

A Problem of Poor Performance in a College Beginning Tai Chi Class

A Design Study Proposal

Behavioral Design Project Study Proposal

ED 333A

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Introduction

Tai Chi is a traditional Chinese exercise consisting of a series of gentle movements designed to improve coordination, relieve stress, strengthen the immune system, and promote overall well-being. In the last 20 years, Tai Chi has spread throughout the world, propagated by immigrant populations from China (including Taiwan and Kong Hong). In the United States, both the West coast and the East coast communities have strong followings of Tai Chi players. It now begins to spread into middle areas. Up until the 1970s, the major style in the United States was a modified Yang style taught by Professor Chen Mancheng, who immigrated to New York City from Taiwan. In the past 20 years, the "opening" of China has brought the five major styles (Song, Yang, Chen, Wu2, and Wu3) of mainland China to Americans, and has moved Tai Chi from the Kung Fu studios to health gyms, community colleges, retirement homes, and even hospitals. One can even find brief performances of Tai Chi in many American movies and TV commercials. Tai Chi classes can now be found at various places such as colleges, community centers, parks, and gyms in the United States.

Most Tai Chi classes begin with a basic warm-up routine that consists of mild stretches and deep breathing. The main part of the class is learning a "routine", which is a carefully choreographed set of fluid movements. In most classes, every part of the body is carefully scrutinized and each muscle and joint must follow a set of pattern as prescribed by the style or form learned.

Depending on the style being taught, these movements can be quite complex and physically demanding although they look simple at first glance. Students not familiar with learning choreography may find that memorizing the sequence of movements quite challenging. The correctness of each movement and the sequence of the movements for are usually emphasized for beginning class (the first level). Intermediate classes place more emphasis on the coordination among movement, breathing, and mind (the second level). Advanced classes more emphasize on visualization and actual movement of "Qi" or "energy" within the body during the routines (the third level). Some instructors may introduce martial applications embedded in the movements to help the students visualize the "purpose" and direction of the movement, although martial applications are not emphasized any more in modern Tai Chi movements.

Tai Chi routines, sets, or "forms" range from a couple of forms to more than 150 forms, depending on the style or sub-style. Each form consists of a single or a series of movements. Some movements may appear to be very similar but they are different. A good sense of subtle discrimination is highly needed in learning these movements. 24 Form Tai Chi – a "simplified" style based on Yang Family Tai Chi – was introduced in the mid 1950s in China for the purpose of providing an entry level Tai Chi form to beginners. Since it is relatively easy to learn and still keep the essence of Tai Chi, it is now widely practiced all over the world. It is usually the first class offered in most colleges that the students have to study before they can move on to a more advanced class. This simplified style consists of 24 forms, each of them including a single or a

series of movements. Movements and forms have to be performed in correct sequence prescribed by the style.

Learning Environments

PHED 1290 is an undergraduate physical education course at ABC College entitled Beginning Tai Chi. The focus of the course is to teach students 24 Form Tai Chi – the movements, forms, and the sequence. The desire is for students at the end of the semester to independently be able to perform 24 Form Tai Chi precisely and also in correct sequence. No prerequisite are required.

The course is taught in a Dance Studio with a big mirror on the wall during 50 minute classes (from 9:15 to 10:05) every Monday and Wednesday. 20 students are enrolled in this class. Most of them are freshman with diversified academic backgrounds. Gender distribution is around half to half. All of them do not have any Tai Chi experience.

The instructor is well-trained in Tai Chi but does not have any formal training in pedagogy. The class usually begins with a warm-up, followed by reviewing the movements and forms learned in previous classes, then proceed to learn new movements or forms, and finally progress to connect newly and previously learned movements or forms. Drills and practice for students are interwoven across the class when the instructor believes necessary. The instructor primarily uses demonstration and verbal cues to teach the movements and occasionally uses video and graphics to aid teaching and learning. Students are required to practice at home.

Learning Problem

Although the instructor is well-trained in Tai Chi and also very dedicated to his teaching, the learning results of this beginning Tai Chi class are not satisfactory. Upon completion of this course, most students cannot meet the objectives set by the instructor. We believe that the objectives set by the instructor are appropriate for beginners since they are widely accepted minimum requirements for the first level Tai Chi “players”. Examples of symptoms of poor performance include performing more than half of movements imprecisely and even inaccurately, missing some movements, and doing movements in incorrect sequence. There are many reasons for this failure, such as students’ limited learning abilities, inappropriate teaching methods, and lacking motivation and interests.

Purpose

The purpose of this investigation is to use behavioral learning theory to examine whether the way in which the teaching and learning activities are created and organized contributes to most learners’ poor performance in a college Beginning Tai Chi class. We will focus on whether the instructor arrange the learning in a routine in which components of Tai Chi movements are presented systematically, take into account what the students already know, and monitor closely whether students have acquired the intended components before going ahead.

