The routine marking of 100s of scripts is a laborious and soul-destroying activity; the sort of thing computers, having no boredom threshold, ought to be able to do quickly and accurately for us. But this is easier said than done, especially in mathematics-based disciplines.

I am in the middle of a 2-year project to promote the take-up of computer-aided assessment (CAA) in the Warwick Science Faculty — until now there wasn’t much of it.

Local Requirements
In the last 10 months I have invited myself to science department teaching committees to find out their attitudes to CAA, how they might use it, and what hurdles, real or perceived, they face. I have picked the brains of many science colleagues with experience or interest in CAA, have nagged Warwick’s IT Services for better provision, and have received generous help from the E-Learning Lab, who have been enthusiastic supporters of the enterprise. I have been gently prodded into taking a broader view and thinking about good practice by the Centre for Academic Practice, who are doing the project evaluation.

Available Software
I have also looked at the credentials of available assessment software, trying it out in limited ways to evaluate its strengths and weaknesses. There are many competing variables:

- **Technical**: Is it browser-based? Is it platform independent? Does it require proprietary add-ons, plug-ins or environments that are not universally supported? Does it render mathematics well? Does it offer a suitable level of security (with single sign-on, and browser lock-down for example)? Does it mesh with local IT architecture? Can it work seamlessly within an institutional VLE?

- **Pedagogic**: Does it allow useful question types (with random parameters and the parsing of equivalent answers for instance)? Does it provide intelligent marking options? Can it handle deeper concepts (e.g. write down “a continuous function with exactly 3 zeros” or “a sequence converging to e”)?

- **Ease of use**: Are questions easy to author, with varied mechanisms for entering symbols and equations (e.g. symbol palette, LaTeX entry, MathML import)? Are assessments easy to create and deliver? Does the system keep full records of student activity. Are the records easy for authorised users to access and are there suitable tools to analyse and export results?
- **Robustness and Maturity**: Can it cope with heavy duty use? Have the bugs been removed over many years of use and development? Is there a good base of experienced users to consult?

- **Cost**: Is it open source? Is it free or commercial? Can the institution afford the licence? Are there enough computer rooms for simultaneous invigilated tests?

- **Support**: Is there long-term technical support from the supplier? Is the local network suitably configured? Does the institution provide training and administrative support?

- **Compliance**: Does it meet STANDA requirements? Does it meet WWW standards (e.g. for MathML)? Which browsers can deliver it?

There is no single package scoring 10 out of 10 on all these desirable features; therefore hard choices have to be made to find the best compromise for local needs. We have been looking closely at the following packages:

- Maple TA
- Mathletics
- Question Mark Perception
- STACK
- WeBWork

and will report our preliminary findings on the Project website: http://go.warwick.ac.uk/caa4s

**Sustaining the Project**

To learn to use CAA software effectively often takes time, technical confidence, and pedagogic commitment, and we all know that time is in short supply for academics. I am therefore spending part of my project funding to hire a small team of computer-savvy research students, recruited from the Science Faculty, to author questions and deliver assignments on demand from academic staff. And if staff want to get their hands dirty, the postgraduates are there to offer expert guidance.

Many e-learning projects introduce teaching-and-learning innovations, which flourish for the while, but peter out when the project ends. Computer-aided-assessment is especially prone to sinking without trace because it takes a number of years to establish its worth, instil confidence, and become firmly embedded in department practice; local enthusiasts and technology move on.

**Business Model**

Here is my plan for longer-term success. Each department makes a modest annual contribution (of the order of £500 – £1000, less than the cost on one TA) to a Faculty CAA budget managed by the e-Learning Lab. With a light touch, the eLab will respond to department CAA needs, allocate duties to the team members, and pay them hourly rates.

As students approach the end of their research degrees, they pass on their knowledge and experience to new recruits to the team. This model has worked well elsewhere for e-Learning in the Faculty. This year we will put the model to the test. I will report back in 12 months – watch this space.