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BRAINSTORMING TRAINING PATTERN 5

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TITLE

Brainstorming

GENERAL DESCRIPTION

Brainstorming is a pedagogical approach used to encourage and increase creative productivity, often in an effort to come up with potential solutions to a problem. The idea is that working in a group, students come up with the most outlandish ideas possible that could be considered as a solution to the given problem.

Under the guide of the teacher, who usually writes down all the ideas on a board, each student shares his/her own thoughts with the group, who finds an adequate solution to the problem based on the expressed ideas.

WHEN IS IT USEFUL?

A Brainstorming activity is suitable for large groups and makes the most of the diversity in competences.

It is usually implemented to come up with potential solutions to a problem or to break the ice before a more complex activity, such as, for instance, a case study.

Performing a Brainstorming activity could:

- help students think outside the box to find innovative solutions and ideas;
- enable students to think independently, to develop their thinking skills, giving them the freedom to express their views and ideas and strengthening their self-confidence;
- maximize the potential of students' diverse experiences, backgrounds, and strengths;
- increase respect for other people's ideas and encourage active listening;
- increase motivation and create stronger bonds among people in the learning community/class.

HOW TO IMPLEMENT IT? SUGGESTED PHASES AND TASKS

In the **preparation phase**, the trainer should:

- ✓ define the global problem, usually in terms of a question which has a wide range of possible answers
- ✓ collect useful information (documents, links, etc) to analyse the problem
- ✓ define the size of the "brainstorming groups" or decide to implement it with the whole class
- ✓ define timing, main steps and supporting tools (in the event that it is at least partially implemented online).

The Brainstorming method can be implemented through different approaches.

The creative problem-solving process usually embraces two types of thinking: convergent and divergent. Convergent thinking focuses on reaching one well-defined solution to a problem. This type of thinking is best suited for tasks that involve logic rather than creativity, such as answering multiple-choice tests or solving a problem for which one knows there are no other possible solutions. Divergent thinking is the opposite of convergent thinking and involves more creativity. With this type of thinking, you can generate ideas and develop multiple solutions to a problem. While divergent



thinking often involves brainstorming many possible answers to a question, the goal is the same as convergent thinking: to arrive at the best solution.

Trainers can use a mix of convergent and divergent thinking to support learners in solving problems. Anyway, the following phases can be identified.

PHASE 1 (divergent thinking) is usually characterized as follows:

- ✓ access to information
- ✓ individual study of the problem/question
- ✓ individual proposal of a solution
- ✓ collection of all proposals/solutions on a shared (physical or digital) board

Then, **PHASE 2** (convergent thinking) usually envisages:

- ✓ the group comments on the proposed solutions, also scaffolded by the trainer
- ✓ the possible refinement of the proposals/solutions in a second round of contributions
- ✓ the preparation and running of a group presentation of the agreed solutions in front of the trainer and/or other groups

In this phase, the trainer usually monitors the process, ensures that the groups fit into the set time/schedule, supports discussions, and then assesses the activity.

The Brainstorming activity can be managed both in presence (F2F) and online, with the support of the proper technologies.

If the Brainstorming activity is performed F2F, it can involve the whole class or sub-groups. In this second option, the classroom should be organized as to allow the different groups to interact properly. Thus, chairs and desks should be movable. Participants should be provided with the documents on the content they have to focus on (e.g. printouts).

A shared board for each group should be available. It can be physical (white board, a big paper on the wall, post-it notes stuck on the wall, etc.) or digital. Several digital applications are available on the web aimed to support a brainstorming of ideas. For instance, a **padlet**¹ can be useful to the purpose of the Brainstorming: visually, it looks like a sort of wall on which post-it notes with various information and content are 'hung' and it is a sort of "virtual notice board" on which members of the groups can upload, place and share all kinds of files and materials, i.e. images, pdfs, videos, links to sites. If the class is used to LMS, a possibility is to **create a page as a wiki** and to contribute to a brainstorming activity by allowing everyone to edit it. Other suggested applications are *Stormboard*² or other apps that support *mind mapping* like *Bubbl.us*³.

Online interaction could be **synchronous or asynchronous**.

A web-conferencing system can effectively support a synchronous Brainstorming. Due to the limits of online interaction, it is suggested to split the whole class in subgroups of about 5 to 8 members and to equip each of them with *break-out rooms*⁴. For example, *Google Meet*, *MS Teams*, *Zoom*, *Webex* and *Discord* can be used to create break-out rooms to conduct online classes with synchronous delivery mode. The tools/resources to be used in the activity, such as text documents, videos, webpages, etc., should be identified and shared beforehand.