Learning Hierarchy in Beginning Tai Chi Class

In this beginning Tai Chi class, students are expected to learn the movements and the sequence of the movements of 24 Form Tai Chi. Learning activities are usually organized in the sequence of learning single movements, then combining single movements in sequence into a single form, and finally connecting all forms in sequence.

According to Gagne's learning theory, there are primarily three types of learning involved in this class, namely stimulus-response learning, chaining learning, and discrimination learning. Learning single movements corresponds to stimulus-response learning while learning the sequence (connecting single movements into a single form and connecting forms) corresponds to both chaining learning and discrimination learning

Stimulus-Response Learning

Example: learning Cloudy Hands

It can be represented as Ss – R. S refers to the external signal – instructor's demonstration of Cloudy Hands and verbal cues on how to do it, s the accompanying internal proprioceptive stimulation, and R the response – the learner's imitation. The response is voluntary, a fairly precise, circumscribed, skeletal muscular act. The learning is gradual and response becomes more and more precise. A particular Ss – R is established, and at same time other Ss-R's, equally probable at the beginning of learning, are disestablished. A process of discrimination is an integral part of this kind of learning. To achieve this, reward or reinforcement is needed. The learner, being given positive feedback by instructor, receives reinforcement for the correct responses he makes. The learner, though, begins with an approximate capability already established. When verbal cues on how to do Cloudy Hands and visual demonstration is given, he or she can immediately do something that is almost correct. Subsequent trials in his case, therefore, are largely a matter of bringing about discrimination. He must receive reinforcement for responding to a narrow range of correct external movement of Cloudy Hands, and also for narrow range of internal stimuli from his muscles in performing Cloudy Hands. The learner also reinforces himself, by recognizing a match between his movement of Cloudy Hands and that of his instructor.

This learning is prevalent in this beginning Tai Chi Class since 24 Form Tai Chi consists of more than 80 single movements.

Chaining Learning

Example: Cloudy Hands followed by Single Whip. (chaining learning and discriminating learning)

To allow this learning happen, the following conditions are necessary:

- The individual links in the chain must have been previously established. The learner must have already learned to perform Cloudy Hands and Single Whip

- There must be contiguity of each link with the next following one. Cloudy Hands must be followed in brief period by the stimulus leading to the single whip.

Discrimination Learning

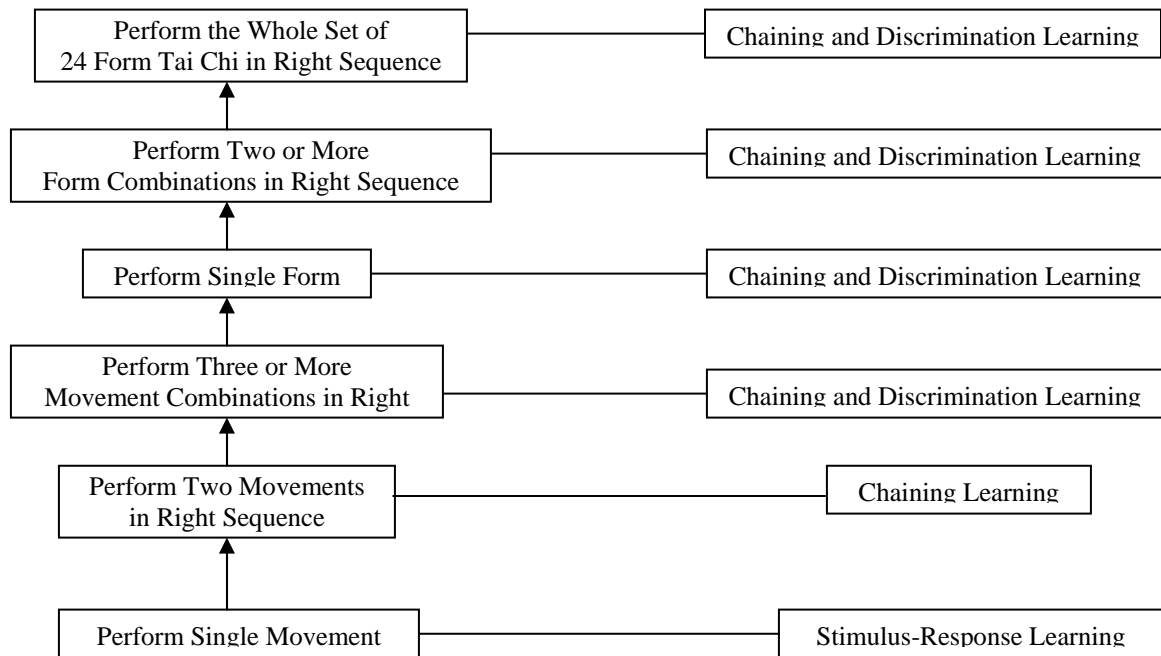
Example: difference between Part Wild Horse’s Mane and Grasp the Bird’s Tail

