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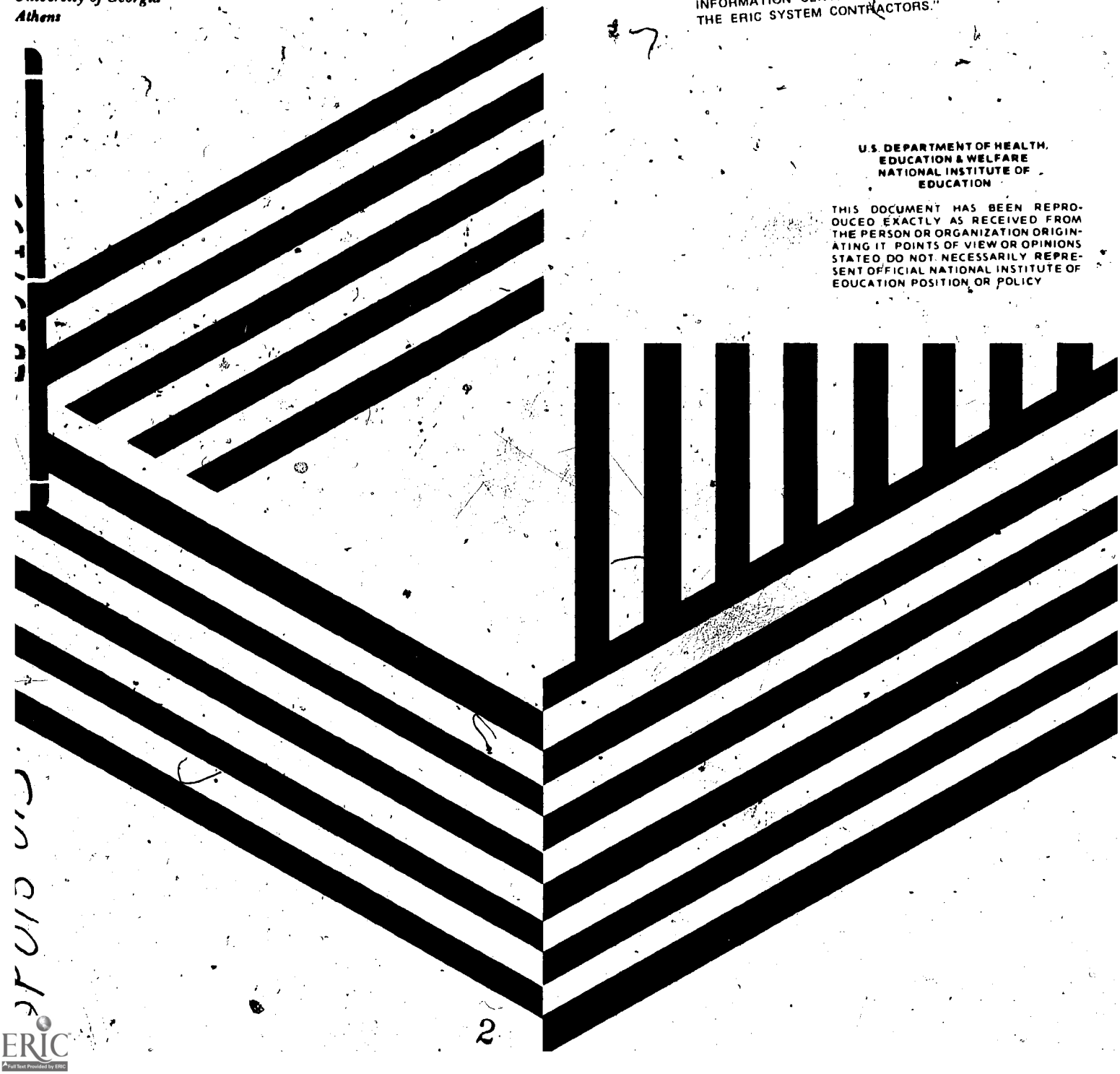
ABSTRACT

This monograph is a progress report on efforts to develop curriculum theory for physical education. It focuses on the development of individual human motor performance and the utilization of selected movement learning media to achieve specified educational outcomes in relational perception and orientation in space. Concerned essentially with the development of a purpose-process conceptual framework for curricular decision-making, the document seeks to relate proposed curriculum theory to the more comprehensive theories underlying the entire discipline of human movement phenomena. A taxonomy of human movement processes is outlined for utilization in: (1) defining educational objectives; (2) sequencing learning materials; (3) providing augmented feedback to learners; and (4) evaluating student progress. The proposed aim is to highlight the potential of planned purpose-process interactions for enriched movement learning experiences resulting in sounder physical education curricula. A model for decision-making and a high school physical education curriculum guide are provided in appendices. Diagrams and tables are presented throughout the document, as well as a bibliography at the end. (Author/DS)

Curriculum Design: Purposes and Processes in Physical Education Teaching–Learning

Ann E. Jewett
University of Georgia
Athens

Marie R. Mullan
University of Georgia
Athens



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FOREWORD

The curriculum is the heart of the teaching-learning process. Basic to construction of any curriculum is the creation of the design to be utilized. It is to the formulation of such a pattern that Ann Jewett and Marie Mullan direct their attention in this publication.

For years, physical educators have been tortured by the decision making regarding the content of the curriculum. Obviously, all activity is not physical education. Obviously, recreation is not physical education. Obviously, all sports are not a facet of physical education. Obviously, human movement involves more than education by, for and through physical reactions. What then is physical education and what should comprise the curriculum? Should frisbee replace volleyball? Is trap shooting an alternative for archery? Is there a place for courses in "Literature and Sport," "The Meaning of Movement," "Aggression and Activity?" These and many other questions are more likely to be answered with consistency if we understand and employ the ideas set forth by Jewett and Mullan. This publication develops and elucidates concepts which have seldom been exposed and thus should be of significant use to practitioners and theoreticians alike.

The National Association for Sport and Physical Education is continually attentive to the importance of curriculum design and it is with pleasure that the work done in this area by Jewett and Mullan is presented. The American Alliance for Health, Physical Education and Recreation recommends this publication as a basic construct in the area of curriculum planning. It is the hope of all who design curriculum that the publication will cast light on some of the shadows of concern which are inherent in curriculum construction. Through the work of Ann Jewett and Marie Mullan, under the auspices of NASPE, we have moved one step closer to promising programs and sound systems in physical education.

Celeste Ulrich
The University of North Carolina
at Greensboro

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This project reflects the work, judgments and professional expertise of many individuals. The authors accept responsibility for the manuscript in its present form; the writers who have contributed the numerous illustrations are acknowledged appropriately in the text. Many others have played important roles in the development of the Purpose-Process Curriculum Framework and in the design and production of the publication. The following colleagues are identified with appreciation.

Initial directions were established by the Curriculum Commission of the Physical Education Division of AAHPER meeting in May 1966. The following individuals attended the meeting:

Anita Aldrich	Ann Jewett
Roscoe Brown	Gerald Kenyon
Hazel Dettman	Roswell Merrick
Bernard Dolat	Helen Starr

A physical education curriculum research planning conference was held in Washington, D.C. July 18-20, 1966. This meeting was attended by the following participants:

Lavonia Allison	Ann Jewett
William Anderson	Perry Johnson
Pearl Berlin	Gerald Kenyon
Camille Brown	Roswell Merrick
Roscoe Brown	John Nixon
Bernard Dolat	Frances Stuart
Thomas Evaul	

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Ruth Abernathy	Phyllis Hill
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Max Beberman	James B. Macdonald
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Rosalind Cassidy	John E. Nixon
Dixie Bob Gowin	Celeste Ulrich
J. Thomas Hastings	D.B. Van Dalen
Laura J. Heulster	Gwen Waters

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The development of the actual conceptual framework is largely the work of the co-authors and the following persons:

Gretchen Brockmeyer	Douglas F. Knox
Peggy Chapman	Sandra Knox
Sheryl Gotts	Marilyn LaPlante
Wilma Harrington	Sarah Robinson
Laura Heulster	M. JoAnne Safrit
L. Sue Jones	Lee Smith

The following individuals contributed to the project as graduate research assistants at the University of Wisconsin and the University of Georgia.

Gretchen Brockmeyer	Marilyn LaPlante
Sheryl Gotts	Mary Neikirk
L. Sue Jones	Vera Rimnac
	Sarah Robinson

Graduate research studies which have contributed to the development of the Purpose-Process Curriculum Framework in its present form have been completed by the following researchers:

Gretchen Brockmeyer	Wilma Harrington
Peggy Chapman	L. Sue Jones
Rod Dishman	Marilyn LaPlante
Daphne Hall	Marie Mullan
	Ray Anne Shrader

Graduate students at the University of Wisconsin, Arnold College of the University of Bridgeport, State University of New York at Buffalo, and the University of Georgia have contributed their reactions, creative ideas and scholarly insights. A few of their materials are used as illustrations in the text. Much other excellent work could not be included.

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Ann Jewett
Marie Mullan
Athens, Georgia
May 1977

INTRODUCTION

This monograph is a progress report on efforts to develop curriculum theory for physical education. It begins with a particular body of knowledge subsumed under the "discipline" of "Human Movement Phenomena."[1] It is limited to that area of study which focuses on the development of individual human motor performance and the utilization of selected movement learning media to achieve specified educational outcomes in relational perception and orientation in space. Its purposes are to relate proposed curriculum theory to the more comprehensive theories underlying the entire discipline of human movement phenomena; to elaborate a particular conceptual framework for physical education curricular decision-making; and to encourage physical education teachers and curriculum specialists to utilize conceptual approaches in designing local curricula. A framework developed through a logical, philosophical analysis of the common human purposes for moving is presented. These purposes provide the structure for defining curricular goals and selecting activity content for the individual learner. A taxonomy of human movement processes which can be utilized in defining educational objectives, in sequencing learning materials, in providing augmented feedback to learners, and in evaluating student progress is outlined. The aim is to highlight the potential of planned purpose-process interactions for enriched movement learning experiences resulting in sounder physical education curricula.

The identification and description of a theoretical structure of physical education as an area of scholarly study and research has been a national professional concern since 1961.[2] The development of a conceptual framework for physical education curricular decision-making has been a parallel goal of the Physical Education Division of the American Alliance for Health, Physical Education, and Recreation since 1964.[3] The theoretical structure project culminated in *Tones of Theory*, a report describing "a tentative perspective," in 1972. The authors concluded, in part,

> Today's tentative perspective should be the cutting edge of current practice . . Continual attention to establishing constructs and designing theory is imperative . . .[4]

The present monograph will help to take a next step in theory-building and start to bridge the gap in articulation of a broad theory of physical education as a meaningful day-to-day teaching-learning experience. In *Tones of Theory*, *theory* was defined as "a systematic organization of concepts into a logical scheme of relationships."[5] This monograph describes a more operational level of theorizing and hypothesis formulation. It narrows the scope of the broad theoretical structure for physical education to conceptualizing focused on the planning of educational programs dealing with human movement phenomena. It elaborates the "process-media-result relationship."[6] *Such activities will not result in the specification of recommended program content; but the conceptual framework presented should provide guidance to the local curriculum specialist in making key physical education curricular decisions.*

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[1]Celeste Ulrich and John E. Nixon, *Tones of Theory* (Washington, DC: American Association for Health, Physical Education, and Recreation, 1972), p. 11.

[2]Ulrich and Nixon, *Tones of Theory*, pp. 1-5.

[3]American Association for Health, Physical Education, and Recreation, "Cooperative Development of Design for Long-Term Research Project Directed Toward the Identification and Evaluation of a Conceptual Framework for the Curriculum in Physical Education, Grades K-16," Final Report Contract No. OEC-2-6-068314-0743, mimeographed (Washington, DC: the Association, May 9, 1967).

[4]Ulrich and Nixon, *Tones of Theory*, p. 26.

[5]Ulrich and Nixon, *Tones of Theory*, p. 10.

[6]Ulrich and Nixon, *Tones of Theory*, pp. 15-19.

Note: Occasional use of the male pronoun in this book is for convenience only. The male noun and pronoun are used to include both sexes.

WHAT IS CURRICULUM?

Definitions of *curriculum* as consisting of all experiences conducted under school auspices became established in the 1930's and were not generally questioned until the 1960's. In the 1970's genuine controversy exists concerning the definition of the term. The predominant current view of curriculum encompasses both "the operational statement of the school's goals" and "the operational consequence of the school's goals."[1] The authors support Macdonald's definition of curriculum as the system of "planned actions for instruction."[2] Throughout this discussion, curriculum is defined as a plan for instructional action based on a set of decisions intended to be reflected in the actions of learners.

Instruction, by contrast, is "the system for putting the plan into action."[3] Macdonald's definitions are useful in distinguishing among four inter-related systems:

> Thus, teaching is defined as the behavior of the teacher, learning as the change in learner behavior, instruction as the pupil-teacher interaction situation and curriculum as those planning endeavors which take place prior to interaction.[4]

A comprehensive *curriculum theory* must take into account the nature of the knowledge to be learned, the nature of the student who would learn it, and the nature of the societal responsibility shared by teacher and student, as well as strategies of instruction.[5] It is probable that several years may elapse before a comprehensive curriculum theory is developed. Subtheories can be constructed now, however, and later developed into more comprehensive theory.

The term *curriculum design* is considered most descriptive of current efforts in developing curriculum theory or subtheories. A curriculum design is defined as the basic organization and plan for action for developing the scope and sequence of subject matter. Any curriculum design reflects a theoretical position; but a curriculum design is more limited in scope than a curriculum theory.

Curriculum models take many forms. Any curriculum model is a symbolic representation of the interrelationship among key concepts. Models can be uni- or multi-dimensional. Many persons find three-dimensional models and mobiles most useful as curriculum models because of the complexity and the dynamic nature of the crucial interrelationships. A satisfactory curriculum model must enable one to ask questions; it should also offer clues as to how questions may be answered.

A *conceptual framework* for a curriculum is a system within which to select instructional actions. It is a model or structure which attempts to systematically describe the curriculum by identifying and operationally defining the elements and the ways in which they are or may be related to each other.

All of the above terms apply in the study of *physical education curriculum*. Physical education in an educational milieu has long been recognized as the school subject using games, sports, dance, gymnastics and other movement activities as media for learning. More recently, physical education has been viewed as the series of school programs concerned with the development and utilization of the individual's movement potential. Currently educators attempting to realize the full potential of this area of human experience are seeking to extend movement concepts to the needs of learners of all ages in both school and non-institutional contexts. Physical education is increasingly viewed as personalized, self-directed learning, using selected movement learning media to achieve individual human goals. A physical education program can be defined as a sequence of experiences in which an individual *learns to move* as he *moves to learn*.[6] Because the term *physical education* does not accurately reflect all the central concepts emphasized in current definitions, a growing number of scholars specializing in this field of study are seeking a new designation for the discipline and for the curriculum dealing with human movement phenomena. This concern is acknowledged, although discussion of the problem is outside the scope of this report.

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[1]Arthur W. Foshay, "Curriculum," in *Encyclopedia of Educational Research* (New York: Macmillan, 1969), pp. 275-280.

[2]James B. Macdonald, "Educational Models for Instruction — Introduction," in *Theories of Instruction* (Washington, DC: National Education Association, 1965), pp. 1-7.

[3]Macdonald, "Educational Models," p. 5.

[4]Macdonald, "Educational Models," p. 6.

[5]Foshay, "Curriculum," p. 276.

[6]American Association for Health, Physical Education, and Recreation, *This is Physical Education* (Washington, DC: the Association, 1965).

A PURPOSE PROCESS CURRICULUM FRAMEWORK FOR PHYSICAL EDUCATION

It is generally accepted that any particular curriculum should be developed within some conceptual framework. LaPlante[1] reviewed those conceptual frameworks proposed for curriculum development in physical education and evaluated them according to four criteria: (1) the important concepts of the body of knowledge are represented; (2) the concepts are relevant to man's total development; (3) the processes of knowledge acquisition receive attention; and (4) the framework is dynamic and flexible to reflect societal change and allow for the inclusion of new knowledge. While many plans for organizing physical education content have been developed and published, LaPlante was able to identify only eight which qualified as demonstrating development from a conceptual framework: the Stanley,[2] Tillotson,[3] Battle Creek,[4] Mackenzie,[5] Pye and Alexander,[6] Austin,[7] and Brown and Cassidy[8] frameworks, and the Purpose Process Curriculum Framework.

The Purpose Process Curriculum Framework was initiated in 1964 under the auspices of the Physical Education Division of AAHPER. Its development has continued through long-term efforts of small groups of physical education curriculum specialists supported by broad participation of AAHPER members. The authors are convinced that the PPCF has several distinct advantages over other proposed conceptual frameworks for curricular decision-making in physical education.

1. The PPCF provides for the selection of content in terms of its meaning to people. It is postulated on the premise that each individual person may seek personal meaning through any combination of the shared movement goals.
2. The purposes, as defined, permit broader scope for local curricular decision-making within a single consistent conceptual scheme than any other conceptual framework which has been developed in any detail.
3. The processes of learning are viewed as equally important; the PPCF is probably the only conceptual framework which offers a scheme for giving attention to movement processes as a significant dimension of physical education curricular decision-making.
4. The processes, as described, permit focus on the complete range of movement processes, including creative movement, rather than limiting attention to skill acquisition processes.

The Purpose Process Curriculum Framework is based on the assumption that the primary concern of physical education is the individual human being moving in interaction with his environment. The PPCF encompasses two major dimensions: purpose and process. The purpose dimension results from a logical analysis of the functions of human movement in achieving the goals of man; these have been organized as the three key concepts of individual development, environmental coping, and social interaction. It is further hypothesized that the three key concepts may be viewed as including seven major purposes and twenty-two purpose elements or sub-purposes.

The second or process dimension of the PPCF has been developed in the form of a classification scheme for identifying the major types of movement operations. The three key process concepts of generic, ordinative, and creative movement have been hypothesized and seven movement process categories described. The focus is on learning processes and the attempt has been to differentiate important learning operations in order to facilitate improvement of instruction.

These relationships are symbolized graphically in Figures 1 and 2. Figure 1 is a photographic representation of a three-dimensional model developed by Robinson.[9] A mobius strip suspended within a tetrahedron symbolizes the individual moving in interaction with the environment. The three key purpose concepts form the base of the tetrahedron; the three key process concepts form the sides. Figure 2 is a schematic representation emphasizing the analysis of each of the two dimensions and the relationships among the purpose elements and the process categories. The purpose and process dimensions are each discussed in more detail in the sections which follow.

Mobius = individual person in interaction with his environment

Purpose-oriented concepts		Process-oriented concepts	
ID	Individual Development Through Movement	gm	generic movement
ENV	Environmental Adaptation and Control through Movement	om	ordinative movement
COM	Expression and Communication through Movement	cm	creative movement

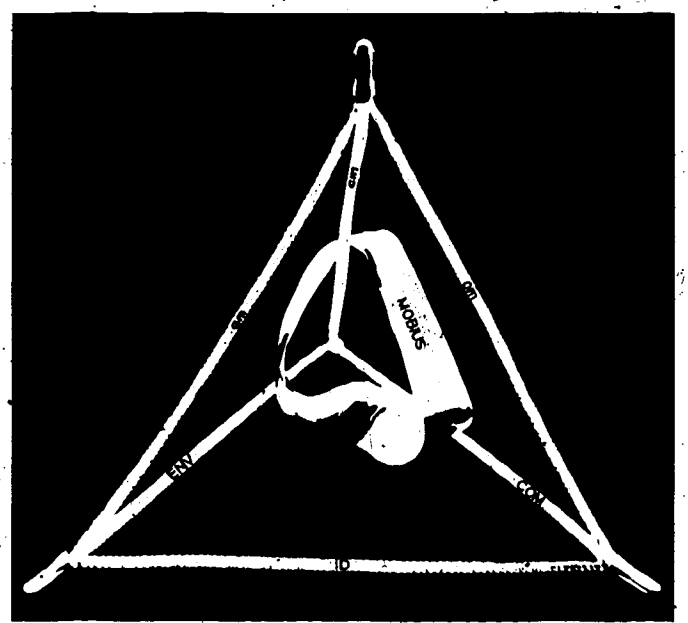


Figure 1. Three Dimensional Model of the Purpose Process Curriculum Framework

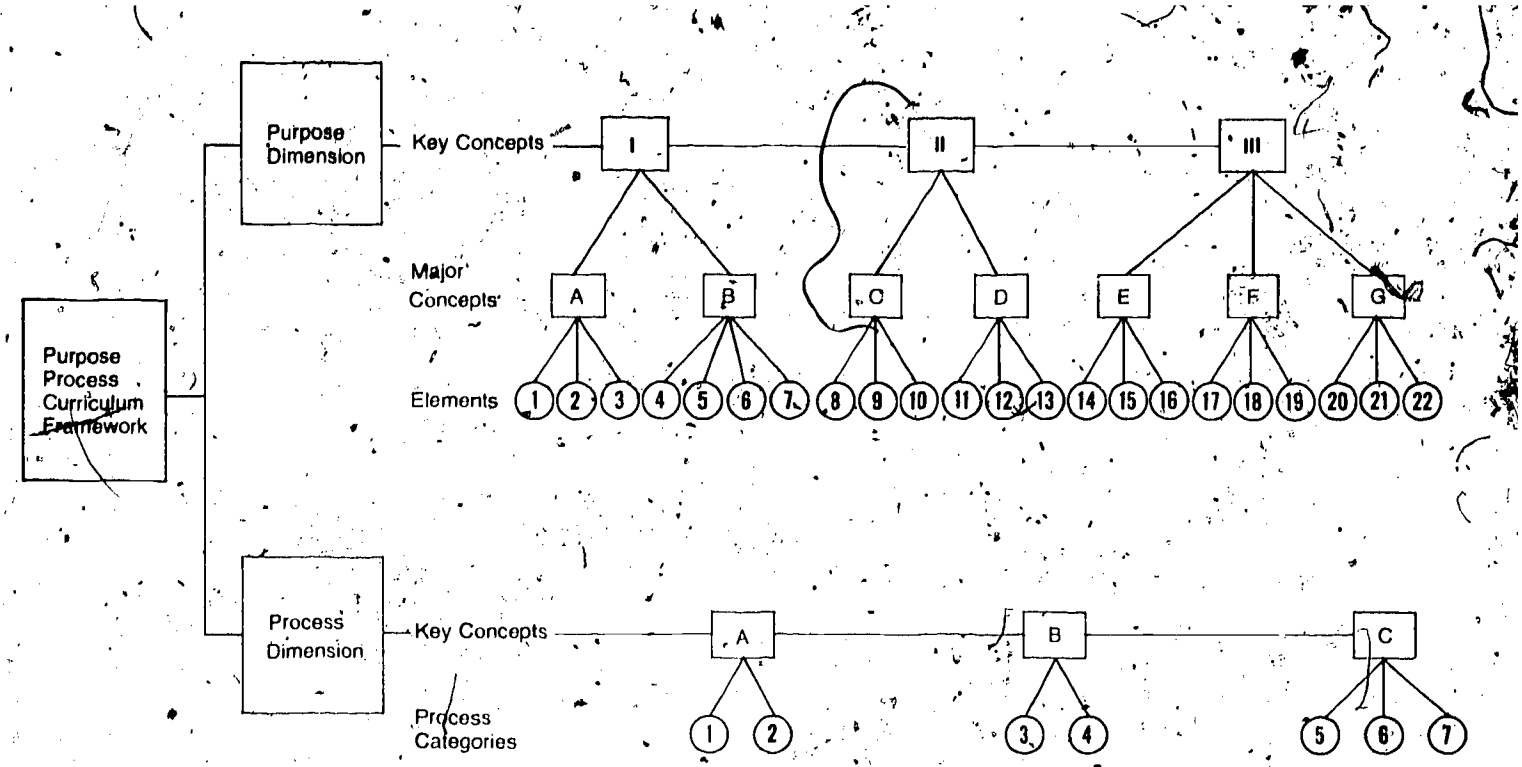


Figure 2. Schematic Representation of Purpose-Process Curriculum Framework[10]

[1]Marilyn J. LaPlante, "Evaluation of a Selected List of Purposes for Physical Education Using a Modified Delphi Technique" (Doctoral dissertation, University of Wisconsin, 1973).

[2]Sheila Stanley, *Physical Education: A Movement Orientation*, (Toronto: McGraw-Hill of Canada, 1969).

[3]Joan Tillotson et al, "A Program of Movement Education for the Plattsburgh Elementary Schools," Final Report of Title III Elementary and Secondary Education Program (Plattsburgh, NY Public Schools, 1969).

[4]Paul Vogel, "Battle Creek Physical Education Curriculum Project," *Journal of Health, Physical Education, Recreation* 40:1969, 25-29.

[5]Marlin M. Mackenzie, *Toward a New Curriculum in Physical Education* (New York: McGraw-Hill, 1969).

[6]Ruby Lee Pye and Ruth Hamlnock Alexander, *Physical Education Concepts: A Teaching-Learning Guide* (Middletown, KY: The Maxwell Co., 1971).

[7]Patricia L. Austin, *A Conceptual Structure of Physical Education for the School Program* (Ann Arbor, MI: University Microfilm, 1965).

