

# Informative Assessment - The ALTA System

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This is the e-age. New technological advances have become the norm. We see, and have come to expect, much faster processors and networks, with higher capacity and faster storage; the convergence of communications technologies such as the web, wireless, digital-TV and telephony to dominate information mediation and exchange; and significant decreases in the (relative) costs of ownership and use leading to much higher levels of deployment.

In this time of 'e-' with everything - where everything includes assessment - we see the emergence of a great variety of multi-media content and the improving quality of educational materials as designers learn to exploit the new technologies. We see renewed interest in computer systems that can 'learn', ie that are adaptive and even self-modifying.

But, do any of these exciting, new, technological developments change the fundamental relationships between teaching, learning and assessment? Consider the propositions -

- learning implies teaching;
- teaching does not imply learning;
- assessment informs teaching;
- better informed teaching is more likely to lead to learning.

Whether these propositions are true or false does not depend on the technology involved in the delivery of teaching and assessment, and the 'technology' inside the heads of the learners is beyond the scope of this article (and this author). Note that this model is based on inductive reasoning, ie on inference from experience to conclusion. We observe that learning does not happen in a vacuum but rather requires a teaching agent, which may be human - a teacher or a fellow student - or a book, an observed event, or one of the new technologically, enhanced stimulants etc. In particular, the propositions about assessment are inductive - first that assessment can inform teaching, and then that better informed teaching is more likely to lead to learning. But, more fundamentally, we should remember that assessment itself is based on inductive reasoning, where experience in this case is the observation and measurement of a student's performance with respect to a given task.

So, how can the new technologies be harnessed to improve learning outcomes? The answer - by enabling assessment to become more informative.

The ALTA - Adaptive Learning Teaching and Assessment - system is an information system. Its primary goals are to support and promote practical, formative assessment in the classroom. It is designed to inform self-assessment, to inform teaching, and, through the collection of longitudinal student records, to inform judgement. It is pupil-centric - information moves with the pupil from class to class, year to year, school to school, and beyond. There are built-in information resources - question banks for automated assessment mapped to structured descriptions of curricula; and exemplar libraries to train and moderate teacher marking. All assessments are adaptive. The outcomes information, gathered to represent the performance of pupils, includes journals to record their processes when solving problems, and which may later be replayed juxtaposed with appropriate model answers. The performance of items is monitored to ensure reliability. Pupil and class profiles are presented in clear and meaningful forms; and deeper diagnostic and prognostic analyses are enabled. Trend and other statistical analyses of whole schools or regions are also enabled.

But, does Alta's informative assessment approach deliver its goals? A solution for mathematics is now widely deployed in schools in Northern Ireland, it is being piloted in Scotland and the Isle of Man with a view to wider deployment, and versions suitable for England have been developed. Over the past five years, we are aware that the system has been evaluated independently 15 times - the five CCEA

evaluations in this period were all undertaken by a unit within CCEA not involved with the project. All evaluations reported positively. To represent the answers to the practical and educational issues most frequently raised, two of the most recent evaluations - CCEA<sup>2</sup> and McAlister<sup>3</sup> - are quoted below. The CCEA evaluation comprised a survey of 179 teachers with 151 respondents, while McAlister's study involved observations and in-depth interviews with teachers and pupils at nine schools.

The practical concerns of greatest interest were training, ease of use, effect on classroom management, and access to computers -

- one day's training was appropriate (CCEA 98%)
- the system easy to use (CCEA 92%)
- manageability for teachers and pupils very acceptable (CCEA 94%)
- computers in classrooms better than suites (McA)

and the educational issues were -

- levels of engagement, motivation and enjoyment were all high (CCEA ave 95%)
- promoted formative assessment (McA + CCEA 95%)
- supported teaching and learning (McA + CCEA 98%)
- developed mathematical skills (CCEA 91%)
- had a significant impact on the pupils' ability (CCEA 79%)
- enabled self-assessment (McA + CCEA 87%)

It should be noted that the 'one day's training' for teachers is focussed mainly on how to use the information provided by the system to achieve maximum benefit and not merely on how to use the software. In her report, McAlister observed that greatest benefit was obtained when teachers and pupils adapted their behaviours in the light of the information provided by the system, and where schools adopted Alta as their internal information system rather than it being used only by a single teacher.

While the return of 87% for 'enabling self-assessment' might seem acceptable, Alta's next version will address the underlying issues to make improvements in this area of prime concern to us.

Another outcome reported anecdotally by both evaluations was that use of the system had produced an improvement in primary teachers' understanding of mathematics.

To summarise -

- the purpose of assessment is to inform self-assessment, inform teaching, and to inform judgements over time;
- assessment becomes 'formative' when pupils and teachers adapt their behaviour in the light of the provided information;
- learning benefit increases as this process becomes more pupil-centric;
- learning outcome is a function of the information value of assessment.

Alta's goals are to improve and enhance informative assessment and to encourage pupils and teachers to make better use of it.

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  - 2 CCEA-Alta Assessment Package for Mathematics - Evaluation Report (June 2006)  
- Martin Montgomery, CCEA
  - 3 Formative Assessment using the ALTA system - Research Report (Aug 2005)  
- Mary McAlister, Stranmillis University College