Highlighting teamwork benefits for computing students and professionals

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Abstract: Teamwork ability is considered as one of the most important 'soft skills' for computing students. Many educational proposals oriented to develop this skill can be found in literature. However, a quantitative objective approach to measure teamwork performance is not usually found in such works. TBA experience is a technique to reinforce the idea of teamwork benefits designed to be applied to software engineering courses for computing students and professionals. This paper summarizes the implementation of TBA, its benefits as well as results from application in different groups of computing students and even professionals.

Introduction

'Soft skills' are considered as a key factor for success in computing labour market and are gaining increasing importance in all areas of computing (while originally more appreciated in user support area) (Lee et al., 1995). Different studies have highlighted the need of an adequate mix of technical competence and non technical skills for certain IT positions (Wade & Parent, 2002) or in general (Seymour et al., 2006), when referred to certain locations (Lee, 2006) or in general (Landry et al., 2000). The underlying reason is that, to help identify the most "adequate" employees for professional positions (i.e., those who are most likely to contribute to organizational results), organizations are tailoring their employee recruitment and selection criteria toward the assessment of interpersonal and communication abilities as key factors once a minimum level of technical skills is achieved (Sullivan, 1995).. Moreover, even students are in favour of soft skills as a basic requirement for computing professionals: e.g. (Chinn, &VanDeGrift, 2008) reflects the importance of non technical skills for students when they adopt the role of people in charge of hiring computing professionals: 88% and 84% for project managers and software developers. Even more, as it is shown in (Lewis et al., 2008), soft skills are essential for retention in computing educational programs so they should be explicitly included within the curriculum.

As a confirmation of this trend, RENTIC series of reports (www.cc.uah.es/lufesa) developed by one of the authors offers an analysis of job requirements in Spain based on a sample of 2997 IT job ads: data reveal that 71,17% of them require some kind of personal competence or skill: teamwork ability leads the ranking with presence in 10,44% of the total (a 14,67% of the ones which require any type of competence) what is consistent with similar studies (Rosca, 2003). Of course, importance of teamwork in engineering education has been highlighted in many contributions including references to ABET guidelines (Perusich et al., 2007) or how to cope with them (Lingard & Berry, 2002). This need has been specifically remarked in the case of IT education with references to the opinion of outstanding IT experts (Duley et al., 2001) and it is recognized as a key factor along with other social issues in the specific field of software requirements analysis Goguen, I (1994). In fact, in the case of software engineering courses within IT degrees, other important skills should be promoted to address specific job profile needs related to positions like software/systems analyst, functional analyst, software engineer, etc. Orientation to customer needs or analysis ability (related to software requirements) are also in top places of requirements for these positions.

In general, educators feel it is not easy to communicate and promote correct attitude in students to face tasks as requirements analysis within a realistic situation where incomplete information, fuzzy expectations of customers and social interaction (among others) are key factors which should be managed. Of course, first step is to get students to be aware of these factors as well as the importance of being oriented to customers needs (the main goal in software projects) and being concerned about real benefits of teamwork. In fact, students are also quite reluctant to teamwork experiences. Sometimes group projects or assignments breed terror in many students' hearts. "Anything but group projects," they beg. "I'll work extra hard and do it myself but please don't make me have to work in a team."

In this article, an experience intended to enhance awareness of teamwork benefits while students develop specific software engineering abilities is presented. One of the specific advantages of this experience, as can be seen below in the presentation of data, is the quantification of teamwork benefits in terms of results for a specific activity of

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