[8]Camille Brown, "The Structure of Knowledge of Physical Education," *Quest* 9:1967, 53-67.

[9]Sarah M. Robinson, University of North Carolina-Greensboro. (Unpublished Paper, 1969).

[10]L. Sue Jones, "The Construct of Body Awareness in Space as Reflected through Children's Ability to Discriminate Directions, Levels, and Pathways in Movement" (Doctoral dissertation, University of Wisconsin, 1974), p. 60.

HUMAN MOVEMENT PURPOSES AS GOALS OF PHYSICAL EDUCATION

Human beings of all ages have the same fundamental purposes for moving. The child needs movement learnings which will function meaningfully in his real world; the youth also needs physical education which will aid him in becoming a fully functioning adult; the adult needs movement activities which will permit continuing self-actualization and more nearly complete individual-environment integration. The same key purposes can be used to design programs of movement opportunities for all persons, although specific goals vary and individual experiences must differ. Man learns to move to achieve these human purposes. A curriculum intended to transmit society's essential knowledges and to improve the quality of life for all citizens must certainly include opportunities to acquire the means by which these movement purposes can be fulfilled. A physical education curriculum designed within a framework of common movement purposes can provide scope for instruction appropriate to the pursuit of related but varying goals of individual learners.

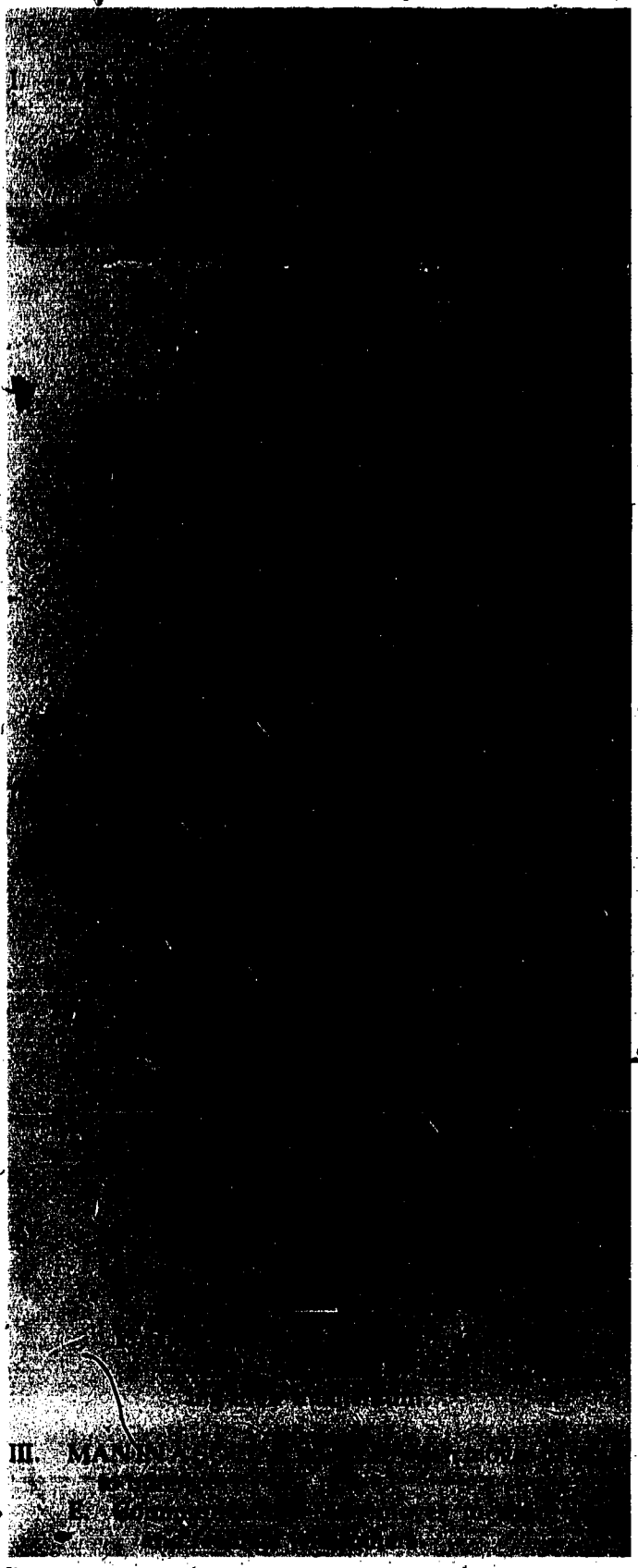
What Functions Does Movement Serve in Human Ecology?

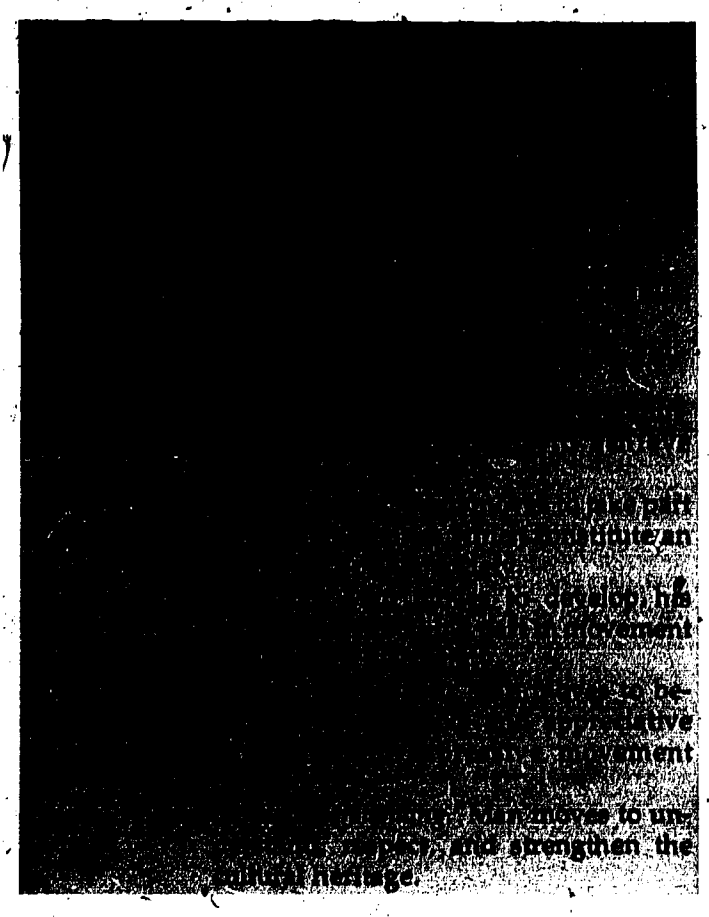
Professional leaders in physical education agree that the interaction of the individual and the environment in movement is a central concept. As expressed by Brown and Cassidy:

> Human movement is the change in position of man in time-space as a result of his own energy system interacting within an environment. Human movement is expressive and communicative and in the interactive process changes both the individual and the environment . . . The individual and the environment are in an interacting unity in movement in which each changes and/or develops through the interaction.[1]

Each person interacting in his natural and social environment shares certain human movement goals.

The Purpose Process Curriculum Framework includes a purpose framework postulated on the premise that each individual person may seek personal meaning through any combination of the shared human movement goals. It includes 22 purpose elements for identifying the content of physical education experiences. It is emphasized that a "purpose" in this context identifies a unique way of finding or extending personal meaning through movement activities. The 22 purpose elements are not limited to voluntary goal-setting in physical education classes by either teachers or students. In a broader sense, they identify the various ways in which movement activities have been meaningful to individual persons. Thus, it is hypothesized that these represent potential avenues to other members of the species for enriching their lives through movement activities. It follows that physical education curricula should present to individuals opportunities to become aware of these possibilities and to develop personal abilities appropriate to their realization. These purposes are listed and defined below.





How Do Movement Learning Media Serve These Purposes?

One of the primary reasons for clarifying the possible purposes human beings have in moving is to provide a basis for curricular decision-making in physical education. If the full range of purposes for voluntary human movement can be determined, direction is indicated for school programs emphasizing the development of individual human movement abilities. Curricular goals can be established in terms of the desired priorities. Short-term objectives can be identified and developed in accordance with the priority decisions. Physical education content can be selected to permit educational emphasis on appropriately related movement activities. Instructional strategies can be chosen and modified so as to maximize the probabilities of effective learning. All of this is more likely to occur if curriculum planners and teachers have analyzed potential purposes and know which purposes are of most significance to the learners who are to be served.

The first question to be answered is: "Who is this physical education program for?" Are we planning for children, for adolescents, for adults, for single sex or coeducational groups? Are the learners using their movement skills in rural, suburban, or urban environments; in temperate, hot, or severely wintry climates; in poverty, middle class, or affluent surroundings; in recreational, vocational, or therapeutic circumstances? Are tentative movement purpose selections being directed toward a "typical" population or a group with some special educational need? All of these factors will affect the choice of particular movement purposes to be emphasized and the development of curricular goals and content. This first stage in curriculum planning results in identification of the learners and becoming familiar with the circumstances and the environments in which they will learn and utilize movement skills and knowledges.

Given some basic understandings of the students and their world, it is appropriate to focus on the second question: "Why do these persons choose to participate in movement activities?" Both logical and empirical approaches are useful in considering this question. Educational practice generally has been based on logical analysis. Curriculum planners charged with making decisions about physical education content at all levels have usually reasoned that the primary objectives were health and fitness, personal pleasure or satisfaction from physical recreation, and the development of selected neuromuscular skills for immediate or future vocational or recreational use. School programs in the U.S.A. have been directed toward these general objectives for the past half century.

The 22 movement purposes listed above represent a contemporary extension of logically identifiable concepts. The purpose framework reflects the combined efforts of many physical educators working together over a 10-year period through a series of consensus-seeking techniques. The content validity of this set of purposes has been evaluated by LaPlante[3], using a modified Delphi technique with a panel of approximately 200 judges selected to secure judgments from five groups: curriculum theorists, human movement researchers, state directors of physical education, city and county supervisors of physical education and teachers of physical education. These professional educators, selected through the use of AAHPER membership lists, demonstrated substantial consensus on the importance of these purposes as desired student learning outcomes. Not only did they agree upon the importance of these purposes, ranking highest circulo-respiratory efficiency, joy of movement, neuro-muscular efficiency, participation, and self-knowledge. They also agreed on differences for present and future educational development, rating self-knowledge, awareness and expression as more important in the future, and rating competition and object projection as less important for future than for present students. Today's best physical education programs probably reflect professional judgments about both present and future importance to learners of these purposes or ways of seeking personal meaning through physical activity.

Undoubtedly, many students participate in the activities offered in physical education curricula because this is the expectation; only recently has student choice been a factor in curriculum development. It is now possible not only to invite students to select particular activities, but also to determine how they view purposes for human movement. Chapman[4] investigated the feas-

ibility of utilizing the student as a data source in making curriculum decisions. Using a semantic differential instrument, she evaluated the affective responses of 420 seventh-, ninth-, and eleventh-grade students to the same 22 purposes for human movement. The instrument permitted analysis in two dimensions, likeability and utility. The data demonstrated that student attitudes toward the purposes differed significantly and that the more mature students were more discriminating. The analyses also provided evidence that students are able to perceive that some purposes which they may not particularly "like" can be "useful." Present evidence suggests, in addition, that student views concerning the importance of particular purposes may not correspond to those of educators. Students in the Chapman study, for example, preferred and perceived as more useful the movement purposes of teamwork, relocation, neuromuscular efficiency, circulo-respiratory efficiency, and mechanical efficiency. Such findings are especially important in demonstrating that students can play a much more meaningful role in rational curriculum planning.

Movement learning media thus serve educational purposes in a variety of ways. They facilitate the achievement of desired outcomes in accordance with the uniqueness of the individual learner. From among the total range of potential purposes, those to be emphasized should be selected in terms of local needs and circumstances. Students pursuing local physical education curricula select their individual educational goals to fit personal interests and purposes to be realized. The question of which movement learning media or physical education subject matters will be utilized then has multiple answers. Various activities such as basketball, badminton, orienteering, rope-jumping, or swimming can be "taught" differently to achieve different purposes. For example, instructional techniques and learning experiences in swimming will differ considerably if the primary emphasis is on the development of circulo-respiratory efficiency in contrast to acquiring specific skills for recreational participation. A single activity in which many students participate may serve different purposes for the individual students within the group. Innovative learning activities may be selected or developed specifically to strengthen particular purpose concepts. Ultimately, the value of the physical education experience is in individualization of purpose and in the design of learning environments to maximize opportunity for the development of personal meaning through movement experience.

The responsibility for curriculum design must be retained at the local level. Yet all learners should have access to programs which provide for the development of each of the seven major purpose concepts. Once aware of the potential of physical activity in each of these areas, the learner may appropriately be offered additional options for his or her continuing physical education curricular experience. Human movement purposes can then become increasingly personal goals of physical education.

Seven major purposes for engaging in physical activity have been identified through the PPCF. To assist the local curriculum planner in viewing physical education's potential for implementing these emphases, each of the seven major purpose concepts is described in more detail in the following paragraphs.

Physiological Efficiency. Physical education has frequently put its major emphasis on circulo-respiratory efficiency as a key aspect of physical fitness. Physical activity programs can be designed to achieve maximum training effects by placing appropriate demands for the processing of oxygen on heart, lungs, and the vascular system. Exercise programs are individually prescribed and progressively increased according to aerobic capacity and current level of conditioning. The educator's responsibility includes encouragement of positive attitudes toward maintenance of optimum levels of physiological efficiency as well as provision of factual information and techniques useful in planning and conducting personal exercise programs.

Goals in the area of mechanical efficiency include joint flexibility, functional body alignment, and appropriate applications of force to achieve the most effective body leverage. Physical education is properly concerned with the development of efficient body mechanics in daily life and work tasks as well as in sports, games, dance, and other recreational activities.

Neuro-muscular efficiency is also an important capability to maintain and improve. Muscular strength and endurance, power, balance, agility, and basic neuromuscular coordination are all important to physiological functioning. Each should receive appropriate emphasis in physical education programs.

Psychic Equilibrium. Physical education can play an important role in the growth of self-actualizing persons if its potential in this area is fully realized. Most young children experience genuine pleasure in strenuous physical activity, but the pure joy of movement is lost to many individuals during adolescence. Good physical education programs are planned so as to maintain pleasurable sensations in movement for individuals of all ages and abilities and to maximize personal opportunities for finding peak experiences in human motion.

Self-knowledge basic to self-appreciation and self-actualization can be enhanced through participation in varied movement activities. Movement exploration enriches any child's perceptual field. The adaptation and refinement of basic movement patterns and creation of unique movement designs or combinations permit the individual to determine what he, as a functioning organism, is capable of doing and becoming. Successful learning may increase his self-appreciation as he extends his own physical capabilities beyond limits he had previously accepted.

Physical education may also contribute to individual psychic equilibrium by providing opportunities to release tensions and frustrations precipitated by the common pressures of modern living or by unique personal

difficulties in launching oneself fully into the stream of life. The range of movement activities through which different individuals experience such catharsis is almost endless. Conditioning exercises, running, cycling, dance, skating, sailing, handball, tennis, golf, casting, wrestling, karate, volleyball, and softball are examples.

A wide spectrum of movement activities offers the challenge to any person to test his prowess and courage through physical activity. The specific movement forms which constitute challenge vary with age, interest, and physical capability. Popular challenges include skiing, sailing, surfing, riding, mountain climbing, sky diving, scuba, and gymnastics.

Spatial Orientation. A person's earliest experiences in physical activity develop his conception of his body and how it moves in space. Physical education encompasses concepts of relationships of different body parts, body shapes, directions, levels, and pathways in three dimensional space.

Beginning with the simplest forms of locomotion, human beings eventually learn complicated step patterns, skilled variations of basic locomotor patterns, modifications required for locomotion on different surfaces, and complex forms of body propulsion and projection in aquatics, gymnastics, dance, skiing, skating, rock climbing, and track and field. Such skills can be learned or utilized in physical education class, recreational sport, work, or survival contexts.

Regulation of body position in relation to stationary and moving objects and persons in the environment is also important. Each person must learn to move over, under, around, through and between objects, to stop and start moving in accordance with boundaries and hazards, to adjust his movement to those of other persons with whom he is cooperating or competing, to modify his movements for effective interception or pursuit of moving objects.

Object manipulation. Physical education includes experience in lifting, carrying, pushing and pulling. It provides instruction in effective techniques for supporting, resisting, or transporting the weight of another person's body in rescue, self-defense, or sport activities such as karate, judo, wrestling, football, ice hockey, hand-to-hand balancing, stunts, and pyramid building.

Many sports and games commonly used in physical education programs require proficiency in various skills of object projection and reception. Children learn throwing, catching, and striking skills in moving with balls, hoops, wands, bats, paddles, beanbags, frisbees, and quoits. Youth enjoy the challenge of seeking increased speed and accuracy in object projection and reception activities, as well as the social satisfactions of group interaction, in many sport and recreational activities. Almost all the team and dual sports provide such learning opportunities. In the lifetime sports selected by many adults, the major skill emphasis is object projection. Golf, archery, handball, bowling, billiards, shuffleboard, badminton, softball, and casting are examples.

Communication. Communication is a fundamental human activity. Although schooling has consistently emphasized verbal language skills, words do not represent the only means of human communication. Nonverbal communication is also significant in human interaction. Movement is an important medium for sharing personal meaning.

Physical education provides opportunities to develop skill in expressing one's uniqueness in the movement dialogue inherent in daily living. It also offers potential learnings in self-expression through such particular movement forms as dance, water ballet, gymnastic routines, and other movement media selected to convey individual ideas and feelings.

Program opportunities in human movement are concerned with the use of gesture and movement style to clarify verbal communication. In addition, movement can be designed to enhance the meaning or increase the impact of other non-verbal communicative forms — music, graphic arts, and various audio-visual media. On the other hand, human movements can be consciously controlled to mask or divert attention from feelings the individual prefers not to share or to obscure his true intent, as with postural styles associated with poise and self-confidence, or in deceptive game strategies intended to throw the opponent off balance or to catch him off guard.

Group Interaction. Sport has frequently been viewed as society in microcosm. One of the functions often attributed to educational programs in human movement is guided experience in group interaction. The individual can learn to understand, appreciate, and participate in teamwork as he accepts rules, regulations, and the authority of officials, and shares in achieving common goals in the team play of children's games or adult forms of team sport. He can develop skills of teamwork as he cooperates with a tennis opponent or a golf partner for satisfying recreation, or as he masters the specialized role of a particular position on a basketball or softball team.

Competition characterizes man's movement activities from the simple races, tag games, stunts, and combatives of children to Olympic contests among the world's outstanding athletes. Frequent opportunities occur in most Western societies to vie for individual or group goals. Competition may be directed toward individual excellence in achieving progressively higher levels of performance or toward superior group performance in team competition. Sound competitive experiences in educational programs emphasize excellence in performance in contrast to conflict requiring degradation of opponents. The development of leadership abilities in movement activities is associated with the need for motivating and influencing individual group members to achieve team unity and to focus competition upon the striving for excellence of performance.

Cultural Involvement. Movement activities constitute an important part of every society. Sport and dance are cultural universals. The popularity of specific activities

varies cross-culturally, but participation is a phenomenon that exists in all societies. A major role of physical education in school programs is derived from man's desire for participation in the movement activities of his society.

Another aspect of cultural involvement is the understanding and appreciation of sports and expressive movement forms as a spectator or audience participant. Such appreciation is extended to the movement activities of other cultures as well as to those of one's own culture — activities not especially enjoyed as a primary participant.

One can understand his own cultural heritage through participation in popular movement activities. Familiarity with and participation in the sport and dance activities of other cultures is a channel for intercultural understanding. The role of sport, dance, and unique physical activities in preserving the cultural heritage of a particular ethnic group is an appropriate concern of physical education. Understanding, respect, and preservation of the movement activities of all ethnic groups can be a means for maintaining cultural plurality and strengthening both national and international heritages.

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[1]Camille Brown and Rosalind Cassidy, "Physical Education," in *Curriculum Handbook for School Administrators*, ed. F.E. Conner and W.J. Ellena (Washington, DC: American Association of School Administrators, 1967), p. 206.

[2]The purpose conceptual framework has been developed primarily through group study at the University of Wisconsin, Madison, from 1970 through 1974. Major contributors were: Peggy Chapman, Sheryl Gotts, Ann E. Jewett, L, Sue Jones, Douglas Knox, Sandra Knox, Marie Mullan, LeRoy Smith, R. Peter Bauer, James Francis, Wilma Harrington, Marilyn LaPlante, David Uhrlaub, Emily Watson, Donald Brault, Philip Pabich, M. JoAnne Safrit, Sarah Robinson. The term "man" is used throughout to refer to both female and male members of the human species. The section, "Key Purpose Concepts," appears also in *International Sport Series*, vol. 4, "Sport Pedagogy," Marie Coughlin, editor, University Park Press, Baltimore, MD.

[3]LaPlante, "Evaluation of a Selected List."

[4]Peggy A. Chapman, "Evaluation of Affective Responses of Students to a Selected List of Purposes for Human Movement" (Doctoral dissertation, University of Wisconsin, 1974).

MOVEMENT PROCESSES IN PHYSICAL EDUCATION TEACHING-LEARNING

The curriculum reform movement of the 1950's and the 1960's brought into sharp focus the importance of process in human learning and the need to shift from the traditional curriculum planning orientation, as essentially the organization and presentation of information, to a concern with the learning of process skills. Today it is widely recognized that the value of physical education as a subject field lies as much in its special way of looking at phenomena and its unique process learnings as in the information provided or the product-oriented performance skills developed. Physical education curricula must be process-oriented if learners are to develop processing behaviors.

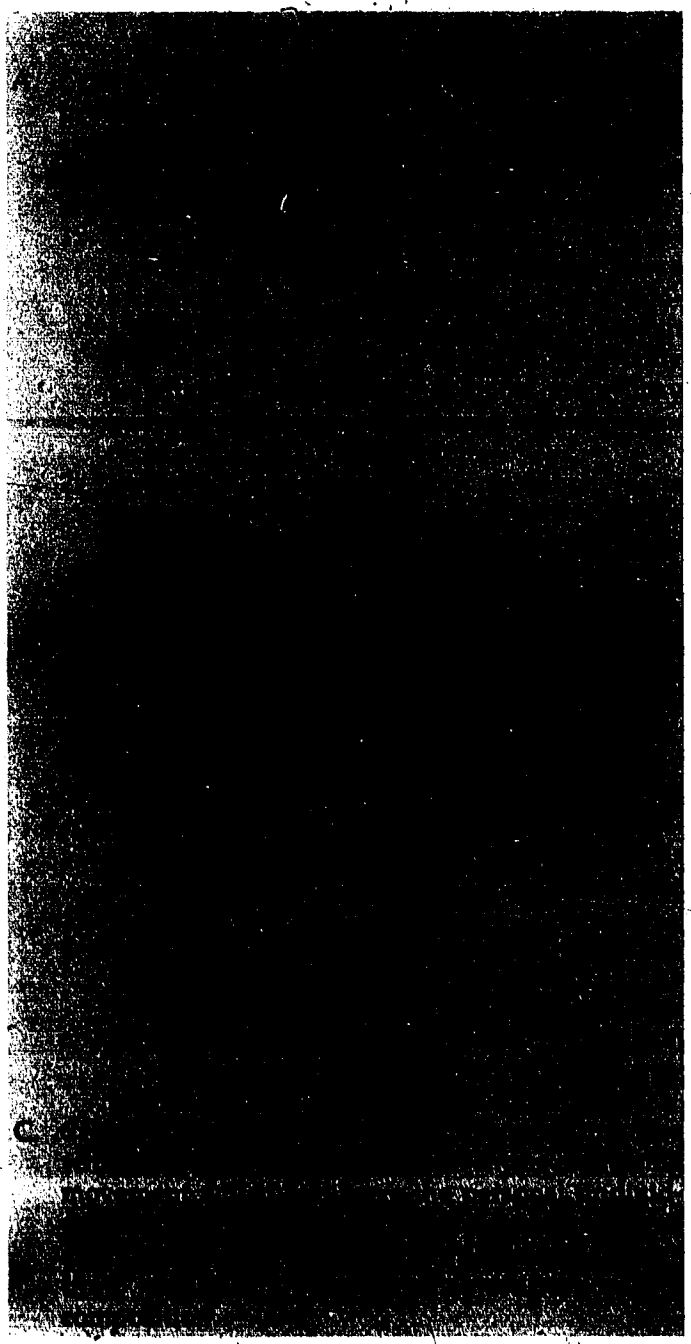
Movement processes represent one large category of human behavior. The processes through which one learns movement must therefore be an integral part of curricular planning. Physical education classes can be expected to result in improved quality of movement performance for more learners if curriculum planners are thoroughly cognizant of the processes by which an individual learns to facilitate, extend and utilize fully his unique movement capabilities. Movement processes provide a basis for sequencing potential learning experiences in physical education as teachers develop instructional objectives using purpose elements of human movement as the content focus and movement operations to identify the process toward which instruction is directed. If the learning of movement process skills is viewed as an important outcome, the student may be expected not only to improve his performance, but also to increase his range of movement abilities. Learning movement processes is as important to achieving a liberal education today as achieving competence in particular subjects of a movement education, perhaps more so.

