Guest Editors' Introduction

Formative Feedback in Digital Learning Environments

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Formative feedback is widely considered one of the most influential elements within teaching and learning processes, as evidenced by a range of articles and reviews conducted primarily in face-to-face environments (see, for example, Evans, 2013; Kluger & DeNisi, 1998; Hattie & Timperley, 2007; Kulhavy & Stock, 1989; Mory, 2004; Narciss & Huth, 2004; Shute, 2008).

A review of the literature shows that feedback has been conceptualized according to specific learning viewpoints. Different psychological perspectives –objectivism, information processing, socioculturalism, visible learning theory– provide distinct frameworks for describing different views of learning and the nature, characteristics and function of feedback (Hattie & Gan, 2011).

According to researchers working in this field, and from a socio-contructivist perspective, formative feedback is typically considered as the information provided by an agent – i.e., a teacher, peer, technology, etc. – to students in response to some action on the learners' part, aimed at helping them identify the gap between what they have achieved and the desired learning goals in a given context (Narciss & Huth, 2004; Nicol & Macfarlane-Dick, 2006; Shute, 2008). Among the various definitions of formative feedback in the literature, Narciss and her colleagues (Narciss, 2008; Narciss & Huth, 2004), for example, recognize that the mechanism can provide different types of information – comments, suggestions, etc.- according to students' circumstances and their learning improvement needs. Above all, however, formative feedback involves the provision of information through dialogue and by encouraging student participation (Carless, Salter, Yang & Lam, 2011; Yang & Carless, 2012).

The potential of formative feedback to promote learning has been widely researched in the past and a number of conditions and characteristics have been identified when designing effective feedback practices. Results obtained from research conclude that feedback should be timely and provided immediately to students while the content still matters to them; be given continuously throughout the teaching and learning process; focus on the learning process and not solely on the product; be precise and clear from the students' point of view (Gibbs & Simpson, 2004). Other complementary approaches stress that feedback should promote interaction between instructor and students, on the one hand, and amongst students, on the other (Alvarez, Espasa & Guasch, 2012). From the teaching perspective, several aspects should also be taken into careful account, including the need to plan opportunities when students can implement earlier feedback; the need to give feedback which promotes motivation and self-esteem; and the need to give feedback which enhances self-regulation of the learning processes (Nicol & MacFarlane-Dick, 2006).

The proliferation of online and blended digital learning environments has created growing interest in the study of feedback in digital environments, particularly in higher education, where it is clearly the key to fostering deep learning and validating knowledge (Dysthe, Lillejord, Vines & Wasson, 2010; Gikandi, Morrow & Davis, 2011; JISC, 2010). The characteristics of these environments and, at the same time, the techno-pedagogical designs with which they are associated, transform the way in which feedback is given, received or implemented. The synchronous and asynchronous interactions in many different directions – multi-directional interaction in the teaching and learning processes based on written communication; the transparency and permanent availability of feedback to all contributors guaranteeing the visibility of the learning process; the use of several types of digital media are just some examples of these characteristics.

Redeker and Johannessen (2013, p.79) (citing the OECD Innovative Learning Environments Project, 2010) point out that: "Formative assessment is a central feature of the learning environment of the 21st century. Learners need substantial, regular and meaningful feedback; teachers need it in order to understand who is learning and how to orchestrate the learning process". These authors call for a paradigm shift in the use of Information and Communication Technologies (ICTs) to support assessment and feedback. This change can be seen as a transition from computer-based assessment and the use of technology to produce efficient testing to an embedded assessment paradigm to ensure personalized learning by means of different uses of ICTs, for example, intelligent tutoring, learning analytics, virtual worlds and games, online collaboration, and peer assessment. In a recent review, Hepplestone et al. (2011) studied the potential of technology to enhance student engagement with feedback, for example, using technology to publish feedback, producing feedback electronically, or supporting the process of peer assessment and peer feedback. However, they found that the number of studies centered on the use of technology to support the production and delivery of feedback and student engagement with it were limited.

Purpose and focus of the special issue

In this context, Digital Education Review published a call for papers on *Formative Feedback in Digital Learning Environments* in order to gather articles presenting several theoretical and practical perspectives on this topic. Taking into account, on the one hand, the conditions and principles underpinning formative feedback, and, on the other hand, the specific characteristics of digital learning environments, among the questions that this special issue tries to respond to are the following:

1. What potentialities do ICT and digital environments have to provide, receive and use feedback with the aim of improving the learning process, the motivation and the self-regulation of learning? What are the main disadvantages or difficulties that these ICT and environments pose?

2. What conditions should digital environments have to promote feedback between students (peer feedback)? How can these environments be used to combine teacher feedback with peer feedback? How can these digital environments be used to give support in accordance to students' needs? How can the potential of ICT be harnessed as a source of feedback?

3. What theoretical and methodological approaches are more suitable to investigate formative feedback mechanisms in digital environments? Which are the advantages and limitations of these approaches?

