

## Chapter 4.37

# Supporting Creativity in Software Development: An Application in IT Education

**Aybüke Aurum**

*The University of New South Wales, Australia*

**Meliha Handzic**

*The University of New South Wales, Australia*

**Adrian Gardiner**

*The University of New South Wales, Australia*

### **ABSTRACT**

This chapter examines the potential of the application of an individual creativity-enhancing technique (called SoloBrainstorming, or SBS) to improve the level of creativity of information technology (IT) students in performing information system (IS) requirements determination. Requirements determination, in the context of software development, involves gaining an understanding of the underlying issues related to a business problem, and also considering potential solutions. The chapter begins with a definition of creativity, followed by an overview of strategies suggested to enhance creativity. The SBS tech-

nique is then introduced, followed by a report of empirical results from its application. Finally, we offer advice for IT education in terms of incorporating creativity-enhancing techniques into the IT course curriculum.

### **INTRODUCTION**

Most business problems have a number of potential solutions, some of which may prove to be more beneficial than others. As many of these solutions may not be at first obvious, or previously imagined, management needs to be highly creative in order to identify the best candidate solutions.

However, identification of candidate solutions may depend upon first successfully identifying the underlying issues associated with the business problem. Identification of these issues also requires creativity, as a full understanding of the problem may only emerge through extensive creative discourse (e.g., through Joint Application Development). As contemporary solutions to business problems frequently require the development of computer-based IS, it therefore follows that creativity is important to IS design and development. As Keegan (1998, p. 239) put it: “Today’s constraining factor is not the software, not the hardware, not the network. It is human creativity. We still need skilled, imaginative individuals who can research a business opportunity and integrate the technology needed to put the required process in place.”

If we accept the argument that the level of creativity applied to a business problem may significantly impact the quality of the resulting IS, it seems reasonable to expect that students studying systems analysis should be well-versed in the importance of creativity within the software development process and also be skilled in applying creativity-enhancing techniques. However, the authors fear that for many university courses in IS, creativity is not emphasized, and students may therefore graduate with only a rudimentary understanding of this important area. In this respect, the authors feel that the IS teaching community can learn from other disciplines that also focus upon the creation of artifacts, such as architecture and engineering. These disciplines have long acknowledged the importance of creativity by encouraging their students to express themselves creatively, and by incorporating creative problem solving and design techniques throughout their curricula.

We therefore argue that IT education and training should more openly acknowledge the role and importance of creativity training and support to the successful development of IS. We believe that training IS and IT professionals in

creativity will allow them to be more successful in their future roles as innovative professionals and business people. Moreover, these concerns have motivated the authors to investigate the potential of an individual creativity-enhancing technique to facilitate requirements determination.

## BACKGROUND ON CREATIVITY

### Defining Creativity

The literature offers diverse conceptual definitions of *creativity*. Tomas (1999), for example, defined creativity in terms of an original idea. Synonyms used by researchers to describe this quality may include uniqueness, surprising, novel, unusualness, innovative, and newness (Thurstone, 1952). A more restricted definition of creativity focuses solely on rare revolutionary and paradigm shifting ideas, while a looser definition includes useful evolutionary contributions that refine and apply existing paradigms (Shneiderman, 2000).

The appropriateness of new ideas is also important in order to distinguish creative ideas from surreal ideas that may be unique but have unlawful or highly unrealistic implications. Synonyms used by researchers to describe this quality may include workable, practical, worthwhile, plausible, relevant, and intelligible. What is seen as appropriateness may change depending upon prior insights, the initial problem definition, and the level of available resources for implementing ideas.

Furthermore, when discussing creativity, it is helpful to distinguish between the four elements of creativity as identified by Mooney (1963):

- The creative environment (place, context, setting, or situation)
- The creative person (levels of individual creativity)
- The creative process (how creativity is undertaken)
- The creative product (all output).

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