¹ See for instance <https://padlet.com/>

² Stormboard (<https://stormboard.com/>) is a shared workspace designed to support brainstorming and other collaborative processes through virtual canvas, whiteboards, workspace, idea boards etc. (basic version free for educational purposes)

³ Bubbl.us (<https://bubbl.us/>) supports groups to take notes, brainstorm new ideas, collaborate, and present shared ideas (basic version free for educational purposes).

⁴ a small meeting room or a separate part of an internet meeting where a small group can discuss a particular issue before returning to the main meeting (<https://dictionary.cambridge.org/>)



Training Pattern 5: Brainstorming

A moderator should be identified in advance for “each room”: his/her aim is to collect proposals on the shared board or to support this process if carried out individually.

A Brainstorming activity can also be performed asynchronously through the interaction in forums. Asynchronous discussion and collaboration need more time than “real time” ones. They could take 3-10 days per phase depending on the theme and the number of people involved. At least one forum should be created for each brainstorming group, but the most effective solution seems to be to create for each group a forum for the divergent process and another for the convergent process. Groups should involve 5 to 8 members.

A “**mixed approach**” can be designed integrating F2F or web-conferencing in the divergent process and asynchronous interaction in the convergent one.

Time	2 Phases	
	Phase 1 - divergent	Phase 2 - convergent
Task	access to information individual study of the problem/question individual proposal of a solution collection of the proposals/solutions on a shared board (physical or digital)	the group comments on the proposed solutions, also scaffolded by the trainer the possible refinement of the proposals/solutions in a second round of contributions the preparation and running of a group presentation of the agreed solutions in front of the trainer and/or other groups
Team	Individual students + collection of the proposals/solutions supported by the trainer	Brainstorming groups
Classroom organization (F2F)	Movable chairs and desks; printouts of the documents. A shared board should be available for each group. It can be physical (white board, a big paper on the wall, post-it notes stuck on the wall, etc.) or digital.	Movable chairs and desks; printouts of the documents. A shared board should be available for each group. It can be physical (white board, a big paper on the wall, post-it notes stuck on the wall, etc.) or digital. The presentation of the agreed solution should be supported by adequate tools/apps.
Needed technologies (online)	Digital resources focusing on the content Text editors or software for presentations to produce a document or an artefact Web-conferencing – using “break out rooms” (synchronous) + a virtual board like a padlet or a wiki or forums for online interaction (asynchronous) + (optional) a virtual board	Digital resources focusing on the content Text editors or software for presentations to produce a document or an artefact Web-conferencing – using “break out rooms” (synchronous) + a virtual board like a padlet or a wiki or forums for online interaction (asynchronous) + (optional) a virtual board Text editors or software for presentations to produce a document or an artefact



ADDITIONAL HINTS AND COMMENTS

The “orchestration” of an online Brainstorming activity could be complex. Each step and related tools should be planned in detail before the activity starts.

Participants’ assessment should be based on the level of participation of the individual, aside to a self-assessment and, in the event of an asynchronous process covering more days, a possible learning log⁵. A peer-assessment can be performed too, by asking each member of the group to rate from 1 to 5 the contribution given by other participants to the whole process.

One recommended method for assessing students’ participation in a brainstorming activity is to monitor the process and compile an easy rating scale in parallel. A possible example is provided in the frame below.

Example of assessment rating scale (<https://www.studyquirk.com>)

Indicate how well the class did while brainstorming.

Use a (+) if students really worked at it.

Use a (=) if you felt students were so-so about it.

Use a (-) if students didn’t really try at all.

- Did not judge
- Welcomed all ideas
- Did not interrupt
- Did not discuss ideas
- Did not criticize ideas
- Everyone contributed
- Wrote down repeated ideas
- Kept focused on brainstorming
- Allowed enough time
- Stopped when everyone was finished

Examples in NECTAR context

Brainstorming can be implemented as a preliminary step to launch an activity or as an independent learning activity. It can be used to come up with potential solutions to a problem which require creativity to find the most suitable one. These characteristics make it suitable for targeting all the Learning Outcomes of the CGE Curriculum that require creativity and problem solving, such as creating new recipes or menus, innovating and stimulating entrepreneurship or testing new solutions on the market.

⁵ Learning Logs are like diaries students keep that record their reflections about what they are learning and how they are going about learning it. Learning Logs are useful because they promote metacognition. They are also useful tools for teachers because they can reveal students’ perceptions (and misperceptions) of the information, as well as reveal how they are reacting to the way the material is being taught



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Studyquirk – Brainstorming method of teaching. Available at <https://www.studyquirk.com/brainstorming-method-of-teaching/>