



A STUDY OF EFFECTIVENESS OF USING BRAINSTORMING TECHNIQUE FOR HIGHER SECONDARY LEVEL STUDENTS

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Introduction: Brainstorming is a group activity technique. Brainstorming is a means of promoting creativity and spontaneity that is highly stimulating and encouraging for students. It allows students to think out of the box as they bounce their ideas off one another. Brainstorming sessions encourage creative leaps that may lead to concrete ideas. It is designed to generate lots of ideas for solution of a problem. The underlying principle is that the greater the number of ideas generated, the possibility that a quality solution will be found. Brainstorming is a commonly used tool by academics researchers and business teams. There are four basic rules in brainstorming.

- **Focus on quantity:** If lots of ideas are generated it will be easy to produce a radical and effective solution.
- **Reserve criticism:** Don't comment on any ideas. First accept all, at a later stage judge.
- **Welcome unusual ideas:** To get a good and long list of ideas, unusual ideas are welcomed.
- **Combine and improve ideas:** Good ideas may be combined to form a single better idea.

Need and importance:

Brainstorming combines a relaxed, informal approach to problem solving with lateral thinking. It encourages students to come up with thoughts and ideas that can be a bit crazy initially. Some of these ideas can be crafted into original, creative solutions to a problem, while others can spark even more ideas. This helps to get students unstuck by jolting them out of their normal way of

thinking. Brainstorming builds involvement, commitment, loyalty, enthusiasm. Participating in the sessions stimulates and unlocks people's creative talents. Brainstorming also builds self-esteem because people are being asked for their participation and their ideas.

Steps of conducting brainstorming in the classroom

Decide on the question or topic that you will present to the group during brainstorming.

Give yourself a time limit.

Choose the participants from five to twelve.

Plan how you will record the results of brainstorming session.

Describe what you will do with the data.

Go through all the ideas and make sure that the meaning of idea is clear.

Different techniques of brainstorming

Freewriting : When you freewrite, you write down whatever comes into student's mind. You don't judge the quality of writing and don't worry about style, spelling, grammar or punctuation. When you have finished your writing and have reached your goal, read back over the text, decide the solution.

Group passing technique: Each person in a circular group writes down one idea, and then passes the piece of paper to the next person in a clockwise direction, who adds some thoughts. This continues until everybody gets his or her original piece of paper back. By this time, participants will have examined each idea in detail. In Nominal group technique the participants are asked to write their ideas anonymously. Then the moderator collects the ideas and each is voted on by the group. The best idea is chosen.

Role Play Brainstorming:

Variants of role play include Role storming; Reverse Thinking, and Figure Storming. What do student really want to learn? What are the challenges students faces internally or externally? Role play allows the student team to "become" their own clients, which often provides surprisingly potent insights into challenges and solutions. Another plus of role play is that, in some cases, it lowers participants' inhibitions. Teacher ask the Students to imagine themselves in the role of a person whose experience relates to brainstorming goal act out a scene, with participants pretending to take the other's point of view.

Reverse Thinking: This creative approach asks,

Q. what would someone else do in our situation?”

Then imagine doing the opposite.

Q. Would it work? Why or why not? Does the “usual” approach really work well, or are there better options?

Figure Storming: Choose a figure from history or fiction with which everyone is familiar—Mother Theresa. What would that individual do to manage the challenge or opportunity you’re discussing? How might that figure’s approach work well or poorly?

Team idea mapping method: This technique may improve collaboration and increase the quantity of ideas, and is designed so that all attendees participate and no ideas are rejected. The process begins with a well-defined topic. Each participant brainstorms individually, then all the ideas are merged onto one large idea map.

Individual brainstorming : It typically includes such techniques as free writing, free speaking, word association, and drawing a mind map, which people diagram their thoughts. Individual brainstorming is useful method in creative writing.

Question brainstorming: This process involves brainstorming the questions, rather than trying to come up with immediate answers and short term solutions. Questions are important in this technique. We need a list of questions to reach to the best solution in an orderly way. Considering the benefits of Brainstorming researcher has chosen to explore its effectiveness in problem solving.

Statement of the study: To study the effectiveness of using brainstorming technique for higher secondary level students.

Objective of the Study: Exploring the extent of acquiring creative problem solving skills of higher secondary school students.

Population and Sample: Population of the study is higher secondary school students from HSC board in Maharashtra. Total 120 students were selected from 11th standard of a reputed school in Pune city.

Procedure of the study: Question Brainstorming is easy to understand. Researcher has selected question brainstorming for the study. She formulated following Brain Storming

Questions based on Human skeleton and locomotion with intention to conduct Experiential learning in the class. Some brain storming Situations are narrated from play ground, sports and daily life.

The study is aimed at investigating the effectiveness of using brainstorming questioning technique application of biology content by experimental group. The study belongs to an experimental research. The single group of the subjects are divided into two half that are called two treatment groups. The two half of students get treatment but the treatment is in different order: brainstorming technique versus non-brainstorming technique.

BSS 1. A sportsman while playing basket ball sprained his ankle. He complaints of severe pain In lateral side of his ankle.

Q.What ligament is injured

Q. What other ligament could be injured?

Q. Which bone could be fractured?

BSS 2. Many fashionable ladies wear high heels for short time and change to flat ones

Q. Why smart high heels should be avoided for long periods?

BSS 3. A player was kicked hard on the lateral surface of right knee during a hockey game

Q. How do you feel the head of fibula?

Q. What important structure lies in relation to the neck of fibula ?

Q. What are the effects of injury to neck of fibula?

BSS 4. Some students were asked by their seniors to run for 3 KM every day, few of them developed severepain above the ankle after 4 days and could not continue,

Q. What is the syndrome called?

BSS 5. An elderly man complained of pain on the inner aspect of right ankle joint. The pain was also felt in area of the sole,

Q. What is the syndrome called?

Q. Why there pain in the sole?

BSS 6.The knee of a foot ball player was flexed at right angle. At this time was so injured that its tibia got driven forward.

Q. What ligament is injured?

Q What are their attachments, what other ligaments could be injured?

BSS 7. A young female complains of severe pain along the middle of her right sole.

Q. what is the condition Called?

Advantages of brainstorming:

- Many ideas can be generated in a short time.
- Requires few material resources.
- The results can be used immediately or for possible use in other projects.
- Is a “*democratic*” way of generating ideas.
- The concept of brainstorming is easy to understand.

Disadvantages of brainstorming

- Requires an experienced and sensitive facilitator who understands the social psychology of small groups.
- Requires a dedication to quantity rather than quality. Shy people can have difficulties in participating.
- May not be appropriate for some business or international cultures.

Conclusion: There was a very statistically significant difference on students' achievement in Biology unit of Human skeleton and locomotion between the students using brainstorming technique and those without using brainstorming technique.

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