

LabSkills

■ Nick O'Brien

LabSkills – a revolutionary teaching tool to improve practical science in schools

With an ever increasing squeeze on teaching time, it would seem difficult to see how a piece of software aimed at improving the laboratory experience of students could find a place in the current curriculum time. However, LabSkills offers the chance to help improve the exposure that the average Key Stage 5 (age 16-19) student has to practical work. This is a huge area for development being highlighted by universities who are seeing a worryingly growing trend in students with little practical experience. There lies a tension where teachers are under pressure to produce ever-improving grades whilst also not scrimping on the amount and quality of practical work that students do. It is, therefore, exciting to see a piece of software present an opportunity to help students improve their practical skills, to complement and develop their practical work and present it in a way that is engaging; accessible in both the classroom and away from school, allowing students to focus and test themselves on areas in which they wish to improve.

From the outset, LabSkills presents an interface that is easy to use and well thought out. It is quick and easy for students to navigate their way around the menu and to always return to this point. There are welcomed useful menu items at the top of the screen; simple things, such as having a Periodic Table, glossary and calculator to hand, make this software easy to use without interruption, helping students to remain focused and concentrate on the tasks and tests given. When a student looks at a typical practical technique, there are high-quality videos that allow the student to follow a technique step-by-step. Far more useful than a simple demonstration or video, this allows students to replay each step, or

sequence of steps, if they need to and goes some way to increasing their confidence when they come to do the technique for themselves.

There are plenty of examples of real-life applications. In each application, the equipment set up is shown as a high-quality photo with numbered stages. Each technique has a quick and easy key to use to find out key information about the reaction; steps that have been taken and in what order they should be done; observations that would be made along the way and a comprehensive risk assessment. What helps is the fact that students have a point of reference with either the video and/or picture of the set-up, meaning that students can use this confidently when doing the real practical, with less support from their teacher. One of the best aspects of the software is the series of simulations allowing students to practice a technique before doing it for real. Two great examples are refluxing and titrations. In both cases, students have a chance to put together equipment and use it. If they make mistakes along the way, it is clearly highlighted (so much so that the equipment will fall apart or students get covered in virtual acid!) and there are helpful suggestions as to how to solve any problems with their set-up. This ability to make mistakes without the risk associated with doing so in a real practical means that students feel more confident. They have an insight into what to avoid in the real situation when they encounter this in the laboratory. Not only is this incredibly engaging and exceptionally detailed, I feel that it will save on my glassware bill in the coming years!

As well as providing an innovative approach to practical work, LabSkills manages to strike a good balance with examination preparation. In every menu, both for the general techniques and the common examples, there are tests for students to complete. From 'drag and

drop' activities to a range of calculations, (the built-in Periodic Table and calculator were invaluable here!) students have an engaging and rigorous way to test what they have learned in other aspects of the curriculum. This includes getting students to focus on precision and accuracy associated with reading a burette and calculating equipment-based errors; all examples that complement the work that students have done in class.

Whilst there have been other useful software and videos that I have used to support practical work before, I see LabSkills as an innovator in its field. It seeks to provide a more personalised, in-depth and complete practical insight into the chemistry associated with all specifications at A-level. Enabling students to prepare for practicals, practise or re-visit techniques they have seen during their practical work, or look at other examples of how techniques they have learned can be used, LabSkills offers a complete guide to support the practical experience of all A-level students, hopefully resulting in more confident and prepared students who wish to pursue chemistry beyond Key Stage 5. I already look forward to continuing to use LabSkills for my own personal use, but am most excited about how I can incorporate it into the learning, both in and out of the classroom, of the future chemists whom I teach.



Nick O'Brien is AST for Science,
Seven Kings High School



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➤ The Discover LabSkills Project was launched in January 2009, through collaboration of the RSC/Pfizer education programme, *Discover Chemistry*, with the University of Bristol and Learning Science Ltd. The aim of the project is to improve access to the LabSkills Dynamic

Lab Manual (DLM) to allow teachers and students to develop and improve their practical laboratory skills. Over 1700 copies of the resource were distributed to PGCE chemistry trainee teachers between January 2009 and October 2010. An evaluation looking at the impact the software has had on trainee teachers highlighted increased confidence in demonstrating practical science; increased confidence in running practical sessions with students; and increased skills in running practical sessions with students after using the software. This evaluation formed the basis of the national rollout, funded by the Training Development Agency for Schools (TDA), which will allow all UK state secondary schools to gain access to this innovative teaching resource.

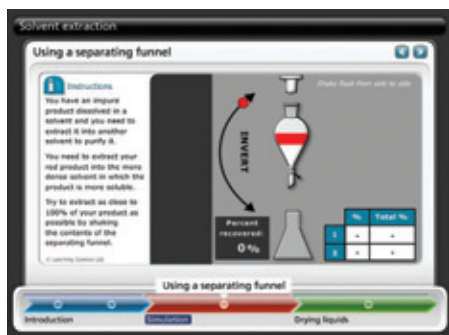
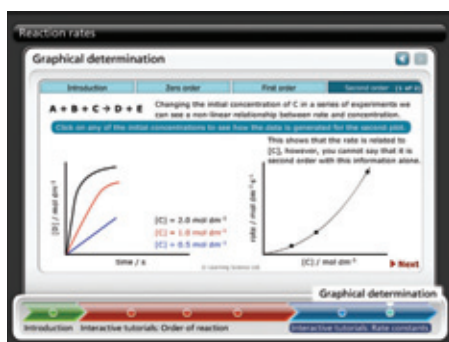
The ASE and the *Getting Practical* – Improving Practical Work in Science Programme see the value in this innovative software resource and are keen to support it. ASE Chief Executive, Annette Smith, says *ASE welcomes all good quality resources that support effective practical work in science and LabSkills does exactly that. Students who explore their own practical skills in a safe and constructive*

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Getting Practical

To request the free copy of the LabSkills resources available to all state secondary and FE colleges in the UK, please contact Dr. Georgina Westbrook at georginawestbrook@ase.org.uk