4. What ICT and what digital environments actually enhance formative feedback? How can these environments promote a formative feedback practice, which is sustainable for both teachers and students?

In a global sense, the papers selected for this special issue cover the main questions proposed in the call for papers with different perspectives, contexts and approaches. In three of the papers: Narciss; Coll, Rochera, de Gispert and Diaz-Barriga; and Espasa, Guasch and Alvarez, the ICT are presented as the context where the teaching and learning process takes place. Therefore, the papers are centred on the analysis of feedback from the point of view of its design and its implementation in a digital environment. The fourth paper, Cano and Cabrera, adds another interesting and complementary perspective because it focuses on the potentialities of one specific tool –blogs- to deliver feedback. In general, in all papers, technology is embedded in the teaching and learning process and it is presented not as an end in itself but as a context or means by which feedback is given.

Structure and content of the Special Issue

The first question presented above focusing on the potentialities of digital environments to promote learning, motivation and self-regulation is partially covered by the first article of this special issue, written by Susanne Narciss. She presents the Interactive Tutoring Feedback Model, which is based on the proposal of tutoring feedback strategies to promote the self-regulation of learning. According to Narciss, *tutorial feedback strategies combine formative elaborated feedback with tutoring and mastery learning strategies*. These tutoring strategies allow students to understand the difference between their current state of knowledge and the desired state and the steps they should take to solve the task (without giving the correct answer immediately). This kind of formative feedback promotes the self-regulation of learning because students are completely aware of their learning, that is they know which competences/knowledge they have already developed and achieved and which they should improve and what they have to do to improve them. The most relevant contribution of Narciss' paper is not only the model itself but also its implications from the design and evaluation point of view.

The second question focuses mainly on the conditions of the digital environments to deliver formative feedback, and specifically it analyses formative feedback from the point of view of the feedback-giver. The paper written by Coll, Rochera, de Gispert and Diaz-Barriga answers in part this question, explaining feedback distribution between teacher and students in the specific case of online collaborative assignments in small groups. Besides the feedback giver, the authors also discuss what feedback is given, whether on learning content, academic task at hand and/or social

participation. Results on the temporal dimension are presented as well. The main contribution of this paper highlights the conditions of formative feedback within digital learning environments. Following the results obtained by Coll et al., formative feedback in digital environments should be analysed from a combination of teachers' and students' perspective and should integrate different types of information on learning content, on the social participation and also on the academic task.

Concerning the methodological issues (question 3), Espasa, Guasch and Alvarez, presented a model to analyse feedback implementation in the specific context of academic writing tasks. This kind of tasks are very common in teaching and learning processes carried out through a digital environment where students and instructors don't share the same physical space and same time and the interaction among them is asynchronous and written. In this context, feedback implementation is defined *as a measure of students' performance to identify the changes introduced in the text, after considering the feedback received from the teacher or peers.* This methodological model allows analysing how students harness the feedback received by the instructor. In this case, the main contribution is the model and its categories and some examples on how it can be applied.

The last article in this special issue, written by Cano and Cabrera, is related to question four mentioned above in the sense that it presents the potentialities of some specific ICT –blogs-for giving feedback. The results are presented from teachers' and students' perspectives and, according to the authors, from both perspectives feedback through blogs is sustainable. The most important contribution of this paper is the experience presented and the suggestions the authors made in relation to the feedback delivered through blogs. These suggestions highlight the need to plan formative feedback strategies from the very beginning of online teaching and learning processes and the need to communicate these feedback strategies to the students in order to make the assessment process more transparent for the students.

In general, the papers included in this special issue provide some answers to some of the current topics and questions on feedback research (Evans, 2013; Hattie and Gan, 2011): feedback as a promoter of self-regulation competency, peer feedback, harnessing of feedback, and blogs as a tool to give feedback. They show the relevance of the contributions of this special issue within current research on feedback processes.

Future challenges

Although the special issue covers the main questions posed in the call for papers and although the main topics of feedback research are also included, there are still some concerns, which remain open and pending.

One of these concerns is the various ICT tools for giving feedback. In this special issue, only blogs are presented as one of the tools for giving feedback. Nowadays, there are other ICT tools such as video recordings, tablets pcs,…which could also be studied as a tool for delivering feedback. The potentialities of these tools become a challenge in feedback research.

Another concern is related to feedback function. Feedback to promote self-regulation has been studied and is still the focus of study at present. However, following Narciss' feedback model presented in this special issue, feedback with the aim of motivating students' learning or feedback as a facilitator of metacognition processes are less present in feedback research. In our opinion, these are questions worth researching in depth in the future in the specific context of digital environments, where students and teachers don't share the same physical space or the same time.

There is no much agreement in the literature on the characteristics of effective feedback. It is a complex concept whose characteristics depend, among other variables, on the context (face-to-face, digital, blended, ICT-supported) it is given, the students' characteristics, the learning task, the educational level, and the discipline. Therefore, more research on each of these variables would contribute to progress on describing the characteristics of effective feedback.

