva (42) also agreed that it is important to be able to

instruct a student in "how" a skill is performed, but also added the

second factor, or "why" the method is the correct performance. McCloy

(33) and Mohr and Barret (35) further supported the hypothesis that

teaching students an understanding and application of mechanical prin-

ciples will effect greater improvement than omitting reference to these

principles. In reference to synchronized swimming skills, Rackham

added:

"Knowledge of the basic principles of balance,
movement, and rotation of the body in water,
enables the learner to solve more of the
problems in the learning of a new synchronized
swimming skill." (39:95)

Knowledge of Faults and Corrections of Performance.

Knowledge of common faults and their corrections were found to be im-

portant factors in the learning process as well as the mechanics of the

skill. Overcoming these mistakes has always been a part of learning.

It was found that a clear violation of body or skill mechanics de-

manded the error be corrected before it became habit. Lawther ex-

plained how this should be done:

> "The teacher will need to bring the error to
> the conscious attention of the learner. Perhaps
> the teacher will need to demonstrate the erroneous
> performance. Once incorporated into the total
> pattern, the correction must be practiced until
> it becomes a part of a new automatic performance."
> (30:60)

Gundling has studied the mistakes that synchronized

swimmers have made:

> "Faults that'feel right' are the most difficult
> to correct, since in order to correct a fault,
> it is first necessary to realize it exists. Once
> you know it exists, try to find the reason for it.
> By learning the cause, you will be better able
> to find the cure." (24:34)

She further contended that faults are inevitable, so it is important to

have a frequent check of skills, either by a partner, instructor, or

self-examination. (24:34) Aitken also agreed that a partner could be

of assistance in learning the skill and correcting the faults. (1)

Most authors believe that in correcting faults it is essential

to have a clear mental picture of how the skill should look when correctly

done. (24, 30, 35) The viewing of films and watching of demonstra-

tions by expert performers have proven to be assets in the learning of

these physical skills by showing the correct performance.

Several studies have been undertaken to explore the effect error feedback has on the learning process. Morgan (36) found video-feedback of swimming errors helped improve the swimming skill of the subjects who saw their own errors. Brown (6) compared performance in tumbling between a group who saw films of correct performance, then films of their own errors, and a group who did not see any films. His study showed that the film technique seemed to have value, yet it was not statistically significant. Similar results were obtained by Watkins (53) in a study which gave visual feedback of batting errors to baseball players. The films of correct performance and feedback of individual errors both effected a degree of increased learning.

Only one study was found which used films showing the common faults in performance. In that study, Friedrichsen (21) had one group of gymnastic students view films of gymnastic skills performed correctly and another group view separate films of the most common errors in performance of the same gymnastic skills. Friedrichsen's analysis of achievement scores indicated that the group that viewed the films of the common faults had improved learning at a statistically significant level. The results of this study underscored the value of including the common faults and corrections in the film loop series developed by the author of this current study.

THE USE OF AUDIOVISUAL AIDS IN EDUCATION AND PHYSICAL EDUCATION

Audiovisual Aids in Education. Educational practices have been in a process of constant change for many decades with the current trend pointing toward individualization. (6,15, 54) Brown specified the goal of t;his emphasis to "provide each student with appropriate experiences that will cause him to learn to the best of his ability and at his own rate." (6:14) In an effort to meet the needs for varied and appropriate experiences, video tapes, tape cassettes, 8mm continuous film loops, slide sets, and filmstrips were developed to assist instructors. (6,15, 54) This multimediated environment has allowed teachers, literally, to be in several places at the same time, helping students on different levels. (15) McCratty saw this combination of methods and techniques, assisted by learning aids, to be valuable in forming successful learning experiences. (32)

One of the most valuable learning aids, the motion picture, was forseen as an aid to education in 1894 by its inventor, Thomas Edison. At that time he predicted that his new invention, the kinetoscope, would change the course of learning, but it took over thirty years for his idea to become a reality. (19) Since its first introduction into education, the motion picture has increased in quality and use.

The worth of learning by motion picture is so accepted today that films are considered primary sources of information. (54)

Since 1960, increasing numbers of educational motion pictures have been produced on 8mm film, compared to the old 16mm size, thus reducing production and purchasing cost. In 1966 Kodak introduced the Super 8mm film which projected a larger picture area than the standard 8mm film. Even with this larger area, Super 8mm films were designed to be used over short distances and on small screens. (54) This short distance was established because 8mm and Super 8mm projectors do not have the illuminating power of 16mm projectors; in fact, they only have half the projection wattage. (37)

Most of the 8mm films have been in the form of an endless loop of film from one to fifty feet in length. This film has been placed in a cartridge with the ends spliced together to form an endless loop of film. (14, 22, 26, 37, 54) Cartridge films have been simple to use because a projector does not have to be threaded; even a first grade child can learn to operate the loop projector with ease. (22) Another advantage of continuous film loops has been the aspect of repetition, which allows the student to view a concept as many times as necessary to learn the concept involved. (14, 26, 54) Tanner found this beneficial:

> "Because of the simplicity of operation of
> cartridge loops, children can view loops on
> their own. The small projector can be left
> set up in a corner of the study area so that
> children can return at will to view the contents. "
> (45:51)

Herman listed these additional advantages of film loops:

> "1. They can be used without instructors.
> 2. They are inexpensive to produce.
> 3. They concentrate attention by intensifi-
>   cation." (26:6)

