October 2024 **Volume 1, Issue 1**

JOURNAL OF EDUCATION STUDIES IN PHYSICS

a quarterly publication to be a source for researchers in physics and science

THIS ARTICLE IS AVAILABLE ONLINE AT
https://physics.cfu.ac.ir/

ORIGINAL RESEARCH PAPER

Why is physics important for our country, and how can it flourish?

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ABSTRACT

Physics plays a pivotal role in understanding the natural world, leading to breakthroughs in many scientific fields such as engineering, chemistry, astronomy, mathematics, etc. This paper aimed at presenting different views as sources of knowledge about the natural world and the reason why Islamic view and values are replaced by particular dominant views which merely consider the practical and utilitarian aspects of sciences. The importance of physics science for the Iranian context and the ways to improve physics status and prestige in the school system of the county are discussed after.

Keywords:
Physics; Technological advances; Science outlooks; Abrahamic religions view

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The Journal of Educational Studies in Physics **DOI: 10.48310/esip.2024.17538.1008**

Received: 2024-10-03
Reviewed:2024-10-03
Accepted: 2024-10-14
Pages: 1 to 5

Citation (APA): Golshani, M. (2024). Why is physics important for our country, and how can it flourish? *Physics Journal | Farhangian University*, *1*(1), 1-5. doi: 10.48310/esip.2024.17538.1008

1. Physics and the study of the nature

Physics is an organized effort for understanding the natural world. But an important question is: Why are human beings seeking to find the structure of the natural world? Science, by itself, cannot answer this question. Rather, it needs a more comprehensive framework. There have been three views concerning this subject, as follows:

(a) Old view: The old view concentrates on the study of natural world because of its worthiness.

(b) Abrahamic religion's view: In the view of the Abrahamic religions, the study of the natural world is conducted for the purpose of understanding the structure of God's creation as well as using this knowledge to take care of human needs. As al-Biruni, a distinguished scholar of the Islamic civilization, long time ago acknowledged 'Sight connects what we see to the signs of Divine wisdom in creation and deduces the existence of the Creator" (cited in Nasr, 1978). The aim of the studies conducted under the Abrahamic religions view is, therefore, to understand the glory of God's creation.

The Abrahamic religion's view was popular among the eminent scientists of the modern science era. For instance, Newton in his important book titled 'Mathematical principles of natural philosophy', pointed out "This most beautiful system of the sun, plants, and comets could only proceed from the counsel and dominion of an intelligent and powerful Being" (Newton, 1878, cited in Clark, 2014).

(c) Practical benefits of knowledge: This view became dominant in the twentieth century, focusing on seeking the knowledge for its practical and material benefits. On such base, all harmful results of science for human societies and humans can be interpreted from this lens since they are the outcome of such an outlook.

Unfortunately, the dominant view in our present scientific circles is different from what is held by the abovementioned outlooks. It is neither for understanding the glory of God's handiwork nor for seeking power and wealth, but for getting university or academic degrees and prestige, or for getting some technologies from the West. This is due to the ruling of a worldview which is neither Islamic nor nature-focused understanding (i.e., understanding the nature), but, instead, is power and position seeking. This outlook overlooks several important points as the following.

(1) Without a powerful base underpinning the basic sciences (especially physics), we face some challenges and limitations in getting and adopting new technologies. It has frequently been emphasized that todays' knowledge leads to tomorrow's technology. From this perspective, clear examples are the discovery of NMR Phenomenon, transistor, laser, nuclear energy in physics, and matrices in mathematics (emerged during the middle of the nineteenth century).

(2) Basic sciences are also important from the Islamic View. For instance, we read in the holy Qur'an

"قل سیروا فی الارض فانظروا کیف بدءالخلق ..."

“Say: travel throughout the land and then observe how He originated the creation” (Al-Ankabut, verse 20)

" قل انظروا ماذا فی السموات و الارض ...."

“Say: Behold what is in the heavens and in the earth” (Yunus, verse 101)

It was this kind of outlook about the sciences of the nature that led Muslim scientists to look for theories with explanatory adequacy, explaining the structure of the physical world while not necessarily looking for sciences with practical benefits. George Sarton (1962) in his book ‘Introduction to the History of Science’ argued that to fully conceive the motive behind the fields of science during the Islamic civilization, one should note the axial role of the Qur’an. In a similar vein, Levy (1967) in his book ‘the social structure of Islam’ puts into words the same idea, as

“Apart from a small number of investigators inspired by Greek philosophic ideas, the Muslim who engaged in the pursuit of science did so in order to discover, in the wonders of nature, the signs or tokens of the glory of God” (p. 460).

Unfortunately, this viewpoint has been forgotten and replaced by a non-Islamic view towards the science, looking only for practical benefit side of the science.

At the moment, technology is important for us. However, for development of technological advancements and access to new technologies, we have no choice except to strengthen our natural sciences. Nonetheless, in many aspects, we are only imitating the West rather than being after innovation in basic sciences including physics, in particular. This introduction raises an important question: Why is physics important for us?

2. Why is physics important?

Physics essentially concerns understanding the world. It is the most basic part of empirical knowledge which has led to a number of important inventions such as computer technology that has dramatically changed our life. Physics generates fundamental knowledge for the future of such technological advances. As to its scope, physics includes a wide field, from atomic particles to galaxies, also undertakes studies on matters, energy, space and time. Overall, as an international enterprise, physics plays an important role in the future progress of our society.

Physics forms a basis for other related sciences such as astronomy, chemistry and oceanography. Furthermore, it has applications in biological sciences and engineering. In other words, physics is a fundamental element in the education of biological, engineering, computer and chemical sciences. This clearly implies that all applied sciences have their roots in physics, and physics enhances our understanding of these disciplines.

3. How to flourish the status of physics in our country?

Given that physics is not currently so popular nationwide in Iran, most of the elite students are not pursuing physics for their field of study. Raher, they go for engineering and medicine most often. Also, physics has no high prestige or status among the government officials. In order to improve this situation, the following actions are suggested to be taken into account.

(a) In our high schools, physics teachers should emphasize the important role of physics in the development of the country.

(b) Physicists should clarify the significance of physics for our society. This leads to the recruitment of physics graduates in many sectors of the society, from the governmental organizations and institutes to the private ones, due to the graduates' potentials and power of analyzing problems and finding the most appropriate solutions.

(c) Our government should provide motivations for our elite students to choose physics for their field of study.

(d) Physicists should explain, through public media, the important role of physics in the development of our country.

(e) As, at the moment, some Islamic societies might be losing their identity, the elites are not motived enough to spend time innovating and making scientific progress constantly. However, unfortunately the number of elites leaving the country is increasing yearly. It is necessary, thus, to combat this sense of inferiority to other nations, both at our high schools and university levels.

(f) In our time, our scientists have become specialists in a narrow field and have lost a holistic view about the natural world. It is, thus, necessary that our scientists combine their field-specific views with a wider view about the world. This could be accomplished by adding some interdisciplinary courses (e.g., humanities) to our school or university curriculums.

(g) At the present time, scientific discussions and criticisms are missing from our school or university classes. It is, therefore, necessary to spend time on critical arguments and discussions in our physics classes.

(h) In our physics classes, it is necessary to put emphasis on understanding the physical concepts, like matter and energy, but not be merely content with the solution for the problems.

(i) It is also necessary to have some special training programs for our elite students.

(j) At the present time, our government is much concerned about new technologies and their expansion rather than the significant role of physics. Due to such a decreasing importance of physics in the society, our physicists' clarifications and illuminations will change the current status of the physics in the country.

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