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The Learning Styles of Health and Physical Education Students Using the CAPSOL Style of Learning Assessment

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THE LEARNING STYLES OF HEALTH AND PHYSICAL EDUCATION STUDENTS USING THE CAPSOL STYLE OF LEARNING ASSESSMENT

by

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Students in a classroom all receive the information the same way, however, those students most likely learn and process information quite differently. Therefore the format in which it is received can make a large impact on the effectiveness of the instruction. The purpose of this study was to determine the learning styles of health and physical education students using the CAPSOL Styles of Learning Assessment. One hundred ten undergraduate PE students in the college of Health, Physical Education and Recreation (HPER) from Western Michigan University participated in this study during February 2005.

Frequencies and percentages were figured for the students as a whole as well as for each subpopulation. The highest percentages of high preference learning styles were individual learner (54.5%) and bodily-kinesthetic learner (51.8%). It was concluded that students in health and physical education fields prefer to learn individually and with a hands-on approach.

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

All throughout history are recorded methods and strategies for learning and instructing. Educators and researchers have proposed numerous factors and methods of conveying information to students effectively. One of those factors that have been extensively focused upon is the individual learning style of each respective student. Learning styles can be defined as the methods employed by individuals to absorb, process, and retain information. By determining a prominent learning style, instructors could gear teaching to those specific styles of absorbing, processing, and retaining information. Researchers have identified many different types of learning styles over the years.

One of the most notable is Kolb's (1981,1984) learning style model, which includes four basic learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. These modes of learning incorporate a "diverger" learning style, a "converger" learning style, an "assimilator" style and finally an "accomodator" style. Kolb proposed that most learners usually develop only one of the four modes.

Dunn and Dunn (1978) introduced a multidimensional learning style model with subscales composed of environmental, emotional, sociological, physiological, and psychological areas. Each of the subscales investigates different stimuli a student might experience in the classroom. Using this model, several testing instruments were developed to discover students' learning styles.

After a learning style is determined, that person will be able to recognize and overcome any limiting factors in the learning process by shifting the learning process to methods he or she prefers (i.e. auditory learning, visual learning, etc.). Instructors will also know the most productive learning environment possible for a wide range of learning styles of students. Research has shown that a learning environment tailored to an individual's specific learning style is more beneficial and produces greater mastery of the information being conveyed. Dunn, Deckinger, Withers and Katzenstein (1990) issued a homework prescription based on their preferred learning style to 200 college students. Results of their study revealed that marginal and underachieving students' achievement on exams statistically improved 30% compared to a control group that did not receive the homework prescription.

Much of the research on learning styles has been conducted in the last 30 years using Kolb's Learning Style Inventory (1976), Dunn, Dunn, and Price's Productivity Environmental Preference Survey (1982), and Canfield's Learning Style Inventory (1980). The specific learning style inventory being used in this study is known as the Computerized Assessment and Prescription Styles of Learning (CAPSOL) Assessment (Henderson and Conrath, 1991). This particular test was not originally developed for the adult learner, but was developed and geared towards children and young adult learners. CAPSOL examines nine different styles of learning individually without grouping schemes or generalized models. It first looks at three sensory styles of learning: visual, auditory, and bodily kinesthetic. Visual learning is perceived by seeing words and numbers in a book, on charts, or on a

chalkboard. Auditory learning is associated with hearing words or numbers. Bodily kinesthetic learning is associated with experience and self-involvement.

The test investigates individual learning versus group learning. Individual learning is characterized by working alone and remembering information better in a solitary setting. Individual learners are more confident with their own opinions. Group learners strive to learn or study with at least one other person. They value the opinions of others and prefer group interaction.

The test further investigates a student's preferred mode of expression: oral versus written. An oral expressive learner is a student who can easily discuss what they know and talk fluently and comfortably while conveying meaning effectively. Oral responses may show greater knowledge than a written test might indicate. A written expressive learner can write proficient answers on a test to demonstrate their knowledge better than orally. Writing may provide them with a better chance to organize their thoughts.

The last styles of learning CAPSOL evaluates are the overall picture of learning: sequential versus global. A sequential learner arranges thoughts and ideas in a linear fashion and likes neatness and order and step-by-step- instructions. A global learner has the ability to be fluid and spontaneous. They order thoughts randomly and like to create their own way of doing things. They are often termed "big-picture" thinkers.