A Taxonomy of Movement Process Categories

The Purpose Process Curriculum Framework developed under AAHPER auspices provides guidelines for curricular decision-making in two major dimensions. The purpose dimension discussed in preceding pages is used primarily to define the scope of the physical education curriculum and to select program content. The process dimension has been developed in the form of a classification scheme for identifying major types of movement operations, by describing seven processes through which a human being learns movement. The focus is on learning processes and the attempt has been to differentiate important learning operations in order to facilitate improvement of instruction.

The physical educators who developed this classification scheme relied heavily in the early stages on the published materials of Bloom, Krathwohl and associates.[1,2] Tentative classifications for the "psychomotor domain," available by 1970,[3,4,5] were studied and numerous physical education objectives were analyzed. Three major process categories were conceptualized. Many persons participated in a task of classifying objectives using a two-way grid. Working with the areas of greatest consensus, eight movement process categories were conceptualized and defined. This draft of "a taxonomy for writing physical education objectives" was the first published version.[6]

Later work based on the responses of many scholar-teachers and the experiences of educators using the taxonomy has broadened the projected functions of the classification scheme of movement process categories and modified the categories themselves. Current definitions and descriptions are as follows:



5. [illegible] invention or construction of personally [illegible] in motor performance. These op- [illegible] different ways of performing [illegible] they are of an immediate [illegible] and lack any predetermined [illegible] which has been externally [illegible]

[illegible] origination or in- [illegible] or combi- [illegible] involved [illegible] externally [illegible] on the [illegible] required.

[illegible] learned movement [illegible] unique motor designs or the in- [illegible] of movement patterns new to the per- former. The performer creates a motor response in terms of a personal interpretation of the movement situation.

A Process Focus for Learning

The authors of the PPCF subscribe to the view that processes are "embodied in the phenomenon of human learning."[8] It is hypothesized that when a student learns processes, he is better equipped for satisfying behavior which will be useful in a variety of situations. The teacher who is well informed about learning processes can provide a wide range of learning experiences for children and youth.

Since process skills are those which have an element of ongoingness about them and their relevance and applicability is to a wide range of situations, learning them involves two dimensions: the opportunity to experience the use of the skill in a wide variety of situations, and the chance to verbalize the meaning of the skill so an interplay can exist between the logical and intuitive. In other words, although process skills are ordinarily called into play spontaneously, the individual should have the tools at his command to go back and analyze what may have transpired through more or less intuitive judgment. By so doing, the person can behave in different or possibly more adequate ways in somewhat similar future situations.

The learning of processes does not guarantee the learner will put them into adept use. Merely exposing the learner to a variety of processes will not serve the purpose. He must have more than exposure. He must grasp the nature of the process and grasp how it became that way; he must know how it has been used in the past and where it might be used in the future, and he must know how to use it with a diverse content to modify it as circumstances demand, to fit his purpose, and to assess the results.

Much more must be learned about movement processes themselves. The seven categories of movement processes hypothesized as the process dimension of the PPCF are currently being studied in a series of efforts to validate the constructs. Initial efforts suggest that the processes of perceiving, patterning, adapting, and refining can be further understood through research relating these categories of learner activity to previous and current research findings on motor skill acquisition.[9] [10] [11] On the other hand, it appears that greater understanding of the processes of varying, improvising, and composing may result from research based on recent studies of the creative process as a more pervasive aspect of individual human behavior.[12] [13] For the present, the following discussion of each of the seven hypothesized movement process categories may be helpful to the individual teacher making curricular decisions directed toward the development of movement process skills.

Perceiving. Perceiving, as the basic movement process category, typically includes exploratory operations in which the learner receives or "takes in" data through which he or she becomes more aware of the self as a moving being, more accurate in knowledge of self as a total functioning person. Perceiving is not limited to the unskilled or novice learner; it also includes operations which lead to differentiation of subtle nuances in skillful movement. The process of perceiving is dynamic and ongoing; it has many elements which make it difficult to describe. It involves the transaction of the organism with stimuli which can be internal or external; it demands the attention of the individual. Behavior terms for perceiving include identify, recognize, discover, discriminate.

A process focus for learning suggests more attention in curricular decision-making to processes of perceiving. The needs for greater awareness of self and increased accuracy in self-knowledge are not limited by an artificial mind-body dichotomy, but relate to the self as a total thinking-feeling-moving being. Movement processes which increase self-awareness and self-understanding should be deliberately encouraged. Learners may be asked to identify many movement positions in a given skill or activity and to demonstrate and discuss a given movement position in another activity or skill context. Students may be asked to feel or observe a particular skill and focus on the joint action of that skill as it is performed by a skilled performer, then to compare their observations with each other and their performances to the skillful performance.

The role of movement in perceiving and responding to various aspects of the external environment should also be highlighted. For example, students may be guided toward development of varied and creative game strategies through capitalization on the greater versatility and range in their own movement performance in continuous assessment of the external situation and the changing game play.

Patterning. Achievement of a particular movement pattern or skill is the goal of a novice in a particular motor activity just as it is the motivating force of the developing child in the trial-and-error-process of building a repertoire of fundamental motor skills. Movement patterns of particular interest to the physical educator include such common patterns as walking, running, jumping, hop-

ping, leaping, skipping, sliding, galloping, throwing, kicking, striking. Patterning operations are those movement processes which result in the ability to perform a recognizable underhand throw, for example, to reproduce the pattern on demand, to execute the throw at a later time in another place. Behavior terms for patterning include perform, execute, demonstrate, replicate, duplicate.

Competing theories of motor development and skill learning provide differing views of patterning processes. From an instructional perspective, however, it is generally agreed that learners need assistance in the provision of a model or the formulation of an ideokinetic plan. Once a model or a plan is established, practice is required until sufficient consistency in the movement behavior is achieved to identify the product as a particular movement pattern. Beyond that point the movement operations or processes are categorized as refining.

Adapting. Adapting processes are directed toward the organization of perceptual-motor abilities with a view to solving particular movement tasks or requirements. Adapting is the modification of a particular movement to perform it under different conditions. Some behavior terms for adapting are adjust, apply, employ, utilize.

A child who has learned to walk on a carpeted floor must adapt the walking pattern to maintain balance on a graded grassy lawn. The learner who has achieved a successful two-handed catching pattern working with a beach ball uses adapting operations when he modifies that pattern to catch a playground ball. The squash player who has previously learned to play tennis experiences a process of adapting in adjusting his forehand striking pattern to the demands of the new sport. A skillful diver adapts certain moves learned on the one-meter board to the three-meter board. The adapting process category requires prior establishment of an appropriate movement pattern and is typically directed toward modifying that pattern to meet specific externally imposed task demands.

Refining. Usually in physical education instruction more attention is given to refining motor skills than to any of the other six movement process categories. Refining is directed toward the acquisition of smooth and efficient control of established motor patterns, toward the achievement of precision, and toward the habituation of performance. Learning activities are structured to encourage identification and elimination of performance errors, to increase consistency of performance, to develop greater speed, to emphasize accuracy. Behavior terms for refining include control, synchronize, improve, perform rhythmically (efficiently, smoothly).

Researchers specializing in motor learning have given considerable attention to analysis of the processes of motor skill acquisition.[14] [15] [16] [17] [18] Most describe motor performance as being governed by a closed loop system with components of input, processing, output and feedback. Feedback is viewed as the ongoing guidance mechanism in motor skill learning. Far too little knowledge is available for adequate understanding either of the feedback the learner receives as an inherent aspect of performance or of the augmented feedback provided directly or indirectly by the teacher. All learning theories and all models for curriculum development do acknowledge the importance of the learner's active functioning. Refining must certainly be studied as a process or a cluster of processes actively employed by the learner.

Varying. Movement operations that emphasize different ways of performing specific, already familiar movements, are categorized as varying. The process of varying results in options in motor performance unique in the experience of the individual. These options are of an immediate situational nature. Terms for varying include change, revise, alter, embellish, diversify.

Varying differs from adapting in that performance options are not limited by externally imposed specific task demands. Student responses to a movement task calling for a pattern modification with a prescribed outcome or "correct" performance are viewed as adapting. A teacher-structured movement challenge which is open-ended in the anticipated student responses is designed to stimulate varying process skills.

Varying occurs when the mover changes the tempo or the force of a motor performance. While moving, the performer may change the body's shape or the parts of the body in which movement is focused. Varying is stimulated by challenges to perform a particular movement within different spatial parameters, within a limited or extended period of time, or with acceleration or deceleration. Any personally unique option in the performance of a specific movement may be classified as varying, provided no predetermined movement behavior has been externally imposed on the mover.

Improvising. Improvising is defined as extemporaneous origination or initiation of personally novel movement or combination of movement. As in the process of varying, improvising may or may not be stimulated by a situation externally structured. Improvising differs from varying, however, in that varying is limited to different ways of performing specific movements, whereas improvising results in movement which is newly experienced by the individual or in previously untried combinations of movement. Terms which suggest improvising include extemporize, anticipate, invent, devise spontaneously.

Improvising is characterized by spontaneity or the lack of conscious planning. The figure skater or gymnast whose practiced routine is interrupted by a fault improvises to make a smooth transition. The tennis or volleyball player who recognizes that the ball is beyond normal reach improvises to make a "save." The participant in a basketball or soccer game improvises in responding to a changing pattern of teammates, opponents, and the ball with movement combinations unrehearsed in the particular form created. The dancer or the swimmer moving spontaneously to express ideas or feelings in movement creates as he moves. An improvisation cannot be duplicated, although it may generate movement components or sequences of composing.

Composing. Physical education has rarely provided instructional experiences in composing for any but the more gifted movers. Yet the process skills of composing are needed by all for a complete movement repertoire. The combination of learned movement into personally unique motor design can be satisfying and rewarding to any human being. Few individuals possess the ability to create motor responses which are universally unique in that they have never been performed before. On the other hand, everyone has the potential for composing personal interpretations in movement that result in exciting motor responses experienced for the first time.

Terms used to encourage composing include design, symbolize, and originate. Composing is distinguished from improvising by conscious planning and forethought. A carefully planned movement composition can be refined as a finished artistic design. It can be notated and duplicated by the originating mover or by another mover who was not the composer. Composing is a process skill with wide applicability; it can be experienced and developed in dance, gymnastics, aquatics, games and sports. Composing that results in a new movement form such as a butterfly stroke, a Fosbury flop, a wishbone, and a Hamill is rare indeed, but composing that expands the movement experience of the average student in a physical education class by developing his potential for creating his or her own motor designs should be encouraged by every physical education teacher.

In order to provide further clarification of the seven movement process categories, two series of movement process behaviors contributed by Gotts[19] are listed below.

Movement Process	Balance Beam	Soccer
Perceiving	The child walks on the balance beam hesitantly, stops frequently to maintain balance; may hang onto partner or teacher. Experiments with body and arm positions. Child may use a shuffle step or slide step.	After a demonstration, the student replicates a kicking pattern. fundamental striking pattern (swing) with the foot is the goal of performance. Neither accuracy nor distance is brought into focus.
Patterning	Child walks on the balance beam using an alternating step pattern with a well balanced body position. Some hesitancy or slowness in performance may still exist.	The student executes a kicking pattern. The force, point of contact, and follow through is the focus.
Adapting	Child walks on a balance beam with an alternating step pattern. He/she walks over a wand and through a hula hoop. May lack smoothness in performance.	The student adjusts his kicking pattern to perform an instep kick.
Refining	Each time the child walks on the balance beam, he/she performs the task smoothly with an alternating step pattern and good body position. He/she is able to move over the wand and through the hula hoop with no hesitation or loss of body control.	The student performs efficiently the instep kick in soccer. The pattern of the kick is performed smoothly with the same force and accuracy each time.
Varying	The child while walking on the balance beam varies the walk by adding a hop. The child is trying to perform a movement in a different way.	The student alters his kicking pattern to perform several variations. The student tries to perform the soccer kick from varying distances and positions from the goal.
Improvising	The child while walking on the beam uses a leap to go over the wand instead of a step.	The student in a game of soccer modifies the pass pattern to take advantage of his opponent's being pulled out of position.
Composing	The child designs and performs a series of moves on the balance beam.	The student will be able to design an offensive strategy, (kick at goal) responding to a set pattern of play developed with teammates.

Teacher Focus on Process

Curriculum planners will find the purpose dimension of the PPCF more helpful in curricular decision-making at societal and institutional levels. The process dimension has particular application at the instructional level. Teachers can give additional emphasis to process outcomes by developing instructional objectives in accordance with the proposed movement process categories. Sequence in physical education can be facilitated by organizing curricular content in terms of desired process outcomes. Well-stated instructional objectives provide for combining the learning of purpose content with the development of movement process competence. This approach can be used to generate educational objectives for instructional groups in any learning environment, utilizing a wide variety of learning media encompassing traditional and popular games, stunts, sports and dance activities, innovative movement education challenges, and unfamiliar but potentially satisfying physical recreation opportunities. Even more important, it can be used to identify instructional objectives for individual learners and to guide personalized learning in different process categories for a number of individuals learning in a group environment, but not necessarily attempting to achieve the same goal at the same time. Such objectives also provide bases for both formative and summative evaluation of student achievement of performance objectives.

The use of movement process categories for the statement of instructional objectives and the evaluation of learning outcomes is a typical use of a taxonomy. Movement process categories may also be used to direct teacher focus to the learning behaviors of students in contrast to unwarranted attention to less relevant student characteristics or behaviors. Skill in observation of pupils is viewed as a desirable teacher competency. Yet those responsible for professional preparation at both pre-service and in-service levels note that teachers often find it difficult to shift the focus of attention from their own activities to the students; even when attending primarily to students, teachers frequently are not observing those characteristics or behaviors which are instructionally relevant. Mullan[20] has provided some initial evidence indicating experience with taxonomies for educational objectives assists teachers in directing instructional focus to the learning behaviors of their students. It may be that a teacher with the ability to state objectives in terms of movement process categories observes student movement behavior more systematically and can respond more appropriately in his ongoing instructional behavior.

Guidance to students in improving motor performance has long been recognized as a key responsibility of the physical education teacher. In terms of current views of motor learning, an essential aspect of instruction is the provision of augmented feedback to the learner. Teachers are necessarily concerned with providing accurate and helpful feedback to their students. Harrington[21] devised an observation instrument for systematic descriptive analysis of teacher feedback which utilizes movement process categories to classify the content of augmented feedback. Analysis of data relating to the motor performance category indicated, demonstrated that the teachers observed were predominantly concerned with prescribing motor practice to follow student activity viewed as patterning or refining movement. Any system which makes it possible to study teacher attention to the movement process behaviors of students has potential for aiding in the development of appropriate educational objectives and for improving the quality of instructional guidance in physical education.

The movement process category scheme also has the potential of helping physical educators to focus on facilitating the development of individual creativity. Educators in the 1970's are increasingly concerned with extending learning options to realize more fully humanistic goals. In this effort, it is reasonable to hypothesize a larger role for personal creativity. Traditional physical education programs have provided very little encouragement for the development of individual creativity. Creativity in movement is clearly one channel to which many learners have had insufficient access.

If the students can develop creative movement concepts and process skills for varying, improvising, and composing movement, opportunities for self-actualization will certainly be enhanced. An approach by Hall[22] may be helpful in this regard; she has developed behavioral definitions of the creative process, using activity examples. Teachers must find ways to facilitate such development, however. Brockmeyer[23] developed and evaluated a teacher behavior instructional unit for eliciting creative movement performance. Selected teacher verbal feedback behaviors were incorporated into a microteaching intervention program. Analysis of preintervention data supported Harrington's findings that patterning tends to receive the most emphasis in physical education classes. More important, Brockmeyer concluded that physical education teachers can direct their teaching toward elicitation of student creative processing in movement if they intend to do so, and can increase use of behaviors selected to facilitate the development of student creative processing.

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[1]Benjamin S. Bloom et al., *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (New York: David McKay Co., 1956).

[2]David R. Krathwohl et al., *Taxonomy of Educational Objectives, Handbook II: Affective Domain* (New York: David McKay Co., 1964).

[3]Elizabeth J. Simpson, "The Classification of Educational Objectives, Psychomotor Domain," Vocational and Technical Educational Grant Contract No. OE 5-85-104. (Washington, DC: United States Office of Education, 1966).

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[5]R.J. Kibler et al., *Behavioral Objectives and Instruction* (Boston: Allyn & Bacon, 1970).

[6]Ann E. Jewett et al., "Educational Change through a Taxonomy for Writing Physical Education Objectives," *Quest* 15 (Jan. 1971): 32-38.

[7]The process conceptual framework has been developed primarily through group study from 1970 through 1976. Major contributors were: Iris Bliss, Donald B. Brault, Gretchen A. Brockmeyer, Peggy A. Chapman, Sheryl L. Gotts, Wilma A. Harrington, Laura J. Huelster, Ann E. Jewett, Sandra M. Knox, Douglas F. Knox, Marilyn J. LaPlante, Marie R. Mullan, Alison Poe, Sarah M. Robinson, Gail Royce, Lee Smith, Charles L. Wuerpel. The section, "Movement Process Categories" appears also in *International Sport Series*, vol. 4, "Sport Pedagogy," Marie Coughlin, editor, University Press Park, Baltimore, MD.

[8]J. Cecil Parker and L.J. Rubin, *Process as Content: Curriculum Design and the Application of Knowledge* (Chicago: Rand-McNally, 1966), p. 11.

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[13]Daphne Hall, study in progress, University of Georgia.

[14]P.M. Fitts, "Factors in Complex Skill Training," in *Training Research and Education*, ed. Robert Glasser (New York: John Wiley, 1965), pp. 177-197.

[15]P.M. Fitts and M.I. Posner, *Human Performance* (Belmont, CA: Brooks/Cole, 1967).

[16]Margaret D. Robb, *The Dynamics of Motor Skill Acquisition* (Englewood Cliffs, NJ: Prentice-Hall, 1972).

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[18]H.T.A. Whiting, *Acquiring Ball Skill, A Psychological Interpretation* (London: G. Bell & Sons, 1969).

[19]Sheryl L. Gotts, unpublished paper, Purdue University, 1972, 1976.

[20]Marie R. Mullan, "Educational Taxonomies and Student Teacher Focus on Pupil Learning Behavior" (Doctoral dissertation, University of Wisconsin, 1973).

[21]Harrington, "Study of Feedback Diversity."

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CURRICULAR DECISION-MAKING IN PHYSICAL EDUCATION

The preceding pages have reported the progress of the AAHPER Curriculum Research Project directed toward the development of a conceptual framework for physical education curricular decision-making. In summary, the Purpose Process Curriculum Framework (PPCF) is based on the assumption that the primary concern of physical education is the individual human being moving in interaction with his environment. Its two major dimensions consist of purpose concepts and process concepts. The functions of human movement in achieving the goals of man have been logically analyzed and organized as the three key concepts of individual development, environmental coping, and social interaction, encompassing seven major purposes used to define the scope of the physical education curriculum and to select program content. Instructional planning requires a second or process dimension which has been developed in the form of a classification scheme for identifying three major types of movement operations, describing seven operational processes through which a human being learns movement. These concepts and their interrelationships are the components of a framework which serves as a tool for curricular decision-making in physical education.

How do these concepts aid in making particular curriculum decisions? How are the purpose and process dimensions used in combination to develop an educational program of movement activities? The function of a conceptual framework is not to provide specific answers, but to offer guidelines which aid the professional working on the local level to find his or her own better answers. To serve as a viable tool for curricular decision-making, this particular framework depends upon two conditions. It is assumed that the individual curriculum planner, whether a member of the teaching faculty or an administrative staff member with a major assigned responsibility for curriculum development, is a professionally prepared, knowledgeable physical educator. The knowledge base necessary for many important curriculum decisions is not spelled out in the framework; it is assumed to be included among the competencies of the certified professional. It is further assumed that the judgment of educators working in the local situation is an important resource for curricular decision-making affecting the citizens of any particular community; thus the absence of certain types of detail in this framework is deliberate. It is hoped that the PPCF is a flexible tool, adaptable to the needs of curricular decision-makers in a wide variety of circumstances.

The chapters which follow are intended to exemplify decision-making procedures; none of the specific decisions implied by the product presented is necessarily endorsed by the authors of the framework. Different interpretations of the value of a given activity in developing a particular purpose or process will be evident. There are illustrations representing a variety of grade levels but no consensus as to the appropriateness of the instructional plans for children at a given stage of development is implied. In every case, the professional judgments are to be made by local professional educators.

The materials which follow are illustrations of physical education curricular decision-making; they are not recipes. They are organized in terms of the emphasis upon each of four major questions:

1. How are program goals determined?
2. How is content selected?
3. How are learning activities organized?
4. How is individual progress evaluated?

HOW ARE PROGRAM GOALS DETERMINED?

At least four approaches are possible in using the Purpose Process Curriculum Framework in determining goals for local physical education programs. (1) Physical education specialists working in school systems in which well-defined educational goals have been identified can review the purpose concepts of the PPCF and select those appropriate to attainment of accepted overall school goals through physical education curricula. (2) Local planners may review the inclusive purpose concepts and select from among the 22 those which are most appropriate to local needs and conditions as the basis for curriculum planning. (3) Curriculum specialists can accept all 22 purpose element concepts as the basis for curriculum development. (4) Local educators can accept process goals as sufficiently important to be included in physical education curricular decision-making at the institutional level.

Coordinating Purpose Concepts with School Goals

If the professional staff has already clarified school goals which provide sufficient direction to curriculum planners in the various subject fields, the physical educator works within this framework to plan the educational program of movement activities. For example, if one of the general instructional goals of a particular middle school states that "the child should identify and explore personal interests and abilities through a variety of contacts with a number of different activities," the physical educator might proceed as illustrated by Bieri in Figure 3.

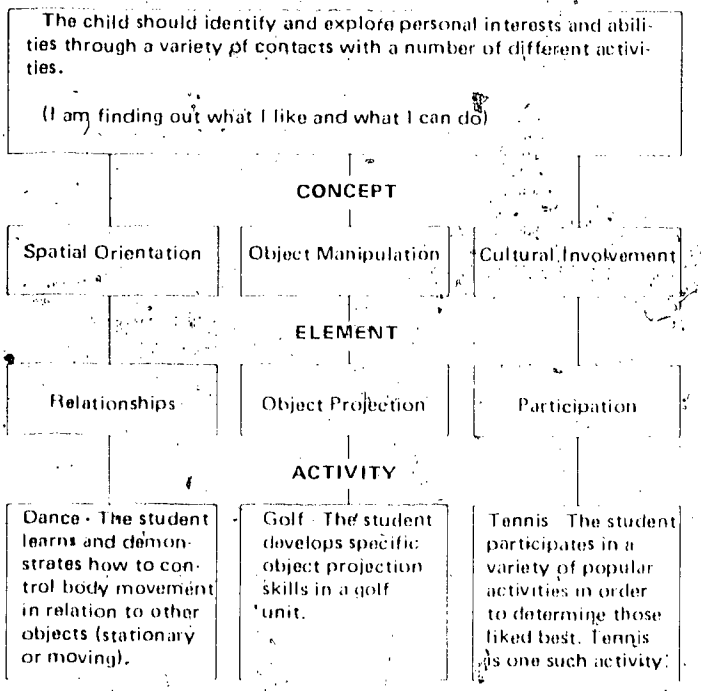

Figure 3. Purpose Concepts Related to a School Goal of Exploring Personal Interests.

The curriculum specialist could determine that the purpose elements of relationships, object projection, and participation should guide the local teacher's efforts to assist children in reaching the general school goal of exploring personal interests. The physical education staff might then select dance as an activity through which to explore personal interests and to develop concepts of relationships and movement abilities in relating to objects and persons in the environment. Individual teachers would emphasize the development of relationships concept and the exploration of personal interests in daily instructional planning. The curriculum specialist would need to consider the employment of activities appropriate to the exploration of personal interests in developing concepts of object projection and participation in the same way; golf and tennis were selected in the above example. Similarly, each of the other general middle school goals would guide selection by the physical education curriculum specialist, in light of the potential values of particular movement activities, of other purpose elements to be stressed. Presumably, curriculum specialists in other subject areas would be working toward the achievement of the same general middle school goals within decision-making frameworks appropriate to their particular subject fields.

Using Selected Purpose Concepts To Determine Program Goals

In using the PPCF to determine physical education program goals, the curriculum specialist may review the comprehensive statement of purpose concepts, select from among the 22 purpose elements those to be emphasized in local curricula, and build curriculum plans based on the particular purposes selected. Thus, if one of the purposes to be emphasized in a senior high school program is participation, a number of activities available for out-of-school participation in the community and appropriate for adult participation would need to be introduced in physical education classes. Students would have opportunities for skill development in these activities and choices in meeting their individual interests to encourage the development of the desire for regular voluntary participation. Students might be required to meet minimum competency standards in a designated number of activities of their choice. Intramural and club sports programs would probably be emphasized.

