At the second meeting of mentoring, more often the group to discuss the sources and resources used in the study period. Each member briefly summarizes the sources who has explored the reasons for their selection and the problems encountered in the search. This is an opportunity for the group to share the sources of information and to learn how to access them, and evaluated through a critical analysis. From the beginning, the group should discuss how critically evaluate the information collected (e.g., the reputation of the authors, employees search methods and statistical methods applied). This process is part of the skills required for future professional throughout his career.

In the second session, all members of the group should have an opportunity to apply the information they have studied the problem being discussed. Thus facilitating the student is training for critical evaluation and correction of prior knowledge based on newly acquired knowledge, and develop the ability critically evaluate their initial analysis of the problem.

The provision of information that each student performs can be supplemented with articles, diagrams and other material. Nevertheless, this process is not a presentation of the information collected but a reconstruction and interpretation of the acquired knowledge. From what we have learned in relation to the particular problem, students must extract the principles and concepts that can be applied to other problems.

The problem must be re-evaluated by reviewing the learning plan and/or the list of hypotheses, indicate what changes should be made and what assumptions should be ratified, altered or changed. This allows the student and the group to identify issues that have not been discussed in depth; these issues can be part of a plan to further study. The information obtained through self-directed learning is applied again to the problem of an active and stimulating; increasing their understanding and makes, the new information is integrated into the basic knowledge of students. Knowledge discussed also can generate new questions and items that can establish new apprenticeship schemes.

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## VISUALIZATION IN ORGANIC CHEMISTRY AS METHOD TO IMPROVE STUDENTS' PERCEPTION

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**Keywords:** chemistry computer animation, organic chemistry.

***Intoduction:*** Currently, chemistry computer animation is widely used around the world, for example, well-known programs are: Model ChemLab, Chem Doodle, Odyssey, etc. [1]. With their help, you can make a quantum chemical calculations of the electronic structure of molecules, which helps scientists to understand the mechanisms of reactions, plan experiments, expect results, in popular and accessible

way present the theoretical aspects of organic chemistry to students, who in their turn better master the subject.

***The aim:*** The aim of this paper is to increase the interest of university teachers to use the animation during classes and laboratory works, which contribute the understanding of the chemicals dynamic transformations starting from the orbital's hybridization states, their overlapping, the redistribution of the electron density in molecules, and ending up with a demonstration of the classic reactions of various rearrangements and cyclizations.

***Discussion:*** Thus, using the chemical 3D programs, students will learn the widely used chemical utensils and tools, because in the result of a purchasing funds reduction, not all university laboratories can demonstrate to students, namely: beakers, erlenmeyer, florence and volumetric flasks, graduated cylinders, burets, pipets, eye droppers, watch glass, evaporation dish, filtering flask with funnel, gas syringe, Bunsen burner, magnetic stirrer and hotplate, balances: centigram, electronic and high sensitivity balances, calorimeter, conductivity meter, Geiger counter, potentiometer, thermometers, pH meter, spectrophotometer and timers, distillation setup: distillation flask with heating mantel, distillation head, condenser and distillation take-off.

At the example of the Model ChemLab work flow You can clearly see, that student can step-by-step using guidance, or by himself, plan an experiment, adding chemical reagents, examining and considering their properties without any harm to his health and without violating safety in the laboratory (Fig. 1).

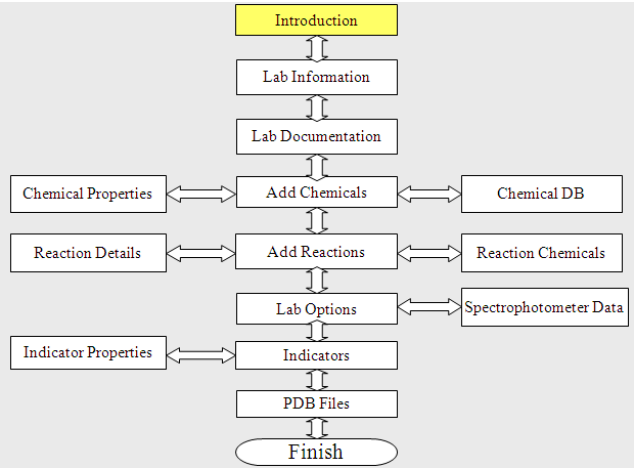


Fig. 1. Model ChemLab work flow [2].

Thus, the student learns in more detail and reasonably understands the types of reactions and methods of quantitative and qualitative evaluation of the resulting products. Considering the cost of licensed software, for example, once more Model

ChemLab, it is only $ 520.00 for the university, that can buy a set of programs for teacher and twenty students, that will ensure full implementation of the program in a specialized computer class and even on some library computers for training during free time [2].

***Conclusion:*** The benefits of the chemical applications usage in a university training program is obvious, I just want to quote the widely known phrase, that "student should not use computer for already prepared knowledge, but learn with help of the computer".

REFERENCES

1. https://en.wikipedia.org/wiki/List_of_molecular_graphics_systems [accessed 28/09/15].

2. http://www.modelscience.com/ordering.html. [accessed 28/09/15].

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## EXPERIENCE OF IMPLEMENTING PROBLEM- BASED LEARNING (PBL) IN ASTANA MEDICAL UNIVERSITY

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**Keywords:** TEMPUS, Astana Medical University, problem-based learning.

Call for innovative processes in the field of content, structure, organization of medical education updating with the purpose to perfect competences of medical university undergraduates, increase of competitiveness of the Kazakhstan experts in the world market of medical services are defined in the State program of health care development in the Republic of Kazakhstan and the Concept of medical and pharmaceutical education development of the Republic of Kazakhstan for 2011-2015 [1,2].

For the achievement of general and special competences by the graduates of «Astana Medical University» JSC in Mission and the purposes of higher education institution, the Strategic plan of the higher education institution development there was proposed the implementation priority of the innovative learning approach. For this purpose, along with the other higher education institutions of Greece, England, Georgia and the Ukraine, Astana Medical University since 2013 has started working in the international grant project «Establishment of the Supra-Regional Network of the National Centres in medical Education, focused on PBL and Virtual Patients» within the European program «TEMPUS». TEMPUS – one of the European Union programs directed to the support of the higher education updating processes in the partner countries of Eastern Europe, Central Asia, the Western Balkans and the Mediterranean, mainly, through projects implementation of interuniversity cooperation.

There are supported consortia, within the «TEMPUS» projects, consisting generally from higher educational institutions or their associations, and also unacademic partners.