The original reliability and validity statistics were obtained on a population of 960 fifth through tenth grade students in a test/retest situation

(www.stylesoflearning.com). The test has been further researched using a general population of college students taking a required health and wellness class at Middle Tennessee State University (Bonacci, 1998).

College instructors of health and physical education students encounter a wide variety of students all interested and majoring in the same field. Therefore, describing the preferred learning styles (visual, auditory, bodily kinesthetic, individual learner, group learner, oral expressive, written expressive, sequential learner, and global learner) of those students enrolled in health and physical education fields are important. The results of this study may provide valuable information to college instructors, graduate teaching assistants, and faculty involved in the instruction of health and physical education students because once they are aware of any learning style trends, instruction methods can be geared towards those trends. Specifically, the purpose of the study is to determine preferred learning styles of physical education students using CAPSOL.

METHODS AND PROCEDURES

Subjects and Setting

There were 110 participants in this study, all of whom were either enrolled in The Nature and Basis of Motor Development (HPER 240) or Measurement and Evaluation in Health, Physical Education, and Exercise Science (HPER 315) during the spring semester of 2005 at Western Michigan University. Thirty-five (35) females and 75 males volunteered for the study. Approval for the use of human

subjects was granted from the Human Subjects Institutional Review Board from Western Michigan University.

Design Scheme of the Study

The instructors of each HPER 240 and HPER 315 were contacted and asked permission to administer the CAPSOL learning style instrument during a lab session. Each instructor gave verbal consent and granted permission for the test's administration. The instrument was administered during a pre-identified lab session by a HPER department graduate assistant who was trained by the student investigator. Each student completed the learning styles inventory during the allotted time. Once all of the completed tests were collected, they were scored by the student investigator to determine the preferred learning styles of each individual. The identities of the students were not known to the investigators, but using a numbering system, scores were returned to the instructor for distribution to the students. Only the student and instructor knew the number assigned and the results were given to the student for the identification of their preferred learning styles.

Interpretation of CAPSOL

The raw scores obtained from the students from each question on the CAPSOL learning styles inventory were configured on a Likert scale with values ranging from one to four. The value of one was titled "never like me," the value of two was titled "sometimes like me," the value of three was titled "generally like me," and the value of four was titled "always like me." Each learning style was evaluated with five questions and the total scores for those five questions were calculated with a

high score possible of 20 and a low score possible of 5. Scores ranging from 16 to 20 indicated a "high preference" for that particular learning style, scores ranging from 10 to 15 indicated that the student may utilize that learning style sporadically and was therefore "no preference", and scores ranging from 5 to 9 indicated a "low preference" for that learning style.

Statistical Analysis

Following the collection of the data, all of the raw data from the completed CAPSOL instruments was entered into SPSS database statistical program (SPSS 11.0, Chicago, IL). The statistical objective was to determine the sampling of "high preference and low preference" scores as percentages of the whole and to determine the percentage of high preference scores for each academic major tested and each gender tested. A frequency summary was calculated of the percentage of scores of each sub-scale (visual, auditory, bodily-kinesthetic, individual learner, group learner, oral expressive, written expressive, and sequential and global learner) of students enrolled in HPER 240 or HPER 315. A chi square analysis was then done on the percentages with noticeable differences between subgroups (male, female, etc..).

RESULTS

Subject Demographics

During the administration of the CAPSOL learning styles instrument, demographical questions were asked of 110 students who were enrolled in either

HPER 240 or HPER 315 and participated in the study. The demographics of gender, year in school, and academic major are located in Table 1.

Gender

	Frequency	Percentage
Male	75	68.2
Female	35	31.8

Major

	Frequency	Percentage
Physical Education	82	74.5
Exercise Science	28	25.5

Class Standing

	Frequency	Percentage
Sophomore	18	16.4
Junior	36	32.7
Senior	40	36.4
More than 4 years	16	14.5

Table 1: Demographic of Subjects

Data Collected

The results of the CAPSOL instrument revealed that 57 (52%) of the students considered bodily kinesthetic as a "high preference" mode of learning. In contrast, only 7 (6%) considered it a "low preference." The results also showed that 34 (31%) considered auditory as a "high preference" while only 3 (2%) chose it as a "low preference." For the visual learning style 9 (8%) considered it a "high preference" and 16 (14%) as a "low preference."

