

# The Importance of Identifying Learning Styles in Medical Education

## A Importância da Identificação dos Estilos de Aprendizagem na Educação Médica

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### ABSTRACT

*Learning is a complex construct that involves several factors, mainly the interaction between teachers and students in the process of teaching and learning. Understanding how students learn and which factors influence academic performance is essential information for lesson planning and evaluation, in addition to allowing a better use of students' learning potential and outcomes. The ability to constructively modify one's behavior depends on how well we combine our experiences, reflections, conceptualizations, and planning to make improvements. This seems particularly relevant in medical education, where students are expected to retain, recall, and apply vast amounts of information assimilated throughout their training period. Over the years, there has been a gradual shift in medical education from a passive learning approach to an active learning approach. To support the learning environment, educators need to be aware of the different learning styles of their students to effectively tailor instructional strategies and methods to cater to students' learning needs. However, the space for reflection on the process of teaching is still incipient in higher-education institutions in Brazil. The present article proposes a critical review of the importance of identifying students' learning styles in undergraduate medical education. Different models exist for assessing learning styles. Different styles can coexist in equilibrium (multimodal style) or predominate (unimodal style) in the same individual. Assessing students' learning styles can be a useful tool in education, once it is possible to analyze with what kind of learning students can better develop themselves, improving their knowledge and influencing positively in the process of learning. Over the last century, medical education experienced challenges to improve the learning process and curricular reform. Also, this has resulted in crucial changes in the field of medical education, with a shift from a teacher centered and subject based teaching to the use of interactive, problem based, student centered learning.*

### KEY-WORDS

- Education, Higher education,
- Teaching,
- Teaching Strategies,
- Learning Method,
- Learning Styles

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## PALAVRAS-CHAVE

- Educação,
- Educação Superior,
- Ensino,
- Metodologias de Ensino,
- Aprendizagem,
- Estilos de Aprendizagem.

## RESUMO

*A aprendizagem é uma construção complexa que envolve diversos fatores, principalmente a interação entre professores e alunos no processo de ensino/aprendizagem. Entender como os alunos aprendem e quais fatores influenciam o desempenho acadêmico são informações essenciais para o planejamento das aulas, além de permitir um melhor aproveitamento do potencial de aprendizado e desempenho dos alunos. A capacidade de modificar construtivamente o comportamento de uma pessoa depende de quão bem combinamos nossas experiências, reflexões, conceituações e estratégias para desenvolver o processo de mudança. Isso parece particularmente relevante na educação médica, na qual se espera que os alunos retenham, processem e apliquem grandes quantidades de informação durante todo o período de treinamento. Ao longo dos anos tem havido uma mudança gradual na educação médica de uma abordagem de aprendizagem passiva para uma abordagem de aprendizagem ativa. Para fortalecer o ambiente de aprendizado, os educadores precisam estar cientes dos diferentes estilos de aprendizado de seus alunos e, desta forma, adaptar estratégias e metodologias pedagógicas que aprimoram o processo de aprendizagem. No entanto, o espaço de reflexão sobre o processo de ensino ainda é incipiente nas instituições de ensino superior no Brasil. O presente artigo propõe uma revisão crítica sobre a importância da identificação dos estilos de aprendizagem dos alunos no ensino médico de graduação. Existem diferentes ferramentas para avaliar estilos de aprendizagem. Diferentes estilos podem coexistir em equilíbrio (estilo multimodal) ou predominar (estilo unimodal) no mesmo indivíduo. Avaliar os estilos de aprendizagem dos alunos pode ser uma ferramenta útil na educação, uma vez que é possível analisar as vias sensoriais mais favoráveis para assimilar e processar os conhecimentos, influenciando positivamente o processo de aprendizagem. No último século, a educação médica vem postulando novos desafios para melhorar o processo de aprendizagem através da reforma curricular. Além disso, impulsionou mudanças cruciais no campo da educação médica, transformando um modelo de ensino passivo, previsível e centrado na figura do professor em um modelo de aprendizagem ativo, centrado no aluno, interativo e baseado em problemas.*

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## INTRODUCTION

Learning is a complex construct involving many factors, including the interaction between teachers and students. When students learn new content, they go through a cycle that involves recognition, assimilation, experience and, finally, the capacity of socializing the acquired knowledge<sup>1</sup>. One of the major challenges people face in life is to learn about themselves and about the people with whom they relate. One way to meet this challenge is to identify learning styles<sup>2</sup>. Such a difficulty is greater for educators, who sometimes ignore the different ways of acquiring knowledge and the resulting essential characteristics of their students<sup>3,4</sup>. The present article proposes a critical review of the importance of identifying the learning style in undergraduate medical education.