If circulo-respiratory efficiency is one of the purpose elements selected for emphasis, some type of fitness testing program would probably be established. The curriculum would be designed to ensure substantial experience in vigorous activities. Students would participate in varied types of conditioning exercise programs and would receive instruction in procedures for developing and maintaining physical fitness, possibly including a mini-course in physiology of exercise.

In a program in which leadership education is to receive significant local emphasis, all students would be provided with opportunities to perform leadership roles during the conduct of their physical education program.

They would have frequent occasions to work in pairs and small groups in classes, as well as to play team leadership roles. They could experience these roles in relation to varying types of activities and in intramural, club sport, or community contexts as well as in classes.

A program designed by Tiburzi[2] provides an example of a plan developed this way. (See Appendix A) This particular program was designed to emphasize seven purpose concepts in a senior high school physical education curriculum, the three purpose concepts discussed above (participation, circulo-respiratory efficiency, and leadership) and, in addition, movement appreciation, cultural understanding, teamwork, and neuromuscular efficiency.

Program Goals Based on the Comprehensive Purpose Framework

A decision to accept all twenty-two purpose element concepts as the basis for curriculum development would be based on the rationale that full educational opportunity includes the opportunity to become aware of all the potential ways of fulfilling human potential and enhancing the quality of living through physical activity. Physical educators who accept this premise assume responsibility for introducing other persons to the full range of possibilities for meaningful involvement in physical activities. Starting from this philosophical position, an individual program planner may still provide for infinite variations in emphasis upon the different purposes and for any degree of participant choice as to how much depth shall be sought in developing particular purpose concepts.

The model developed by LaPlante and Chapman[3] illustrates this approach. (Figure 4) This model was developed for a K-12 curriculum development project in which teachers in the school district served as curriculum workers under the direction of a curriculum specialist qualified to guide curricular decision-making using several models including the PPCF. The first step in the process requires the teachers to identify the problems in their district that necessitate curriculum development or revision. The curriculum specialist reviews with them available conceptual frameworks for long-range planning. If the teachers select another conceptual framework, it will be necessary to identify an alternative model for decision-making. If the PPCF is accepted for local curricular decision-making, acceptance of its broad goals is implied, and decision-making proceeds as indicated on the flow chart.

Since the goals as stated are very general, the teachers must ask themselves what evidence they will accept that the goals have been met. The evidence can be stated as answers to the following questions: If the student's purpose for moving is

(a) what should he be able to do?
(b) what does he need to know?
(c) how should he feel about it?

Statements of acceptable evidence must then be collapsed into a succinct list and may then be classified in

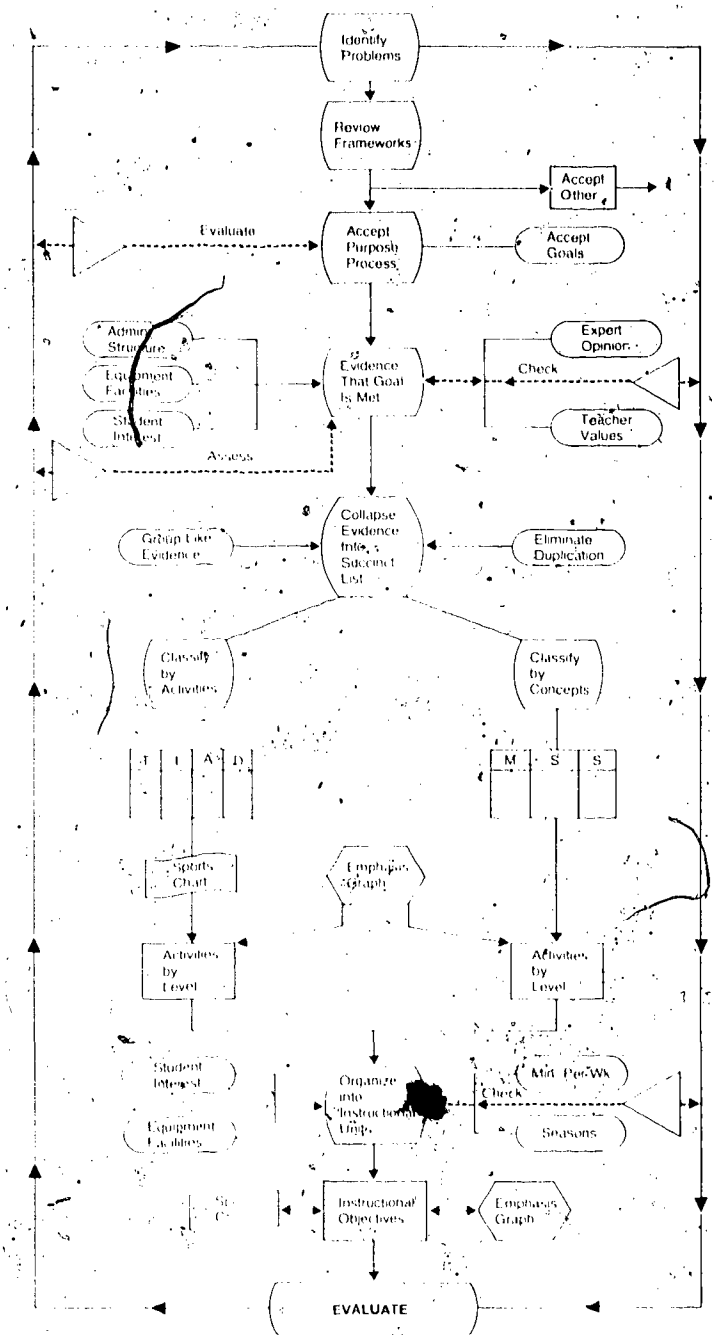

Figure 4. Model for Decision Making

one of two ways. Statements of evidence might be classified according to whether they are primarily within the context of specific activities, i.e., team sports, individual sports, aquatics, or dance; or the statements might be classified according to the three key concepts, i.e., man master of himself, man in space, or man in a social world.

As the flow chart indicates, the next step will be to make decisions concerning what activities will be taught at what levels. The activities listed by level will be sports activities such as volleyball or gymnastics if the activity classification is used, but will be movement activities such as "relocation" activities or "object projection-reception" activities if the concepts classification is se-

lected. Once the activities to be included at each level have been determined, the next step is to decide more precisely how these activities can be organized into instructional units at each grade level and how long the units will be. The teachers responsible for teaching at a specific grade level will need to formulate instructional objectives which, if met, will lead to the eventual attainment of the broad curricular goals.

The overall evaluation of the curriculum will be in terms of whether the process has provided solutions to the problems initially identified, and the assessment of student outcomes in terms of the evidence to be accepted that the broad curricular goals have been met. The flow chart in Figure 4 thus depicts a model for continuing curriculum development and evaluation. The procedure is further detailed in Appendix B.

Process Goals for Physical Education Programs

Planners who use the PPCF in determining goals for local physical education programs usually focus, at the institutional level of decision-making, on the purpose concepts. However, educators who consider process goals sufficiently important may decide to include among the program goals the development of movement process skills. A given program may emphasize the process of skill acquisition (patterning, adapting, and refining, in PPCF terms). A program for children with motoric handicaps may direct particular attention to the process concepts of perceiving and patterning. Another program might direct major emphasis to development of the creative processes of varying, improvising, and composing. Such decisions could result in the selection of different content, in the choice of varying procedures for organizing learning activities, and in the use of less traditional techniques for evaluation.

Any of the three illustrations presented above could incorporate the decision to include process goals among those selected for local physcial education programs. The general goals of the middle school program previously presented are of a type which suggest concern for process goals by the curriculum planners. The school goal of exploring personal interests, as well as other goals not previously quoted, might be supported by emphasis on process goals in the physical education curriculum. For example, the goal to "develop basic learning skills and have more opportunities to apply these skills in progressively more organized activity" can be interpreted to include the development of the movement process skills defined by the PPCF. As a child learns how to do things in the physical education class, he learns how to use movement process skills to learn new activities outside the school setting as well as in future physical education classes.

The senior high school program described above emphasizes both purpose and process concepts. Ordinative movement process goals are stressed in the ninth grade program in the goal of competency in aquatics and in one activity each in the areas of team sports, individual sports, and dance and gymnastics. These goals are stressed in the tenth grade program in attainment of minimal competency in two additional sport areas and intermediate competency in two sport areas; and again in the graduation requirement of additional student-selected skills competencies. Creative movement process goals are included in both ninth and tenth grade programs.

In the model for curricular decision-making, process concepts would be included in the goals accepted, and in determining the evidence that goals are met. Classification by concepts would include a fourth column for process concepts. Instructional units and instructional objectives would reflect concern for process goals as well as purpose-oriented goals.

Summary

Each of three approaches in using purpose concepts of the PPCF in determining goals for local physical education programs has been illustrated. A few examples of a fourth approach emphasizing the inclusion of the process concepts of the PPCF in determining goals have been cited. Others will be noted in illustrations in the following chapters.

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[1]Ronald Bieri, unpublished paper, Madison, Wisconsin Public Schools, 1972.

[2]Antoinette Tiburzi, unpublished paper, State University of New York, Cortland, 1974.

[3]Marilyn LaPlante, Earlham College, and Peggy Chapman, Madison, Wisconsin, Public Schools, unpublished paper, 1972.

HOW IS CONTENT SELECTED?

Once program goals have been determined, content appropriate to attainment of those goals must be selected. In most instances, use of the PPCF to select content begins with the identification of one or more of the 22 purpose elements as a significant program goal. Meaningful decisions about content to be selected require analysis of the purpose element to clarify what subelements are included. The identification of possible subelements is necessary in order to better focus content. It is not presumed that at the subelement level content can be definitively specific. The nature of the content would need to be applied to the entire element until that point in time when each subelement has been validated. Exhaustive further research needs to be focused on each construct element to reach this goal.

Theoretical Constructs of Purposes for Movement

The curriculum specialist works from a construct, often hypothetical, of what an element such as circulo-respiratory efficiency, relationships, or teamwork includes. Examples of purpose constructs developed to identify subelements as a basis for selection of program content are described in the following pages. The reader must be cautioned that these examples have not been validated. They represent different levels of knowledge, foci and specializations. They are presented here merely to illustrate a variety of approaches. The examples to follow are constructs for neuromuscular efficiency, joy of movement, awareness, object projection, simulation, teamwork and cultural understanding.

Neuro-Muscular Efficiency. The model[1] presented in Figure 5 represents neuro-muscular efficiency as an entity made up of strength, balance, agility, coordination, endurance, and kinesthetic sense.

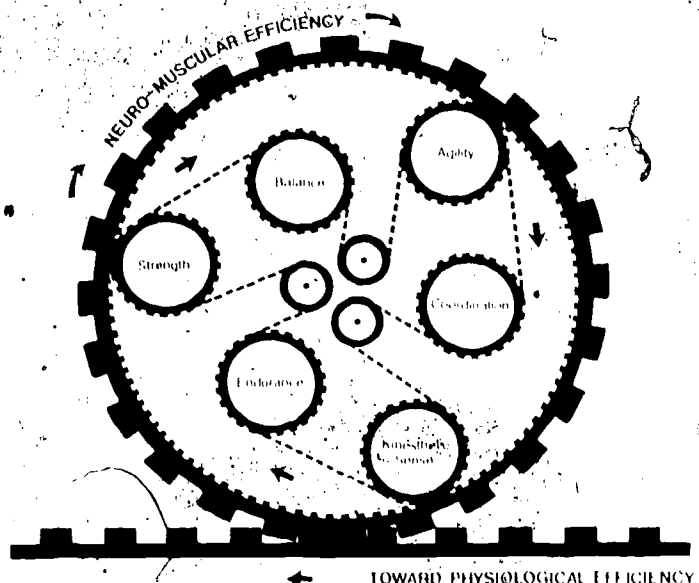


Figure 5. Construct of Neuro-Muscular Efficiency

The purpose element of neuro-muscular efficiency has been defined as "man moves to develop and maintain motor functioning." The subelements identified are defined as follows:

Strength — Man moves to maintain or improve the capacity to exert muscular force.

Balance — Man moves to maintain or improve the ability to maintain the neuro-muscular system in an efficient static condition or to control it in a specific efficient posture while moving.

Agility — Man moves to maintain or improve the ability to change direction rapidly and accurately.

Coordination — Man moves to maintain or improve the ability to integrate types of movements into specific patterns.

Endurance — Man moves to maintain or improve the capacity to sustain movement over a period of time.

Kinesthetic Sense — Man moves to maintain or improve the sense of awareness of position of the body or body parts as it moves through space.

Joy of Movement. Joy of movement is defined as deriving pleasure from movement experience. Thirty-three physical education specialists working with seventh graders in Racine County, Wisconsin, were surveyed in a research study[2] directed toward the development of a construct of joy of movement. The survey suggested that movement was enjoyed most when the qualities were suspended, explosive, rotating, extraordinary, and/or free and when engaging in running, jumping, and/or object manipulation movements. Joy of movement, therefore, was postulated as having two components, that of most enjoyed movements and that of qualities which make the movements pleasurable. Figure 6 is a visual representation of this construct and of the hypothesized movements and qualities.

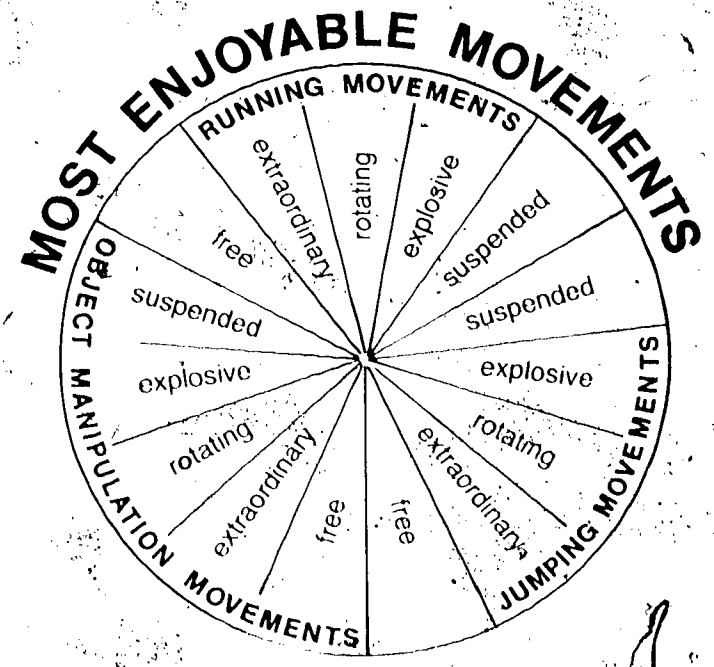
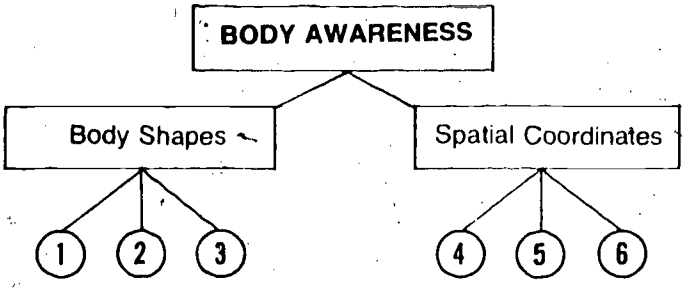


Figure 6. Construct of Joy of Movement

Awareness. The PPCF defines the purpose of awareness as moving to clarify a conception of the body and its position in space. The construct of awareness,[3] represented in Figure 7, postulates two discrete constituents of dynamic body awareness in space. The first is defined as body shapes and focuses primarily on how the body can move. Included are knowledge of body parts, how these parts move, and the ability to position body parts in specific ways. The second, described as spatial coordinates, focuses primarily on where the body can move. The component of spatial coordinates is logically divided into three subcomponents. Directions concern judgment and movement in the horizontal, sagittal, and oblique coordinates of space. Levels pertain to judgment and movement in the vertical coordinates of space. Pathways deal with visualization and movement through space in order to make specific patterns or lines while using a combination of spatial coordinates.



1 — Knowledge of body parts

2 — Knowledge of how body parts move

3 — Ability to position body parts in specific ways

4 — Directions (horizontal, sagittal, oblique)

5 — Levels (vertical)

6 — Pathways (combination)

Figure 7. Construct of Body Awareness

Object Projection. Object projection has been defined as "man moves to impart momentum and direction to a variety of objects." Two major foci derive from analysis of the definition of object projection: the projectile and the projector. The construct of object projection[4] represented in Figure 8 includes five subelements, three identified with the projectile (speed, pathway, and structure) and two identified with the projector (force production and stability).

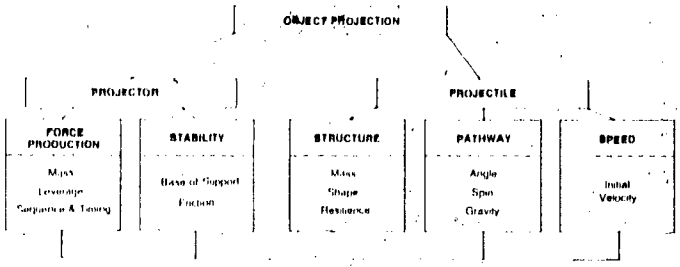


Figure 8. Construct of Object Projection

Speed as a subelement is the property of the projectile which determines the length of time required to stop it. Pathway conveys the concept of the entire projectile flight during which the factors of spin and gravity would have influence. The final projectile subelement concerns its structure, shape, mass and resilience. As these factors change, the pathway is modified. Analysis of the projector identifies two subelements of object projection, force production and stability upon which the outcome of any projection is dependent. Force production is concerned with mass, leverage, sequence and timing; key aspects of stability are base of support and friction.

Simulation. The PPCF defines the purpose of simulation as moving to create an advantageous image or situation. The four categories of Laban's movement analysis framework, body awareness, space awareness, effort and relationships, have been used to classify the subelements of simulation, in developing the construct[5] which appears in Figure 9.

Body Awareness	Space Awareness	Effort	Relationships
Stance: any type of ready position or recovery position.	Positioning: areas of responsibility on the court or field.	Time: change-uses varying the speed or holding.	With Objects: Manipulative: continuous, any change in grip; in[illegible]tent, placing of shots vertically [illegible]sh) and horizontally (angle of [illegible].
Carriage: any way of presenting the body; the body as spectacle; stage presence.	Pivots: used as change of direction.	Weight: varying the strength (smash/drop shot; spike/dink).	With People: Patterns of Play devised/improvised drawing/pursuing blocking/screening tackling/dodging marking/double teaming/ zone defense backing up/interchanging leading/following.
Body Shapes: Round (roll), Narrow (tight places), Wide (block, screen), Twisted (power, interest).	Cutting: use of pathways; creating spaces	Space: direct/drive; flexible/ use of extraneous movement (fencing).	
Feints: use of head, eyes, shoulders, arms, hands, feet; use of ball or implement.	Coverage: covering a space.	Flow: changes in flow; free to bound/bound to free (layup in BB, shot on goal in FH).	
Pivots: change of facing			
Recoveries: to regain a favorable position or to cover up an error.			

Figure 9. Construct of Simulation

27

Teamwork. The purpose element of teamwork is defined as cooperation in pursuit of common goals. The model of the teamwork construct[6] shown in Figure 10 delineates the four subelements and their interrelationships. Descriptive and representative terms of the subelements of teamwork include identity, commonality of goals, cohesion, and success. These four teamwork components constitute a hierachy, with each dependent upon the preceding one and representing a cumulative portion of the whole concept. The alert reader will note that this construct illustrates well the general concept of individual purpose or meaning. If teamwork is defined as a means toward winning or if success is equated with winning, the components of teamwork will be quite different. Here teamwork is defined as a purpose and the four components are consistent with an analysis based on that definition.

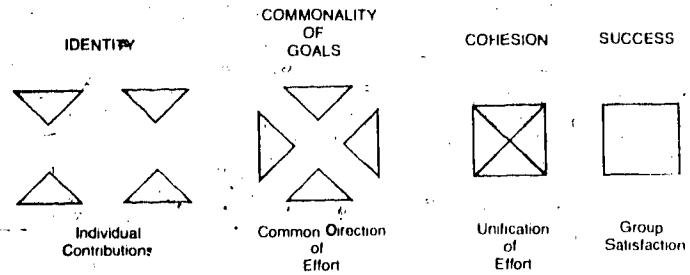


Figure 10. Construct of Teamwork

The effectiveness of a group or the quality of its teamwork is the exponential product of individual contributions. As a result, group capacity and needs determine membership roles and optimal individual contributions. The mover must adequately evaluate personal movement potentials relative to the other members and accept a role which is most complementary to the movement potentials of the remaining group members.

In order for individual contributions to be directed and channeled, group members must share the desire for achieving the same goal. Whereas individuals may aspire to distinct secondary objectives, the ultimate goal or purpose of the group's existence must be common to the entire membership. The willingness to sacrifice egocentric aspirations in order to enhance the achievement of the group's goals exemplifies directed effort.

Whereas a common goal provides the external impetus for group unity and direction of effort, the internal binding force of teamwork is the attitude of camaraderie. Although group cohesion is multidimensional, it is partially derived from the combined effect of individual contributions commonly directed and draws sustenance from the mutual regard and respect of the membership. These feelings result in a closely-knit group structure often illustrated by terms such as morale and esprit de corps and characterized by unification of effort.

The combination of the elements of identity, commonality of goals, and cohesion culminates in individual satisfaction which is the primary measure of group success. The degree of satisfaction is relevant to the realization of the first three subelements and can only be optimal when each individual achieves identity, a commonly directed effort, and an effort in unison with the remaining group members.

Cultural Understanding. The construct model[7] symbolized in Figure 11 analyzes subelements of cultural understanding, the purpose element defined by "man moves to understand, respect, and strengthen the cultural heritage."

The element which integrates experience for the individual is the Cultural Nexus. The Cultural Nexus is the integration of the historical heritage and the contemporary social influences relating to and affecting the individual's conscious and unconscious behavior. The triangular conglomerates which represent the Understanding and Extension components of Cultural Understanding are integrated by and within the Cultural Nexus. These subelements are progressive in nature.

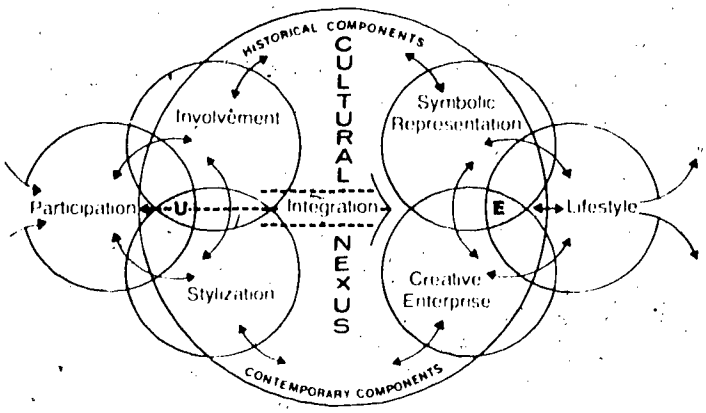


Figure 11. Construct of Cultural Understanding

Exposure to activities and skills characteristic of the ethnic play that is the focal point of the movement experience is the first prerequisite of Participation. It is during participation that one is taught or learns the basic motor patterns required for increasing depth and involvement in the movement experiences. As the individual's participation develops, there evolves an Involvement in the movement activity which goes beyond mere pattern practice. This Involvement is characterized by an increasing interest in and search for the basis, meaning, background and "real" nature of the play. Personal commitment now becomes related to the concept of Participation. Historical cultural manifestations associated with the ethnic activities are engaged in willingly and for their own sake.

Linked with Participation and Involvement is the concept of Stylization. That emanation of Involved Participation which leads into an experiencing of the "real" qualities of cultural play is termed Stylization. The individual, with learned and appropriate skill patterns, is now exposed to experiences with individuals who know and exhibit qualities of movement expression characteristic of the authentic cultural play patterns. Personal involvement with "real" cultural expressions and with

authentic ethnic players provides opportunities for learning and stylistically refining movement patterns in order to make them conform to the "authentic."

As a result of motor, cognitive and affective immersion in a variety of ethnic school and non-school activities the concept of Understanding of the cultural heritage develops. The individual develops a personal understanding of the cultural heritage in which immersion has taken place. Participation is now at a level in which skillful, stylized movement enhances awareness of self in relation to the cultural play.

The integration of the cultural play heritage is now advanced by means of the socio-cultural milieu from Understanding to a more abstract level of expression. As cultural play characteristic of both the historic (ethnic) and contemporary (American) heritage is engaged in, conscious symbolism and creative enterprise in making motor and cognitive associations with the Understandings of the construct become more apparent.

Persons exhibiting behavior at the level of Symbolic Representation engage in cultural play in order to help distinguish the purposes of the activity and to develop additional insight into the growth of cultural identity and its manifestations in action. Relationships between historical ethnic play and its contemporary expression, and, relationships between the contemporary self and the stylized heritage are clarified in activity. Creative Enterprise is the linked construct element resulting from the reorganization of all the components of Understanding with foresight and openness to life as it is developing, to create new expressions of the heritage.

