# Chapter 6
# Application of Neutrosophic Soft Set to Assess Academic Performance of Students Using Bloom's Taxonomy

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## ABSTRACT

*A key aspect of human cognition is learning, a universal process that all humans undergo. In order to learn or improve one's knowledge and abilities, it integrates influences from the cognitive, emotional, and environmental spheres. There are vast amounts of studies and a wide range of hypotheses that attempt to describe the workings of the learning process. The purpose was to gain an objective understanding of how individuals learn and then build pedagogical strategies appropriately. In this chapter, neutrosophic soft sets, a novel mathematical technique for dealing with uncertainty, are utilized to measure student learning capabilities with Blooms taxonomy. Generations of educators have used Bloom's taxonomy as a framework for instruction and evaluation, and they continue to do so today, because of the taxonomy's emphasis on the need of engaging students at all levels of cognitive development. In addition, a practical example from the teaching process would be given to show how it might be used in practice.*

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## INTRODUCTION

The word "taxonomy" comes from the Greek word for "classification". Three "domains" of learning are identified, each of which is set up as a set of stages or preliminaries. It is believed that higher levels cannot be properly addressed until lower levels have been addressed. Training for technicians might include knowledge, comprehension, and application in the Cognitive domain, but it might not concern itself with analysis and higher-level thinking, whereas training for full professionals might be expected to include analysis and higher-level thinking along with synthesis and evaluation (Krathwohl, 2002).

We envisioned this project as a way to facilitate a better flow of information and resources not only between those who were working on the exam but also between those who were working on other aspects of educational research and curriculum creation. A collection of organizations would be able to identify the similarities and variations between the objectives of their various education programs by using the taxonomy as a tool to produce a clear definition and categorization of concepts as "thinking" and "problem solving". They might analyze and discuss the results of various evaluation tools, such as exams and other assessment methods, designed to establish how beneficial these programs are (Bloom and Krathwohl, 2020).

When developing any form of taxonomy, the most important step is to choose relevant symbols, next to give those symbols definitions that are clear and actionable, and finally to get the consensus of the group that is going to utilize them. The choice of an acceptable set of symbols to represent the main categories of educational results is also necessary when creating a categorization of educational objectives (Harrow, 1972).

It is acknowledged that students' actual actions after completing the unit of instruction may differ in degree and kind from the anticipated behaviours stated by the goals. In other respects, the consequences of training may be such that students do not achieve a skill to the anticipated degree of mastery, or perhaps fail to develop the ability at all. This is an issue of giving a grade to the performance of students.

There are certain principles for choosing a single categorization system.

- The taxonomy should be constructed in a rational manner and should be consistent within it. Each taxonomy word should be defined and utilized consistently.
- The taxonomy should be compatible with how we already understand psychological events. It would be avoided to draw distinctions that, although being frequently made by instructors, are psychologically unstable.

The division of behavioural characteristics into three categories: cognitive, psychomotor, and emotional. The ordering of activities from basic to complex was done largely from an educational standpoint. In other words, these are the distinctions that instructors make while creating curricula and teaching methods.

## LITERATURE REVIEW

Florentin Smarandache was the one who originally put up the idea of Neutrosophic Logic (Smarandache, 2006). The term "neutro-sophy," from which the adjective "neutrosophic" derives, literally translates to "knowledge of neutral ideas." When translated literally from french to english, the word neutre means "neutral," whereas the word sophia means "skill or knowledge." Each neutrosophic set (NS) component