



## **The Science Academy Statement on the Ministry of Education's Draft Curriculum**

The Science Academy is working on a detailed study of the new education curriculum drafted by the Ministry of National Education. In this statement, we would like to draw attention to the main features of this curriculum.

The draft curriculum, which covers all subjects, at all levels, in all schools, is based on a framework that is deficient, erroneous, and incorrect in many respects. This framework can be summarized as follows:

In all subjects, for all types of schools, there is a focus on “values” such as friendship and affection, whether these are related or not to the subject at hand. The draft curriculum also aims at helping students acquire “skills” such as scientific literacy, critical literacy, scientific inquiry and creative and critical thinking; however, there is no mention of values related to rationality and understanding the world, such as curiosity, search for evidence and inquiry, which must be underscored in an education program, not only for the science disciplines but also for all fields related to knowledge of the world. These rational values are essential for the implementation of moral values, for individual, social and political life, for living well, and creating a productive society. The draft curriculum does not list rational values among the essential values, and excludes them from its overall approach. A special place is given to moral, religious and national values; however, these should not be confused with the fundamental universal rational values. Curiosity, learning from experience and employing logic are the main means of grasping the world. One should decide whether a statement or perception is right or wrong by examining the available evidence, and not on the basis of the speaker's or writer's identity, title or position or his or her beliefs and origins.

An analysis of the curriculum reveals that the following characteristics are prevalent and dominant:

1. Topics are presented in the form of lists, without any explanation as to which have primary and which have secondary importance.
2. There is a special emphasis on the “opinions” of this or that scientist or scholar. Yet the essential thing is not to whom a certain argument belongs, but rather what that argument says

- about the world, how it reaches these conclusions, on what evidence and with which arguments.
3. References to individuals and texts tend to become more prominent than references to evidence about the world. Just like the natural sciences, social sciences and history are built on a rational approach, and the search for evidence is based on observation and experience. The dominant discourse in this curriculum is one based on recounting. The style of choice is preaching, starting from some definitions. Basic concepts should not be presented based on definitions, rather, they should be developed from information acquired through observing the world. *Terms* should be *defined* so as to express this information.
  4. In abstract disciplines like mathematics and philosophy, while putting forth the *basic definitions*, it is necessary to a) ensure the consistency among these, b) lay a foundation for deductions, c) provide a language of deduction and expression for describing the world. Once again *reasoning* is of essential importance. However, this curriculum has a heaped-up structure and a discourse which relegates reasoning to the back burner.
  5. It is possible to explain the laws of nature and provide information on the world to children and young people through simple yet correct language. The discourse employed in this curriculum, however, consists of abstract sentences with multiple layers, which frequently digress from the main argument, and create the impression that the topic is subject to arbitrary definitions, is obscure or even impossible to understand.
  6. Disproportionate importance is attached to history while explaining various topics in science. The historical dimension must be limited to how the information presented was deduced in the past. Before the Renaissance, experiment and observation were not performed in a systematic fashion. Islamic civilization raised important natural philosophers prior to the 15<sup>th</sup> century. These early scholars made very significant inventions by employing rational observation, instrument design, and practical experience. It is, however, misleading to lump together Avicenna's ideas on inertia and Newton's theories.
  7. This historical amalgam of information based on systematic experiment and observation with the bright intuitions and discoveries of ancient times, has been extended to irrelevant cultural contexts. While discussing the important scientists of Turkish and Islamic civilizations, it is not mentioned that their arguments were not based on systematic scientific experiments and observations. Reason is not unique to the West; it is available in all societies. What is necessary is to promote reason, inquiry and creativity as the common heritage of all humanity, instead of trying to equate modern science with the obsolete traditions of 600 years ago, due to some cultural complex.

As a result, the textbooks based on this curriculum and the education system as a whole project an abstract culture cut off from the real world. Rote learning, which everybody claims to criticize, is hereby upheld through the very design of the education program. These characteristics have not abruptly emerged with this last draft curriculum. Rather they represent the consequence of deterioration through decades, accelerated in recent years. Just like the general education system, the education programs in teacher training schools and education faculties are shaped by similar, and uniform curricula. Despite the immensely valuable efforts of numerous teachers who educate

themselves and employ their power of reasoning, this framework imposed by the Ministry of Education officials has come to dominate education policy. Many graduates do not display much competence in reasoning, which should be the main skill provided by a good system of education. This is confirmed by the unsuccessful results obtained in PISA studies, especially in the comprehension of Turkish texts. It is necessary to organize a serious discussion based on evidence to improve the quality of our education system and curricula. We are faced with a deep and important set of problems. The Ministry has announced a timetable of months. No measures should be implemented with such haste.

The Ministry has also removed the theory of evolution from the curriculum. Evolution is a scientific theory supported by a large array of evidence. A simple and direct body of evidence for evolution is the increasing resistance of bacteria to antibiotics, due to which the government has obliged pharmacies to sell antibiotics only as a prescription drug. It is not possible to conduct research and develop new drugs without grasping and making use of the theory of evolution. Introducing the theory of evolution to high school students is the first step towards educating scientists and professionals who can contribute to biomedical research in this field.

The theory of evolution is not a just any component of the biology curriculum. The theory of evolution is essential in one way or another to develop the various topics explained in biology classes. Taking evolution out of the biology curriculum is like teaching physics without the laws of Newton, or building a structure without columns. For biology to be discussed and understood not by rote learning but through a holistic perspective, the theory of evolution must be discussed at the beginning, and not, like in the previous curriculum, as the very last topic of the 12<sup>th</sup> grade which will probably not be covered. A society which ignores the theory of evolution or any basic theory supported by scientific evidence will be deprived of the values to be yielded by employing these theories. "Eppur si muove", as in the phrase attributed to Galileo Galilei, the pioneer of the scientific method.

Another topic of debate was the place attributed in the new curriculum to Atatürk, the founder of the Turkish Republic. Just like the entire curriculum, information on Republican history and the War of Liberation must be based on evidence and historical fact. An unexaggerated narration of this history through evidence will suffice to display the extraordinary leadership capacities of Atatürk and other prominent figures of the era. Reason and science are not only the cornerstones of education, but also the basis of Atatürk's legacy.

**The Science Academy Board of Directors**

**January 20, 2017**