Students revealed on the CAPSOL instrument that 60 (55%) preferred to learn individually while only 5 (4%) did not. In contrast, only 6 (5%) chose group learning as a highly preferred style of learning and 33 (29%) chose this as a low preference. The CAPSOL instrument revealed that 37 (33%) people chose oral expression as a "high preference" while 13 (12%) chose this as a low preference. Written expression was chosen by 15 (13%) students as a "high preference" and by 11 (10%) as a low preference. Finally, the tests revealed that 46 (42%) people chose sequential learning as a "high preference" and only 2 (1%) chose it as a "low preference." The data revealed that 12 (11%) people highly preferred global learning as 13 (12%) considered it a "low preference." This data can be found in Table 2.

After compiling the data by gender, major and class standing, "high preference" scores and percentages within subgroups were calculated. Females and males produced similar scores except for the preference of sequential learning and individual learning.

Twenty two (22) of the 35 females (63%) reported a "high preference" for sequential learning while only 23 of the 75 males (30%) did. Also 42 males (56%)

Learning Style Category	"High Preference" (n) and % score	"Low Preference" (n) and % score
Visual Learner	(9) 8%	(16) 14%
Auditory Learner	(34) 31%	(3) 2%
Bodily Kinesthetic Learner	(57) 52%	(7) 6%
Individual Learner	(60) 55%	(5) 4%
Group Learner	(6) 5%	(33) 29%
Oral Expressive Learner	(37) 33%	(13) 12%
Written Expressive Learner	(15) 13%	(11) 10%
Sequential Learner	(46) 42%	(2) 1%
Global Learner	(12) 12%	(13) 12%

Table 2: Samplings of Overall "High and Low Preference" Scores on the CAPSOL Learning Styles Inventory

preferred individual learning while only 15 (42%) of females did. The only noticeable difference between majors was the number preferring bodily kinesthetic learning. Forty four (44) Physical Education students (53%) highly preferred it while only 12 (42%) Exercise Science majors preferred it. The complete data for these can be found in Tables 3 – 5.

Learning Style Category	Gender	"High Preference" (n) and % score
Visual Learner	Male Female	(4) 5.3% (5) 14.2 %
Auditory Learner	Male Female	(21) 28% (12) 34.2%
Bodily Kinesthetic Learner	Male Female	(37) 49.3% (19) 54.2%
Individual Learner	Male Female	(42) 56% (15) 42.8%
Group Learner	Male Female	(3) 4.0% (3) 8.5%
Oral Expressive Learner	Male Female	(23) 30.6% (13) 37.1%
Written Expressive Learner	Male Female	(7) 9.3% (8) 22.8%
Sequential Learner	Male Female	(23) 30.6% (22) 62.8%
Global Learner	Male Female	(5) 6.6% (6) 17.1%

Table 3: Samplings of the "High Preference" Scores on the CAPSOL by Gender

A Chi square analysis was done on those data segments mentioned above to determine the significance. When academic major was compared with bodily kinesthetic learning the p value was 8.655. Between gender and sequential learning

the p value was 14.426. And finally, comparing gender with individual learning produced a p value of 13.654.

Learning Style Category	Academic Major	"High Preference" (n) and % score
Visual Learner	Physical Education Exercise Science	(5) 6.0% (4) 14.3%
Auditory Learner	Physical Education Exercise Science	(25) 30.4% (6) 25.0%
Bodily Kinesthetic Learner	Physical Education Exercise Science	(44) 53.6% (12) 42.8%
Individual Learner	Physical Education Exercise Science	(43) 52.4% (14) 50.0%
Group Learner	Physical Education Exercise Science	(5) 6.0% (1) 3.5%
Oral Expressive Learner	Physical Education Exercise Science	(26) 31.7% (10) 35.7%
Written Expressive Learner	Physical Education Exercise Science	(10) 12.1% (4) 14.3%
Sequential Learner	Physical Education Exercise Science	(32) 39% (13) 46.4%
Global Learner	Physical Education Exercise Science	(8) 9.7% (3) 10.7%

Table 4: Samplings of the "High Preference" Scores on the CAPSOL by Academic Major

