

PROCESSO SELETIVO - TURMA DE 2010

FASE 1 - PROVA DE INGLÊS

O texto a seguir é um trecho do Capítulo 3 do livro *Teaching Introductory Physics*, de Arnold B. Arons (John Wiley & Sons, 1997). Após a leitura deste texto, você deve responder em português às perguntas apresentadas, com base no que consta no texto. É permitida a consulta a dicionários.

Understanding the law of inertia

Because of the obvious conceptual importance of the subject matter, the preconceptions students bring with them when starting the study of dynamics, and the difficulties they encounter with the law of inertia and the concept of force, have attracted extensive investigation and generated a substantial literature. A sampling of useful papers, given far more extensive detail than can be incorporated here, is cited in the bibliography.

Learners' difficulties in encompassing the law of inertia and the concept of force stem in large measure from the wealth of common sense preconceptions and experiential "rules" that most of us assimilate to our view of the behavior of massive bodies before we are introduced to Newtonian physics. Some of these views are Aristotelian (e.g., the necessity of continued application of a push to keep a body moving, it being very difficult to abandon thinking of rest as a condition fundamentally different from that of motion, or to accept the view that, rather than asking what keeps a body moving, we should ask what causes it to stop), but many of these common sense views are more closely related to the medieval notions of impetus associated with names such as Buridan and Oresme.

All investigations show these "naïve" conceptions to be very deeply entrenched and very tenaciously held, and it is important for teachers to understand that student difficulties are not reflections of "stupidity" or recalcitrance. The difficulties are rooted in seemingly logical consequences of perceived order and experience and are vigorously reinforced by insistent use (or actually misuse) of words drawn from everyday speech (inertia, mass, force, momentum, energy, power, resistance) before these words have been given precise operational meaning in physics. Persistent misuse of the terms in thinking to oneself and in communicating with others is a major obstacle to breaking away from the naive preconceptions. (This is another reason for helping the students stand back and become very self-conscious about the process of operational definition - term by term.) Some teachers tend to minimize such problems labeling them as "merely" a matter of language or semantics, apparently not realizing how formidable and significant the linguistic obstacles tend to be.

Questão 1

Segundo o autor, qual é a origem das dificuldades dos alunos em relação à lei da inércia e ao conceito de força?

Questão 2

Quais os pontos de vista Aristotélicos citados pelo autor?

Questão 3

Por que o autor considera importante que os professores compreendam que as dificuldades dos estudantes são reais?

Questão 4

Na opinião do autor, por que as dificuldades são reforçadas pela linguagem utilizada, e como é possível amenizar estes problemas associados à linguagem?

