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Review Article

Impact of Psychomotor Domain in Enhancing Science Learning in Khyber Pakhtunkhwa, Pakistan: A Review

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ABSTRACT

Learning can be divided into three categories: emotional (attitudes), psychomotor (skills), and cognitive (knowledge). The Taxonomy of Learning Domains, developed in 1956 by a team of academics under the direction of Benjamin Bloom, provides the clearest explanation of this grouping. The learning domains were initially developed and described between 1956 and 1972. Psychomotor goals are specific to reflexes, interpretive motions, and body processes. It's interesting to note that although cognitive and affective taxonomies were described in 1956 and 1964, respectively, the psychomotor domain was not fully developed until the 1970s.

KEYWORDS

Science Learning, Psychomotor Domain, KPK, Pakistan

1 | INTRODUCTION

Psychomotor goals are specific to reflexes, interpretive motions, and body processes. It's interesting to note that whereas the cognitive and affective domains were fully defined by the 1970s, the psychomotor domain was not. taxonomies were described in 1956 and 1964, respectively (Bloom, 1956; Azlan et al., 2021).

1.1 | Objective of the Psychomotor Domain

The psychomotor domain is concerned with learning to improve physical skills and capacities. The following levels can be used to classify its goals: Perception: Directing motor activity with the use of sensory clues. Set: A state of mental, physical, or emotional readiness to do action. Guided Response: Accurately doing a skill while being instructed (Anderson & Krathwohl, 2001; Saim et al., 2021). Mechanism: Exhibiting competence and assurance in carrying out difficult tasks. Complex Overt Response: Skillfully executing tasks with efficiency and accuracy.

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1.2 | Adaptation

Changing motions to satisfy particular needs. Origin, developing novel movement patterns to handle particular tasks. In tasks involving motor skills, these goals encourage physical coordination, dexterity, and creative problem-solving (Kahn & Soler, 2019; Jainudin et al., 2021).

1.3 | Understanding Bloom's Psychomotor Domain

The psychomotor domain is concerned with learning to improve physical skills and capacities. The following levels can be used to classify its goals: Perception: Directing motor activity with the use of sensory clues. Set: A state of mental, physical, or emotional readiness to do action (Bloom, 1956). Guided Response: Accurately doing a skill while being instructed. Mechanism: Exhibiting competence and assurance in carrying out difficult tasks. Complex Overt Response: Skillfully executing activities with efficiency and accuracy. Adaptation: Changing motions to satisfy particular needs. Origin: Developing novel movement patterns to handle particular tasks. In tasks involving motor skills, these goals encourage physical coordination, dexterity, and creative problem-solving (Hennessey, 2014; Mohamad et al., 2021).

1.4 | Psychomotor Skills in Secondary School Science Curriculum

The scientific curriculum in secondary schools emphasizes psychomotor skills through practical exercises that develop the capacity to carry out tasks involving manipulation, coordination, and accuracy. These include dissections, making models, utilizing scientific equipment, conducting laboratory experiments, and securely handling chemicals (Khan & Gul,2017; Rahman et al., 2021). In this case, the main goals are: enhancing precision and fine motor abilities. promoting the ethical and safe use of scientific instruments. improving experimental and observational abilities. encouraging originality and creativity by solving real-world problems. These abilities help students grasp scientific ideas more deeply and prepare them for practical scientific applications (Tuli, 2019).

1.5 | The Role of Psychomotor Domain in Enhancing Science Learning

By offering practical, hands-on experiences that link abstract ideas to real-world applications, the psychomotor domain significantly contributes to the improvement of science education. Students gain vital skills including accuracy, coordination, and safety awareness through lab experiments, model building, and the use of scientific instruments (Khan & Gul, 2017). This interaction enhances memory and comprehension of scientific concepts while promoting creativity, critical thinking, and problem-solving. Engaging in psychomotor tasks actively enhances learning and equips students for postsecondary education and scientific careers (Kahn & Soler, 2019).

1.6 | Relevancy of Psychomotor Domain in Khyber Pakhtunkhwa

By allowing students to participate in practical exercises and experiments that strengthen theoretical ideas and cultivate practical abilities, the psychomotor domain greatly improves science education (Anderson, & Krathwohl, (2001). Important roles consist of: Development of Skills: Students gain knowledge of how to perform experiments, handle scientific equipment, and adhere to safety regulations (Ghani, 2016; Isa et al., 2019). Active Learning: Hands-on activities promote knowledge application and critical thinking. Creativity & Innovation: Problem-solving and innovative thinking are fostered by experimentation. Retention: Being physically active enhances memory and comprehension of scientific concepts. This field fosters a thorough grasp of science by bridging theory and experience (Ministry of Education, Khyber Pakhtunkhwa, 2018).

2 | RESEARCH METHODS

The current study is qualitative in nature, it’s a systematic review. Articles thesis and books were collected from web of science (WOS) and Scopus data bases. This study has applied PRISMA methodology for collecting and reporting the literature.