Creative Enterprise and Symbolic Representation intertwine until culturally "authentic" movement expression becomes unconscious in nature. It is at this juncture that ritual develops. No longer are all the components of cultural heritage consciously utilized but behavior has actually become an integrated whole. Ritual becomes the cultural tie between the past and the present. A Lifestyle has now developed which serves as the true extender of cultural heritage. Action comes as an integrated whole in which all the understandings of cultural play and the progressions of the Cultural Nexus become unconscious and oftentimes conscious determiners of behavior. A unique Lifestyle is the vehicle for the extension of the cultural heritage. Participation to Lifestyle is a cyclical process and continuum in which "man moves to understand, respect, and strengthen the cultural heritage."

Selection of Content To Develop a Single Purpose Element

Sound selection of content depends upon analysis of the purpose or process concepts to be developed. Once the curriculum specialist has developed or selected a satisfactory theoretical construct of the elements appropriate to the attainment of program goals, content can be selected in accordance with the elements and subelements identified. Again, it is presumed that specific content can be developed at the subelement level. The succeeding example illustrates the conceptualization of the purpose concept of relocation as a theoretical construct including four subelements, and the selection of program content utilizing this construct. Relocation is defined as, "Man moves in a variety of ways to propel or project himself." The matrix[8] below identifies the four subelements of propulsion, propulsion with object, projection, and projection with object; and four variations for the base of support. Activities have been selected to meet the requirements of individual cells within the matrix. Satisfactory experience in activities within each cell should result in the development of a comprehensive set of relocation abilities. (Figure 12)

Subelements	Base of Support			
	Foot alternation or feet	Hand alternation or hands	Feet to hands or hands to feet	Whole body
Propulsion	walk, run, skip, slide, gallop	horizontal ladder, walk on hands	cartwheel walkover	forward roll swimming
Propulsion with object	roller skate, ski, ride bike snow shoe	paddle canoe hands only on rope climb		sledding or tobogganing, swim fins or kick boards
Projection	jump, hop, leap, hurdle	tower diving from handstand	vaulting, diving, handsprings	
Projection with object	trampoline, pogo stick		pole vault	

Figure 12. Selection of Relocation Activities in Accordance with Theoretical Construct

Programming Emphasizing Selected Purpose Concepts

The preceding example illustrates the selection of content in terms of a single purpose element, relocation. The next three exemplify physical education programming, each plan emphasizing several selected purpose concepts.

Curriculum Plan for Primary Grades. A plan[9] for grade one, based on the decision that the most important purposes at this level are mechanical efficiency, awareness, relocation, and relationships, follows (Figure 13). Units in Basic Movement and Games, Exploratory Ball Activities, Basic Tumbling, Apparatus, Climbing, Jumping, etc., are organized with basic instruction and safety standards being discussed and agreed upon by the teacher and children. The units are aimed at discovery and a wide variety of appropriate activities are made available in logical sequences. Individual differences are taken into account with activities being offered on a variety of skill levels giving the child a chance to select the level that fits best regardless of the participation ability of the child. Learning centers or interest areas are set up in the physical education facility for the curric-

ulum area being explored so the child might move at an individual pace with guidance and suggestions being offered in order to bring about wanted outcomes. Task cards, drawings, sketches, pictures, demonstrations, simple directions, tutorial helpers and reciprocal learning from classmates are all modes of learning utilized in the program.

	Key Concepts						
Activities – Grade 1	Mechanical Efficiency	Joy of Movement	Self-Knowledge	Awareness	Relocation	Relationships	Object Projection
(auditor/perception activities)							
Listening Skills & Activities			X	X			
Form Perception (Colors and numbers)			X	X		X	
Basic Movement & Games	X	X				X	
Exploratory Ball Activities			X			X	X
Basic Tumbling – Simple Stunts – Partner Balances	X			X	X		
Apparatus: Balance Area (Low Balance Beams, Low Balance Boards, Tires, Walking Cans, Scooter Boards)			X	X	X	X	
Climbing Area (knotted ropes, horizontal ladder)	X				X	X	
Jumping Area – Crash mat, mini-tramp & mat, trampoline)	X			X	X		
Strength Area – Dual ropes, rings	X			X	X	X	
Exploratory Rope Unit				X	X	X	
Folk Dance		X			X	X	
Rhythmic Gymnastics (Hoops)				X		X	X
Target Unit – Object Projection	X				X	X	X
Parachute Play		X		X		X	
Track & Field Activities	X		X		X		
Ball Game Activities					X	X	X

Figure 13. Curriculum Plan for Grade One

Middle School Physical Education Curriculum Plan. The middle school curriculum plan[10] which follows is structured to guide students (Grades 6 through 8) in the development of concepts of awareness, relocation, relationships, object projection, object reception, expression, teamwork, competition, leadership, participation and movement appreciation through twelve popular sports, dance and gymnastic activities (Figure 14, page 24).

High School Physical Education Curriculum Plan. The coeducational senior high school program[11] below was designed to stress the three movement purposes of physiological efficiency, teamwork, and participation. To complete the senior high physical education program, each student is required to participate in 24 activity units. Of these 24 units, 17 units are to be in the following activities:

- 2 units in a field team sport
- 2 units in an indoor team game
- 2 units in gymnastics
- 3 units in swimming or pass a proficiency test
- 4 units in individual sports or racket games
- 2 units in weight training, physical fitness, or slimnastics

The remaining seven units will be left to the choice of the student or can be used as makeup units. Figure 15 (pages 24-25) identifies the activities selected to contribute to the fulfillment of the key purposes or aims of the program. The chart also indicates movement processes to be emphasized in planning and conducting instruction.

Programming Based on the Comprehensive Framework

The curriculum planner who has identified program goals and defined these goals in terms of their subelements must then select activity content in terms of the purposes to be attained. Traditional physical education activities may be selected and activity units planned so that instruction will be directed toward the purpose concepts of the PPCF. Creative curriculum specialists may invent new games and movement activities especially suited to the development of purpose concepts not usually emphasized. Particular curriculum guides reflect the professional judgment of the authors as to the potential of selected activities in attaining particular goals. The examples below translate the judgments of individual educators, using the PPCF, into plans for physical education curricula for three significantly different school situations.

Elementary Physical Education Scope and Sequence Chart. The scope and sequence chart[12] (Figure 16, page 26) is planned for the use of classroom teachers in grades kindergarten through four, working under the supervision of a physical education specialist. The activities listed are classified in terms of the purpose elements to be emphasized.

Secondary Physical Education Curriculum Model.[13] The curriculum model which follows was developed for a K-13 school district, using the PPCF to establish the basic design. It is an excerpt from a major curriculum project developed over a period of several years, drawing upon the talents and energies of teachers working at all grade levels under the guidance of the central-administration staff. The plan in Figure 17 (page 27) identifies the subject areas selected for the curriculum. Figure 18 (page 27) outlines the core program for grade ten. The core program demonstrates how the purpose concepts are related to the subject areas and illustrates possible activities to be included with the subject areas. In developing instructional units to be used within this curriculum, performance objectives have been established for each grade and for each unit. The movement

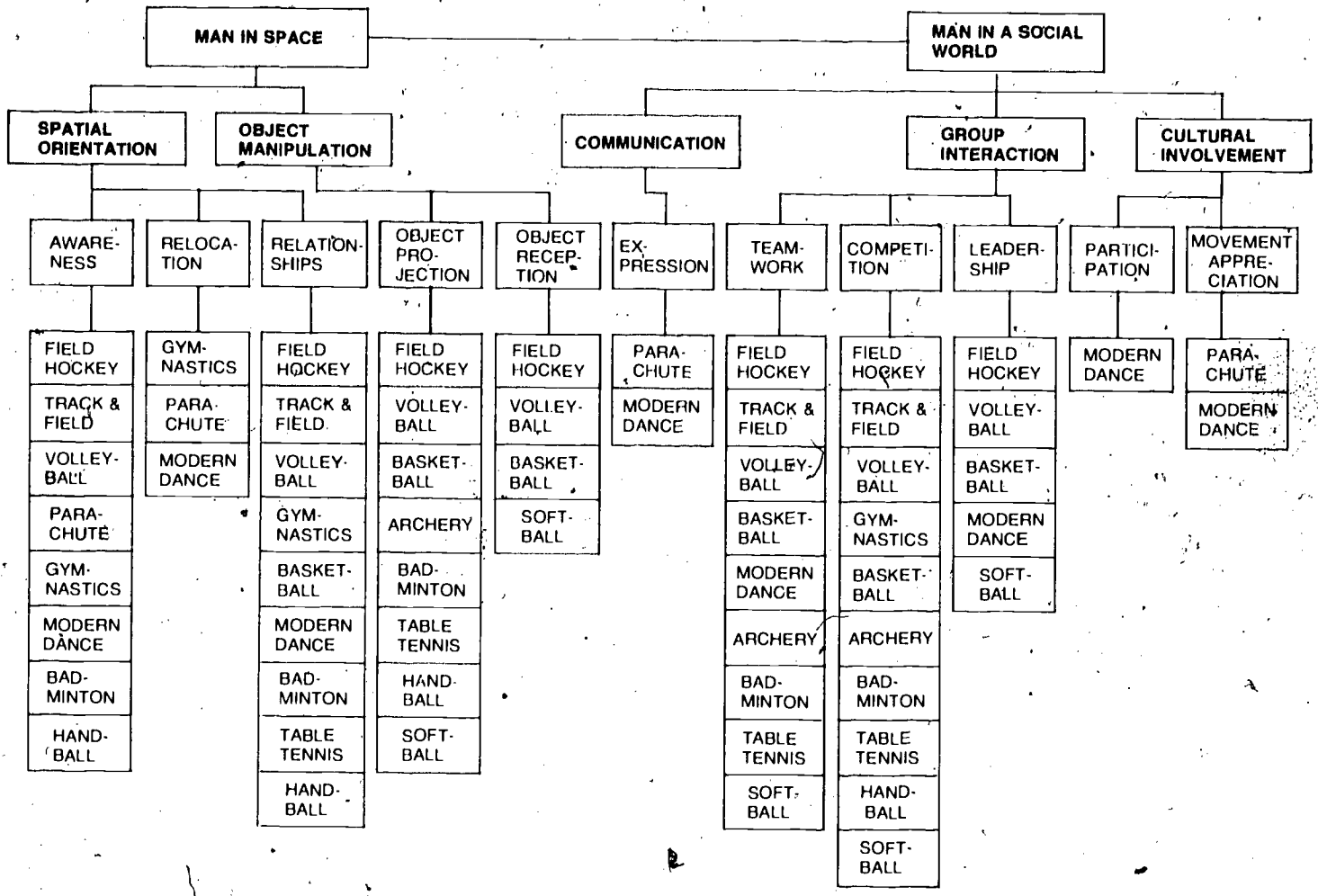


Figure 14. Middle School Physical Education Curriculum Plan

Activities	Purposes				Process (Motor Domain) — to be developed
	Physiological Efficiency	Teamwork	Participation	Others*	
Soccer	X	X			skills strategy — creative movement (varying, improvising, composing)
Field Hockey	X	X			skills strategy — creative movement (verying, improvising, composing)
Speedball	X	X			skills strategy — creative movement (varying, improvising, composing)
Flag Football		X	X		fundamental + application (perceiving — adapting)
Basketball Tournaments	X	X		competition	skills strategy (improvise — composing)
Volleyball Tournaments		X	X	obj. proj. competition	skills strategy (improvise — composing)
Softball		X	X		skills strategy + application (refining — improvise)

*Purposes served other than the three emphasized in the curriculum plan.

Figure 15. High School Physical Education Curriculum Plan

Activities	Purposes				Process (Motor Domain) – to be developed
	Physiological Efficiency	Teamwork	Participation	Others*	
Archery			X		fundamentals + application (perceiving – refining)
Tennis			X	obj. proj. obj. rec.	fundamentals + application + skills strategy (perceiving – composing)
Golf			X	obj. proj.	fundamentals – application (perceiving – refining)
Wt. Training	X				fundamentals (perceiving – pattern)
Gymnastics I	X mech. eff.			relocation maneuvering wts. interest	fundamentals – application (perceiving – varying)
Gymnastics II	X			challenge expression interest	application – skills strategy (refining – composing)
Swimming	X mech. eff.		X		fundamentals – application (perceiving – refining)
Floor Hockey		X		interest professional team in area	fundamental – application (perceiving – adapting)
Outdoor Education			X		cognitive domain fundamentals (perceiving + pattern)
Jogging	X				application – refining cognitive awareness of self
Badminton			X		fundamentals – application – skills (perceiving to composing)
Yoga	X		X		fundamentals – application (perceiving to refining)
Judo Self-Defense			X		fundamentals – application – skills (perceiving to improvising)
Sr. Life Saving			X		fundamentals – application (perceiving – refining)
Rec. Games					
Bowling			X		fundamentals – application (perceiving – refining)
Slimnastics	X				cognitive learning – fundamentals (perceiving – patterning)
Orienteering	X				cognitive learning – about fitness
Bicycling	X		X		fundamentals – application
Backpacking	X		X		fundamentals – application
Outdoor Rec. Games			X		

*Purposes served other than the three emphasized in the curriculum plan.

Figure 15. High School Physical Education Curriculum Plan (continued)

KINDERGARTEN			ONE AND TWO			THREE AND FOUR		
Activity		Purpose	Activity		Purpose	Activity		Purpose
Fundamental Movement	II-C	8. Awareness 9. Relocation 10. Relationships	Fundamental Movement	I-B	4. Joy of Movement 5. Self-Knowledge			
Fitness	I-A	1. Circulo-Respiratory Efficiency 2. Mechanical Efficiency 3. Neuro-Muscular Efficiency	Fitness	I-B	5. Self-Knowledge	Fitness	I-A	1. Circulo-Respiratory Efficiency 2. Mechanical Efficiency 3. Neuro-Muscular Efficiency
Ball Skills	II-D	12. Object Projection 13. Object Reception	Ball Skills	II-D	12. Object Projection 13. Object Reception	Ball Skills	III-F	17. Teamwork 18. Competition
Rope Skipping	I-A	1. Circulo-Respiratory Efficiency 3. Neuro-Muscular Efficiency	Rope Skipping	I-B	6. Catharsis 7. Challenge	Rope Skipping	III-G	20. Participation 21. Movement Appreciation
Creative and Dramatic Rhythms	III-E	14. Expression 15. Clarification	Creative and Dramatic Rhythms	I-B	4. Joy of Movement 6. Catharsis	Creative and Dram. Rhythms	III-E	14. Expression 15. Clarification 16. Simulation
Gymnastics Stunts and Self-Testing	I-B	4. Joy of Movement 5. Self-Knowledge 6. Catharsis 7. Challenge	Gymnastics Stunts and Self-Test. Apparatus Tumbling	II-C	8. Awareness 9. Relocation 10. Relationships	Gymnastics Stunts and Self-Testing		1. Circulo-Respiratory 2. Mechanical Efficiency 3. Neuro-Muscular Efficiency
Apparatus	I-A	Physiological Efficiency				Apparatus Tumbling	I-A	

*Purposes are keyed to key concept, major concept, and purpose element numbers of purpose framework (pages 4-5).

Figure 16. Scope and Partial Sequence Chart for Grades K-4

process categories have been used in writing unit performance objectives.

College Physical Education Curriculum Plans. Figure 19 (page 28) is a graphic presentation of a college physical education curriculum plan.[14] This pattern is designed to facilitate achievement of educational objectives in the motor, cognitive and affective domain as well as to provide for development of all major purpose concepts. The activities included within the program have been analyzed to identify the key contributions of each in terms of both purpose and process dimension of the PPCF.

The specific intentions or objectives of the planned curriculum are indicated in the lower portion of the chart. The chart is designed to show the framework of the learning process and the role of physical education. By utilizing the activities offered in the physical education curriculum, the experiences can be planned so each will be focused on achieving the specific objectives. The learner will be able to apply the acquired behavioral experiences toward developing an understanding of the purposes of movement. The chart indicates how each activity in the curriculum assists in meeting the specific objectives. The curriculum is outlined in general categories of activities, with the major area of contribution for each category indicated by the line leading to the specific objectives involved.

Another example[15] of implementation of the PPCF at the college level is illustrated in a private church-related four-year college program as it was offered from 1969 to 1973. The program was designed as a proficiency program that required the demonstration of competence in three major areas, physical education foundations, aquatics proficiency, and lifetime activity proficiency, and a substantial amount of participation in physical activities of the student's own choosing. An adaptive program was available for those needing program modifications. A wide variety of choices were open to the

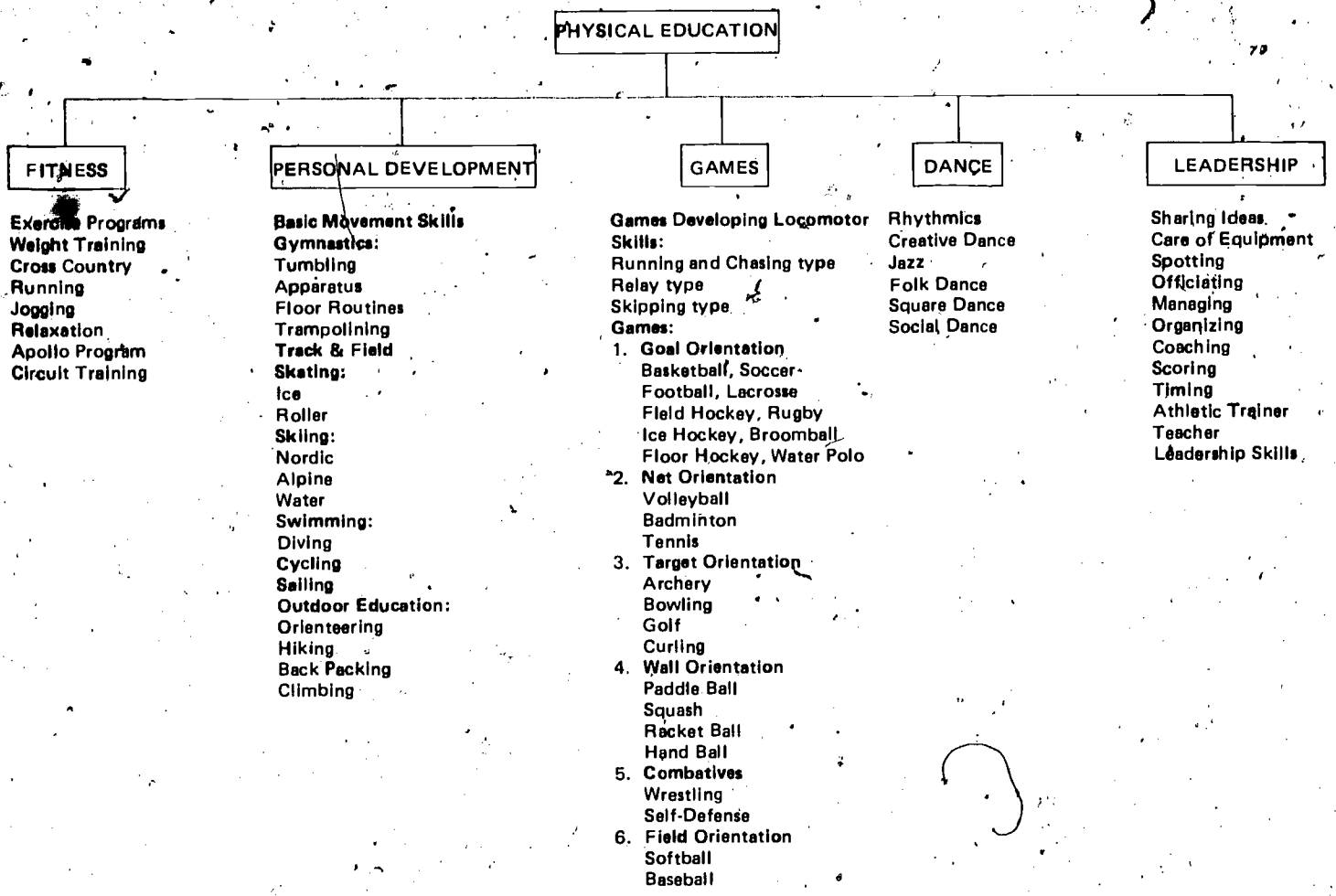


Figure 17. Subject Areas . . . Part IV Curriculum Model

Subject Area	Concepts	Possible Activities
FITNESS: 1 Unit	Circulo-Respiratory Efficiency (A-1) Self-Knowledge (B-5)	Cross Country Running, Cross Country Skiing, Jogging
PERSONAL DEVELOPMENT: 1 Unit	Neuro-Muscular Efficiency (A-3) (balance, agility, co-ordination) Challenge (B-7)	Tumbling, Floor Routines Apparatus – Trampolining
GAMES: 5 Units 2 Goal Types	OBJECT MANIPULATION (D)/Projection (D-12) Reception (D-13) a) one using the body to manipulate the object b) one using an implement to manipulate the object GROUP INTERACTION (F)/Teamwork (F-17), Competition (F-18)	Body: a) Basketball, Soccer, Team Handball, Flag Football, Rugby b) Ice Hockey, Floor Hockey, Lacrosse, Broomball, Field Hockey
2 Net Types	OBJECT MANIPULATION (D)/Projection (D-12) Reception (D-13) a) one net game using the hands to manipulate the object b) one net game using an implement to manipulate the object	a) Volleyball b) Badminton, Tennis
1 of: TARGET or COMBATIVE Types	SPACIAL RELATIONSHIPS (C-10) TARGET Object Projection (D-12), Catharsis (B-6) COMBATIVE Maneuvering Weight (D-11), Neuro-Muscular Efficiency (A-3) (agility)	Curling, Golf, Archery, Bowling Wrestling, Self Defense, Judo
DANCE: 1 Unit	Participation (G-20), Joy of Movement (B-4), Clarification (E-15)	Folk Dancing, Social Dancing, Square Dancing, Modern Dancing

Figure 18. Core Program Outline - Grade 10

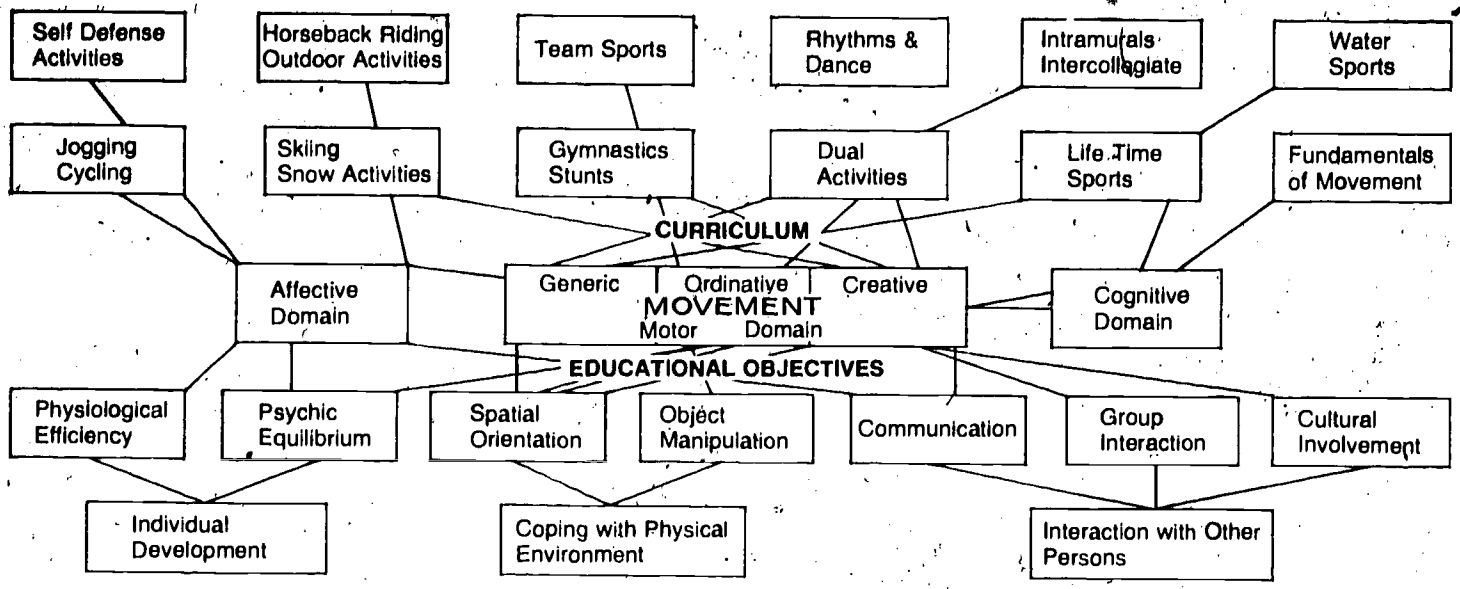


Figure 19. College Physical Education Curriculum Plan

students for meeting requirements in each of the competency areas. The requirements of this program are summarized below. (Figure 20)

PROFICIENCY PROGRAM IN PHYSICAL EDUCATION

I. Foundations
   A. Achieve an adequate knowledge, understanding, and appreciation of physical education and the role and function of physical activity in modern-day living.
   B. Demonstrate an acceptable level of physical fitness in terms of agility, balance, coordination, endurance, flexibility, strength and basic motor skills of running, jumping, leaping, lateral movement and the projection of objects.