References

Alvarez, I. Espasa, A. & Guasch, T. (2012). The value of feedback in improving collaborative writing assignments in an online learning environment. *Studies in Higher Education, 37* (4), 387-400

Cano, E & Cabrera, N. (2013). Evaluación formativa de competencias a través del blog en la universidad. *Digital Education Review, 23.*

Carless, D., Salter, D., Yang, M. & Lam, J. (2011). Developing sustainable feedback practices. *Studies in Higher Education, 36* (4), 395-407.

Coll, C.,Rochera, M.J., de Gispert, I., Díaz-Barriga, F.(2013). Distribution of feedback between teacher and students in online collaborative learning in small groups*. Digital Education Review, 23.*

Dysthe, O., Lillejord, S., Vines, A. & Wasson, B. (2010). Productive E-feedback in higher education. Some critical issues. In S. Ludvigsen, A. Lund, I. Rasmussen & R. Säljö. *Learning across sites: New tools, infrastructures and practices*. Oxford, UK: Pergamon Press).

Espasa, A., Guasch, T. & Alvarez, I. (2013). Analysis of feedback processes in online group interaction: a methodological model*. Digital Education Review, 23.*

Evans, C. (2013). Making sense of assessment feedback in Higher Education. *Review of Eductional Research, 83* (1), 70-120.

Gibbs, G. & Simpson, C. (2004). Conditions under which assessment supports students' learning. *Learning and Teaching in Higher Education, 1*, 3-31.

Hattie, J. & Gan, M. (2011). Instruction based on feedback. In Mayer, R.E. & Alexander, P. (eds). *Handbook of research on learning and instruction*. New York: Routledge. Taylor and Francis Group. pp 249-271.

Hattie, J. & Timperley, H. (2007). The Power of Feedback. *Review of Eductional Research, 77*(1) 81–112.

Hepplestone, S., Holden, G., Irwin, B. Parkin, H.P. & Thorpe, L. (2011). Using technology to encourage student engagement with feedback: a literature review. Research *in Learning Technology, 19- 2*, 117–127.

JISC. (2010). *Effective Assessment in a Digital Age: A guide to technology-enhanced assessment and feedback*, Bristol, HEFCE. Available from http://www.jisc.ac.uk/media/documents/programmes/elearning/digiassass_eada.pdf (Retrieved May, 9th, 2013).

Kluger, A. N., & DeNisi, A. (1998). Feedback interventions: Toward the understanding of a double-edged sword. *Current Directions in Psychological Science,* 7, 67–72.

Kulhavy, R. W., & Stock, W. (1989). Feedback in written instruction: The place of response certitude. *Educational Psychology Review, 1*(4), 279–308.

Mory, E. H. (2004). Feedback research review. In D. Jonassen (Ed.), *Handbook of research on educational communications and technology* (pp. 745–783). Mahwah, NJ: Erlbaum Associates.

Narciss, S. (2008). Feedback strategies for interactive learning tasks. In J.M. Spector, M.D. Merrill, J.J.G. van Merrienboer, & M.P. Driscoll (Eds.), *Handbook of Research on Educational Communications and Technology* (3rd ed., pp. 125-144). Mahwah, NJ: Lawrence Erlbaum Associates.

Narciss, S., & Huth, K. (2004). How to design informative tutoring feedback for multimedia learning. In H. M. Niegemann, D. Leutner, & R. Brunken (Ed.), *Instructional design for multimedia learning* (pp. 181–195). Munster, New York: Waxmann.

Narciss, S. (2013). Designing and Evaluating Tutorial Feedback Strategies for Digital Learning Environments on the basis of the Interactive Tutoring Feedback Model. *Digital Education Review, 23.*

Nicol, D. J., & Macfarlane- Dick. (2006). Formative Assessment and Self- regulated Learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*, 199–216.

OECD (2010) *The Nature of Learning: using research to inspire practice* (Paris OECD).

Redecken, C. & Johannseen, Ø. (2013). Changing Assessment —Towards a New Assessment Paradigm Using ICT. *European Journal of Education, 48* (1), 79-92

Shute, V.J. (2008). Focus on formative feedback. *Review of Educational Research, 78* (1), 153-189.

Yang, M. & Carless, D. (2012). The feedback triangle and the enhancement of dialogic feedback processes. *Teaching in Higher Education*, DOI:10.1080/13562517.2012.719154 Available from http://dx.doi.org/10.1080/13562517.2012.719154 (Retrieved May, 9th, 2013).

Recommended citation

Rochera, M.J. & Espasa, A. (2013). Guest Editors' Introduction: Formative feedback in digital learning environments. In: *Digital Education Review*, *23,* 1-6. [Accessed: dd/mm/yyyy] http://greav.ub.edu/der

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