

[P13] Implementation of new teaching materials for an introductory chemistry course in a further education college

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Students at one Further Education (FE) college in Scotland undertake a one year pre university nursing course. As part of successful completion of this course, students are required to complete an 18 week introductory chemistry course. The background knowledge of students entering the course is varied and some may not have any formal chemistry education at all.

It is known that some students may find chemistry difficult to learn, complicated and find the relevance of chemistry problematic. This is especially the case for nursing or non science major students (e.g. Hall and Evans, 2006; Herron, 1975; Mahaffy, 2004).

At the outset, previous groups of students found the incorporation of chemistry in the curriculum as being largely irrelevant when compared with other classes in the curriculum. Various changes were made to the chemistry module in which the applications-led approach (Reid, 2000) and an understanding of the Information Processing Model (Johnstone, 2006) were the key underpinning principles.

In looking at the applications-led approach, a change in direction from the original 'logical' approach was implemented.

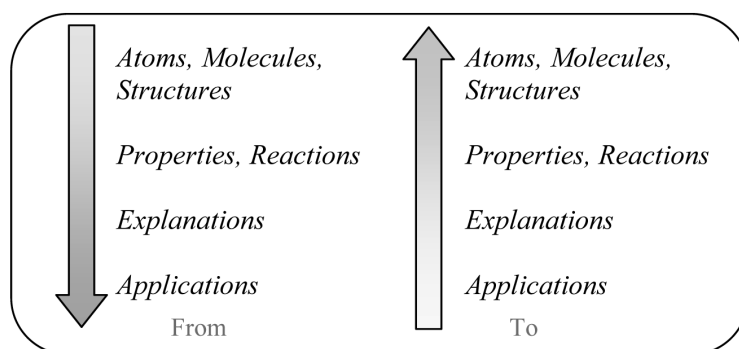


Figure 1: A change of direction

The course content, which was nationally set, was not altered in any way: only the order, presentation and sequencing of materials were changed. The importance and relevance of the material were illustrated, whenever possible, by presenting the chemistry to be taught from real life situations and to previously held knowledge. In this manner, learning chemistry can fit with what we already know about human psychology. By taking account of information processing capacities (illustrated in poster), material was presented in such a manner that reduced the load on the working memory, which is a rate determining step for learning. If the working memory is overloaded, learning (defined as understanding) will more or less cease.

New teaching materials were developed with these features in mind and distributed to a small sample of pre university nursing students. It was hoped to make the new materials accessible, achievable and relevant in the context of the learners.

The effectiveness of the programme was evaluated primarily by interviews with 18 participating students. The learners (mean age 36) were interviewed in two groups of 8 and 10 students. In addition, an informal discussion with the delivering FE lecturer also took place at the end of the course. Questionnaire data was also obtained regarding students views on learning and their intentions of studying more chemistry at university.

Although the sample size was small and no statistical significance can be made, the participating lecturer and students gave universal support to the new materials. The interviews showed very clearly that the students were very positive about the different approach. In addition, it was clear that a positive attitude change to learning chemistry had occurred. Further discussions revealed that it was extremely important that students could see the context of chemistry within nursing studies. Indeed the view was expressed that they would have liked the new materials from the very beginning of the course.

The study indicates key factors influencing the design of introductory chemistry courses and in promoting intentions of studying chemistry at university. By preparing the mind for learning, a positive chemistry experience at the introductory level allows students to view future opportunities to learn chemistry in a more positive light.

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