II. Aquatics Proficiency
Demonstrate a level of watermanship that indicates that the individual is safe in and about the water. No specific strokes are required. Students unable to meet this requirement will enroll in a swimming course until this proficiency is achieved.

III. Lifetime Activity Proficiency
Demonstrate an intermediate level or above of skill and knowledge in one lifetime activity listed below:

Archery	Racquetball
Badminton	Scuba
Bowling	Square Dancing
Canoeing	Squash
Golf	Tennis
Handball	Water Safety Instructor
Outdoor Education	

Any activity not listed, may be approved by the proficiency committee of the department.

IV. Participation Units
This requirement may be met by registering and participating in any two of the following or by registering and participating in two physical education instructional classes:
   Departmental interest groups (clubs)
   Varsity or extramural teams
   Intramural seasonal activities
   Physical education instructional classes

Participation in the above program must be for the specified period of time as designated by the instructor who is coaching, directing, or coordinating the activity.

ADAPTIVE PROGRAM. For students whose participation in the basic program must be modified because of lack of physical development or because of an atypical condition, an individualized program will be planned in consultation with the department chairman and the proficiency committee. The status of the student will be determined by a physical proficiency test or by a physical examination and doctor's advisement. Completion of the program will include achievement in three basic areas: foundations, swimming proficiency, and a lifetime sport, or reasonable substitute(s).

Figure 20.

Summary

The Purpose Process Curriculum Framework is a flexible tool for use in physical education curricular decision-making. Decisions in the area of content selection are based on constructs of purposes or processes or both. Currently most of these constructs are largely hypothetical, lacking conclusive research findings delineating the specific elements and subelements comprising a single purpose or process component. Examples of construct analysis have been presented to indicate the nature of possible content and probable future directions in strengthening the research base for such

curriculum decisions. Once a decision has been made concerning the components of a given concept element, the designer may select program content to develop a single element, to emphasize several selected concepts, or to offer a program based on the comprehensive framework.

[1]Gail Joyner, unpublished paper, South Carolina State University, Orangeburg, 1974.

[2]Bonnie J. Blaser, "The Construct of Joy of Movement as Reflected Through Seventh Graders' Enjoyment of Movement Tasks" (Master's thesis, University of Wisconsin, 1974).

[3]L. Sue Jones, "The Construct of Body Awareness in Space as Reflected Through Children's Ability to Discriminate Directions, Levels, and Pathways in Movement" (Doctoral dissertation, University of Wisconsin, 1972).

[4]Jo Ann Walker, unpublished paper, Madison, Wisconsin, Area Technical College, 1974.

[5]Judith A. Wido, unpublished paper, University of Georgia, Athens, 1976.

[6]Rod K. Dishman, unpublished paper, University of Wisconsin, Madison, 1974.

[7]Gretchen Brockmeyer, Decorah, Iowa, unpublished paper, Luther College, 1973.

[8]Beth Emshoff, unpublished paper, Madison, Wisconsin, Public Schools, 1972.

[9]Judi Knight and Ron Tatar, unpublished paper, Sweet Home School, Amherst, New York, 1974.

[10]Michele Marks, unpublished paper, Turn-of-River Middle School, Stamford, Connecticut, 1972.

[11]Nancy R. Riccio, unpublished paper, Lewiston-Porter Central School, Lewiston, New York, 1974.

[12]John Gronholz, unpublished paper, St. Paul's Lutheran School, Lake Mills, Wisconsin, 1972.

[13]Arlene McGinn and Leroy Pelletier, Calgary Separate School System 1976-1977 Pilot Program Materials, Calgary, Alberta.

[14]Billie J. Moore, unpublished paper, California State University, Fullerton, 1972.

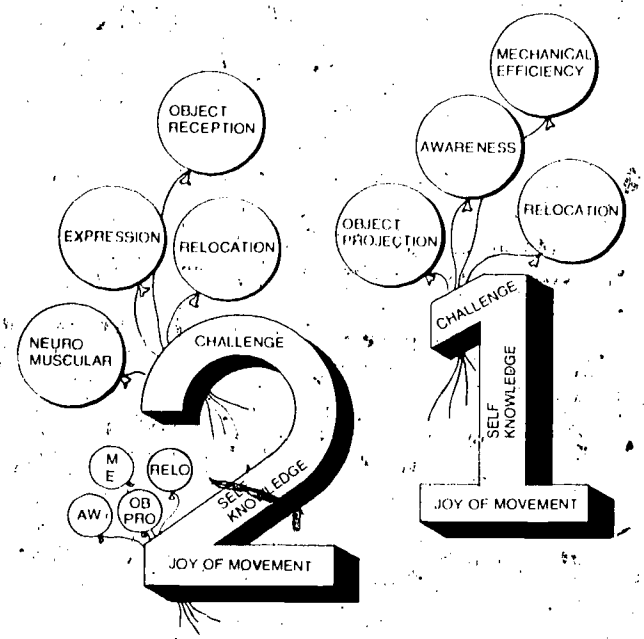
[15]Carolyn Wallin, unpublished paper, Furman University, Greenville, South Carolina, 1976.

HOW ARE LEARNING ACTIVITIES ORGANIZED?

As a framework for curricular decision-making, the PPCF is a multi-purpose tool. As already demonstrated, it can be used in determining curriculum goals and in selecting program content. The PPCF can also be applied to the curricular and instructional decisions involved in organizing learning activities. Examples given in the preceding section included a number of suggestions for organizing activities, just as the following illustrations will give added insights into the decisions of content selection. The materials that follow focus primarily on the planning of instruction at the activity unit level or the organization of activities within a somewhat narrowed conceptual scope or limited time frame. The range of possibilities is infinite. A few intentionally diverse applications have been selected.

Lesson Planning

A physical educator organizing learning activities for primary grade children may develop a model based on the PPCF such as the model illustrated in Figure 21. Key program emphases are joy of movement, self knowledge and challenge. The model for the second grade curriculum highlights in addition, the purpose concepts of relocation, neuromuscular efficiency, expression, and object reception. It is built upon a first-grade program which emphasized awareness, relocation, mechanical efficiency, and object projection, as well as the core concerns of joy of movement, self-knowledge, and challenge. The model also includes guidelines for planning the child's process. A series of three lessons planned to focus on relocation, using this second-grade curriculum model, are demonstrated in Figure 22.



Guide for Planning: Child's PROCESS – "perceive - pattern - refine - vary - create"

The child will be encouraged to:

1. efficiently use relocation skills with increased challenge on coordination, balance and timing.
2. be effectively motivated to increase ability in motor performance when working alone and with partner(s).
3. maneuver own weight, weight of others and objects (implements), controlling and increasing force during stationary and moving conditions.

Figure 21. Model for 2nd Grade Curriculum (games-gymnastics-rhythms)

Lesson Focus:

1. Jumping and landing toward greater efficiency
2. Transfer of weight while traveling
3. Group activity

Lesson 1	Examples
1. Perceive process	Jump and land exploration (personal space) Questions: How do you use your legs to jump? How do you land softly? Can you use your legs in different ways to jump? Which parts (body) initiate the jump? Which parts (body) are important? Which body parts go highest? Can you make another part go higher?
2. Vary process	Travel using different body parts—hands and feet—change direction—stretch and curl positions—etc.
3. Vary process	Run and jump, landing softly—try a different take off position i.e., two feat—one foot, change lead foot. Use ropes for making bridge lines on the floor wide to narrow for jumping
Lesson 2	
1. Pattern process	Run and jump high (listen for drum beat) Run and jump long Always land softly Run and jump turning—small runs, long runs
2. Refine process	Show body bridge over a line (rope). Are there other body parts to support bridge? Wide bridge—narrow bridge Move one end, keep other end stationary Can both ends move?
3. Vary process	Leap frog—show base position and hands on vault Series of leap frog—over two, new base
Lesson 3	
1. Vary process	Can you jump in different directions? Can you jump showing a different shape in the air? Can you jump at different levels? Show a shape while jumping—another? Show a sequence of jumps using different shapes.
2. Vary process	Show several bridges, vary space (distance). Can you make curved, twisted, bent bridges? Change from one type to another, one end stationary. Make bridge with partner and then, over and under partner.
3. Vary process	Jumping rope using long rope (4-5 in group).

Figure 22. Lessons for Relocation

Elementary School Soccer Worksheet

Figure 23 presents excerpts from a curriculum model worksheet[2] developed for district-wide use by physical education specialists. It is intended for planning for soccer activities for grades four and five. Purpose concepts to be emphasized are listed in the first column. Selected behavioral goals are listed in column two; they have been stated and classified in terms of the movement process categories of the PPCF. Suggested learning experiences and evaluation standards are indicated for each behavioral goal.

Goal-Oriented Games Unit

An outline for a goal-oriented games unit[3] for grade six is presented below. Concepts to be developed are identified at the outset. Approaches used to achieve the stated performance objectives are clarified in the discussion of problems for students/suggestions for teachers.

Grade 6
Unit 12
Group Interaction F
Games - Goal Oriented F, 17, 18

GAMES

1. *CONCEPTS TO BE DEVELOPED*

Teamwork F. [illegible]4
Competition F. 18
Goal oriented Games F. 18
Joy of Movement B-4
Participation-(Partners, one on one, two on one, two on two, three on three) G. 20
Self-Knowledge B-5

2. *SKILLS TO BE DEVELOPED*

Co-operating within a group to plan a game
Challenging members of your group in offense or defense
Sharing ideas
Recognition of strategies

Concepts	Behavioral Goals	Learning Experiences	Evaluation
Relocation	The student should be able to maneuver his body quickly within a confined area. (A-2)	Tag games with boundaries. Continuous running in a confined area for warm-up.	The student will run at high speed in a confined area without colliding with anyone.
Relationships	The student should be able to adjust position to assume appropriate relationship to opponent in making forward progress toward goal. (B-3)	Practice without ball with a partner with focus on maintaining relationship with partner. Practice with ball without attempting a tackle.	The student will maintain appropriate relationship to mark forward progress in a modified game 60% of the time. (Subjective)
Object Projection			
Dribbling	The student should be able to control body action and ball handling to dribble around obstacles keeping the ball close to him. (B-4)	Practice dribbling around obstacles arranged in different ways. (Stress control, not speed) Try to advance the ball over a line 20 yards away with defensive man trying to take the ball but not gain possession.	The student will dribble the ball weaving between a line of 4 markers 30' long down and back in_____ seconds.
Passing and Advancing	The student should be able to combine body action and ball handling in moving to the ball and passing accurately to a target with inside, outside, and heel of foot (B-4)	Practice alone using his specified target. Practice passing to a moving partner. Practice passing forward, backward, and sideward to players in a circle. Try to deceive circle players by varying the passes.	The student will move to the ball and pass it to a____ft. target with: 1. inside of foot 4 out of 5 2. outside of foot 4 out of 5 3. back of foot 4 out of 5
Shooting	The student should be able to combine body action and ball handling to shoot toward a modified goal in a game situation (B-4)	Practice dribbling to a point for a goal from varying positions and distances. Practice dribbling around obstacles and shooting for goal with a goalie guarding it.	The student will shoot for and make a modified goal on 50% of his tries in a game situation.
Trapping	The student should be able to trap a ball coming directly to him (A-2)	In a circle formation, trap the ball to prevent it from leaving the circle. (Could have teams and make a game situation.)	The student will trap a ball coming directly to him 4 out of 5 times.
Blocking	The student should be able to execute a body block and then advance the ball against an opponent. (B-4)	Repeat above experience and follow by advancing the ball against the partner.	The student will block the ball, control it, and advance against an opponent for a distance of_____feet.

Figure 23. Curriculum Model Worksheet Soccer — Grades 4-5

3. *GENERALIZATIONS*

How movement occurs within the spatial area determines how successful a player or team is.
Fast cutting can create spaces.
Defensive play depends on the person's ability to anticipate movement and make perceptive judgments quickly.

4. *PERFORMANCE OBJECTIVES TO DEMONSTRATE CO-OPERATION AND CHALLENGE BY PLANNING AND PLAYING GOAL ORIENTED GAMES USING A ONE ON ONE OR TWO ON TWO RELATIONSHIP*

1. To co-operate with a partner to plan a "goal-oriented" game establishing
   a) equipment
   b) rules for play
   c) spatial boundaries and target
2. To plan and demonstrate offensive strategy to challenge and score.
3. To plan and demonstrate a defensive strategy to prevent scoring.
4. To share your game with other students by demonstrating the game for other students and/or changing partners.
5. To discuss "tactics" involved in offensive and defensive strategy.

5. *PROBLEMS FOR STUDENTS SUGGESTIONS FOR TEACHERS*

Cue Question. Classroom Planning
What information do we need to plan a "goal-oriented game"?
(Score on a Goal)

What do we mean by "goal-oriented"? Can you give an example of some equipment we have that could be used for a goal? (hoops, pylon, chalked wall markers, etc.) Do each of these goals or targets have a space the object can go through or hit?
What object can we use in a one to one situation that we could move through space to score on the goal? (variety of size and shaped balls, pucks, bean bags, etc.)
What limitation can we have for boundary space so we will all have space to participate? (areas, lines, etc.) This can be co-operatively determined by the class.
What rules must we consider when planning our game? Let us list ideas on the board. How do we move the object? What method do we use to score on goal? How do we change from offense to defense? What conditions or restrictions do we have on the offense and defense?
How do we settle disputes?
What is a game "strategy"? (game plan) What do we mean by "tactics" (way you can move or manipulate your body or the object to implement your game plan)?

Cue Question. What are the responsibilities of the offensive and defensive player?
What do we mean by offense? (attempt to maintain possession and to score) What do we mean by defense? (retrieving the object and preventing the opponent from scoring) What do we mean by a strategy for offense or for defense? (a plan or method used to achieve the desired results) Strategy can be a plan for the whole team as well as for each person on the team. What tactics can you use to co-operate with your partners to assist in offense? (Get into an open space, move quickly to get free from your opponent) What tactics can you use to co-operate with your partner to assist in defense? (help out, watch your check and try to watch the object at the same time.)
Cue Question. What safety procedures must we be concerned about when planning or playing a goal game?
Is the field (environment) safe? Is it free from objects? Is there enough space for the participants? Is the equipment safe? What protective clothing do we need? (feet, body, hands, face.)

6. *TASKS*

a. Co-operate with a partner to plan and play a "goal-oriented" game using: (Do any of the following)
   1) a ball, a chalk wall target, your foot for projection
   2) a ball, two sticks, a hoop target
   3) a bird, two paddle bats, a hoop target.

   Plan - rules for offense, defense, strategy for scoring, taking turns, etc.
   Can you stop on the signal and share and discuss with your partner the strategy (plan) you used for offense and defense?
   What tactics (movements, etc.) helped you in your game plan?
b. Can you change patterns as directed? Can you learn and play your new partner's game? Can you teach your new partner your game? Have you checked the safety procedures? When stopping on signal, can you discuss with your partner strategies for offense and defense and the tactics you used to implement the strategy?
c. Volunteer to share your game with the class. Have the students try a variety of "goal-oriented" games.
d. Can you adjust your game so that you and your partner can co-operate as a team and challenge two other students?
   Decide which of the two games will be played first.
   Explain to the opposition the rules that will be used.
   Check to see if the opposition has questions before you begin.
   Have you checked the safety procedures?

e. Can you discuss with your group and finally with the whole class ideas you have discovered about offensive strategies and defensive strategies and the tactics you used to implement these strategies that seem to be common in all the "goal-oriented" games you played?
f. Can you identify "goal-oriented" games you have watched or played? (hockey, basketball, football, etc.)

Physiological Efficiency Unit Plan

Below is a seven-week unit plan[4] of 21 classes designed for eighth-grade boys using many instructional materials, the outdoors and gym to focus learning on the major purpose concept, physiological efficiency.

The first week the entire class is given the AAHPER Physical Fitness Test. The test norms are made available to the students. The purpose is for the student to find his fitness level, find the areas in which he is weak as well as strong, and to begin to set goals for improving or maintaining a fitness level.

The second week each student will be further classified, using his physical fitness test results, by the tables set up in the Victor P. Dauer publication, "Fitness for Elementary School Children." The three tables to be used are those concerned with sit-ups, pull-ups, and 600-yard run-walk.

The film, "Outward Bound," which deals with putting young men and women against a constant and impartial natural environment, is shown. This is done to motivate the class and to expose them to a realistic environment requiring a high degree of fitness.

The third week instructional materials provided by the outdoors and the natural environment are introduced. Adjacent to the school is a 2.5 mile cross country course which has three stopping points at which students are to engage in learning activities and make use of instructional materials provided by the environment or set out by the teacher. Point number one has an audiotape instructing students to engage in a series of flexibility exercises. Point number two has a series of strength exercises and station three has the groups engage in games, such as chain tag or hand soccer, which increase circulo-respiratory endurance. Each time students move from one station to another they are instructed to use various movement patterns which vary according to the group classifications. The students run the course twice during the third week; the instruction emphasizing mechanical efficiency, neuromuscular efficiency and circulo-respiratory efficiency varies each period. In addition to the cross country course experience offered during the third week, students are asked to use the library to find definitions for flexibility, strength, cardio-respiratory endurance, speed, agility, muscular endurance, and power-application of force. Selected books are on reserve for class use.

The fourth week a circuit training course is set up in the gym. Station number one consists of three sets of weights and written instructions on how to use these weights while engaging in flexibility exercises. At station number two there is a record, "15 Tunes for Physical Fitness," and twenty jump ropes. The students are to jump rope to the various tunes, stopping only to adjust to the rhythm of the music. A loop film entitled "Developmental Fitness" is at station three. The purpose of this station is to provide information to the students concerning fitness while allowing for a recovery period prior to moving on to the next station. Station number four features a recording, "Isometrics Made Easy," which contains four sets of exercises to develop strength in the major muscle areas and is designed for a large group. Station number five is a testing station and includes record forms, pencils, mats and a horizontal bar. The students are to re-test themselves on the sit-ups and pull-ups and record their progress. At the end of this week each student is to submit a list of ways the natural environment might be utilized for developing physiological efficiency.

The fifth week the students are re-tested on the 600-yard run-walk, first using the 440-yard track, and then again on the cross-country course; this information is for feedback to the students. Instructional materials are borrowed from the biology department for use in a lecture-lab setting for explanation of the elements of physiological efficiency.

During the sixth week, students run the cross-country course again. At each station materials from the natural environment must be utilized for designing activities to develop mechanical efficiency, neuromuscular efficiency or circulo-respiratory efficiency. The purpose is to allow students to analyze and evaluate their weaknesses in physiological efficiency and to be creative in reaching the goals.

The seventh week will be used for re-testing with the AAHPER Youth Fitness Tests and the Dauer Classification Tables to determine individual student progress.

Junior High School Girls Curriculum Guide

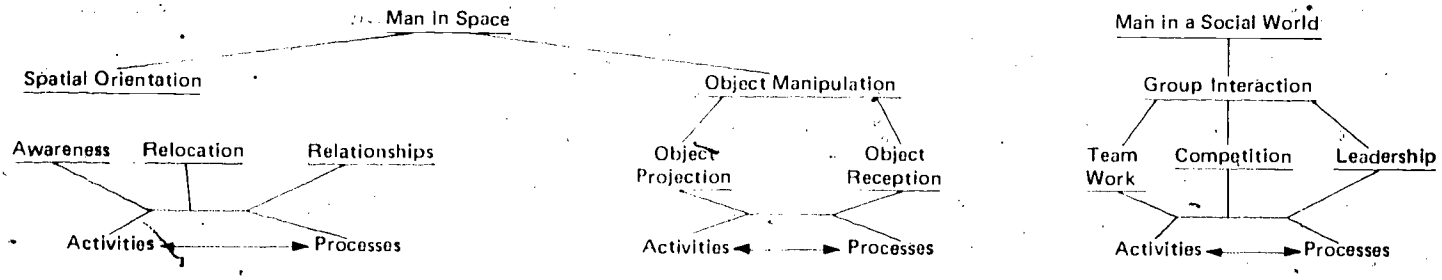
The following example (Figure 24) is a guide[5] demonstrating the organization of learning activities for a physical education program for seventh- and eighth-grade girls. The major purpose concepts to be emphasized are spatial orientation, object manipulation, and group interaction. For each of the three major purpose concepts, the author has identified the activity content and the movement processes to receive attention in instructional planning.

Coeducational Volleyball Unit

A coeducational junior high school volleyball unit[6] has been selected to illustrate another type of implementation (Figure 25, pages 34-35). Here, the typical activity content of a volleyball unit was organized into thirteen content units. Four of these have been selected for illustration; these are listed in column one. The purpose concepts and process behaviors toward which instruction will be directed are listed for each instructional segment. Purpose and process concepts are both reflected in the statements of specific objectives.

Aquatics Activities Plan

A graphic plan[7] for organizing aquatics activities in terms of the PPCF appears in Figure 26 (page 36). The scheme includes three sequential stages, and encompasses the three key purpose concepts and all seven movement process categories.



Swimming (Strokes)	Patterning Adapting Refining	Skills involved without artificial body extension 1. hand & ball 2. feet & ball 3. head & ball 4. body & ball 5. body in various positions & ball	Patterning Improvising	Field Hockey	Perceiving Patterning
Synchronized Swimming	Perceiving Patterning Varying Improvising Composing			Soccer	Adapting Varying
				Basketball	Adapting Varying
				Volleyball	Adapting Varying
Gymnastics includes: tumbling & apparatus	Patterning Refining Varying Composing	Skills using an artificial extension of the body: 1. hockey stick & ball 2. tennis racket & ball 3. badminton racket & birdie 4. bat and ball 5. paddle racket & ball	Patterning Improvising	Softball	Adapting Varying
				Badminton	Adapting Varying
Folk Dance	Patterning			Tennis	Adapting Varying
Archery	Perceiving Patterning	Skills involved in throwing and catching	Refining		
Scooter Board	Adapting Improvising Composing	Rebounding ball on objects	Improvising		
Obstacle Relay	Perceiving Patterning Improvising	Lead up games using skills: line hockey line soccer Bowling Pin Basketball stunt kickball crab soccer	Adapting		
Jump ropes	Perceiving thru Composing				

Figure 24. Physical Education Curriculum Guide Grade Seven and Eight Girls

Activity/Organizational Format	Purpose Concept(s)	Process Behavior	Specific Objectives
III. The Serve	C. Spatial Orientation: 10. relationships	A-2 Patterning	A. Take a legal stance which will permit effective motion.
	D. Object Manipulation: 12. object projection	B-4 Refining	B. Refine the serve so that it is repeatedly sent legally to the opponents' court.
	E. Communication: 16. simulation	C-5 Varying	C. Disguise intent to and direction of serve so that opponents are taken unaware.
	F. Group Interaction: 18. competition	B-3 Adapting	D. Serve with intent of outwitting the opponents.

Figure 25. Purpose Concepts and Process Behaviors for Cooducational Junior High Volleyball Unit

Activity/Organizational Format	Purpose Concept(s)	Process Behavior	Specific Objectives
V. The Overhand Pass	D. Object Manipulation 12. object projection	B-4 Refining	A. Refine the overhead pass such that the ball is legally sent to the areas of weakest defense on opponents' court.
	E. Communication: 16. simulation	C-6 Improvising	B. Mask the movements of passing so that the opponents are unaware of where the ball will be sent.
VIII. The Block	A. Physiological Efficiency 2. mechanical efficiency	B-4 Refining	A. Refine the pattern of blocking so that the jump is accurately timed with the opposing spike, the hands extend higher than the net in front of the ball, and no foul is committed in the process.
	B. Psychic Equilibrium: 7. challenge	C-5 Varying	B. Meet the challenge presented by an opposing spike by attempting to block the ball.
	C. Spatial Orientation 8. awareness	A-1 Perceiving	D. Develop an awareness of the potentials of the body through continued use of the block.
	D. Object Manipulation: 13. object reception	B-4 Refining	E. Refine the block such that spiked balls are legally stopped from crossing the net.
	F. Group Interaction: 17. teamwork	B-3 Adapting	
	F. Group Interaction: 18. competition	B-3 Adapting	
IX. Strategy			
A. Set to Specified Spikers	C. Spatial Orientation: 10. relationships	C-3 Varying	A. Alter which spiker is to be set in the light of abilities and game conditions.
	D. Object Manipulation E. Communication F. Group Interactions: 17. teamwork		
B. Service Placement	D. Object Manipulation 12. object projection C. Spatial Orientation: 10. relationships E. Communication: 16. simulation	C-6 Improvising	B. Interpret the defensive alignment and serve accordingly.
C. Screening the Service	C. Spatial Orientation 10. relationships E. Communication: 16. simulation F. Group Interaction: 17. teamwork	C-7 Composing	C. Design a legal method of screening the server.