Audio tape recordings have also found a prominent place in modern teaching methods. Dale contended that recordings are "to the ear what pictures are to the eye", and saw benefits for variety in classroom learning experiences by the use of audio recordings. (14:496) Wittich advocated the educational use of sound recordings:

> "Used wisely, audio recording and playback
> can virtually create an assistant teacher which
> will communicate information tirelessly and
> dependably while the human teacher is busy
> humanizing and personalizing instruction."
> (54:319)

Most authorities find cassette recordings to have benefits and advantages for educational use because the tapes have been permanently enclosed in a plastic container, loading and unloading is done in seconds, and the forward and rewind movement is controlled easily. (14, 26, 54)

Visual information in the form of film loops was found to increase comprehension, but the verbal media was found to aid in comprehension also. In relation to combining visual and verbal media, Herman made the following statement:

> "The narration that accompanies the pictured
> demonstrations on film can be far superior to
> that given at 'live' demonstrations. Because
> it will be composed with the close cooperation
> of an experienced authority, it will be scrupulously

> correct. Because more time can be given
> to its composition, it will be better organized
> and developed. " (26:191)

Presently there are very few audio-film loops because of the expense
involved in the necessary equipment (39:14) and because of the lack of
standardization on the equipment that is produced. (20) Kemp investi-
gated this problem:

> "It would be better to have film loops controlled
> by a cassette tape, thus making better use of the
> large number of film loops on the market today. "
> (28:71)

Even though Kemp proposed coordinating film loops and cassette re-
cordings, he gave no suggestions on how the two were to be synchro-
nized. In fact, the investigator of this study could find no information
on construction techniques of this type. Therefore, the researcher had
to develop an original technique to synchronize the visual and verbal
media.

The Use of Audiovisual Aids in Physical Education. Many
methods of instruction have been developed to assist the educational
process. It is important that the medium of instruction fits the
type of learning that is desired. (22) In physical education and sport
situations, the desired learning has been in the form of movement
patterns and physical skills. There has been little doubt about the
effectiveness of using motion pictures in teaching perceptual motor
skills. (12) Houser investigated teaching aids in the learning of a

movement skill by comparing skill instruction through motion pictures

and instruction of the same skill concept through a slide presentation.

He found the following results:

> "From analysis of the data, it is clear that
> in the case where motion is a defining attri-
> bute of a concept, it is better to present that
> concept using motion picture film than by a
> non-motion medium." (27:429)

An attribute of motion picture use in the teaching of skills

has been that films can take the place of a "live" demonstration if it is

unavailable. (26) Lockhart investigated this assumption in a study of

motion pictures as an aid to teaching bowling skills:

> "In any learning problem it is necessary to
> obtain an intellectual concept, a clear picture
> of just what is expected... The movie groups
> grasped the nature of the desired response
> more quickly than the non-movie group."(31:181)

An additional element of film use was pointed out by Cook:

> "The zooming in on a subject forces one to see,
> and aids the looker in moving from sight to in-
> sight, from seeing to preceiving." (7:39)

The use of films showing skills in slow motion was also found to aid in

skill learning. This was especially true in fast action movements be-

cause slow motion showed the action at a speed where components of

the movement pattern were preceived in relation to the whole move-

ment. (6, 18)

CHAPTER III

PROCEDURES

SELECTION OF FILM CONTENTS

To determine the contents of the proposed film loop series in beginning synchronized swimming skills, the author researched available literature on synchronized swimming. Most stunts were found to have related movements based on several basic body positions. These fundamental body positions were the front layout, back layout, tuck, pike, vertical, and ballet leg. All stunts were found to use these positions either singly or linked with connecting movements.

A film loop series on just the basic body positions was determined to be of little educational value because it would not show how the basic body positions related to the total movement pattern of skills in synchronized swimming. To overcome this problem, a decision was made to incorporate into the film series several basic stunts using two of the body positions, the tuck and front pike.

A tentative outline of the film contents was constructed as follows:

Beginning Synchronized Swimming Skills

I. Basic Body Positions

A. Front Layout
B. Back Layout
C. Tuck
D. Front pike
E. Vertical
F. Ballet leg

II. Skills Using the Tuck Position

A. Tub
B. Front tuck somersault
C. Back tuck somersault
D. Kip

III. Skills Using the Pike Position

A. Front pike somersault
B. Porpoise
C. Somersub
D. Front walkover

This outline was submitted to six experts in the field of synchronized swimming instruction for evaluation and revision as they deemed necessary to produce a film series that would be a valid teaching aid. The synchronized swimming coaches from the major colleges in the midwest section of the United States were chosen to be on this panel of experts because of their advanced instructional and coaching backgrounds in synchronized swimming. Four of the six experts responded to the questionnaire. The list of experts and their addresses are listed in Appendix A.

After analyzing the suggestions by the experts, several changes were made in the content outline. In the basic body positions section, the flamingo position variation of the ballet leg was added be-

cause of its frequency of appearance in many synchronized swimming skills. Another change was made in the section on skills using the tuck position; the tub was dropped from the outline because it did not use a complete tuck position. The front walkover was eliminated from the pike skills because it was a movement too advanced for a beginning learner. The barracuda was added in place of the walkover because it used a front pike somersault.

