

## Education and Experimenting with At-Home During the COVID-19 Pandemic

Ahmad Shaabani<sup>\*,1</sup>

Before the COVID-19 pandemic, the lack of access to school for more than 250 million children and youth in the primary- and secondary school age, high dropout rates, and unfair distribution of educational facilities were serious crises and challenges to the education and learning systems in the world. The COVID-19 pandemic has doubled the dilemma and problem in the education systems by closing schools and educational institutions in all countries. In this article, an attempt has been made for sharing the personal experience and experience of some universities in other countries in the education system during the COVID-19 with teachers, professors, planners, and policymakers in the field of education and learning to reduce crisis and improve the educational system. In this study, the teaching of theoretical courses, especially in undergraduate and graduate levels by the synchronous virtual learning environments, solving problems, exercises and issues with the asynchronous virtual method, Ph.D. courses by a hybrid online environment, and lab courses in the at-home laboratory program as the most appropriate approach is proposed. Given that E-learning costs are greatly reduced (transportation, accommodation, etc.), it is suggested that cost savings be spent on upgrading E-learning and virtual education infrastructure.

**Keywords:** COVID-19 pandemic, Education, Synchronous virtual learning, Computer-based learning, Web-based Technology, Experimenting with at-home, Educational technology, Virtual laboratories

---

\* Author for Correspondence, Professor, Tel: +982129902800, Fax: +982122431663, E-mail: a-shaabani@sbu.ac.ir

<sup>1</sup> Faculty of Chemistry, Shahid Beheshti University, G. C., P. O. Box 19396-4716, Tehran, Iran