Figure 25. (Continued)

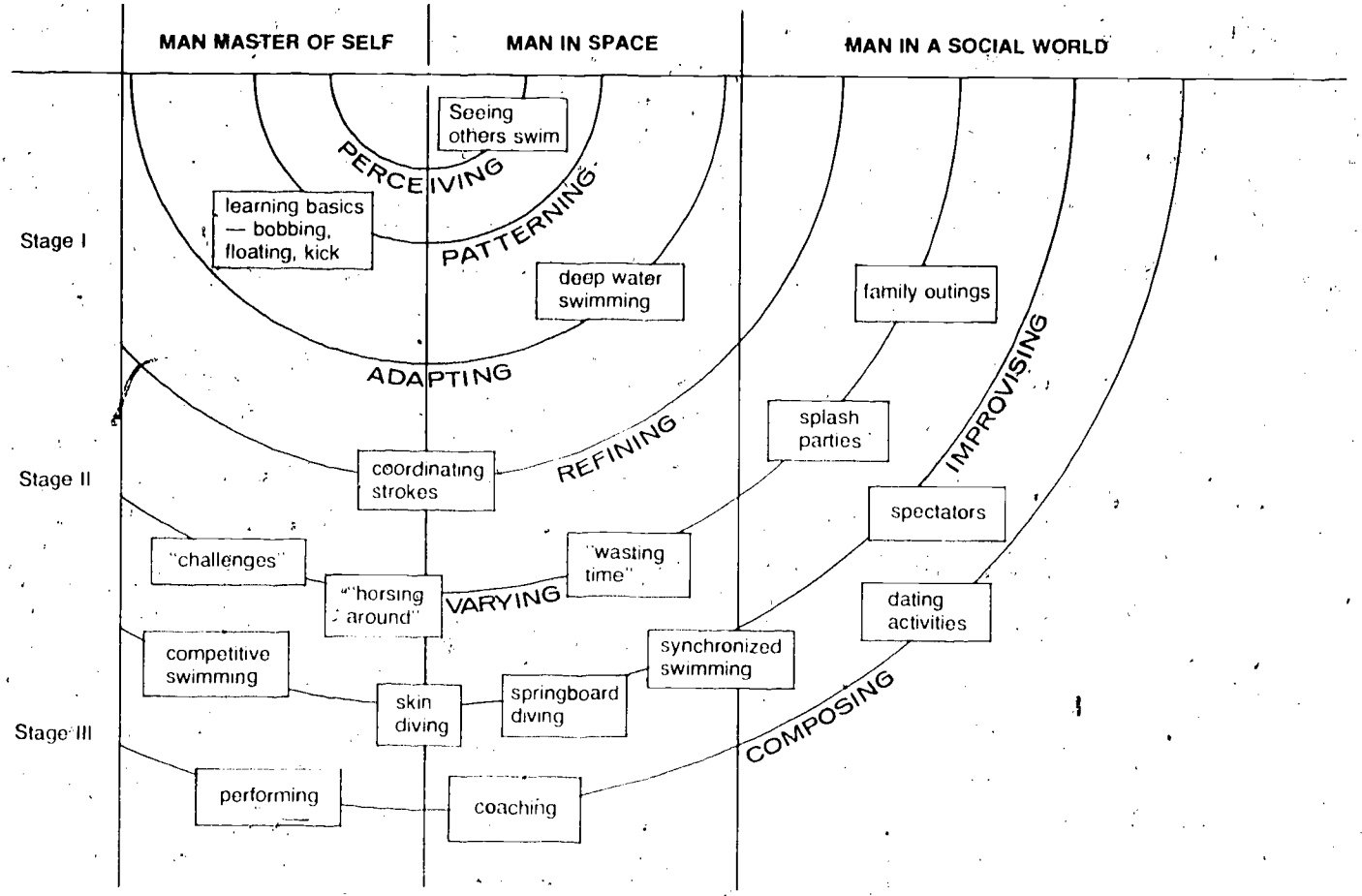


Figure 26. Purpose/Process Plan for Organizing Aquatics Activities

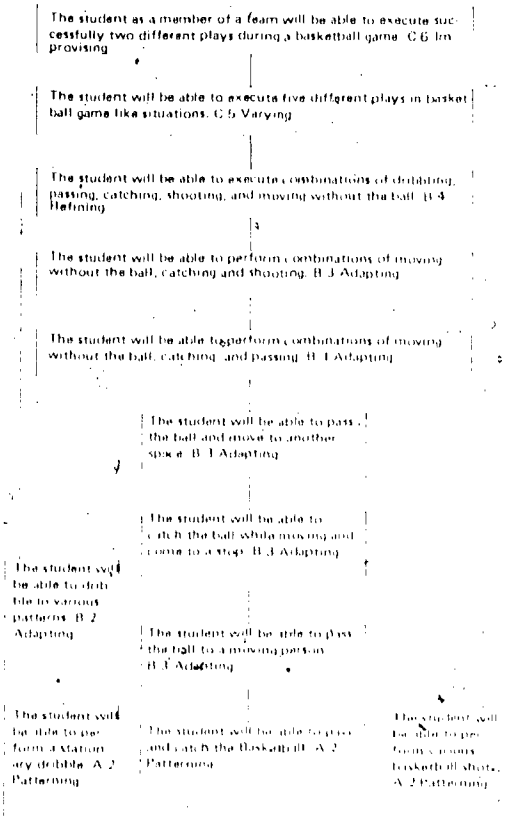


Figure 27. Learning Hierarchy for Basketball Teamwork

Learning Hierarchy for Basketball Teamwork

A physical educator who uses a mastery approach in organizing learning activities can develop learning hierarchies in terms of movement process categories. This approach is illustrated by a learning hierarchy for teamwork in basketball[8] (Figure 27). The end goal of the hierarchy was determined first to be: "The student as a member of a team will be able to execute successfully two different plays during a basketball game." Then the components necessary to achievement of that goal were listed and sequenced according to the process categories of the PPCF.

Relationships Concepts in Basketball

The final example in this section illustrates the use of basketball activities in developing concepts of relationships (as an element of spatial orientation). Specifically, a theoretical construct of relationships has resulted from an analysis of the components of offensive strategy in basketball. The learning experiences described[9] are directed toward the relationship purpose as it is involved in offensive strategy against a set defense (excluding fast breaks). It is recognized that many aspects of basketball appropriate to the purpose concept have been excluded. The simultaneous development of skills necessary to implement the strategies is not con-

sidered, nor is the simulation purpose, which is also an integral part of implementing strategy. Learning experiences emphasize three aspects of offensive strategy.

The following abbreviations are used in denoting the construct:

STAT OBJ: FOCUS	Moving in relation to stationary object, with a focal relationship.
MOV OBJ: INTER	Moving in relation to moving object. Individual interacts with moving object by projecting, intercepting, dodging.
REACT	Individual reacts to movement of moving object by making adjustment in own movement but not interacting with it.
OTHERS: SYNCH	Individual moves in relation to other people. Individual attempts to synchronize movement with that of others.
ANTIC	Individual perceives movement of others and then responds.
PLAN	Movement in relation to others is pre-planned.
SPON	Movement in relation to others is spontaneous.
COOP	Individual and others have same or compatible purposes for movement.
COUNT	Individual's purposes are counter to purposes of others.
PERC	Individual observing others but no motor response.

The learning experiences designed to develop concepts of relationships emphasize three aspects of offensive basketball strategy:

1. the creation of crucial situations which force the defense to make a critical choice, to commit themselves to a course of action which covers one possibility but creates accompanying weaknesses;
2. the recognition of how the defense has responded;
3. the implementation of the appropriate action to capitalize on the resulting weakness.

I. Perceives the relationship of self to teammates, the ball, and the goal and moves with consistent focus on "going to the basket."

STAT OBJ: FOCUS

A. Moves in relation to goal

1. One player moves and handles ball; bell attached to basket signals to shoot and follow for rebound.
2. Three players moving and passing ball; bell signals player with ball to shoot and others to rebound.

STAT OBJ: FOCUS
OTHERS: SPON, ANTIC, REACT, COOP

B. Moves in relation to teammates and goal

Give offensive players in 1-3-1 set-up moving and passing ball; any player except point cuts toward basket when lane not occupied. Buzzer activated whenever someone in lane. Stress on sensing movements of teammates and "open" lane.

MOV OBJ: INTER
OTHERS: SPON, ANTIC, COOP

C. Moves in relation to the ball

Spotlight provides moving circle of light sweeping throughout halfcourt. Five players moving and passing ball in attempt to get ball into light circle where iridescent spots will show. Emphasis on constant movement of ball. View videotape to observe success in selecting target, leading with passes, anticipating receipt so that no lulls occur in movement of ball.

STAT OBJ: FOCUS
MOV OBJ INTER, REACT
OTHERS: SPON, ANTIC, REACT, COOP

D. Moves in relation to teammates, ball, goal. Add continual cutting through lane to constant movement of ball until pass to cutting player can be synchronized so that no delay occurs in movement of ball. View videotape replay of each pass to a cutting player instantly after it occurs to determine if timing synchronizes.

II. Understands specific defenses in terms of possible weaknesses.

OTHERS: PERC

A. Understands possible defensive patterns

Students view films of games illustrating variety of defensive tactics. Students describe defense used.

OTHERS: PERC

B. Understands the principles of operation of a specific defense

1. Learn specific roles of defensive players by any of these alternatives: reading a description, observing a demonstration, watching film, designing own defense and determining the roles.

2. Practice the selected system of defense until able to execute it.

OTHERS: PERC

C. For specific defense, perceives possible weak points and how these situations are created by offensive action.

1. Individual student uses strategy game. Designed as branching programmed instruction in which starting situation is described, student controls offensive team actions, game indicates defensive reactions. Probable outcomes indicated and scored. Student attempts to discover defensive weaknesses.

OTHERS: REACT, COUNT

2. Student views loop films of "choice points" for defense illustrating alternative defensive responses. (Example: Against 2-1-2 zone, offensive player in corner near endline threatens to shoot. Back defense can come out to guard shot or not; if goes out, other defensive players may or may not shift to compensate.) Observers of loops discuss ways to take advantage of defensive response.

III. Plans and executes offensive strategy designed to create weaknesses in defense.

OTHERS: PERC

A. Recognizes critical points as they occur in game (i.e. points where defense must commit itself)

Student views film of game from perspective of own position. Student can stop action at critical point and describe how situation was created and what alternatives are available to defense.

OTHERS: PLAN

B. Intentionally creates critical situations.

1. Student repeats strategy game experience concentrating on developing consistent strategy to beat that defense.

OTHERS: PLAN

2. Game situation in which offensive team consistently tries to create particular critical situation. Emphasis on forcing defense to commit rather than upon a follow-up response.

OTHERS: SPON

3. Game situation in which player carries wireless microphone and verbally describes what she is trying to do while playing. Audiotape synchronized with videotape. View after to assess whether attempting appropriate strategy.

IV. Identifies defensive response to critical situation and selects an appropriate offensive follow-up.

OTHERS: REACT

A. Responds at unhurried pace.

1. View film of game situation from perspective of own position showing critical situation. Student chooses next action (shoot, pass, etc.) and discusses why.

2. Electronic game simulator with visual display. Each offensive player controlled by a student. Computer controls defense in response to offensive moves. Interaction like regular game but can control pace.

3. Game situation in which offense can signal a freeze of all action, contemplate action and then continue.

OTHERS: REACT PLAN

B. Responds at speed required in game situation.

1. Game play with another student observing each offensive player; player has earphones which pick up partner's immediate reactions. At 2-3 minute intervals, stop and discuss with partner.

2. Game play videotaped and analyzed immediately after.

V. Recognizes overall patterns of defensive action and appropriately plans overall offensive strategies.

GENERAL:

A. Perceives general pattern of defense being employed.

1. Repeat experience of watching films of game and identifying defenses.

2. Game situation, defensive team alternates patterns on secret signal, offensive team calls out as soon as recognizes.

B. Recognizes persistent weaknesses in way in which defense is executed.
Views game situation and charts weaknesses observed. At three minute intervals, participants and observers discuss weaknesses of defense.

C. Selects and executes offensive strategies appropriate for defensive weaknesses.
At three minute intervals, view videotape replays and adjust play accordingly.

Summary

Several examples have been presented to illustrate the use of the PPCF in organizing physical education learning activities. Assuming prior decisions concerning the selection of content, planning has proceeded within the boundaries of a traditional activity area, e.g., volleyball; or in the context of developing a particular purpose concept, e.g., relocation; or in some cases with a joint focus, as in developing relationships concepts in basketball. In most of the illustrations, the movement process categories have been the basis for sequencing instruction.

[1]Marie R. Mullan, unpublished paper, University of Georgia, Athens, 1972.
[2]Madison, Wisconsin, Public Schools, Department of Health, Physical Education and Safety, 1971.
[3]Arlene McGinn and Leroy Pelletier, Calgary Separate School System 1976-1977 Pilot Program Materials, Calgary, Alberta.
[4]Ken Roth, unpublished paper, New Glarus High School, Wisconsin, 1971.
[5]Paddi McGee, unpublished paper, Harrison High School, Harrison, New York, 1972.
[6]Bonnie Blaser, Racine, Wisconsin, and Don Anderson, Winnetka, Illinois Public Schools, unpublished paper, 1973.
[7]Nancy Michael, unpublished paper, Athens, Georgia, Public Schools, 1975.
[8]Sheryl L. Gotts, unpublished paper, Purdue University, 1972.
[9]Linda Bain, unpublished paper, University of Houston, 1972.

HOW IS INDIVIDUAL PROGRESS EVALUATED?

All techniques available for assessment of individual status and learning may be utilized in programs based on PPCF decision-making as effectively as in programs resulting from the use of any other conceptual framework. Effective evaluation within any framework depends upon thoughtful formulation of educational goals and objectives. The PPCF can serve as a tool for rational decision-making in formulating program goals and educational objectives for particular curricula. Preceding sections have illustrated the use of student purposes for moving in determining program goals. In addition, particular techniques have been suggested for formulation of educational objectives, using purposes as conceptual referents and using the movement process categories to state objectives more precisely and to assist the planner in decisions relating to sequence.

The examples which follow illustrate the use of a set of comprehensive physical education goals, the statement of specific performance goals, the mastery learning approach, and curriculum task analysis. A final example is included to give additional insight into the types of evidence apt to be most appropriate for evaluation of individual progress in the development of the purpose and process concepts which define the PPCF.

Comprehensive Student Goals

A comprehensive summary of overall student goals[1] developed by a curriculum team of Madison, Wisconsin, public school teachers and curriculum specialists identified broad objectives for the high school graduate. Objectives were stated in each of three domains (motor, cognitive, and affective) in terms of the twenty-two purpose concept elements. Goals for three of the twenty-two elements are reproduced in Figure 28 to illustrate the approach.

Motor	Cognitive	Affective
Challenge		
The student will perform motor activities that require that he intensify or extend his ability level beyond his present capabilities and subsequently toward accomplishment of that task.		
The student will participate in activities that involve a degree of risk taking.	The student will know the hazards of risk taking in any activity setting.	The student enjoys participating in activities which involve a degree of risk taking.
Awareness		
The student should be able to effectively utilize space in any given activity (simple or complex) no matter what the field limitations.	The student should understand the principles of good space utilization with regards to where to find open space and how to get to it.	Student values the strategic implications of effective space utilization and projects his awareness.
Student will be able to move the body and/or body parts in various directions and change direction without extraneous movement and demonstrate such by successfully engaging in movement activities.	The student should understand the need to adjust his body movements with regards to spatial limitations.	
Student will be able to move his body proficiently while changing levels.		
Student will be able to adjust his range of movement in response to a specific task.	Student understands how to adjust his range of motion.	
Cultural Understanding		
The student will demonstrate intermediate or advanced ability in at least two activities significant in his own ethnic subculture.	The student will have knowledge of activities popular in many cultures, including his own.	The student will appreciate the cultural differences reflected in traditional and popular activities.
The student will demonstrate novice to intermediate ability in several activities playing a more significant role in other cultures than in his own culture.	The student will understand the role played by particular game, sport, or dance activities within a given culture.	The student will take pride in his own cultural movement heritage.
	The student will recognize variations in games and other physical activities reflecting diverse cultural customs, mores, and values.	

Figure 28. Goals for High School Physical Education Students

Each of the broad goals requires more precise statements to provide a set of summative objectives for guiding specific program and instructional decisions. Given a series of well-stated summative objectives, the teacher can develop formative objectives to guide daily planning and evaluation. Program evaluation can then focus on student achievement of summative objectives and the degree of institutional success in achievement of overall student goals.

Performance Objectives for Beginning Bowling

In contrast to the preceding comprehensive set of general objectives, Anderson[2] has provided a set of specific movement objectives for teaching bowling to ninth-grade boys and girls. The statement of specific performance objectives for any instructional unit provides criteria which can be communicated clearly among teachers and students to guide direction for learning and a base for objective evaluation of student performance upon completion of the unit. The following performance objectives in bowling are written and classified in accordance with the movement process categories of patterning, adapting, and refining.

A. General Goal — Development of Ball Approach and Delivery
From observations of a demonstration or by task analysis, the learner will be able to use a full length arm swing with the shoulder as the fulcrum so as to project a ball to cover a distance of sixty feet within 3.0-3.3 seconds seven out of ten times. (Patterning)
Following a demonstration or by task analysis the student will be able to execute a 3, 4 or 5 step pattern combined with a full length arm swing so that the ball is projected with a speed of 2.5-3.0 seconds seven out of ten times. (Patterning)
On five out of ten attempts the student will be able to coordinate the forward motion of the body (steps) with the arm swing so that the following take place:
The ball is rolled with a consistent speed of 2.5-3.0 seconds. (Refining)
The ball is released over a given point at the foul line, rolled over a specific target (point of aim) and contacts the center pin. (Refining)
The bowler finishes the approach in balance, facing straight ahead, and with a straight pendulum swing and follow through toward the target. (Refining)

B. Development of an Effective "Strike Ball"
Using a coordinated approach, the bowler will demonstrate ability to modify the point of aim and ball release so as to deliver a hook ball. (Adapting)
Using a coordinated approach and either a straight or hook ball delivery the bowler will demonstrate the ability to roll an effective first ball by averaging six pins per frame for 10 frames. (Refining)

C. Development of an Effective Second Ball
The learner will demonstrate an ability to adjust the strike ball movement pattern so that single pin leaves or multiple pin leaves may be contacted by either moving the starting position, release point or point of aim or all three. More specifically —
the bowler will be able to contact the single 7 pin (right to left angle) five out of ten times; (Adapting)
the bowler will be able to contact the single 10 pin (left to right angle) four out of ten times; (Adapting)
the bowler will be able to contact the single 5 pin (center to center angle) five out of ten times. (Adapting)
In a game situation the bowler will be able to convert space leaves three out of ten times. (Refining)

D. Summary
Upon completion of this unit on bowling the student will be able to perform and demonstrate the following for six games:
1. consistent ball speed of 2.2-3.0 seconds;
2. consistent ball roll — straight or hook;
3. ability to hit within 2 boards of one's release point and point of aim 70 percent of the time;
4. first ball average of 6.5 pins per frame;
5. mark (spare or strike) average of 3 per game;
6. average game score of 105 pins.

Softball Mastery Learning Unit

In an earlier section a learning hierarchy in basketball was presented to illustrate the use of a mastery approach in organizing learning activities in terms of movement process categories. The mastery approach can be especially effective in developing evaluative activities as well. Gotts[3] utilized the PPCF in designing a mastery learning unit for fielding in softball. Based on assessment of entry skills of the learners, the learning hierarchy was planned to achieve student purposes of object projection, object reception, and relocation. An end goal of achievement of proficiency in softball fielding was determined. This end goal was stated at the improvising level and became the summative objective of the mastery learning unit: "In a game, the student will be able to move to meet the ball, catch it, and in the same motion throw to a designated spot."

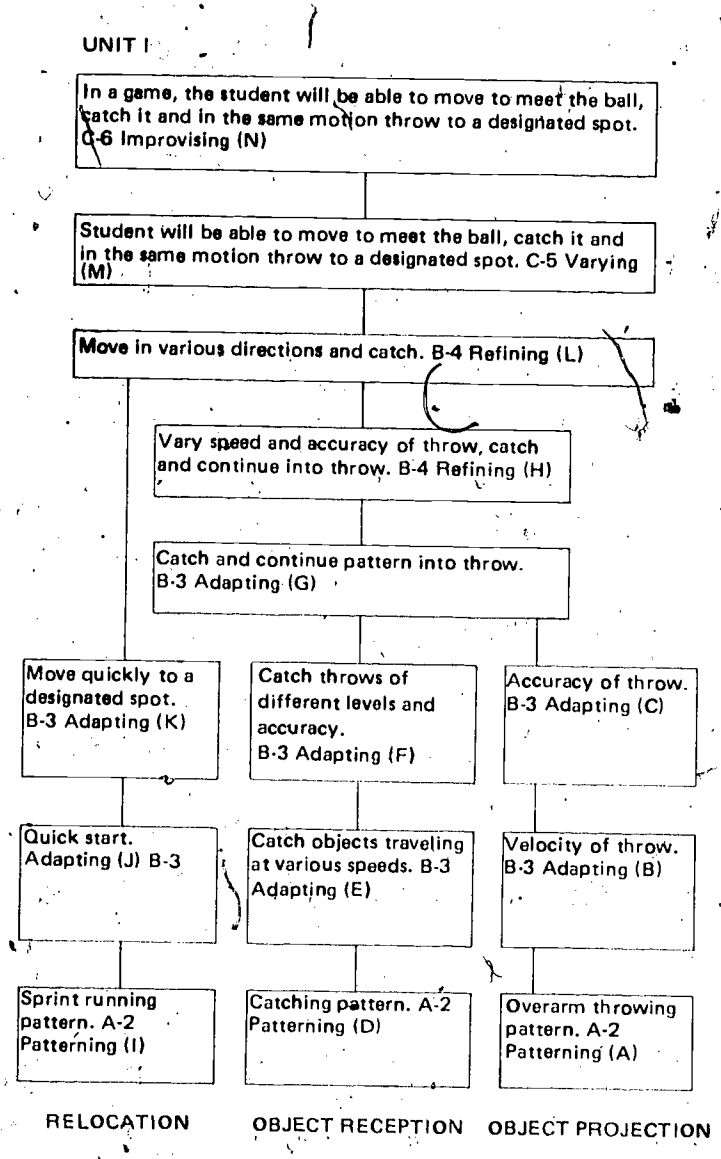


Figure 29. Learning Hierarchy For Softball: Fielding, Agility, Speed, Accuracy and Throwing

Figure 29 presents this learning hierarchy with the end goal at the top and components necessary to achieve that end goal appearing below. The objectives are keyed to the movement process categories by letter and number (e.g., C-6). The process category of the end goal is improvising because the movements cannot be preplanned since where the ball will be hit is unknown. The objectives leading to the summative objective are formative objectives written to identify different process categories. The processes in the formative objectives are patterning, adapting, refining, and varying which provide sequential steps to achieving the summative objective.

Shown at the bottom in Figure 29 are the main purpose elements in the unit, relocation, object reception, and object projection, reflected in the formative objectives. These purposes are worked on separately in the beginning of the unit and then are combined until the student is able to perform the end goal. The letters in parentheses on the learning hierarchy correspond to the learning experiences designed to achieve the learning hierarchy goal. Three illustrations of learning experiences designed for self-assessment in mastery of selected goals appear below: overarm throwing pattern (A); vary speed and accuracy of throw, catch and continue with throw (H); and move to meet ball, catch and throw to designated spot (M). In the learning experiences described, ML I, ML II, ML III, ML IV refer to the mastery levels. The performance criterion standard can be set at any one level. The choice will depend on the ability level of the students and the time available. For example, ML III could be the criterion standard. When a student has achieved that level he is free to go on to the next learning experience without regard to levels I and II. It is possible for a student to work on more than one learning experience before achieving the mastery level desired. For example, it would be possible for a student to work on learning experiences A, D and I concurrently, before achieving the desired mastery level in any one of the three.

A. Perform an overarm throwing pattern in mature form.
   1. Using a soft ball, stand 20 feet from a wall. Throw the ball against the wall. Check points:
      a. Before I start to throw my non-throwing arm side is to the wall.
      b. As I throw I take a forward step toward the wall on my non-throwing side.
      c. I shift my weight onto the forward foot.
      d. As I throw my hips and shoulders rotate so I am facing the wall.
      e. My throwing arm rotates at the shoulder joint.
      f. I follow through so that I am forced to take a step forward.
   2. a) Use the VTR and check yourself. b) Have another person in class check you. c) Have the instructor check.

H. Perform a successful catching motion right into the overarm throw when the throw is high, low, medium, to the side, hard (fast) or soft (slow).
   1. Throw the ball at low, medium and high levels. Catch and continue right into your throw.
      With a partner:
      ML-I — 20 at each level, consecutive catches and throws
      ML-II — 15 at each level
      ML-III — 10 at each level
      ML-IV — 5 at each level
   2. Throw the ball to the side of your partner at low, medium and high levels.
      ML-I — 15 consecutive on each side

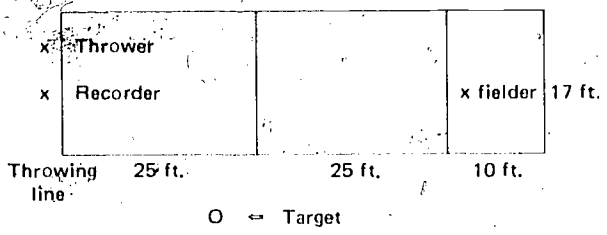
ML-II — 10 consecutive on each side
ML-III — 5 consecutive on each side
ML-IV — 3 consecutive on each side

3. Now vary the speed and level of the throw and continue catch motion right into the throw.
   ML-I — 15 consecutive catches. Ball thrown hard at least 50 percent of the time.
   ML-II — 10
   ML-III — 5
   ML-IV — 3

How does this movement feel? _____
If it does not feel good or right, ask the instructor to help you.