DISCUSSION

Results of this study indicated that the preferred learning styles of college students in health and physical education fields are individual learners (54.5 %) and bodily-kinesthetic learners (51.8%). A study on learning styles completed by Dunn and Dunn (1979) found that a general population of students' preferred learning styles were 40% visual and 30-40% tactile/kinesthetic learners. Similarly, Galbraith and

James (1987) showed that the visual learner was the most predominant learning style of five different groups of adult students with diverse educational backgrounds and variable majors. In a study by Pettigrew and Zakrajsek (1985), which assessed the learning style profiles of 104 physical education majors at the University of Idaho, it was found that their

Learning Style Category	Class Standing	"High Preference" (n) and % score
Visual Learner	Sophomore	(1) 5.5%
	Junior	(2) 5.5%
	Senior	(3) 7.5%
	+4 Years	(3) 18.7%
Auditory Learner	Sophomore	(5) 27.7%
	Junior	(7) 19.4%
	Senior	(18) 45.0%
	+4 Years	(3) 18.7%
Bodily Kinesthetic Learner	Sophomore	(5) 27.7%
	Junior	(21) 58.3%
	Senior	(20) 50.0%
	+4 Years	(9) 56.2%
Individual Learner	Sophomore	(11) 61.1%
	Junior	(16) 44.4%
	Senior	(22) 55.0%
	+4 Years	(8) 50.0%
Group Learner	Sophomore	(1) 5.5%
	Junior	(1) 2.7%
	Senior	(4) 10.0%
	+4 Years	(0) 0.0%
Oral Expressive Learner	Sophomore	(7) 38.8%
	Junior	(9) 25%
	Senior	(18) 45%
	+4 Years	(2) 12.5%
Written Expressive Learner	Sophomore	(2) 11.1%
	Junior	(7) 19.4%
	Senior	(5) 12.5%
	+4 Years	(1) 6.2%
Sequential Learner	Sophomore	(7) 38.8%

	Junior	(15) 41.6%
	Senior	(20) 50.0%
	+4 Years	(3) 18.7%
Global Learner	Sophomore	(3) 16.6%
	Junior	(3) 8.3%
	Senior	(4) 10.0%
	+4 Years	(2) 12.5%

Table 5: Samplings of the "High Preference" Scores on the CAPSOL by Academic Standing

preferred learning style was kinesthetic, and learning best with hands-on experiences. The results of this study mirror that of Pettigrew and Zakrajsek with only 8% preferring visual learning while 52% prefer bodily kinesthetic learning. This could be attributed to the hands-on activities and tactile projects of health fields as opposed to visually oriented work of many other fields.

Students in HPER 240 and HPER 315 have a higher preferred percentage score as individual learners (54.5%) than as group learners (5.4%). These scores are similar to those found by Bonacci (1998) in which 58% of college students preferred individual learning as opposed to 10.6% who preferred group learning. A possible explanation for this finding is that as a student proceeds into higher education, the focus is centered more on individually based coursework, such as original research and presentations. They are confident with their own ideas and don't need the opinions of others. These results also may indicate that the preference for group work declines with maturity or further education. Those students pursuing higher education are predominantly the ones who prefer to work alone (Terry, 2002).

Results indicated that students scored a slightly higher percentage of high preference scores as oral expressive learners (33.6%) than they did as primarily written expressive learners (13.6%). This seems to parallel the higher preference for auditory learning (31%) as opposed to visual learning as stated previously. This also may complement the health and physical education fields where much of the information is conveyed verbally rather than written down (Linares, 1999).

Finally, the results indicated that students scored a higher percentage of high preference scores as sequential learners (41.8%) than they did as global learners (10.9%). This seems to indicate that the students in health and physical education fields prefer a step-by-step instruction method and are more aware of the detail and organization of a project than they are as "big picture" thinkers and creative developers. This could be attributed to the fact that health and physical education fields center on detail and step-by-step methods rather than larger overall concepts (Linares, 1999).

Gender Results

When assessing the percentage of scores of "high preferences" with genders very little difference was found between males and females. This outcome could be a result of all students in a particular field preferring certain learning styles despite their gender. It was found that for the sequential learning style 62.8% of females reported a high preference for this mode of learning while only 30.6% of males highly preferred it. Females seem to follow a step-by-step method for learning in general

more than males, however further research would need to be conducted to explore this hypothesis.