The final outline of the contents of the film series follows:

Beginning Synchronized Swimming Skills

I. Basic Body Positions

 A. Front layout
 B. Back layout
 C. Tuck
 D. Front pike
 E. Ballet leg
 F. Vertical
 G. Flamingo position

II. Skills Using the Tuck Position

 A. Front tuck somersault
 B. Back tuck somersault
 C. Kip

III. Skills Using the Pike Position

 A. Front pike somersault
 B. Porpoise
 C. Somersub
 D. Barracuda, front pike

While re searching the process of learning physical skills, several studies were found that pointed out the value of seeing

performance errors in order to achieve a higher level of correct performance. (6, 21, 53) The author of this study decided to incorporate this same idea into the construction of the film loop series. The correct skill would be shown, the common errors would be next, followed by the methods of correcting the errors. Since verbal descriptions would greatly enhance the value of this teaching aid, a cassette recording of verbal descriptions of the correct skill, common faults, and corrections would be synchronized to the film loops.

In order to find the common faults as they occur most often, the final outline of the film series was sent to the panel of experts in the field of synchronized swimming that responded to the first questionnaire. They listed the common performance errors they found most often and gave the correction techniques they used. After analysis of the returned questionnaires, the most common faults and suggested corrections of each skill were outlined. (See Appendix B)

The skills were then grouped according to simularity and placed into six separate film outlines. The six film loops were designed to be sequential with the basic body positions in the first three film loops, followed by three film loops of skills using the basic body positions. An outline of each film loop follows:

Beginning Synchronized Swimming Skills

Film I. Basic Body Positions

        A.   Front layout
        B.   Back layout
        C.   Tuck

Film II. Basic Body Positions

        A.   Front pike
        B.   Vertical

Film III. Basic Body Positions

        A.   Ballet Leg
        B.   Flamingo Position

Film IV. Skills Using the Tuck Position

        A.   Front tuck somersault
        B.   Back tuck somersault
        C.   Kip

Film V. Skills Using the Pike Position

        A.   Porpoise
        B.   Front pike somersault

Film VI. Skills Using the Pike Position

        A.   Somersub
        B.   Barracuda, front pike

FILMING PROCEDURES

Selection of Type of Film. To determine the type of film to use and to gain experience in handling a movie camera, the author traveled to Charlotte, North Carolina to film parts of the Amateur Athletic Union's Indoor National Championship in Synchronized Swimming in 1971. Two types of Super 8mm film were tried, as was the use of movie lights in comparison to available light. The two types of film were Kodachrome 40 and High Speed Ektochrome, both by

Kodak. A Bell and Howell Super 8mm camera with a zoom lens and automatic exposure control was used in connection with a tripod for stability.

After analyzing the experimental films, the author decided to use the High Speed Ektachrome 160, Type G film in the final film loop series because it had fewer operational problems than the Kodachrome 40 film. The Kodachrome film needed the use of movie lights and would have been acceptable in filming any medium except water. The wave action in the water constantly reflected the intensity of the movie light. This caused distractions and an inability to see movements under the surface of the water. The High Speed Ektachrome film, in conjunction with available indoor light, was acceptable, except that it was slightly underexposed. This was not considered a problem since the final filming of the series would be at the swimming pool at the University of North Carolina at Greensboro which had windows on two sides that would allow natural light to enter and add to the intensity of the artificial light. The experimental filming in Charlotte was at an indoor pool with no windows at all.

Selection of Filming Angles. The next preparation step was to find the angle, elevation, and distance from the subject to be filmed. To accomplish this, the author filmed an expert synchronized swimmer from various angles and distances. A low elevation filming angle was found to be unacceptable because the refraction of the water caused

a distortion of the movements under the surface of the water.

Since the final film series would use movements partially under the water, a high filming angle of about forty degrees was chosen for best results. A distance of twenty to thirty feet from the subject was found to be best because the camera lens could then be zoomed in or out for the best photographic adjustment.

Probably the best outcome from this second stage of experimental filming was the realization that the background behind the subject caused distractions too numerous to accept in the final film series. A backdrop of a solid color piece of material was used to overcome this problem. If it were extended below the surface of the water, it would also add a contrast to the swimmer's body, thus allowing better vision of the movement to be filmed.

First Filming Trial. The first filming trial occurred in 1972, partially at the University of North Carolina at Greensboro and partially at the Upper Arlington High School swimming pool in Columbus, Ohio. At that time it was necessary to switch locations because an expert synchronized swimmer could not be found in the Greensboro area. The expert swimmer was filmed in Ohio and the beginning swimmer, in Greensboro, with plans to splice the film pieces together to form the final film loops. After attempting this procedure, the author found it totally unacceptable as far as technical quality was concerned. This film trial was abandoned.

Second Filming Trial. Using techniques learned in an audiovisual materials course, the content of each film loop was out-lined on planning cards. Each card contained information on shooting angles and filming techniques on the movement to be filmed. These cards were then placed in their order of appearance in the film loop.

Title cards were made for each separate film loop and a series title card to be seen at the beginning of every film was con-structed. The series title card would appear first in each film, followed by a card giving the instruction to "re-start the cassette recording". This instruction card was necessary for the planned synchronization of the verbal descriptions to the visual movements. Following the cassette card was the film title card telling the skills or positions included in the film being viewed.

In this second filming, the camera was changed to the new Kodak SXL Automatic which was especially designed to use the High Speed Ektachrome 160, Type G film.

As deemed necessary in previous filmings, a cloth screen measuring sixteen feet by ten feet was hung from the high diving board in such a manner that it had four feet of material above the surface of the water and twelve feet of material below the surface. The bottom edge of the material was weighted to keep it in a vertical position. Twelve feet below the surface was necessary for a complete background because of the high camera angle and refraction of the water.

Three skilled synchronized swimmers were used to show the various correct movements, common errors and methods of correction.