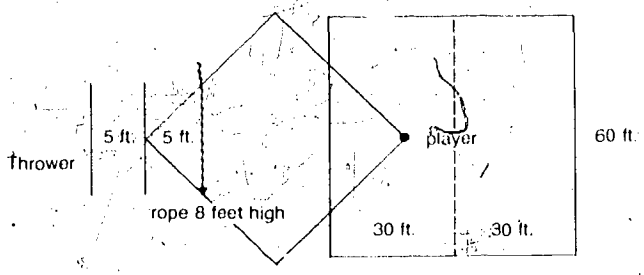
M. Student will be able to move quickly to meet fly balls and ground balls.

1. Ground balls (Haskins, 1971) 50 ft.



Each throw must bounce at least once between throwing line and 25-foot line. Thrower must throw with good speed and some variation in speed.

2. Fly balls (Haskins, 1971)



Thrower must throw over the eight-foot-high rope. Throw with good speed.

Student will get one point for each correctly fielded ball and one point for throwing the ball into the target area. Two trials of twenty each.

ML-I — 36 points
ML-II — 30 points
ML-III — 24 points
ML-IV — 18 points

Curriculum Task Analysis for Teamwork in Field Hockey

Utilizing curriculum task analysis requires one to identify a terminal objective, several enabling objectives, and more specific teaching objectives which lead the learner to the terminal objective. Upon completion of any work module, the evaluator may select from among a complete range of assessment activities those appropriate to the particular enabling or teaching objective being emphasized. Saunders[4] has illustrated this approach to evaluation of student progress in learning teamwork in field hockey in Figure 30.

Behavioral Evidence of Cultural Understanding

Current interest in focusing evaluation on significant learning and in assessment based on performance criteria has highlighted concern for identifying behavioral evidence of achievement of student learning goals. Brockmeyer's[5] theoretical construct of cultural understanding presented in Figure 11 (page 21) can be used to illustrate the nature of evidence sought in evaluating student achievement. Behavioral evidence for assessment of each of the six subelements of cultural understanding as hypothesized by Brockmeyer is suggested below:

A. Participation
   1. The learner will execute the presented skill patterns without major error and with ease and efficiency.
   2. The learner will voluntarily take part in the skill development phase of the class.
   3. The learner will demonstrate an understanding of the mechanics and the movement sequences of the skills presented in a cognitive manner, such as descriptive writing or diagramming.

B. Stylization
   1. The learner will adapt his or her movement patterns to conform to the "real" style.
   2. The learner will perform the skills in a manner judged to be stylistically correct.
   3. The learner will change skill patterns to fit the social setting and situation and utilize authentic style in the changed, appropriate patterns.
   4. The learner will exhibit, through cognitive representation (oral or written reporting), a knowledge of the background, history, purposes and character of the play elements of the ethnic culture being studied.
   5. The learner will undertake research into the cultural manifestations — folkways, mores, local color — of the ethnic culture play being studied.
   6. The learner will appreciate the basis for the style and purpose of the "real" players.

C. Involvement
   1. The learner will actively and voluntarily seek participation in the cultural play.

TERMINAL OBJECTIVE: To be able to play the game of field hockey utilizing the element of teamwork as evidenced by the successful completion of combination plays.

Skills for Differentiated Roles	Understanding Rules and Game Structure	Understanding Tasks & Setting Goals	Commitment to Teamwork
7. Design strategies using different skills.	6. Evaluate officiating & playing efforts & suggest improvements based on own experience.	6. Evaluate own progress in each task & effectiveness of task learning for you.	5. Can be counted upon to select teamwork skill & to encourage others to do so.
6. Substitute different skills to accomplish aims in a game.	5. Officiate, facilitating smooth play.	5. Set hierarchy of mastery levels as goals for yourself in selected skill.	4. When a choice exists, often select a teamwork skill.
5. Use specific skills in a game with teammates.	4. Explain differing penalties & mechanics for specific field areas & circumstances.	4. Explain hierarchy of mastery levels in a skill.	3. When appropriate, usually select a teamwork skill.
4. Use specific skills with specific teammates in a game.	3. Identify fouls & mechanics in a game.	3. Select & work toward a mastery level in a skill & help a partner.	2. Work on teamwork practicing skills with partners and in game.
3. Adjust skills to different paces with partner and opponent.	2. Explain the mechanics of the game.	2. Explain to partner how information can be found, used, and practiced.	1. Be aware of need to combine efforts to produce teamwork & of understandings & skills needed.
2. Employ a combination skill with 1 partner & opponent.	1. List the field hockey fouls & penalties.	1. Explain requirements outlined for 4 basic tasks.	
1. Identify adjustments needed to perform skills with varying numbers of partners, opponents & paces.			

Figure 30. Teamwork Task Analysis

2. The learner will voluntarily participate in school and non-school ethnic play.
3. The learner will demonstrate interest in learning more about the cultural heritage.
4. The learner will derive pleasure from participation in and from learning more about the play of a specific cultural heritage.

D. Symbolic Representation
1. The learner will demonstrate relationships of the traditional cultural heritage to contemporary play through cognitive expression.
2. The learner will utilize contemporary cultural manifestations in cognitive representations of historical ethnic play.
3. The learner will interpret in movement the concepts of traditional cultural play as it relates to the social concepts of contemporary play.
4. The learner will exhibit, unconsciously, an integrated style of culturally authenticated movement in play.
5. The learner will utilize the symbolic meanings of the culturally authenticated play in social relationships in play.

E. Creative Enterprise
1. The learner will create new movement expressions based upon the integrated cultural play concepts previously experienced.
2. The learner will consciously evaluate the historical and contemporary cultural influences on play in applying the concepts to new expressions (motor or cognitive) of cultural heritage.
3. The learner will unconsciously express the cultural heritage in manifestations of the creative impulse.

F. Lifestyle
1. The learner exhibits behavior which shows the integration of the cultural history and the contemporary influences on play.
2. The learner becomes a "real" cultural extension by unconsciously valuing the total experience of living in a new, culturally authenticated mode.
3. The learner is a new person who responds consistently to life situations as a culturally integrated whole.

Summary

A series of approaches to evaluating student progress in developing concepts identified by the PPCF has been presented. The selection emphasized diversity. Comprehensive physical education goals can be set for the high school graduate. The evaluator then uses any combination of acceptable techniques to ensure that the program offers to all of the students opportunities to achieve these goals and assistance in assessing individual performance levels. An example of the utilization of per-

formance goals in bowling demonstrated the statement of objectives in terms of movement process categories. The evaluator would employ the same procedures for seeking behavioral evidence as in assessing achievement of performance goals in any other subject field. The mastery learning approach was illustrated by a softball unit in which the learning hierarchy was sequenced according to process categories. This approach permits both the teacher and the student to evaluate whether a desired performance standard has been achieved and to make a rational curricular decision concerning succeeding learning activities. Curriculum task analysis was demonstrated by a field hockey analysis. In this example, the terminal objective identified was directed toward the development of a purpose concept, using a construct of the element of teamwork comprising four subelements. The final example was selected to illustrate the types of behavioral evidence the evaluator might seek in assessing student progress in achieving concepts of cultural understanding, a purpose element construct hypothesized as including six subelements.

Curriculum evaluation is far too broad a field for the scope of this monograph. No attempt has been made to present even the most basic concepts of evaluation or to suggest the great variety of possibilities for assessing student learning in physical education. Illustrations have been selected for the limited purpose of demonstrating the application of the PPCF to this aspect of curricular decision-making.

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[1]Madison, Wisconsin, Public Schools, 1972.

[2]Peggy Anderson, unpublished paper, University of Arizona, Tucson, 1972.

[3]Sheryl L. Gotts, unpublished paper, Purdue University, Lafayette, Indiana, 1974.

[4]Katherine Saunders, unpublished paper, University of Wisconsin, Madison, 1973.

[5]Gretchen Brockmeyer, unpublished paper, Luther College, Decorah, Iowa, 1973.

TOMORROW'S CURRICULA

Another step has been taken. The development of a purpose-process curriculum framework for physical education opens up additional options for the individual to become educated to achieve his or her purposes through movement in unique ways and to find personal meanings in movement experiences. Hopefully, the "process-media-result" relationship described in *Tones of Theory*[1] has been elaborated and the gap in articulation of a broad theory of physical education has been somewhat narrowed. Educators *can* use this framework in its present form for ongoing curriculum development in physical education.

Much remains to be done. The purposes of human movement, the ways in which persons find meaning through their own movement, have been identified, categorized, and defined to establish a base for the physical education curriculum. The research to date provides some assurance that the list is inclusive.[2] The full use of the purpose concepts in curricular decision-making depends upon further analysis of the subelements of each purpose element. A research methodology for construct validation is available and applicable,[3] but much theoretical conceptualizing and an extensive series of research studies are required to meet this challenge.

The movement process categories have been subjected to three major revisions, but very little research has been directed toward the validation of this classification scheme. It has been demonstrated that teacher differentiation of process categories can be reflected in augmented feedback to students,[4] but little is known about the relationships of particular teacher behaviors to the development of selected process behaviors by students. The movement processes categorized as generic and ordinative appear to be consistent with research findings concerning the acquisition of motor skill.[5] On the other hand, the nature of creative motor behavior is highly speculative.

Theoretical development of the PPCF as it describes potential interrelationships between purpose and process concepts has been extremely limited. There is great need for exploratory efforts in conceptualizing models for overall curriculum development. Specific applications in a variety of local settings would contribute to further research and better understanding.

Certainly the profession of physical education must be concerned with continued development of conceptual framework for physical education curricular decision-making. The Purpose Process Curriculum Framework appears to be a helpful tool, but other options should also be studied.

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[1] Celeste Ulrich and John E. Nixon, *Tones of Theory* (Washington, DC: American Association for Health, Physical Education, and Recreation, pp. 15-19), 1972.

[2] Marilyn J. LaPlante, "Evaluation of a Selected List of Purposes for Physical Education Using a Modified Delphi Technique" (Doctoral dissertation, University of Wisconsin, 1973).

[3] L. Sue Jones, "The Construct of Body Awareness in Space as Reflected Through Children's Ability to Discriminate Directions, Levels, and Pathways in Movement" (Doctoral dissertation, University of Wisconsin, 1972).

[4] Wilma M. Harrington, "A Study of Feedback Diversity in Teaching Physical Education" (Doctoral dissertation, University of Wisconsin, 1974).

[5] Harrington, "Study of Feedback Diversity."

APPENDIX A

HIGH SCHOOL PHYSICAL EDUCATION PROGRAM DESIGNED TO EMPHASIZE SELECTED PURPOSE CONCEPTS[1]

The program outlined below is planned for students in grades nine through twelve. The program goals to be emphasized are: participation, movement appreciation, cultural understanding, teamwork, leadership, circulo-respiratory efficiency, and neuromuscular efficiency. The program is an individualized, continuous, four-year program which ultimately allows the student to do independent work and in-depth study, directed toward becoming a physically educated person, defined as an individual who:

1. has learned to perform efficiently the motor skills one needs in everyday living and in recreational activities;
2. has knowledge about and can maintain levels of physiological conditioning;
3. understands the concepts underlying effective human movement;
4. has developed a desire to regularly participate in activity and has a favorable image about self and activity.

In this competency-based program the students *select* the activities in which they would like to become competent and the teacher assists by determining the minimal competency level.

The entering ninth-grade student participates in a movement skills assessment module. Students are given competency tests to determine their level of performance and understanding of movement skills. If necessary, the student takes remedial work in fundamental skill development.

Broad grade-level objectives are stated for each grade. By the end of the ninth grade it is anticipated that each student:

1. will have performed with minimal competency in three different activities, with at least one from each of the three key purpose categories;
2. will have demonstrated minimal survival competency in aquatics;
3. will have demonstrated helping another student to learn or improve a skill;
4. will compose and perform one of the following:
   a. a routine for one aspect of gymnastics
   b. a dance routine
   c. a new skill drill for teaching a particular skill in a team sport or individual sport.

Once the student meets the minimum standards with regards to movement fundamental skills he/she then moves directly to the activity selection. All ninth-grade students must take a 12-week module of aquatics. As soon as a student passes the survival test he/she is no longer required to take swimming. In addition the student must participate in at least six activity modules during this first year. One activity from each of the categories of individual sports, team sports, and dance-gymnastics must be chosen.

By the end of the tenth grade each student is expected to:

1. attain minimal competency in two additional sport areas;
2. attain intermediate competency in two sport areas;
3. compose a paper or symbolize through a movement sequence appreciation of an activity;
4. participate in a school, family, or community activity program in one of the following ways:
   a. as an official for the intramural program (must officiate at least four games)
   b. as a counselor in the Saturday morning playground program for at least four Saturdays
   c. as a hospital aide in the Therapy Laboratory for at least four afternoons
   d. as coach of one of the adult community teams in volleyball, softball or basketball
   e. by fulfilling any other contract accepted by one of the physical education teachers as meeting this competency;
5. prepare a profile of actual abilities and those he/she aspires to achieve.

The junior and senior years of physical education are completely selective. The students schedule classes which emphasize activities in their particular area of interest. The student takes a mini-lab course in physiology of exercise sometime during these two years. In this course the student is exposed to basic concepts of fitness, strength development, and weight control. Elective study in physical education includes, in addition to the content already established, such offerings as history of sport, sport psychology, sport sociology, and literature and sport.

The student is responsible for designing, with teacher assistance, a program for individualized student achievement. The student can take two approaches to this program:

1. setting a series of skill competencies that the student can achieve within the two years;
2. work in the direction of some sort of research project that shows in depth exper-

lence in relationship to physical education and any other academic discipline.

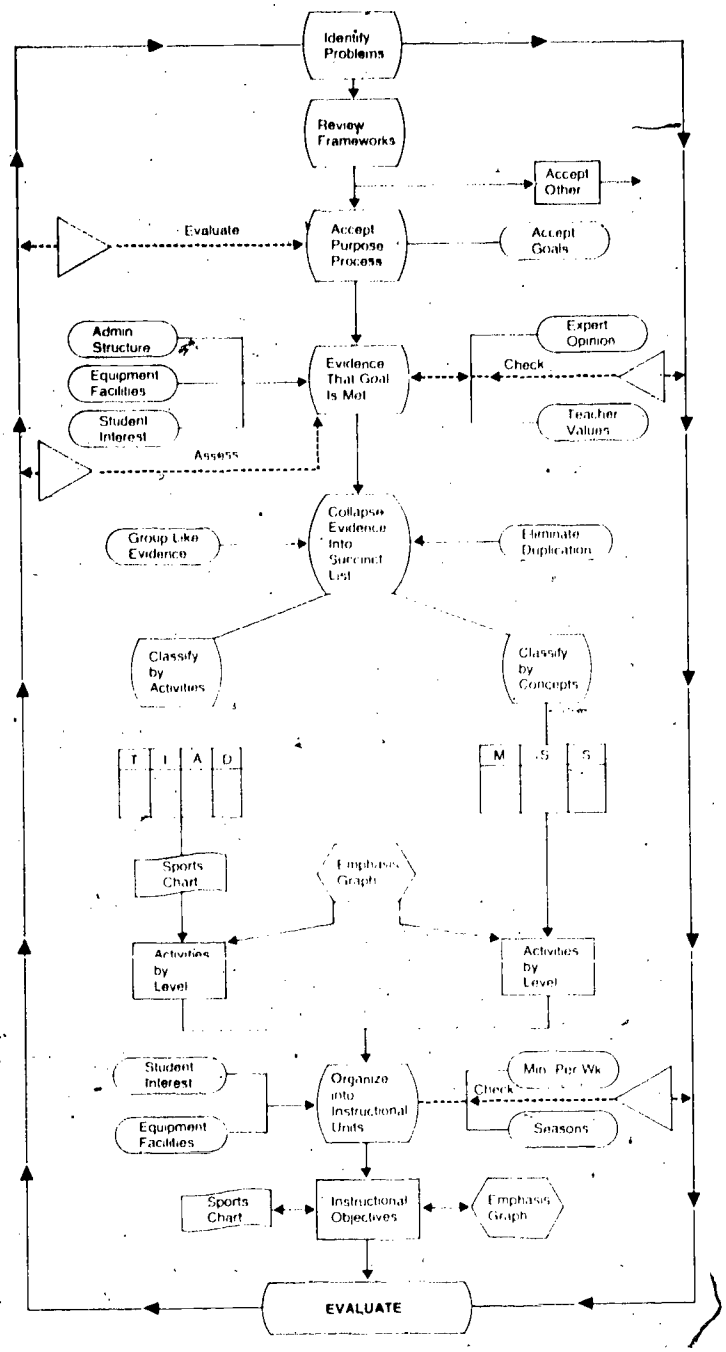
The ultimate aim of the physical education student in this high school program is to be able to evaluate himself/herself as a physically educated person.

[1]Antoinette Tiburzi, unpublished paper, State University of New York, Cortland, 1974.

APPENDIX B

MODEL FOR DECISION-MAKING

The model[1] which follows was developed for a K-12 curriculum development project in which the teachers in the school district served as curriculum workers under the direction of a curriculum specialist qualfied to guide curricular decision-making using several models including the PPCF.



Identify problems. The first step in the process is for the curriculum workers (teachers) to identify the problems in their district that make it necessary for curriculum development or revision to occur. Examples of these problems are: (1) lack of continuity among levels, (2) repetition of activities year after year, (3) lack of clearly defined focus.

Review frameworks. Having identified a number of problems with the teachers, the curriculum specialist will review with them various conceptual frameworks with the idea that such a framework is essential for long-range planning. The teachers, having gained an understanding of the frameworks, will decide which they will use in their curriculum development project. If they accept a framework other than the PPCF, a model for decision-making will need to be identified. If they accept the PPCF, they will proceed as indicated on the flow chart.

Accept purpose-process. Acceptance of the purpose-process framework implies that the broad goals are also accepted. The broad goals are simply the elements rephrased to read "The student moves to . . ."

Evidence that goal is met. The goals, of course, are very general. In order for the teachers to be able to communicate what is intended by each, they will need to ask themselves what evidence they will accept that the goals have been met. The evidence can be stated as answers to the following three questions: If the student's purpose for moving is _____,

(a) what should he be able to do?
(b) what does he need to know?
(c) how should he feel about it?

There are apt to be several answers to the above questions, or several different ways for the student to demonstrate that the goals have been met. The teachers may decide that all three conditions must be met in order for the student to have successfully achieved the goal; or they may decide that it is sufficient for the student to be able to perform any one of the three. Decisions of this sort will be based on considerations of the administrative structure of the school district, the equipment and facilities which are available, the interests and values of the students and the community, the abilities and values of the teachers, and the opinions of experts about the validity and feasibility of the stated evidence. At this point, also, a check back to the problems which were identified originally would be made to see if the statements of evidence reflect solutions to these problems.

Collapse evidence into succinct list. Upon completion of this task, the teachers will find that they have an unwieldy number of statements of evidence. Therefore, they can eliminate duplication and reduce the number by grouping together all statements that are alike.

At this point, when the statements of evidence have been collapsed into a succinct list, there are two directions which might be taken. The statements of evidence might be classified according to whether they are

primarily within the context of specific activities, i.e. team sports, individual sports, aquatics, or dance (left side of flow chart, Figure 31). Or the statements of evidence might be classified according to the three key concepts, i.e., man master of himself, man in space, or man in a social world (right side of flow chart).

Classify by activities. With the statements of evidence classified by activities, decisions then have to be made concerning what activities will be taught at what levels. As aids in making these decisions, two tools are needed. The first,[2] referred to as the sports chart, is a grid with the 22 elements listed across the top and the activities listed along the side (Figure 31). The teachers use this grid to indicate which elements seem to be inherent in each of the activities. The other tool,[3] referred to as the emphasis graph, is a graph which depicts the relative emphasis to be placed on each of the three key concepts at each of the four levels (Figure 32). For example, using this tool, man in space would receive the most emphasis in the K-2 program, while all three key concepts would be emphasized equally in grades 6-8.

	MAN MASTER OF HIMSELF								MAN IN SPACE						MAN IN A SOCIAL WORLD								
	Physiological Efficiency			Psychic Equilibrium					Spatial Orientation			Object Manipulation			Communication			Group Interaction			Cultural Involvement		
ACTIVITY	C-R Eff.	Mech. Eff.	N-M Eff.	Joy	Self Know	Catharsis	Challenge		Awareness	Relocation	Relationship	Maneuver Weight	Object Projection	Object Reception	Expression	Clarification	Masking	Teamwork	Competition	Leadership	Participation	Movement Appreciation	Cultural Participation
Basketball																							
Gymnastics																							
Beg. Swim																							
Tennis																							

Figure 31. Sports Chart Identifying Purpose Elements

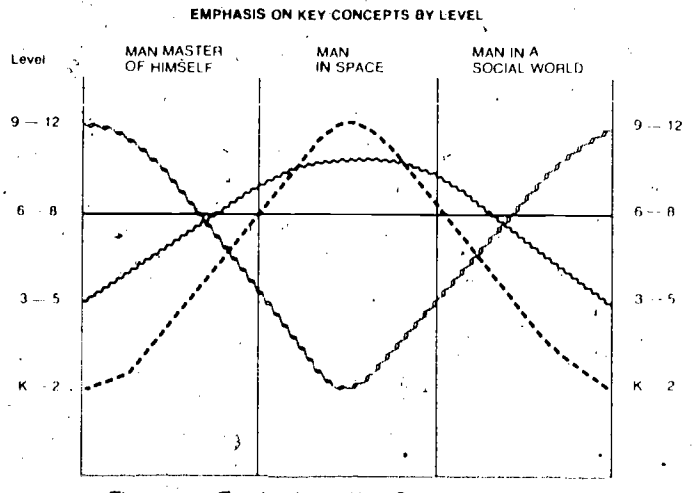


Figure 32. Emphasis on Key Concepts by Level

It is not intended that the decisions made in the sports chart or in the emphasis graph be universally accepted. Rather, the teachers implementing the curriculum should reach consensus and be able to support their decision in terms of child growth and development and student abilities and interests.

By combining the statements of evidence, the sports chart, and the emphasis graph, decisions can be made about what activities will be taught at each level. For instance, considering that there are statements of evidence classified under team sports, and that the emphasis in grades 3-5, for instance, is on man in space, the choice of activities for grades 3-5 will be those team sports which have inherent elements under the key concept, man in space (from the sports chart). The product of this effort will be a very rough listing of activities by

levels and will be subject to change when organized into instructional units.

Classify by concepts. The process for deriving activities by level from a classification of statements of evidence by key concepts is much the same as that described in the preceding section. The activities that will be listed by level, instead of being sports activities such as volleyball or gymnastics, will be "relocation" activities or "object projection-reception" activities.

Organize into instructional units. With a general idea of the activities to be included at each level, the next step is to decide more precisely how these activities can be organized into instructional units at each grade level and how long the units will be. In planning the instructional units, there must be a consideration of the interests and entering abilities of the students, the equipment and facilities available in each building, the number of minutes per week that each grade meets, and the climatic conditions of the area. At this stage, also, there needs to be a check back to the problems identified at the start.

Instructional objectives. When the instructional units by grade level have been planned, the teachers responsible for teaching at a specific grade level will need to formulate instructional objectives which, if met, will lead to the eventual attainment of the broad curricular goals. Here again, the sports chart and the emphasis graph can be helpful. For instance, the fifth grade teacher in writing instructional objectives for a basketball unit would, after determining from the emphasis graph that the "man in space" concept is to be emphasized at this level, consult the sports chart to see what elements under the "man in space" concept have been judged to be important in basketball. If "object projection-reception" happened to be one of them, objectives which would indicate what object projection-reception skills were to be developed in basketball at grade five would be formulated.

Evaluate. The arrows moving up the left side of the flow chart are intended to depict that the overall evaluation of the curriculum is in terms of whether or not the process has provided solutions to the problems that were identified. In addition to this overall program evaluation, there will eventually be an assessment of the student outcomes in terms of the evidence that will be accepted that the broad goals have been met. This will occur after the curriculum has been implemented for a period of time.

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[1]Marilyn LaPlante, Earlham College, and Peggy Chapman, Madison, Wisconsin Public Schools, unpublished paper, 1972.

[2]Peggy Chapman, unpublished paper, Madison, Wisconsin Public Schools, 1972.

[3]Peggy Chapman, unpublished paper, Madison, Wisconsin Public Schools, 1972. Adapted from Paul Vogel, "Battle Creek Physical Education Project," *Journal of Health, Physical Education, Recreation* 40 (Sept. 1969):25-29.

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