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2.1 | Inclusion Exclusion Criteria

Articles books and thesis published in English were included, articles and books indexed and published in Web of science and Scopus were included in this study. The studies published about psychomotor domain science learning were included. Those published in other than English, were not indexed in WOS and Scopus were excluded form the study.

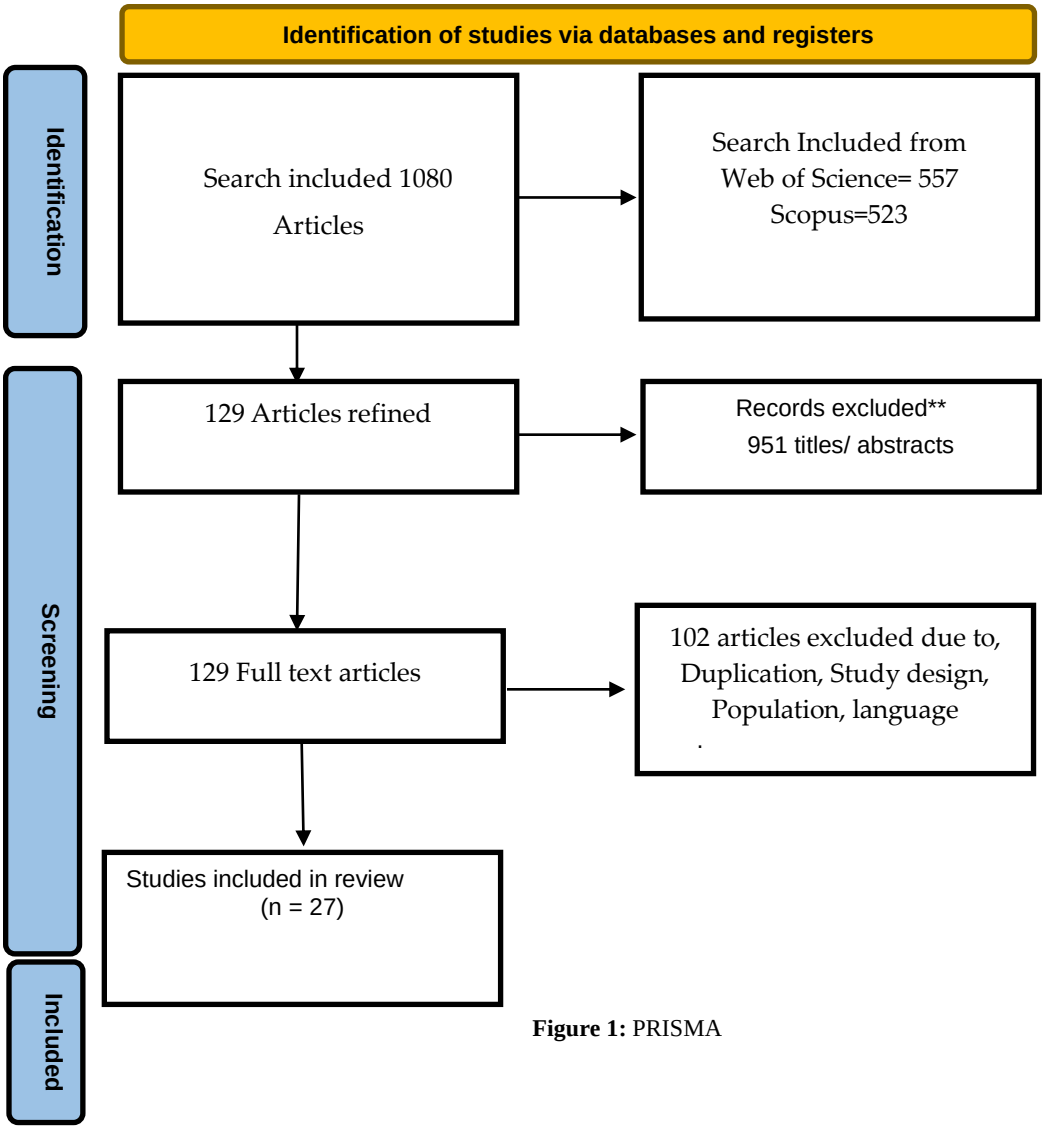

Figure 1: PRISMA

3 | CONCLUSION

Throughout their lifetimes, people acquire new knowledge. We pick up new knowledge and incorporate it into our innate knowledge. Concept knowledge, how we view ourselves as learners, and the skills necessary to engage in the job of geoscientists are the three categories into which learning in the geosciences can be separated, as is the case with all learning. As early as 1956, educational psychologist Benjamin Bloom divided what and how we learn into three different learning domains. The cognitive domain encompasses the development of intellectual skills and

subject knowledge. This entails retaining or recognizing specific information and concepts that contribute to improving one's ability to think and learn. There are six primary types of behavior, ranging from the most fundamental (remembering knowledge) to the most complex (assessment). The psychomotor domain encompasses physical movement, coordination, and the application of motor skills. These skills, which are evaluated on execution methods, distance, speed, accuracy, and procedures, require practice to improve.

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