# Preface

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## 1 What has been achieved?

Improving the quality of feedback in education has been a goal for many educationalists for a very long-time. In the last ten years or so, the move towards "Assessment for Learning" (Black and Wiliam, 1998) has had a significant influence on educational practices in the UK and elsewhere. Not only has this led to improvements in practice but generated a significant strand of research as well as attempts to build a theoretically well founded basis for formative assessment (cf. Black and Wiliam, 2009).

While the movement emphasises formative assessment this is closely associated with feedback. Research into what makes feedback work includes research into the content of feedback; the timing of feedback and the organisation of feedback [see Shute (2007) for an excellent summary of current research]. This has led researchers to consider the kinds of support that need to be provided to learners – both automated and non-automated.

Boud (2002) suggested the development of 'devices' for self-monitoring and judging progression towards goals, access to peers and experts to reflect on challenges and gain support for renewed efforts, and the use of feedback to influence new ways of engaging with the learning task. Winne et al. (2006) emphasise the importance of providing students with feedback about how they study to learn. The gStudy system includes a note taking facility, a concept map tool, an automated coach and a log analyser which infers, amongst other things, some notions of the learner's metacognitive monitoring.

Systems that feature automated feedback include work by Britt et al. (2004) on the provision of automated feedback on the use of academic citation. Di Eugenio et al. (2008) investigated feedback for simulation-based diagnostic training; they were able to demonstrate that feedback with higher levels of abstraction which provided hints for future work was an improvement on a simple feedback generation method.

## 2    This issue

The six papers in this issue cover a wide range of issues in pushing forward the use of electronic feedback in e-learning systems.

### 2.1    Automatic feedback systems

Duenpen Kochakornjarupong and Paul Brna argue for automated situated support for 'teaching the teachers' as the effectiveness of feedback ultimately depends on the knowledge and experience of feedback-givers. Their McFESPA system utilises high level patterns of giving feedback which provides a level of coherence to the total feedback given to the learner. The work is focused on students in higher education and the evaluation suggests that such an approach would be acceptable to feedback givers.

Sara Dexter presents a very thoughtful account of the design of e-feedback for the ETIPS learning environment, looking particularly at the various disconnects that occurred – e.g., between the feedback made available to students and the ways in which faculty incorporated the possible uses of the feedback into their courses, and between students' perceived needs and the quality of the feedback given to them.

### 2.2    Pedagogical models of feedback

Denise Whitelock, Roser Pintó and Marcel.la Saez begin their research with an existing system, Nefreduca, used by teachers to help students understand biological concepts connected with the functioning of the kidneys. They use an ethnographic approach to understand how teachers give feedback to students and then they develop a pedagogical model of feedback. Based on this model, they then design an approach to providing support when the teacher is absent. The work emphasises the need to ensure that socio-emotive support is provided in an adequate manner.

### 2.3    Practical advice about audio feedback

Middleton and Nortcliffe explore the ways in which audio feedback is provided in a Higher Education Institute and derive seven models of audio feedback use. The paper makes a good case for the effective use of in a number of ways. They offer practical advice and guidelines on how to use audio feedback to produce the quality of feedback needed in an e-learning situation. They point out the particular value of the use of recorded conversations to promote dialogic engagement.

### 2.4    Investigating feedback and learning

Angeliki Kolovou and Marja van den Heuvel-Panhuizen explore ways in which primary school children can be prepared for learning algebra in secondary school through a game-based scenario used at primary school level. The results of playing the game online suggest that the kind of feedback provided whilst playing the game helped children to improve their performance when compared with children who only used a paper and pencil version. The results suggest that children who have worked online are more likely to verify their answer even when working offline. They suggest that game-generated feedback stimulated student-generated feedback.

Kenneth David Strang provides an empirical study that suggests that international university students use self-regulated process feedback for deep conceptual learning to achieve good grades in an online course. He uses Hofstede's (1991) global culture model to examine cultural differences and the ASSIST model (Entwistle et al., 2004) to look at different approaches to study. The combination of examining both culture and study approach is a potentially fruitful one, and the statistical approach adopted is powerful. Feedback is not directly measured but is indirectly accessed through students reported preferences for four different approaches to studying.

## 3 The way forward

The evidence is mounting that personalised automated feedback is beginning to provide feedback that approaches the quality of that provided by some teachers – but there is a long way still to go.

First, the work on the analysis of the learner's input is increasingly sophisticated but it still has some way to go to ensure adequate accuracy. Second, there is a need to promote a more dialogic approach for learners to interact with the feedback giver. Third, while there is growing work on providing feedback on higher order skills such as self-regulation, effective metacognitive activity, improved social support there is still plenty of room for improvement.

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