

Psychomotor Domain of Bloom's Taxonomy in Teacher Education

OPEN ACCESS

A.Ajumunisha Ali Begam

Ph.D. Scholar, Department of Education

Dr. A. Tholappan

Associate Professor, Department of Education

Bharathidasan University, Thiruchirappalli, Tamil Nadu, India

Volume: 6

Issue: 3

Month: June

Year: 2018

ISSN: 2320-2653

Received:
05.04.2018

Accepted:
16.06.2018

Published:
29.06.2018

Citation:
Ajumunisha Ali Begam,
A., & Tholappan, A.
(2018). Psychomotor
Domain of Bloom's
Taxonomy in Teacher
Education. *Shanlax
International Journal of
Education*, 6(3), 11–14.

DOI:
[https://doi.org/10.5281/
zenodo.1299766](https://doi.org/10.5281/zenodo.1299766)

Abstract

Bloom's taxonomy of Education objectives has been an important source for investigations of curriculum since its development. The authors of original taxonomy discussed the issues of cognitive and affective objectives in education and furnished a hierarchy of kinds of capability in these domains which could be used as evidence for achievement. Also, they provide a framework for correlating educational attainment with evidence of qualities that relate to abilities relevant to the performance of professional, or in the case of lower elements of the hierarchy, sub professional work roles. The original Taxonomy authors believed that there are three domains relevant to educational outcomes. They are the cognitive, knowledge of and ability to work with information and ideas; the affective, ability to organize, articulate and live and to work by a coherent value system relevant to the capabilities achieved through education; and the psychomotor skills, ability to do acts relevant to the field of study. In Teacher Education, psychomotor skills form a very important set or skills that need to be acquired by the student teachers to satisfy overall teaching and present employability skills requirements. Most of the research in teacher Education has dealt with Cognitive and Affective domain. Through the Timothy L.J Ferris and S.M Aziz's paper entitled "A Psychomotor Skills Extension to Bloom's Taxonomy of Education Objectives for Engineering Education" "Published in iCEER -2005, the author got an idea of this paper [4] <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.471.1302&rep=rep1&type=pdf>. Hence the work follows. Teachers teach in many ways including lectures, small group activities & hands on learning activities. It is necessary for a teacher to have appropriately developed psychomotor skills to be able to recognize and handle the teaching learning process in an effective manner. The paper will present a hierarchical taxonomy of psychomotor skills and discuss these skills specifically from the viewpoint of the needs of student teachers.

Introduction

Teaching is an exciting and rewarding activity but like other profession it is demanding. A professionally trained teacher can use different methods of teaching successfully. All the teacher training institutions are not only imparting theoretical but also practical knowledge and skill in different subject prospective teachers. At the end of the session, teaching practice is carried out for practical application of theoretical understanding about different teaching methods. Student teachers need to graduate with positive attributes in order to become a great teachers. Hence, in Teacher education, Internship training is integrated into the curriculum in order to provide student teachers with teaching experience and practice prior to their graduation.

Internship training can provide student teachers with knowledge and practical skills and expose them to the relevant subject area. In order to bring about improvements in the teaching and learning processes, three basic domains from Bloom's taxonomy must be applied. A number of published papers have reported on psychomotor implementations in engineering and clinical education. Very less have discussed the implications of psychomotor domain in Teacher education. The authors have been Teacher educators for considerable period of time. In the field of Teacher education, the authors have been involved in the supervision of Demonstration classes & Internship training in schools. In the internship training, students were required to use all the skills learnt in their college. The authors observed that student's competence in the internship was not correlated with performance in standard paper test and assignment work, nor to any other obvious factor.

Student teachers are given practice in mini teaching, micro teaching, skill practice, lesson plan writing, TLM Preparation etc in their colleges before they go for Internship training. They need to implement all these skills in their internship. Cognitive and Psychomotor skills should be used in the proper way to have an effective teaching learning process. Whether the ITP schools provide enough opportunity to the student teachers to use their skills during the internship. The famous tool to think and analyze the goals of Educational objectives and activities is the Bloom's Taxonomy of Educational Objectives. Anyhow, the taxonomy as published has discussed about the two domains, the cognitive and the affective, but has skipped discussion of the third, psychomotor skill domain. The issues that the authors have noticed in practical teaching are closely linked to the psychomotor domain, and so this paper concerns the development of a framework of objectives in a hierarchical form related to the psychomotor domain.