When an learner acquires a chain that makes it possible for him to perform Part Wild Horse’s Mane, and then goes on to learn Grasp the Bird’s Tail, he may by so doing weaken the first chain; he may forget Part Wild Horse’s Mane. To avoid this to happen, discrimination learning is needed. Learners have to make difference between Part Wild Horse’s Mane and Grasp the Bird’s Tail. To allow discrimination learning to happen, the following conditions are necessary:

- Individual chains connecting each distinctive stimulus with each identifying response must be learned
- In order to ensure retention, measures must be taken to reduce interference. Make the stimulus as highly distinctive as possible

This learning is prevalent in beginning Tai Chi Class since a lot of movements are very similar.

In summary, there are primarily three types of learning that can be identified in this beginning Tai Chi class. The learning hierarchy can be illustrated in the following diagram:



A learning hierarchy for the basic Tai Chi skill

Learning Principles

We are proposing a behaviorism study of the learning of Tai Chi based on the following design principles:

1. **(B1) Routines of activity for effective transmission of knowledge.** Application of this principal on learning Tai Chi requires that the instructor organizes the class to optimize acquiring of routine skills. When the class is well organized with routine for class activity that students know and follow efficiently, learning occurs most effectively. For example if students know that the class usually begins with a warm-up, followed by reviewing the movements and forms learned in previous classes, then proceed to learn new movements or forms, and finally progress to connect newly and previously learned movements or forms, they know exactly what they are expected to learned for each step. The familiarity of the class routine helps to improve the efficiency of acquiring transferred skills.
2. **(B2) Clear goals, feedback and reinforcement.** The behaviorism approach suggests having explicit instructional goals, providing opportunities for students to respond correctly, to give detailed feedback and offering reinforcement for learning that satisfies students' motivation. As for the Tai Chi class, it is advantageous for the instructor to specify the objectives of each class, to give enough time for students to correctly respond for stimulus given. It is also important that students gain frequent and detailed feedbacks to know how they have learned and what they still need to work on. Sufficient repeat in movements or forms they have learned in each class is also crucial for beginning Tai Chi learner.
3. **(B4) Sequences of component-composite skills.** The simplified 24 Form Tai Chi consists of more than 80 single movements. To facilitate learning of the 24 patterns in correct sequence, the instruction should proceed from the introduce of most popularly embedded single movements to the intertwined forms or composite movements, finally to combined sequence of the 24 forms. The learning process from single movements to sequence ensures students have sufficient skills to practice the new component and to properly combine the whole sequence.

In sum, the behaviorism perspective recommends the Tai Chi class to be organized with explicit goals and detailed routines that provide students opportunities to acquire a maximum accumulation on movements or forms. The class should proceed from simple single movements to combined sequence with sufficient and efficient feedback and reinforcement.

Proposal Study

To examine whether the instructor arranged the learning in a routine in which components of Tai Chi movements were presented systematically, took into account what the students already know, and monitored closely whether students have acquired the

intended components before going ahead, and how this arrangement affected learning, we design a qualitative research proposal based on the following methods and procedures.

Location

One session of the PHED 1290, Beginning Tai Chi, an undergraduate PE class at ABC College, Polo Alto California. This is a ten-week class at winter. Class meets Monday, Wednesday 9:15-10:05 at Dance Studio.

Participants

20 students: 10 females and 10 males, all freshmen with no previous Tai Chi experience.

One male instructor: well trained in Tai Chi, no formal training in pedagogy.

Methods and Procedures

- *Consent forms*

The consent forms on possible videotaping the class are signed and handed-in by students and instructors at the beginning class to ensure the later on videotaping the class. We do this at the beginning since we believe that videotaping class gives students stimulus to have more response on the learning materials of that day, which will affect the accuracy of the study.

- *Class observation*

Classes will be observed and videotaped every two weeks. During the class observations, we will focus on the routine of the class. We will collect data to shed lights on the following questions:

1. Did the instructor arrange the learning in a routine of warm-up, review, teaching new movements, and practice and drills with feedback?
2. Did the instructor express the learning goals of each class clearly?
3. Were students familiar with and do they follow the class objectives and class routine?
4. Was the class organized from the single movements to complex combinations?
5. Did students have enough time to recall learning from previous class?
6. Did the instructor give enough time for students to practice newly learned movements before proceeding to teach the next movement?
7. Did students effectively utilize the practice time assigned by the instructor?
8. Did students get proper feedback on their in-class practice?
9. Did the instructor give strong enough stimuli to effectively reduce interference from other stimulus so that students can make difference among similar movements?
10. Did the instructor give after-class assignments for students to reinforce learning
11. Did the instructor implement a mechanism so that, even for after-class practice (assignments), students can still get some forms of feedback?

