

Chapter 16


Predictive Model for Enhancing Learning Skill Through Biometric Integration: A Review

Surekha Yashodharan

 <https://orcid.org/0009-0006-9688-7524>

*Government Engineering College, A.P.J. Abdul Kalam Technological University,
India*

K. S. Vijayanand

 <https://orcid.org/0000-0001-5002-5554>

A.P.J. Abdul Kalam Technological University, India

ABSTRACT

In the field of education, early identification of students who require additional support due to learning difficulties is paramount importance. This paper offers a pioneering approach to revolutionize education by harnessing biometric data for personalized and effective learning experiences. This research provides a foundation for further exploration in the field of adaptive learning technologies and their potential to transform the way we educate and acquire knowledge. This study proposes the development of a predictive model that leverages biometric information, such as physiological and behavioural data, to provide real-time insights into the learning process. The predictive model is designed to adapt and personalize learning experiences based on the individual's biometric responses. By continuously monitoring and analyzing biometric data, the system can dynamically adjust the difficulty level of educational content, provide timely interventions, and optimize learning strategies.

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INTRODUCTION

There are various types of learners like Fast learners, Bright learners, Average learners and slow learners in education field. Fast Learners have very good cordial relationships and good leadership qualities. They are almost well in all subjects. Bright learners are the ones who succeed better in a typical school setting. These learners always learn with ease, good memoriser and complete assignment. Average learners manifest average ability. Majority of learners can be classified into his group. Average learners are also known as Normal Learners. They need a teacher to bring out their skills and up bring them. A teacher must be there for providing learning style to each average learner. Slow learner is a child who qualifies for special education services. They exhibit numerous learning difficulties that seem to defy all learning methodologies and procedures. They have no interest in learning and their memory capacity is very low. They have poor communication skills, oral and writing skills are not also good. They are not able to mingle with their peers. Their scores in all tests are very low. They need repeatedly remedial classes. They are having poor eye-hand coordination. Several factors can influence the learning activity and overall academic performance of a student. These factors can be broadly categorized into personal, environmental, psychological, and social influences. Here are some key factors:

a) Personal Factors:

- Cognitive Abilities: Intelligence, memory, and critical thinking skills play a significant role in a student's ability to learn and process information.
- Motivation: A student's intrinsic and extrinsic motivation affects their engagement and willingness to participate in learning activities.
- Physical Health: General health, including nutrition, sleep quality, and physical fitness, can impact energy levels, concentration, and cognitive functioning.
- Learning Styles: Different students have varied learning preferences, such as visual, auditory, kinesthetic, or reading/writing styles, which can affect how they absorb and retain information.
- Self-Discipline: A student's ability to manage time, maintain focus, and follow through on tasks is crucial for successful learning.
- Prior Knowledge: The background knowledge and skills a student brings to a learning activity influence how well they can grasp new concepts.

b) Environmental Factors:

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