University of the West of Scotland – Computer–Aided Learning to Enhance Taught Lecture Material

Dr. Graham L. Patrick is a lecturer in Organic Chemistry and Medicinal Chemistry at the University of the West of Scotland. He is well known for his textbook "An Introduction to Medicinal Chemistry" (Oxford University Press), used as the recommended textbook in most Medicinal Chemistry university courses, which introduces undergraduates and postgraduates to the fundamentals of medicinal chemistry. With his vast experience, we asked Dr. Patrick to evaluate how Molecular Conceptor™ may be used to enhance the teaching of medicinal chemistry– and drug design–related courses and how it could be used to solve the everyday challenges encountered in teaching these subjects in a university setting.

Background

The University of the West of Scotland was formed in August 2007 through a merger between the University of Paisley and Bell College. Holding a regional reputation for vocational undergraduate and post-graduate courses the University currently has over 18,000 students. The School of Engineering and Science is one of the seven schools making up the university and it comprises a number of departments including “Chemistry and Chemical Engineering” and "Biology". A wide range of degree courses is on offer for study in these two departments including Applied Biosciences, Medicinal Chemistry and Pharmaceutical Science.

Molecular Conceptor™ in Practice

Dr. Patrick familiarised himself with Molecular Conceptor™ and decided it would be best used to enhance the teaching of three undergraduate modules (courses), which are offered on the three programmes mentioned above. "Introduction to Pharmaceutical Science", is a 2nd year module that covers topics such as protein structure, enzymes, receptors, transport proteins and nucleic acids. "Producing pharmaceuticals", is a module studied by third year students and covers topics such as chemical development and process development. "Drug Design and Development" is an Honours module that covers topics such as signal transduction, QSAR, Cephalosporins and
Peptidomimetics. Up until now, each module has been taught using a combination of lectures, tutorials and workshops. The honours module also includes hands-on sessions in molecular modeling.

Dr. Patrick chose to use the Molecular Conceptor™ course as extra supplementary material to the taught aspects of each module. Each student was instructed to navigate through certain sections of Molecular Conceptor™, specific to the topics taught on the course. General questions formulated by Dr. Patrick were used to guide the students through the material and facilitate their understanding.

**Assessment**

Once the students had completed the module, they were assessed on the material studied in Molecular Conceptor™. The second year students had an open-book multiple-choice assessment, in which they were permitted to view any notes they had made during their Molecular Conceptor™ sessions. The third year students sat a closed-book multiple choice exam. The honours students had the option to answer a final exam question about Peptidomimetics from material covered in Molecular Conceptor™.

**Opinion**

Following Dr. Patrick’s use of the Molecular Conceptor™ software in teaching, we sat down with him and discussed the advantages of using the programme and how it can benefit students.

Overall, Dr. Patrick found Molecular Conceptor™ to be a useful learning tool. He said that his students were happy to use it, most of them found the content easy to navigate through and when asked if they preferred lectures or using MC, most of them said they would prefer a mixture of the two. Dr. Patrick commented that the students were self-sufficient when using the software and did not require staff support. For him, this was a major advantage as it meant that a module that was previously worth 15 credits could be converted to a 20-credit module with no extra staffing hours.

In terms of content, Dr. Patrick found Molecular Conceptor to cover all the topics essential to teaching the subjects making up each module, that the topics are well-explained and that the flash media and use of real-life examples enhances the understanding of many complex concepts, such as linear conversion.

Dr. Patrick remarked that the interactive elements of the programme were important in keeping the students interested in the material and suggested ways that we could increase the interactive element of the programme. Overall, Dr. Patrick was of the opinion that Molecular Conceptor™ enhances digestion of taught lecture material and makes a positive contribution to the learning process.

SYNERGIX Ltd. would like to thank Dr. Graham Patrick for his participation in our case-study and invaluable feedback. To find out more about how Molecular Conceptor could benefit your teaching of subjects related to chemistry and drug design see www.drugdesign.com