The format and method of filming in this second trial was superior to the first filming. Due to a malfunction of the automatic exposure control on the rented camera, however, all six films were overexposed and unacceptable for use in this project.

The Final Filming Procedure. Using the same techniques, planning cards, and swimmers as previously used, a final set of six films was made using a new Kodak SXL camera. These films, with the exception of two title cards and three movement skills that were out of focus, were considered acceptable for use in this project. The out of focus title cards and movement skills were subsequently re-filmed.

CONSTRUCTION OF FILM LOOPS

Each film was reviewed and edited after receiving the film series from the film processors. The out of focus parts were cut and the refilmed sections were spliced into the correct positions. The leader film and the unused portion of film at the end of each roll was cut and discarded. The final films were then sent to Technicolor Corp. for placement into cartridges. Their address follows:

> Technicolor
> P. O. Box 4
> Springfield, Massachusetts 01101
> Attention: Customer Service

The cartridge film loops were returned in three weeks. Each film cost $1.75 to be placed into the cartridge. Each original roll of film cost $3.25. Processing cost $1.25 per roll, bringing the total cost of each final film loop to $6.25.

SYNCHRONIZATION WITH SOUND

Development of the Synchronization Process. The problem of synchronizing the visual and verbal media presented the greatest challenge because an original technique had to be developed. No guidelines on the subject could be found while reviewing the literature. The whole process of synchronization would have to be based on the tape and film starting at exactly the same point, with the verbal descriptions following the visual images on the films. To accomplish this goal, a visual command to start the tape recording was included in the filming procedure. This was achieved and the command to start the cassette recording follows the series title in each film loop in the series.

Each cassette tape recording was constructed with instructions for synchronization included at the beginning of each tape. At a given point in the instructions, the tape would be stopped and the film loop projector started. At the visual command to restart the tape recording, the viewer would restart the tape, thus completing the synchronization process as the tape would now be giving the verbal descriptions to the visual actions on the film.

An outline of the verbal instructions at the beginning of each tape follows:

I.   Statement of film number and skills on the film.

II. Instruction to check the projector and screen.

III. Instruction on how to stop the tape player on command, start the film, then restart the tape player when told to by a written command on the film.

IV. Instruction to stop the film projector, at the beginning of the set title card, when finished viewing, and to rewind the cassette tape completely before storage.

V.   Command to stop the tape player. (To be restarted when the written command in the film tells you to.)

A copy of the operational instructions included in the final series is in Appendix A.

Synchronization of Verbal and Visual Media. After developing the synchronization process, the actual recording of the tape recordings to fit the film loops was undertaken. Several prerecording precautions were taken to insure proper synchronization. A tape recorder that plugged into normal electric current was used in preference to a battery operated cassette tape recorder. Batteries would have lost their efficiency over a period of time thus causing the verbal to lag behind the visual. The verbal narration had to be edited to fit the space

of time allowed by the film sequence. This narration was practiced until it fit the movements as they appeared on the screen.

The actual recording sessions consisted of recording the operational instructions, starting the film loop projector, then recording the verbal descriptions of what was happening on the film. The verbal descriptions for each film loop were repeated in sequence for five complete rotations of the film so that a viewer could have both verbal and visual media repeat a maximum of five times without having to rewind the cassette tape recording.

The finished cassette recordings and film loops were then labeled clearly and placed in a plastic box, along with a booklet that explained the instructional package and gave information about using it correctly.

EVALUATION OF THE FINAL INSTRUCTIONAL PACKAGE

Evaluation Procedures. The final instructional package was sent to a panel of four judges who were experts in the field of synchronized swimming, audiovisual instruction, and swimming instruction. The variety of educational backgrounds was deemed necessary by the author to insure analysis from different standpoints. Each film was to be evaluated on six components:

1. Photographic quality.

2. Pace and organization.

3. Technical quality (splices, etc.).

4. Synchronization with sound.

5. Instructional information.

6. Instructional purpose reached.

The evaluation of each component was to be on a scale from one to five with 5 being excellent; 4 good; 3 average; 2 fair; and 1 poor. The individual evaluation forms are in Appendix C.

Evaluation Results. Photographic quality was evaluated average to excellent in virtually every case. Pace and organization was also considered average to excellent in all films except the first one in the series where the judges found the pace too rapid. The component of technical quality received consistently low scores due to the rough splices. The greatest variation between judges came in the component of sound synchronization. Three of the four judges found the synchronization to be good to excellent, while one consistently found the synchronization to be of poor quality. In all cases, instructional information was found to be good to excellent, as was the reaching of instructional purposes. A detailed evaluation by the media expert is placed in Appendix D.

Suggestions for Subsequent Filming and Synchronization. After reviewing the judges' evaluations and comments, the author would like to add suggestions for changing production techniques should anyone want to follow the procedures developed in this study.

Suggestion I.   When planning the contents of a film to be synchronized with sound, keep in mind the length of the necessary verbal descriptions. It would be better to have a long visual sequence with a normal narration than to have a short visual sequence with a rapid, cramped narration.

Suggestion II.   If possible, during the recording session, place the film loop projector as far away from the tape recorder as possible to avoid the motor becoming "background noise" on the recording.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary. The purpose of this study was to construct a set of film loops and audio cassette tape recordings that could be used as teaching aids in synchronized swimming.

To determine the contents of the film series, a tentative list of the basic body positions and skills to be filmed was sent to a panel of experts in synchronized swimming. After their revision of this outline, a questionnaire pertaining to common faults and errors in performance was sent to the panel. The returned information was processed and six film outlines were constructed. Utilizing techniques and skills learned in experimental filming, several filming sessions were held until acceptable results were achieved. The films were then placed into film loop form and a method of synchronizing cassette tape recordings to the films was developed. The final instructional package was sent to a panel to be evaluated on content, technical quality, and instructional information.