- *Online Status check:*

The online status check is a way of providing our study with more details and data on the student's efforts, commitment level, and time involved after class. Each student will be given an account at the first day of class. Each week they will answer the same set of questions regarding:

1. Did you miss any class? If yes, how many?
2. Did you practice Tai Chi after class?
 - If yes
 - How long did you spend on practicing?
 - Did you practice Tai Chi alone or in a group?
 - How could you make sure that your movements were correct when practicing after class?

- *Interview*

At the end of this course, we are going to interview these 20 students individually. We will try to find, from students' perspectives, whether the instructor arrange the learning in a routine in which components of Tai Chi movements are presented systematically from simple to complex, taking into account what the students already know, and monitoring closely whether students have acquired the intended components before going ahead. We are going to ask students to answer the following specific questions based on their overall feelings about this course:

1. Did the instructor express the learning goals of each class clearly?
2. Did you follow the class objectives and class routine set by your instructor?
3. Do you think your instructor organized the class from the single movements to complex combinations?
4. Do you think your instructor has given you enough time to review the movements you learned in previous class before he teaches new content?
5. Do you think the instructor has given you enough time to practice newly learned movements before proceeding to teach the next movement?
6. Do you think you effectively utilized the practice time assigned by the instructor?
7. Do you think your instructor gave you proper feedback on your in-class practice?
8. Did the instructor give you strong enough stimuli to effectively reduce interference from other stimulus so that you can make difference among similar movements?

- *Performance Evaluation*

At the end of this course, we will evaluate each student's performance on Tai Chi (one of the investigators is an expert in Tai Chi). This evaluation is just for our study and will not be counted to their final grade. Students will be required to do the whole set of 24 Form Tai Chi individually and their performance will be video-taped. The evaluation will focus on two aspects: accuracy of single movements and correctness of sequence. We will record the following data for each student:

1. How many movements he or she did imprecisely
2. How many movements he or she did incorrectly or inaccurately?
3. How many times he or she made mistake on movement sequence?
4. How many movements he or she missed?

Compared with data from observation and interview, we can find out if there is correlation between students' performance and learning arrangements such as

practice time and feedback for reinforcement. Then, we can further infer that how learning arrangements and activities affected learning.

Possible Results

- Most students could independently perform the whole set of 24 Form Tai Chi, however they did poorly and showed at least one of the following symptoms of poor performance:
 - Performing more than half of movements imprecisely and even inaccurately
 - Missing some movements
 - Doing movements in incorrect sequence.
- The instructor clearly expressed the learning goals of each class and student were clear about these goals.
- Learning was organized in a routine of warm-up, review, teaching new movements, and practice and drills. It proceeded from simple to complex
- The instructor provided time for students to practice and drill but it was not adequate enough to ensure that students had acquired pre-requisite
 - Inadequate practice time during the class
 - Some student did not well utilized the practice time assigned by instructor
 - Inadequate practice off class: students were required to practice at home, but only a few students did so
 - Students who practiced at home did better than students who did not
 - Students who practiced at home for more than half hour each week did better than students who practiced for less time
- The instructor provided feedbacks to reward and reinforce correct movements and to discourage incorrect movements, but it was inadequate
 - Inadequate feedbacks during the class because of the large size of the class
 - No feedback for off-class practice
- Stimuli are not strong enough to effectively reduce interference from other stimulus and students can not make difference between similar movements.

Suggested Solutions

- Provide sufficient practice time to make sure that students have acquired prerequisite skills before teaching the next movement.
- Give incentives such as extra points for active participation in class practice and drills
- Decrease the class size by limiting enrollment so that the instructor can give more feedback to each individual student.
- Emphasize the importance of practicing after class.
- Provide students a video clip of 24 Form Tai Chi performed by the instructor or an expert so that students can compare their own movements with standard movement for self-feedback when they are practicing after class.
- Provide strong stimuli to effectively reduce interference from other stimulus so that students can make difference among similar movements.

Conclusion

The beginning Tai Chi class is organized in a routine that is clear and easy to be followed for students. However, students do not have adequate in-class practice time to reinforce their learning. Due to the nature of the class, it is hard to have sufficient and efficient feedback for every movement students practice in class. Therefore, **our study shows** that, for a behaviorist's point of view, the class is constructed under the understanding of the principal B1 and B4, but need some improvement on giving more feedbacks and practice time in and after class. Our findings show that inadequate feedback and practice time in class organization and construction are among the major reasons for students' poor performance.

On the other hand, we need to further investigate on issues such as "Is the instructor's belief on choosing proper class material, scheduling practices and giving appropriate rewards consistent with that of students? Does the instructor understand students' motivation and choose effective reinforcers that are relevant to these motivations?" These questions should be answered in **further studies**.

Reference

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