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A Review of Brainstorming Techniques in Higher Education

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Highlights

- A review of brainstorming (BS) techniques in higher education was conducted.
- The purpose of using traditional, nominal, and electronic BS techniques was compared.
- The opportunities and challenges of these techniques were addressed across disciplines.
- Other proposed solutions to these challenges were discussed.
- Electronic BS is the most realistic solution for carrying out BS sessions in a university setting.

Abstract

Various Brainstorming (BS) techniques have been proposed specifically to develop individuals' creativity and productivity during idea-generation sessions. Yet, the available knowledge about the potential of certain BS techniques seem very limited in higher education. Thus, a review of previous studies on some BS types such as the traditional brainstorming (TBS), nominal brainstorming (NBS), and electronic brainstorming (EBS) was conducted. A total of 42 well-grounded studies about the use of these techniques in a university context were reviewed. The classification of these studies was based on four key schemes related to the purpose of use, opportunities, challenges, and proposed solutions in a discipline-specific context. The review results revealed a set of evidences supporting the use of TBS, NBS, and EBS in specific areas. We also provided a comprehensive view of why certain interventions can be more effective in some contexts than others. The insights gained from this review can be used to guide educational decision makers to identify the best BS practices/conditions within a university setting. It also shed light on the potential opportunities and challenges that students may experience when using certain BS rules and techniques.

Keywords*: brainstorming, higher education, group discussion, idea generation, creativity*

Introduction

Many researchers focus on creativity as the primary catalyst for stimulating students' thinking and decisions. In higher education, it is seen as an essential element that students must develop in order to understand and contribute to their existing knowledge in ways that underpin the extension of that knowledge (Egan, Maguire, Christophers, & Rooney, 2017; Paul & Elder, 2004). This has led many studies to apply various methods in order to foster creative thinking among university students through idea generation (Kelly, 2016; Montag-Smit & Maertz, 2017).

Brainstorming (BS) is one of the techniques for fostering group creativity by which ideas and thoughts are shared among members spontaneously in order to reach solutions to practical problems (Gogus, 2012). Osborn (1957) was the first person who introduced group BS as a means for increasing creativity in corporate settings. Later, its application has been expanded to various areas and settings, including higher education where it has been commonly used to generate ideas, clarifications, and solutions. As a result, the BS sessions became more appropriate for increasing productivity in a learning-specific situation (Unin & Bearing, 2016). Many previous studies (e.g., Drapeau, 2014; Michinov, Jamet, Métayer, & Le Hénaff, 2015; Schlee & Harich, 2014) have claimed that the process involved in the idea generation task may potentially play an exceptional role in stimulating individuals' ability to produce creative solutions that can be further evaluated and, eventually, applied in practice. Very commonly, the individuals' ability during the BS session is measured based on the quantity or uniqueness of the generated ideas (Fu et al., 2015). Quantity of ideas is estimated based on the number of solutions delivered by a group or individual students. The uniqueness of ideas, however, is estimated based on certain dimensions related to novelty, workability, relevance, and specificity of ideas (Hong & Chiu, 2016).