Academic Major Results

In analyzing the results of preferred learning style of academic majors, the undergraduates majoring in each of the three majors represented, Physical Education, Exercise Science, and Athletic Training, presented no significant differences in their "high preference" modes of learning. With only slight variations in scores it can be assumed that each of the majors are similar in their core and basic methods of instruction and students choosing each of these majors has similar preferences for how they learn and perceive information. Therefore, most of the information they learn and the tasks they must perform are all of a common style. The overall results, which indicated a "high preference" for Bodily Kinesthetic, Individual, Oral Expressive, and Sequential Learning, can be applied to each of the three majors as well.

Academic Standing Results

After analyzing the results of the different academic standings it was found that all of the levels seemed to mirror the results found for the group as a whole. The highly preferred modes of learning were Bodily Kinesthetic learning and Individual learning. At any level of education, the basic concepts taught are meant to prepare the student for the next level, or for further education. Therefore, students in a particular field seem to prefer the same styles of learning no matter the number of years of previous schooling. These results are in agreement with the study by Linares

(1999) of 301 allied health students in which no significant learning style differences were found between the students even though their years in school differed.

Implications for Instructors

This research provides both information and implications in regard to learning styles about the students who enrolled into two core curriculum health classes. The findings from this study have professional implications for future instructors of these classes and other classes in health and physical education.

The first implication is that it is important for instructors to recognize, accept, and understand student diversity in regards to learning typologies. Throughout this study, gender, academic major, and class standing preferred learning style differences were found. Acceptance of a specific learning style in each student can help to develop self-esteem, decrease test anxiety, and ultimately enhance academic performance. Instructors need to use a variety of teaching techniques to reach all of the students and their individual styles of learning and processing information.

For example, to enhance the learning of visual learners an instructor might draw a diagram or provide pictures of what she is trying to explain. For auditory learners it could be beneficial to verbally repeat information they have read and provide audio tapes or other sound devices relating to a subject. Bodily kinesthetic learners would enjoy doing an activity or building something that would incorporate the subject matter. Individual and group learners should be given the option to work alone or in groups for some activities to enhance their absorption of the material. Oral expressive learners might benefit from questions asked of them about a lecture

to ensure understanding while a written expressive learner would rather write down the answers to questions or draw conclusions on paper. And finally, a sequential learner might need an outline for a project or specific guidelines for a paper while the global learner would simply prefer a topic and the freedom to choose how to approach it and present it.

The second implication of this study reveals that the majority of students are bodily kinesthetic learners and individual learners. As a result, instructors of health and physical education classes should deliver a majority of the information with teaching techniques that cater to the needs of this learning style in the classroom. Hands-on and tactile methods of learning should be utilized as well as letting students learn and discover on their own rather than in a group.

A third implication is simply the identification of preferred learning styles, as students may not understand how to utilize all of their strengths in the classroom. To achieve this, instructors need to determine each students learning style and help them understand independently their preferential learning style strengths and weaknesses. It is important to teach students how to effectively use various learning strategies based on their learning style.

CONCLUSION

In conclusion, the results of the study indicate that the preferred learning styles of students who enrolled in health and physical education courses were primarily bodily kinesthetic and individual learning while the other learning styles varied in their degree of preference among the students. To reinforce the preferred

learning styles of the students in these courses, teaching strategies should be used that will utilize these styles of learning. Instructors should also evaluate their students' preferred learning styles in the future to note any trends or significant findings that may effect how they should instruct their classes. Further research should be conducted on larger populations to determine if the trends found in this study hold true for a more general population and whether those trends are significant in comparison with any other variables. This research will also encourage instructors in the future to approach their classrooms teaching towards the students' specific learning styles in all fields and academic majors.

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Appendix A
General Information Survey

The Learning Styles of Health and Physical Education Students using the CAPSOL Style of Learning Assessment.

General Information Survey

Please return this survey with the completed test if you wish to be included in the study.

1. Test number _____

2. Gender (please circle) M F

3. Age _____

4. Major _____

5. Minors _____

6. Class (please circle)

Freshman

Sophomore

Junior

Senior

More than 4 years

Appendix B
CAPSOL Style of Learning Assessment

CAPSOL© Style of Learning Assessment-Form B

By: John M. Coarath Ph.D. & Howard Henderson Ed.Sp.