## CURRENT EDUCATIONAL MODEL

The school we know is based on the prevailing educational model in our country, that of homogeneous education. At first

sight, this view may seem adequate, but reflection indicates that linear education does not reach everyone equally and fairly. On the contrary, we struggle all the time to adapt to a learning model that often does not fit students' needs. By trying to develop strategies to deal with this difficulty, we learn to live with failure and with the labels imposed by evaluation<sup>2</sup>.

In order to understand the teaching-learning process in higher education, it is necessary to understand that university students are the concrete subjects of learning. They are part of a specific culture, are involved in social relations and private life situations, and are emotionally involved in the subjective process meaning-making, thus bringing into this context their history and their individual needs. In order to stimulate the creative process, learner's involvement is necessary, so that the process represents a moment of the subject's realization, leading them to have emotionally and personally motivated experiences<sup>5</sup>.

In medical schools, we often find a scenario where the educational process is carried out by physicians without any

pedagogical skill to play the role of teachers, believing in the premise that professional expertise is enough to practice teaching. This context supports a teaching process centered around the teacher, fragmented and detached from students' real needs. Good teachers, far from being an abstraction, are an ongoing construct of the entire faculty committed with a vocational training that goes beyond mere learning procedures and techniques. They think, organize, and delineate pedagogical interventions centered around the complex dimension network that permeates their social role<sup>6</sup>.

## LEARNING STYLES

Understanding how students learn and which factors influence academic performance is essential information for lesson planning and evaluation, in addition to allowing a better use of students' learning potential and outcomes. Learning style can be defined as how the individual learns<sup>7</sup>.

In an age when students are at the center of their learning, it is necessary to provide the subsidies for students to develop, in addition to expertise and skills, techniques to make learning a meaningful experience. Each student uses different methods to assimilate knowledge. In this sense, the process of learning and teaching becomes a challenge in academic education<sup>8</sup>.

Since the Classical Age there is a concern about the way people learn: both Plato and Aristotle registered their theories on the subject and expressed their appreciation for self-learning, as many of their works were written with the intent to be used by their disciples<sup>9</sup>.

Carl Jung developed the idea of the existence of psychological types, i.e., the different ways people perceive the outside world (perception) and internalize what was perceived (processing), incorporating the knowledge into their individuality. In recent decades, researchers have developed tools to assess learning preferences, and these tools have been validated in different languages<sup>10</sup>.

It is generally agreed that different individuals have different styles of learning. However, there are common features to many individuals. The different styles can coexist in equilibrium (multimodal style) or predominate (unimodal style) in the same individual. Different authors distinctly denominate the learning style categories. The Honey-Alonso Learning Styles questionnaire (QHAEA) by Portillo<sup>8</sup> is the result of the translation and adaptation into the academic context of the Learning Styles Questionnaire (LSQ) by Honey and adapted by Alonso, from English into Spanish, called C.H.A.E.A (Cuestionario de Honey y de estilos de Aprendizaje). The questionnaire consists of 81 social and academic questions divided into four groups: active, reflexive, theoretical and pragmatic.

A profile can change due to intrinsic factors, such as motivation and maturity, but is also influenced by extrinsic factors, such as the educational project and the choice of the teaching methodology by the faculty<sup>4</sup>. Kolb's model (Kolb's Cycle) works with a tool for individual identification of a learning style. Based on the recognition of each individual's learning skills, the model identifies four styles: the accommodating, the converging, the assimilating, and the diverging styles, which characterize the individual's way of learning, each with their own characteristics<sup>11</sup>.

The Vark evaluation tool was described by Fleming in 2001. It is a sensory model, and the acronym Vark stands for Visual (V), Aural (A), Read/Write (R) and Kinesthetic (K). Fleming defines the learning style as the characteristics of an individual and the ways used to acquire, organize and think about information. The Vark inventory provides a score for each of the four modes of perception that can coexist in individuals. Fleming reports that 51% of those who answered the tool have multiple styles, 27% have two styles, and the others, a single learning style<sup>12</sup>.

This tool is available at [www.vark-learn.com](http://www.vark-learn.com) and can be freely used in academic settings with the author's permission. The questionnaire was translated and validated into Portuguese and consists of 16 multiple-choice questions. Since the questionnaire allows to tick more than one answer, the combination of results reflects a unimodal, bimodal or multimodal learning style. Students with multiple ways to capture and process knowledge can be more flexible and adaptable to different teaching and learning resources. In courses where the skills and knowledge should be integrated into practice scenarios, this ability can provide an advantage during the knowledge internalization process<sup>13</sup>.

## THE IMPACT OF THE EDUCATION PROJECT ON LEARNING STYLES

The development of student-centered teaching and learning processes was described by Harden in 1984, in opposition to the then current Flexnerian model<sup>14</sup>. The trends of the Spices model can be summarized in the table below<sup>15</sup>.