Bloom's Taxonomy

Benjamin Bloom had developed taxonomy of Educational Objectives. It consists of three domains namely Cognitive, Affective and Psychomotor. Each domain has several levels, from easy to difficult.

The area of Educational objectives is subdivided

by Educational psychologists into three domains. They represent and identify the Knowledge, beliefs and skills. Learning occurs in these three domains.

The Cognitive Domain is related to thinking process; Affective domain is connected with feelings and attitudes and Psychomotor Domain includes motor skills. The Psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor –skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures or techniques in execution

The three domains are not mutually exclusive. None of the three classifications of behaviors and objectives can be isolated from the others, as almost all learning activities involve more than one domain. Students think, experience feelings, and move in certain ways all at the same time. Psychomotor behaviors specifically contain elements of cognitive and affective behaviors within them. Psychomotor behaviors--"doing" movements--are connected to and affect cognitive student learning and performance (Abedi & O'Neil, 2005; Adkins, 2004; Beane et al., 1986; Gage & Berliner, 1988; Haladyna, 1997). Taken separately, each domain serves as a valuable reference point for the development and achievement of balance in the range and scope of educational objectives within the curriculum so as to accent different areas of learning. Psychomotor student outcomes are important and need to be included in instructional programs (Beane et al., 1986; Haladyna, 1997).

History of Psychomotor Domain

Psychologist B. F. Skinner (1904-1990), the foremost behaviorist of his era, developed the theory of human behavior, which is most often referred to as behavioral learning theory. Skinner's most famous work, *The Behavior of Organisms*, was published in 1938. His behavioral learning theory greatly influenced American education. Cognitive psychology has eclipsed behavioral learning theory as the mainstream way in which to study human behavior. However, a legacy of behavioral learning theory and behaviorism is a teacher's statement of the purpose of a lesson at the beginning of each class so students have a clear understanding of what

they are going to learn (Haladyna, 1997; Vernoff & Shore, 1987).

The different hierarchies of objectives or taxonomies have been around for many decades. Taxonomies of the three domains were initially formulated and published during the period from the mid-1950s to 1970. Historically speaking, the first of the comprehensive educational taxonomies were those developed for the cognitive domain by Bloom, Engelhart, Furst, Hill, and Krathwohl (1956). This taxonomy became classically known and is still referred to as “Bloom’s Taxonomy.” During the 1960s, much attention was paid to identifying the types of learning occurring in the cognitive and other domains. In 1964, a taxonomy for the affective domain was published by Krathwohl, Bloom, and Masia. Then in 1970, similar taxonomies appeared relating to the psychomotor domain. These latter taxonomies were authored by Kibler, Barker, and Miles (Adkins, 2004; Beane et al., 1986; Dettmer, 2006; Gage & Berliner, 1988).

Early research in the development of psychomotor skills was performed in military laboratories. The U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences conducted research and published technical reports on the learning, achievement, testing, and measurement of skilled psychomotor tasks and reactive skills. The U.S. Air Force also conducted assessments of motor and perceptual skills. The measurements from their psychomotor/perceptual battery were generally highly reliable. Among the many applications of the educational research conducted by the military were the use of computer-assisted instruction to develop and maintain psychomotor skills and the use of computer-administered tests of perceptual and psychomotor abilities (Hunter, 1975; Peterson, 1987; Tuckman, 1996).

Psychomotor Domain Taxonomy

The taxonomy committee didn’t produce a compilation for the psychomotor domain model, few other have done it. Among them the frequently discussed one is Simpson’s (1972) categories. He categorized the progressive levels of behaviors from observation to Mastery of a skill. Simpson (1972) built this taxonomy on the work of Bloom and others:

- Perception - Sensory cues guide motor activity.
- Set - Mental, physical, and emotional dispositions that make one respond in a certain way to a situation.
- Guided Response - First attempts at a physical skill. Trial and error coupled with practice lead to better performance.
- Mechanism - The intermediate stage in learning a physical skill. Responses are habitual with a medium level of assurance and proficiency.
- Complex Overt Response - Complex movements are possible with a minimum of wasted effort and a high level of assurance they will be successful.
- Adaptation - Movements can be modified for special situations.
- Origination - New movements can be created for special situations.