Name _____ Location _____

		Always Like Me 4	Generally Like Me 3	Sometimes Like Me 2	Never Like Me 1
		(Please circle the answer which best describes you)			
1.	I remember what I read better than what I hear.	4	3	2	1
2.	I learn better if someone lectures to me rather than reading silently to myself.	4	3	2	1
3.	When I make or create learning tools for my studies it helps me to remember.	4	3	2	1
4.	I complete more work when I work alone.	4	3	2	1
5.	When I really have a lot of work to do I like to work with 3 or 4 colleagues.	4	3	2	1
6.	I can say the answer to a question better than I can write it.	4	3	2	1
7.	Assignments which I write are easy for me to do.	4	3	2	1
8.	I like to follow step by step directions.	4	3	2	1
9.	I like to draw pictures.	4	3	2	1
10.	I understand a problem that is written down better than one I hear.	4	3	2	1
11.	When I do math problems, I say the numbers to myself.	4	3	2	1
12.	I learn best by building, baking or doing things.	4	3	2	1
13.	I like to work by myself.	4	3	2	1
14.	I like to learn in a group because I learn from others in my group.	4	3	2	1
15.	I would rather tell how something works than write how it works.	4	3	2	1
16.	I like doing written assignments.	4	3	2	1
17.	I like to organize my work.	4	3	2	1
18.	I like to daydream.	4	3	2	1
19.	I would rather read a story than listen to a story.	4	3	2	1
20.	I remember information I hear better than information I read.	4	3	2	1
21.	I like to accomplish tasks with my hands, like repairing objects, etc.	4	3	2	1
22.	I learn best when I study alone.	4	3	2	1
23.	I complete more work when I work with someone.	4	3	2	1
24.	I think I speak better than I write.	4	3	2	1
25.	The information I write on paper sounds better than when I talk about the information.	4	3	2	1
26.	I usually have a place for everything.	4	3	2	1
27.	I like to work on many things at one time.	4	3	2	1
28.	I remember instructions best when I read them.	4	3	2	1
29.	Saying something I am trying to remember over and over helps me remember better than writing an item over and over.	4	3	2	1
30.	I like to make things with my hands.	4	3	2	1
31.	I study best when no one is around to talk or listen to.	4	3	2	1
32.	I can learn more working with a group of my classmates than I can working by myself.	4	3	2	1
33.	I would rather tell about something I have learned rather than writing it out.	4	3	2	1
34.	I would rather write the answers to a test than tell the answers.	4	3	2	1
35.	I make lists for things I have to do.	4	3	2	1
36.	I often have trouble finishing tasks I am supposed to do.	4	3	2	1
37.	I do well in classes where most of the information has to be read.	4	3	2	1
38.	I understand more from talking about a subject in class than from reading about it.	4	3	2	1
39.	I understand what I have learned when I make something for the subject.	4	3	2	1
40.	I can't think as well when I work with someone else as when I work alone.	4	3	2	1
41.	I like to study with other people.	4	3	2	1
42.	I would rather tell a story than write it.	4	3	2	1
43.	My thoughts that I write on paper or a word processor sound better than when I talk about the topic.	4	3	2	1
44.	I work on one thing until it is finished.	4	3	2	1
45.	I like to create my own way of doing things.	4	3	2	1

DIRECTIONS: Read each question. Circle the four(4) if the statement always describes you. Circle the one(1) if it is never like you. Circle the two(2) if it is sometimes like you, and circle the three(3) if it is generally like you. Please respond with the first answer that comes to mind. Please do not look back and review previous answers. To score, tear off this sheet when finished.

Appendix C
Approval letter from the Human Subjects Institutional Review Board

WESTERN MICHIGAN UNIVERSITY
Human Subjects Institutional Review Board

Centennial 1903-2003 Celebration

Date: November 9, 2004

To: Debra Berkey, Principal Investigator
Michael Miller, Co-Principal Investigator
Erin Palpant, Student Investigator for thesis

From: Amy Naugle, Ph.D., Interim Chair

Re: HSIRB Project Number: 04-11-03

This letter will serve as confirmation that your research project entitled "The Learning Styles of Health and Physical Education Students Using the CAPSOL Style of Learning Assessment" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: November 9, 2005

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