Flexner (1910)	The SPICES model Harden (1984)
Centered on the teacher	Centered on the student
Transmit knowledge	Based on problems
Isolated disciplines	Integrated
Hospitalocentric	Community-oriented
Standard curriculum	Centralized and elective modules

The change to the student-centered educational process and based on problem-solving also impacted the understanding that effective learning must be contextualized. Traditional models of medical education that separated, temporally or geographically, the biomedical disciplines from clinical practice are prevalent in curriculum matrices characterized by fragmentation and theoretical and practical dissociation. Integrated approaches predict modules where there is horizontal integration of knowledge and skills of many disciplines grouped around a theme or health problem<sup>16</sup>.

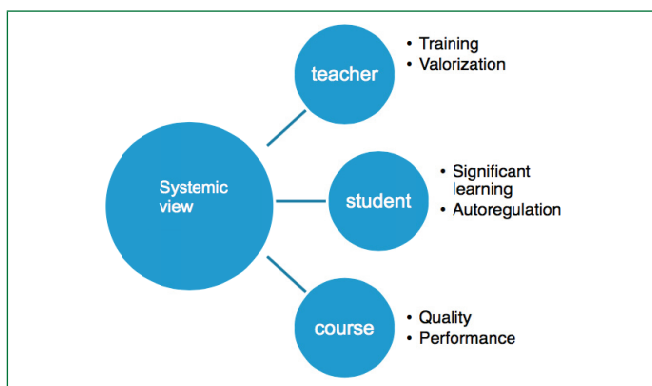
The results of a study carried out in India about learning styles in first-year undergraduate medical students using the Vark questionnaire showed that 61% of the students have a multimodal style, suggesting that a single teaching approach may not work for most of them<sup>17</sup>.

## DISCUSSION

Considering the several possibilities found in medical education, the authors propose strategies that can positively affect the formation of medical professionals in a higher education setting.

### The systemic view

The space for reflection on the teaching learning process is still incipient in Brazil's higher-education institutions. Teachers, immersed in specific activities, underestimate their influence on the curriculum design and pedagogical structure of an undergraduate program. However, there seems to be a clear understanding that individual approaches can have an impact in aiding curriculum designing at any level. The performance of pedagogical approach in the classroom is often the common thread between the structural faculty and the students. Teachers perform the interface between students' needs and the educational objectives proposed by the educational institution<sup>6</sup>. We understand that teachers, when combining professional and pedagogical technical qualifications, contribute to students' formation, thus creating a strong program with good performance ratings.



### The teacher as learning facilitator

Education requires focus on the subject to be taught, on the understanding of its need for health practice, and on the ability to activate student learning. Concerning the latter, the use of appropriate teaching practices depends on the understanding of students as subjects.

Educational practices become effective when undergraduate course managers and the faculty understand their role as well as the impact of recognizing how students learn in the academic process. However, that does not mean categorizing students without contributing to teachers' planning of appropriate and varied teaching strategies. Therefore, identifying learning styles is a tool to be explored and debated in the educational scenario to influence the learning process<sup>8</sup>.

As for teachers, their role is to find solutions to the different individual needs, such as diversifying pedagogical strategies according to the predominant learning styles in different groups of students, which is only possible by having proper teacher training to develop alternatives to expository classes. Another possibility is to identify the learning styles of students with insufficient academic performance and design a recovery program based on the knowledge of how they learn.

### Students at the center of the teaching-learning process

Learning becomes a challenge also for the students, as they actively participate in the construction of new pedagogical models. By elucidating the usual process of teaching, one creates space for the identification of alternative ways, allowing students to have a conscious and meaningful learning experience, improving the acquired knowledge and the program they chose. It is known that by alternating forms of assessment, self-assessment, and psychoeducational assessment, one can foster growth, self-knowledge, and extensive learning ability<sup>18</sup>. The use of active teaching methodologies such as problem-based learning (PBL), Peer instruction and FlipClass provide a more active posture of students, making them responsible for their own learning<sup>19</sup>.

Evaluating students' learning styles, allowing them to recognize how to improve their own learning, would serve to guide their studies and the search for different tools better suited to their own thought process. Learning autonomy also depends on learners' self-knowledge.

We are experiencing a decade of intense and rapid changes. Forms of interpersonal communication are undergoing constant adaptive changes to the needs of individuals and society. In education, these behavioral changes also exhibit their features throughout generations. The educational model associated with an orthodox curricular structure does not meet the current needs of higher education. The teacher-student dichotomy needs to be reviewed and rediscovered through the

identification of characteristics, styles, and desires of the students that are now entering universities. The role of medical schools and educational entities is essential to promote spaces for debate and construction of new pathways in the Brazilian medical education scenario.

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