Conclusions. After evaluation by a panel of experts in the fields of synchronized swimming, audiovisual instruction, and swimming instruction, the audio film loop series on Beginning Synchronized Swimming Skills was found to have good instructional use, but was not of high enough technical quality for commercial use.

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APPENDIX A

LETTERS AND FORMS

Sample Letter of Inquiry.

Sample Follow-up Letter.

List of Experts Used.

Film Content Questionnaire.

Common Faults and Corrections Questionnaire.

Film Series Evaluation Form.

Operational Instructions Included in the
Final Learning Package.

SAMPLE LETTER OF INQUIRY

Miss Marty Washington
Department of Health, Physical Education
    and Recreation
University of Georgia
Athens, Georgia 30601   May 27, 1971

Dear Miss Washington:

I have chosen as a thesis project, the construction of a set of four or five film loops, synchronized to sound tracks, as teaching aids for beginning synchronized swimming. I have chosen this endeavor because there is a need for visual materials in the teaching of synchronized swimming.

I am now interested in trying to obtain the advice and evaluation of a panel of judges and am writing to see if you would be interested and willing to serve as one of the judges. It would involve your participation in two phases of the project. First, you would be reading the tentative outline of the contents of the film loops, making any revisions you deem necessary, and filling out a short questionnaire on the common faults and corrections for the skills. This phase would occur in late September or early October, 1971. The second phase would be viewing the finished product and rating it on an evaluation scale.

I sincerely hope you will find it possible to participate in my study. I have enclosed a self-addressed postcard for your convenience and would greatly appreciate your reply before June 7. Thank you.

                    Sincerely,

                    Carolyn Temple

                    Dr. Rosemary McGee
                    Thesis Advisor

SAMPLE FOLLOW-UP LETTER

Miss Iris E. Andrews
Women's HPE Department
Bowling Green State University
Bowling Green, Ohio 43403   October 11, 1971

Dear Miss Andrews:

          Thank you for your interest in my study, and in your willing-
ness to serve as a member of a panel of judges to advise and evaluate
the progress and effectiveness of the study.

          The purpose of the study will be to construct a set of film
loops and cassette recordings covering selected beginning skills in syn-
chronized swimming. The films will show a skilled swimmer execut ing
the skill and a beginning synchronized swimmer as she performs the
same skill showing the common faults, and again as she corrects her
movements. The cassette tapes, which will be synchronized to the
action in the film loops, will give verbal descriptions of the skill as it is
done correctly, and the cues and corrections to be given to the beginning
swimmer to improve her performance. A set of film loops such as this
hopefully would be helpful to the novice instructor as well as to students.

          The tentative outline of the contents has been constructed with
four major headings based according to skill progressions. Your opinion
is sought in the critical analysis of this outline and in any revisions that
you deem necessary to the proper progression for learning the basics of
synchronized swimming. I am also seeking information from you concerning
the most common faults your students have encountered in the perform-
ance of the skills, and the corrections or cues that you would suggest
for these faults.

          You will find enclosed the tentative outline and questionnaire
to be evaluated and completed at your convenience, and return before
November 1, 1971. Upon receipt of all questionnaires, the filming will
begin. The final set of films and tapes will be sent, along with the
necessary equipment, for your final evaluation as soon as they are
completed.

          Thank you for your help.
                                              Sincerely,

                                              Carolyn Temple

LIST OF EXPERTS USED

Miss Iris Andrews
Women's Health and Physical Education Department
Bowling Green State University
Bowling Green, Ohio 43404

Miss Penny Hackett
227 Warner Gymnasium
Eastern Michigan University
Ypsilanti, Michigan

Mrs. Mary Jo Ruggeri
Physical Education Department
202 Pomerene
Ohio State University
Columbus, Ohio 43221

Miss Marty Washington
106 Spruce Valley Road
Athens, Georgia 30601

FILM CONTENT QUESTIONNAIRE

The purpose of this study is to construct a set of film loops and cassette recordings on the basic skills in beginning synchronized swimming. After researching available literature, I have decided the following tentative series outline would best serve the needs of this project. I am asking for your expert advice on evaluating the outline and making any revisions you deem necessary to construct a functional film series of beginning synchronized swimming skills. Please place suggestions, additions, or revisions in the space to the right of each group of body positions or skills.

BEGINNING SYNCHRONIZED SWIMMING SKILLS FILM CONTENTS

I. Basic Body Positions   Suggestions

    A. Front Layout
    B. Back Layout
    C. Tuck
    D. Pike
    E. Vertical
    F. Ballet Leg

II. Skills Using the Tuck Position   Suggestions

    A. Tub
    B. Front Tuck Somersault
    C. Back Tuck Somersault
    D. Kip

III. Skills Using the Pike Position   Suggestions

    A. Front Pike Somersault
    B. Porpoise

C. Somersub
D. Front walkover

GENERAL COMMENTS:

COMMON FAULTS AND CORRECTIONS QUESTIONNAIRE

Please list the common faults you find occuring most often in each skill and the correction technique or cues that you use to correct the error listed.

