Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary
The aim of education is to bring about an all round development of human potential. This ultimate aim is subdivided into intermediate objectives to aid the selection of content material, methodology of teaching, and evaluation of the efficacy of education. Mental, physical, social and emotional development are the traditional aspects of the ultimate aim of education.

Mental development represents the cognitive domain of human learning and is an important objective for all educational curricula. Progressive subdivision of the cognitive development objective yields such a large number and diverse statements of desired changes in student behavior that the need for classification and organization of these statements becomes imminent early in educational planning.

Bloom's Taxonomy of educational objectives provides the basis for systematic ordering of
cognitive objectives at a level where they are meaningful statements of desired student behaviors. The Taxonomy has received widespread use in designing curricula and developing evaluation instruments.

However, the validity of the Taxonomy has not been adequately documented. Validation of the Taxonomy would essentially be concerned with seeking empirical support for the assumptions on which it is based. The two assumptions made in developing the Taxonomy state that cognitive behavior can be ordered hierarchically according to complexity, and that the hierarchy would be cumulative.

The present study was conducted to find if the assumption of hierarchical cumulativeness of cognitive behavior is valid with regard to the categories and subcategories of the Taxonomy. The content area for the validation of the Taxonomy was a professional course in Physical Education.

Twenty master's degree students of the Lucknow National College of Physical Education, Gwalior, served as subjects for the study. Using the college syllabus for the course Research (Process) as the content area, and the Taxonomy as
the guide, objectives were stated and pursued in the course which was taught by the scholar himself. Student attainment of the objectives was evaluated by tests specially constructed for this purpose.

Two analyses were made for scores in the Taxonomical categories and subcategories. One, the Hierarchical Syndrome Analysis was used to test the assumption of hierarchical cumulativeness of the categories and subcategories of objectives in the Taxonomy. Second, a Within Subjects Analysis of Variance was used to test the assumption of increasing complexity of objectives along the taxonomical categories and subcategories.

**Conclusions**

On the basis of the findings of this study, the following conclusions are drawn:

1. The assumption of hierarchical cumulativeness of categories in Bloom's Taxonomy is not valid for the formation of the first and the third reciprocal pairs.

2. The assumption of hierarchical cumulativeness of categories in Bloom's Taxonomy is valid
for the formation of the second and fourth pairs.

3. The assumption of hierarchical cumulativeness of subcategories in Bloom's Taxonomy is valid for the formation of the first, fifth, ninth, eleventh and twelfth pairs.

4. The assumption of hierarchical cumulativeness of subcategories in Bloom's Taxonomy is not valid for the formation of the second, third, fourth, sixth, seventh, eighth, and tenth pairs.

5. The assumption of increasing complexity of cognitive behavior along the taxonomical categories is valid for the following pairs: Knowledge - Comprehension; Comprehension - Application; and Analysis - Synthesis.

6. The assumption of increasing complexity of cognitive behavior along the taxonomical categories is not valid for the following pairs:

   Application - Analysis, and
   Synthesis - Evaluation.

7. The assumption of increasing complexity of cognitive behavior along the taxonomical subcategories is valid for the following pairs:
- Knowledge of Universals and Abstractions in a Subject Field - Translation;
- Interpretation - Extrapolation;
- Analysis of Elements - Analysis of Relationships;
- Analysis of Organizational Principles - Production of a Unique Communication;
- Production of a Unique Communication - Production of a Plan, or Proposed Set of Operations.

8. The assumption of increasing complexity of cognitive behavior along the taxonomical subcategories is not valid for the following pairs:

- Knowledge of Specifics - Knowledge of Ways and Means of Dealing with Specifics;
- Knowledge of Ways and Means of Dealing with Specifics - Knowledge of Universals and Abstractions in a Subject Field;
- Translation - Interpretation;
- Extrapolation - Application;
- Application - Analysis of Elements;
- Analysis of Relationships - Analysis of Organizational Principles;
- Production of a Plan, or Proposed Set of Operations - Derivation of a Set of Abstract
Relations; and

Derivation of a Set of Abstract Relations-Evaluation.

Recommendations

1. It is recommended that the validity of Bloom's Taxonomy be assessed over a wider range of courses in Physical Education using different subject areas.

2. It is also recommended that the study be repeated with a substantially larger number of questions to eliminate, so far as possible, the effect of content sampling bias.

3. A similar study may also be conducted using an experimental and a control group to find the effect of teaching with and without taxonomical objectives on the validity of the Taxonomy.

4. A factor analytic study may be conducted to isolate the factors that comprise the cognitive domain.

5. It seems that the Application category has not been duly elaborated in the Taxonomy; an attempt to find possible subdivisions and elaboration of this category may prove to be meaningful.
6. Since much of cognitive learning is influenced by affective predispositions, the relationships between the cognitive and the affective domains may be studied.

7. Although attempts have been made to develop taxonomies for the psychomotor domain, such attempts have been restricted to large muscle play activities. Investigations may be conducted to develop a psychomotor taxonomy applicable to "practical" work in theory subjects like Physiology of Exercise, Kinesiology and Biomechanics, Sport Sociology, Sport and Educational Psychology, etc.

8. Attempts may also be made to develop a unitary taxonomy for the three domains of learning, viz., Cognitive, Affective, and Psychomotor. Such attempts would essentially involve long term research and may call for substantial manpower and financial allocations. It is, therefore, recommended that project research in this area be initiated at the Lakshmibai National College of Physical Education, Gwalior with financial support from
the Sports Authority of India and the University Grants Commission. M.Phil and Ph.D. degree scholars may be offered financial incentives equivalent to tuition and/or boarding fees for participating in the project.