The other two popular versions are given by Dave (1970) and Harrow (1972).

Dave (1970) developed this taxonomy

- Imitation - Observing and copying someone else.
- Manipulation - Guided via instruction to perform a skill.
- Precision - Accuracy, proportion and exactness exist in the skill performance without the presence of the original source.
- Articulation - Two or more skills combined, sequenced, and performed consistently.
- Naturalization - Two or more skills combined, sequenced, and performed consistently and with ease. The performance is automatic with little physical or mental exertion.

Harrow (1972) developed this taxonomy. It is organized according to the degree of coordination including involuntary responses and learned capabilities:

- Reflex movements - Automatic reactions.
- Basic fundamental movement - Simple movements that can build to more complex sets of movements.
- Perceptual - Environmental cues that allow one to adjust movements.
- Physical activities - Things requiring endurance, strength, vigor, and agility.
- Skilled movements - Activities where a level of efficiency is achieved.

- Non-discursive communication - Body language.

Proposed Psychomotor Domain for Teacher Education from Dave's Taxonomy

Without the application of Psychomotor Domain, student teacher cannot become an efficient teacher. 21st century teacher need to excel in the teaching skills, Techniques etc. A proposed hierarchy of student learning outcomes in the psychomotor domain is presented below in terms of Dave's taxonomy. The motives for development of this hierarchy are to develop a description of the psychomotor domain that is useful for practical teaching in higher education and Teacher education in particular.

The proposed psychomotor Domain's hierarchy is given below.

The psychomotor Domain hierarchy, as proposed requires elaboration to enable meaningful interpretation of the author's intent

1. Imitating the teacher Educator – The teacher Educator demonstrates the skill in teaching & student teacher imitates them in their teaching
2. Performing the skill among the peer – Student teachers practices the skill among them.
3. Performing the skill in ITP School – The student teachers practices the skill in ITP schools.
4. Integrating the skill in teaching – Student teacher prepares lesson plan on her own by integrating all the skills & practice teaching.
5. Mastery in teaching- Finally the student teacher gets mastery over the skill of teaching.

Conclusion

In spite of all criticism, Bloom's Taxonomy of education outcomes has been a significant influence in educational development since its first publication. The use of the taxonomy in the cognitive and affective domains has been important, both in the target field of higher education, but probably more so in primary and secondary education, where much of the curriculum development is performed by people with a significant theoretical background in education[4]. This contrasts with higher education, in which most educators have little formal training in the concepts that underlie thinking about the educational process.

This paper has reviewed some work done in the field of the absent domain, the psychomotor domain. This work was seen to be formulated in terminology that derives from the development of elementary psychomotor skills, and seems to be largely targeted towards dealing with the issues resulting from the needs of the primary and secondary educational levels, in which the students have a significant need to develop the elements of psychomotor skills. Many researches should be carried out in the field of Teacher education in the absent domain "Psychomotor Domain".

A comprehensive assessment of students' performance in the courses is important in producing graduates who are able to integrate the theory and practice of the learned courses in any higher education programs.

References

- Ashok Kumar, Attitude of Pupil Teachers towards Internship as a Part of B.Ed Curriculum in Relation to Gender, Stream and Academic Qualification, Central University of Jammu, India, Research Article 6(7).
- Kamilah Radin Salim*, Marlia Puteh & Salwani Mohd Daud Universiti Teknologi Malaysia, Assessing Students' Practical Skills in Basic Electronic Laboratory based on Psychomotor Domain Model, UTM Kuala Lumpur, Jalan Semarak, 54100, Kuala Lumpur, Malaysia
- Mishra, R., Barrans, S., and Pislaru, C., Imparting psychomotor skills to the learners using computer aided instructions in Engineering Education University of Huddersfield, School of Computing and Engineering, Queensgate, Huddersfield HD1 3DH, United Kingdom
- Timothy Ferris, L.J., and Aziz, S.M., A Psychomotor Domain Skills Extension to Bloom's Taxonomy of Education Objectives for Engineering Education, Exploring Innovation in Education and Research, Tainan, Taiwan, 1-5 March 2005.