SECTION ONE: Basic Body Positions

I. LAYOUT POSITION

    A. Front Layout
       Common Fault (s):

       Suggested Corrections:

    B. Back Layout
       Common Fault (s):

       Suggested Corrections:

II. TUCK POSITION
       Common Fault (s):

       Suggested Corrections:

III. PIKE, FRONT
       Common Fault (s):

       Suggested Corrections:

IV. VERTICAL (Head Down)
       Common Fault (s):

       Suggested Corrections:

SECTION TWO: Ballet Legs

I.   BALLET LEG (Single)
         Common Fault (s);

         Suggested Corrections:

II. BALLET LEG, Flamingo Position
         Common Fault (s):

         Suggested Corrections:

SECTION THREE: Skills Using the
         Tuck Position

I. FRONT TUCK SOMERSAULT
         Common Fault (s):

         Suggested Corrections:

II. BACK TUCK SOMERSAULT
         Common Fault (s):

         Suggested Corrections:

III. KIP
         Common Fault (s):

         Suggested Corrections:

SECTION FOUR: Skills Using the Pike
         Position

I. FRONT PIKE SOMERSAULT
         Common Fault (s):

Suggested Corrections:

II. PORPOISE
         Common Fault(s):

Suggested Corrections:

III. SOMERSUB
         Common Fault(s):

Suggested Corrections:

IV. BARRACUDA FRONT PIKE
         Common Fault(s):

Suggested Corrections:

FILM SERIES EVALUATION

Viewer_____

The purpose of this set of film loops and cassette recordings
was to present a method of visual and verbal instruction using correct
skills, common faults, and corrections. Please evaluate this series as
to its technical quality and achievement of purpose. The following
scale will be used:

> 5............Excellent
> 4............Good
> 3............Average
> 2............Fair
> 1............Poor, needs to be corrected.

Please check the numbered area that best describes your
evaluation of the point listed. If you have any special comments, sugges-
tions, or corrections, please place them in the recommendation area.
Thank you for your assistance in this project.

	5 4 3 2 1	RECOMMENDATIONS
FILM 1		
Photographic Quality		
Pace and Organization		
Technical Quality, splices, etc.		
Synchronization with Sound		
Instructional Information		
Instructional Purpose Reached		
FILM 2		
Photographic Quality		
Pace and organization		
Technical Quality, splices, etc.		
Synchronization with Sound		
Instructional Information		
Instructional Purpose Reached		

FILM 3
    Photographic Quality
    Pace and Organization
    Technical Quality, splices, etc.
    Synchronization with Sound
    Instructional Information
    Instructional Purpose Reached

FILM 4
    Photographic Quality
    Pace and Organization
    Technical Quality, Splices, etc.
    Synchronization with Sound
    Instructional Information
    Instructional Purpose Reached

FILM 5
    Photographic Quality
    Pace and Organization
    Technical Quality, splices, etc.
    Synchronization with Sound
    Instructional Information
    Instructional Purpose Reached

FILM 6
    Photographic Quality
    Pace and Organization
    Technical Quality, splices, etc
    Synchronization with Sound
    Instructional Information
    Instructional Purpose Reached

OVERALL SERIES EVALUATION

COMMENTS:

OPERATIONAL INSTRUCTIONS FOR THE FINAL LEARNING PACKAGE

BEGINNING SYNCHRONIZED SWIMMING
SKILLS

Welcome to a six film loop series on several basic skills and body positions in synchronized swimming. These films are designed to be used by beginning students or teachers who have little or no experience in synchronized swimming skills but would like to learn more about them. All advanced stunts spring from foundations in these basic skills, therefore learning these beginning body positions and skills is an important springboard to further advancement in synchronized swimming. The contents of the films are as follows:

Film 1: Basic Body Positions
    A. Front Layout
    B. Back Layout
    C. Tuck

Film 2: Basic Body Positions
    A. Front Pike
    B. Vertical

Film 3: Basic Body Positions
    A. Ballet Leg
    B. Flamingo Position

Film 4: Skills Using the Tuck Position
    A. Front Tuck Somersault
    B. Back Tuck Somersault
    C. Kip

Film 5: Skills using the Pike Position
    A. Porpoise
    B. Front Pike Somersault

Film 6: Skills using the Pike Position
- A. Somersub
- B. Barracuda, Front Pike

An ancient Chinese Proverb states:

> "I hear and I forget
> I see and I remember
> I do and I understand. "

The whole purpose and substance of this instructional series is reflected in this proverb. The combination of visual and verbal descriptions of the skills performed correctly, the common faults, and their corrections will give the viewer a better understanding of the skill involved than what normally would be given by verbal instruction only.

These film loops and cassette tape recordings are designed to be coordinated together for both verbal and visual instruction. Before we get into the process of synchronized sound and film, you need to become familiar with their separate designs.

The tape recordings all begin with the same instructions on how to synchronize the verbal descriptions to the film loops. You may stop the tape at anytime during the instructions and then restart when ready. An outline of the instructions on each tape follows:

I. Statement of film number and skills on that film.

II. Instructions to check the projector and screen for use.

III. Instruction on how to stop the tape recorder on command, start the film, then restart the tape player when told to by a written command on the film.

IV.	Instruction to stop the film at the beginning of
the title card when finished viewing and rewind
the tape completely before storage.

V.	Command to stop the tape player. (Restart when
the film tells you to).

The film loops all have a set title with the film number, a command card for restarting the cassette tape, and then the film title stating the contents of that film. The films then show the skills performed correctly, the common faults in execution, and hints for correcting those faults.

STEPS TO FOLLOW TO SYNCHRONIZE TAPE RECORDINGS AND FILM:

1. Set up screen, projector. and tape recorder. Make sure to use good batteries in the tape player or a tape recorder that uses a wall outlet.

