Chapter XI

Web-Based Assessment
in Student Learning

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Assessment is considered the central part of the educational process. At least five categories exist in which it is possible to classify the evaluation procedures which are singled-out by the common name of assessment: placement, formative, diagnostic and summative assessment (Airasian,1975; Gronlund,1985) and self-assessment.

Placement assessment is concerned with the identification of students' entry level for class enrollment and selection. Therefore, placement assessment is aimed at determining both prerequisite skills and mastery of course contents/objectives.

Formative assessment is used to provide ongoing monitoring of student progress which may be used by the teacher to gather feedback in order to adjust the educational process, to insure that learning is occurring and to correct learning errors. Formative evaluation is an integral part of everyday instruction (King and Rowe,1997).

Diagnostic assessment begins where formative assessment leaves off. Diagnostic evaluation is concerned with "the identification of persistent or recurring learning difficulties that are left unresolved by the standard correction perspective of formative evaluation" (Gronlund,1985). Diagnostic evaluation may be conducted through two classes of tests: extensive and intensive. While intensive diagnostic tests focus on just one aspect of learning, extensive tests cover a broader range of contents and are characterized by a graded sampling of the concepts and knowledge to be assessed. Broad areas of difficulty may be identified and the points where a student's understanding falters may be indicated, if the grading of the questions is sensitive.

Summative evaluation comes at the end of units or courses and aims to assign grades to certify the students' global level of knowledge on the topics taught. An important side effect of summative evaluation is the production of useful information on the course such as clarity of lectures, completeness and integration of the proposed concepts and arguments in order to provide the teacher with feedback.

Finally, self-assessment may be viewed as a mix of formative and diagnostic assessment, that may be used by the student to monitor the level of acquired knowledge in order to decide how and when to face summative evaluation.

The search for assessment methods able to reach an objective judgement of student's knowledge is a crucial goal for both teachers and educational institutions. The teacher looks for homogeneous treatment of the students and for useful hints on her educational activity in terms of clarity, completeness and effectiveness; whereas the educational institution tries to log the teacher's activity and the quality of the service offered to the students. Moreover, the growing mobility of the manpower everywhere requires the educational institutions to comply with international standards of crediting courses, and the diffusion of computer based distance learning forces them to cope with problems posed by self-assessment procedures.

In this scenario the Web Based Assessment (WBA) seems to have a number of applications as it is able to automatically capture all the information required by the actors of the educational process (teacher, student and institution) for large and/or distributed classrooms.

Dealing with large classes raises a number of problems both from the lecturer and the students' point of view, and teaching large classes is often seen as a difficult and unwelcome assignment (Bjedov,1995; Celentano,1997; Cucchiarelli et al.,1998; de Azevedo Restelli Tedesco,1997; Moore,1996). Furthermore, the lecturer is able to know only a limited number of students and since the lectures follow one another in a short interval of time, only a few of the students with questions about the material can be helped (Bjedov,1995).

The same considerations are equally true for the support that may be given in office hours. Furthermore, exams cannot be taken by all the students at the same time, due to lack of resources: this often reflects in exams being graded by different people with differences in grading styles, that may become relevant regardless to any "grading blending" policy.

The freshmen, on their side, often have problems adjusting from teacher-led form of education used in high schools. Many of them need support as they make the transition to a learning style in which they have to take great responsibility for their own education. In particular they are often worried by the way exams are carried out, since the only possibility to verify the results of the study activity consists in just one final examination at the end of the course without the chance of any intermediate check point. In particular they appreciate frequent feedback on their progress and reassurance that any misconceptions may be identified and fixed. However, the decrease in resources to be used for tutoring and the increase in class sizes often leads to poor feedback to students, which often reflects either in delaying their career or in poor grading.

The possibility of doing testing at any time and in any site is feasible using the internet medium: this has led to the development of a number of commercial application and academic projects in the field of Web Based Assessment and Distributed Learning. A good starting point, for the interested reader on these topics may be the site maintained by TECFA: the academic unit active in the field of educational technology of the School of Psychology and Education of the University of Geneva (TECFA,1999).

The purpose of this chapter is to present an overview of the current trends on web-based assessment of student learning based on objective testing. Furthermore, we will discuss a novel approach that may extend this metaphor in order to deal with problems more complex than those assessable with current tools.

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