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**Project-based learning as a way to cover the gap between school curriculum and contemporary chemistry**

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 AESC one of Lomonosov Moscow State University subdivisions established in 1963 by Acad. A.N. Kolmogorov [1]. The mission of AESC is to gather gifted pre-University students (14-16 years old) from all-Russia to teach them at University style in order to simplify their start to science. A lot of University professors and researchers have classes in AESC. As a high secondary school, AESC has a range of programs for student activity: advanced math, physics, informatics, biology and chemistry.  
The Chemistry division of AESC is 25-years old. In 2003 started a new class focusing on life sciences with the project-based learning implemented in education program. Later students of early-created advanced chemistry class were involved into the projects activity. Since more than 130 research projects have done. The projects grown up from simple but unusual synthetic or analytical problems to serious investigations in collaboration with researchers of Lomonosov Moscow State University, Nesmeyanov Institute of Organoelement Compounds, Karpov Institute of Physical Chemistry and others. Now AESC is one of unique secondary schools of Russia where students have an opportunity to work in chemical research laboratories with actual scientific problems.  
Another sense of our projects revealed recently. We estimate the educational background on chemistry using problems of UK A-level exams. Russian students have good theoretical basis and enough practical activity. Unfortunately, competence skills in the field of modern analytical methods are insufficient. We are trying to fill this gap by additional lessons on NMR, MS, UV-VIS spectrometry and other modern techniques. However, we do not have enough equipment to run discussed methods on the regular basis. The school digital labs with analytical sensors allow some quantitative experiments, but cannot replace the well-equipped laboratory. The possible solution is to encourage the students to research under qualified supervising in scientific labs. Our students work with excellent motivation exceeding most beginner University students. Students complete their projects at spring and present results at annual AESC conference. Every year our students win awards on the project conferences. Some students publish in popular and peer-reviewed scientific journals during the school time. All information regarding our project activity present at AESC web-site [2].  
The project activity leads our students to get an experience of work with modern devices and techniques, improve their presentation skills and establish initial social communications in scientific world. The skills elaborated by project-based learning allow them to choose knowingly a way for further high education and to turn readily to scientific activity after admission in Universities.

 1. AESC web-site: http://internat.msu.ru/ (Russian only)  
2. Chemistry division project activity page: http://internat.msu.ru/?page\_id=1333 (Russian only)

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