2. Turn on the tape recorder for verbal instructions.... stop the tape when told to do so.

3. Turn the projector on and focus.

4. Turn the tape player on when you read the instructions to do so on the film. Verbal and visual parts should now be synchronized.

5. When you are finished viewing each film, please stop the projector immediately when you see the series title card.

6. Stop the tape recording and rewind completely.

7. Place the tape and film back in their boxes and put a rubber band around both of them to keep them together.

APPENDIX B

QUESTIONNAIRE RESULTS CONCERNING COMMON FAULTS AND CORRECTIONS

The following faults and correction techniques were found most often on the questionnaires that were returned.

BEGINNING SYNCHRONIZED SWIMMING SKILLS

POSITION	COMMON FAULTS	CORRECTIONS
Front Layout	1. Raising head and arching the back. 2. Feet sinking.	1. Place face in water and stretch the body. 2. Press heels to the surface.
Back Layout	1. Head held forward. 2. Back arched with feet sinking.	1. Lay head back with ears in the water and look at ceiling. 2. Tighten abdominal muscles and lift toes to the surface.
Tuck	1. Tuck not compact. 2. Feet sinking.	1. Tighten abdominal muscles and bring knees and forehead together. Press hips to heels. 2. Keep shins on the surface of the water while drawing the knees to the chest.
Front Pike	1. Feet sinking and hips.	1.(a) Hook toes on the pool wall or gutter to practice a smooth pull down.

POSITION	COMMON FAULTS	CORRECTIONS
Front Pike		1. (b) Rest toes on a kick-board or floating support, pull down without pressing down on the feet, hips move forward on the water surface.
	2. Pike too tight.	2. Practice with a partner signaling you with a touch when the 90° angle has been achieved.
Vertical	1. Head back, looking at pool bottom with the back arched.	1. Watch pool sides and contract abdominal muscles.
	2. Head forward, chin tucked.	2. (a) Stand with your back against the wall to get the "straight line" feeling.
		2. (b) Hang inverted to the side of the pool, head below the surface, hands grasping the gutter or pool edge.
Ballet Leg	1. Hyperextending the raised leg	1. Lay on deck and practice raising the leg to the vertical position, using a line, pole, or marker showing vertical position.
	2. Bottom leg dropping.	2. Extend the bottom leg and press the toes to the surface.
Flamingo Position	1. Head held forward, with rounded back.	1. Lay the ears back in the water and look at the ceiling.

POSITION	COMMON FAULT	CORRECTION
Flamingo Position	2. Overextended ballet leg.	2. Perform the skill by the side of the pool and have a partner signal when a vertical ballet leg is achieved.
Front Tuck Somersault	1. Tuck not compact.	1. Pull knees to forehead by tightening abdominals and hip flexors.
Back Tuck Somersault	1. Head held back causing a rough roll.	1. Tuck chin and pull forehead to knees until the roll is completely executed.
Kip	1. Opening too soon with not enough rotation.	1. Perform the skill near a partner who touches your leg when the correct rotation has been reached.
	2. Raising head on descent, arching back.	2. Keep chin tucked and look at side of pool, keeping the back straight.
Porpoise	1. Head pulled back, feet going beyond vertical, back arching.	1.(a) Shallow water - pike pull down until hands touch bottom, lift legs to a straight handstand with partner's aid, keeping head in a straight line with the body.
		1. (b) Perform the skill by the edge of the pool with a partner signaling when the vertical has been reached.

POSITION	COMMON FAULT	CORRECTION
Porpoise	2. Feet sinking and hips popping up.	2. Press the heels to the surface on the pull down and pull down slowly.
Front Pike Somersault	1. Pike tighter than 90°.	1. Have a partner give you touch signals when the 90° angle has been achieved.
	2. Heels dropping below the surface.	2. Press heels upward slightly while pulling the torso down to the 90° angle.
Somersub	1. Split legs too soon after pike somersault.	1. Have a partner give touch signals on toes when the correct position has been achieved.
	2. Hyperextending the ballet leg.	2. Raise leg and point toes straight at the ceiling.
Barracuda	1. Incorrect scull to vertical.	1. "Sit" in the water, legs extended in front of the body at a 90° angle to the torso. Reach by the knees and pull the water down by the thighs while straightening the 90° body angle by uncurling the lower back first then on up to the head until a straight body line has been achieved.

APPENDIX C

EVALUATION RESULTS

The following diagramatic final evaluation form shows how each judge rated the film series on photographic quality, pace and organization, technical quality, synchronization with sound, instructional information and the reaching of the instructional purpose. Each judge's response will be indicated by the letter code listed below. By super-imposing all evaluations on one representative form, the evaluation trends can be easily seen.

Judge A   Ms. Linda Lash, Synchronized Swimming Instructor

Judge B   Ms. Marjorie Leonard, Swimming Instructor

Judge C   Dr. Sigrid Trombley, Media Specialist

Judge D   Dr. Rosemary McGee, Swimming Instructor

Evaluation Scale:

$$5----------------Excellent$$

$$4----------------Good$$

$$3----------------Average$$

$$2----------------Fair$$

$$1----------------Poor$$

FILM I

	5	4	3	2	1	JUDGE	COMMENTS
Photographic Quality	B	A C D					
Pace and Organization		A B C	D			A B. C D	Needs to be slower. Maybe a little fast. Pace too rapid, organization good. A little fast.
Technical Quality, splices, etc.	B	A D			C		
Synchronization with Sound	A B	D			C		
Instructional Information	A B C	D					
Instructional Purpose Reached	A B	D			C		Cannot be determined until technical problems are overcome.

FILM II

	5	4	3	2	1		JUDGE	COMMENTS
Photographic Quality	A B C		D				D	A little blurry.
Pace and Organization		A C	B	D			B C D	Too sudden change to vertical. Good sequencing of instruction. Need notification to switch to vertical.
Technical Quality, splices, etc.	B	A D		C				
Synchronization with Sound	A B	D	C				C	Good at start. Near end of film ahead of tape.
Instructional Information	A C	D						
Instructional Purpose Reached		A C D						

FILM III

	5	4	3	2	1	JUDGE	COMMENTS
Photographic Quality	B	D	A C			C D	Underexposed. Hazy focus.
Pace and Organization	B	A C D				C	Pace too rapid at times.
Technical Quality, splices, etc.			A D		C	B	Two poor splices.
Synchronization with Sound	A B D				C	C	Varied - at times okay; at times not.
Instructional Information	A B D	C					
Instructional Purpose Reached	B D	A C					

FILM IV

	5	4	3	2	1		JUDGE	COMMENTS
Photographic Quality	A B	C D						
Pace and Organization		A B C D					D	Need verbal or visual title introducing each new stunt.
Technical Quality, splices, etc.		A B	D	C				
Synchronization with Sound		A B D		C				
Instructional Information	B	A C D						
Instructional Purpose Reached	A B D						C	Can't be sure until synchronization is correct.

FILM V

	5	4	3	2	1		JUDGE	COMMENTS
Photographic Quality		A	B C D				C D	At start, much reflection on water. Lightness when action goes to shallow water.
Pace and Organization		C D	A B				C	Okay.
Technical Quality, splices, etc.		A B	D		C		B C D	Changing places, light, color, is distracting. Near end, film completely stopped. Tape has sound in background.
Synchronization with Sound	B D	A			C			
Instructional Information	C D		A B				A B	Pike pull down technique needs emphasis. Did not seem as good to me.
Instructional Purpose Reached	D	B	A				C	Can't determine until synchronization is correct.

FILM VI

	5	4	3	2	1		JUDGE	COMMENTS
Photographic Quality		A B C		D			D	Out of focus - seemingly more toward the left of the screen.
Pace and Organization		A C	B D					
Technical Quality, splices, etc.			A B D		C		D	Some rough spots.
Synchronization with Sound	D	A B			C			
Instructional Information	C	A	B				A	The barracuda could have been better verbally explained for clearer understanding of the skill.
Instructional Purpose Reached	A D	B					C	Can't determine until synchronization is improved.

APPENDIX D

COMMENTS BY A MEDIA EXPERT

Photographic quality

At times reflection on water is a bit distracting. Cloth hung as a background needed to be wider. In a few instances, film is under-exposed. In general, however, I'm impressed with the quality of the photography.

Pace and Organization

At times pace is too rapid. Typically Super 8mm film loops are single concept films. Each of these films covered at least two skills - probably too much for such a short film.

Technical quality, splices, etc.

Unfortunately film loop projectors do not handle splices very well. Each time a splice occurs, film travels very slowly through the projector. In one instance film came to a complete stop and had to be manually advanced beyond the area of the splice.

Sound quality on the tapes is fair to poor. I think it could be improved by doing the following:

1. Record on a better quality tape recorder.

2. Record on a machine which allows you to set the volume recording level (as opposed to a machine which sets this level automatically). Record then, at the highest level possible without distortion. These tapes were recorded at a low level. In order to be audible (especially above the noise of the projector) I had to set the volume of the recorder at a maximum. Doing this resulted in distorted sound quality.

3. Use better quality recording tape. Better tape should improve your sound quality significantly.

Synchronization with Sound

This was the major problem of the entire learning package. Problems with the splices consistently caused film and tape to be out of synch. Often I didn't know where I was. I was hearing one thing and seeing another. Being a beginner (in terms of synchronized swimming skills and terminology), this is a critical problem. It is imperative that when the skill is being properly executed the narration indicates same and vice versa. When tape and film are out of synch it's highly possible that the narration is referring to the correctly executed skill while we are seeing incorrect execution. Result is that the neophyte may not be able to differentiate between correct and incorrect skill execution.

Instructional Information

Appears to be very good though I can't evaluate it in terms of "correctness". Though each of the skills is basic in terms of skills which comprise the whole of synchronized swimming, each skill is rather complex in terms of the things one must remember about each. Thus, I wonder if each of the skills taught needs to be repeated a number of times visually. Though there is repetition, more is needed. Viewer also needs to be clear as to whether or not she/he is seeing a correctly executed skill or a common fault. Too often I was not sure. Perhaps it would help if color cues had been used - black-suited swimmer always demonstrating faults. That way, even if film is temporarily out of synch, viewer still knows what she/he is seeing.

Instructional Purpose Reached

This is difficult to determine since the package can't be used exactly as intended until technical difficulties are overcome. Obviously the ultimate test of these materials is "can a student view them and subsequently get in the water and execute the skills." Once technical problems are overcome, I think it is highly likely that the package will function as intended.

A final Note.

Despite the difficulties mentioned above, I think Ms. Temple should be commended. An incredible amount of high quality work is evident in this learning package. I know how long it takes to produce even one only mediocre film and assure those of you in physical education that Carolyn spent hours and hours producing this package. The possibilities for merging media and physical education are numerous and exciting. I hope more students will be encouraged to explore the possibilities.