

SECTION ONE: Project/Lesson Overview

Grades: 11 and 12

Subjects: Biology (53411-53412), Entrepreneurship (83411), French (10411-10412)

Lesson Title: Magnificent Mascots!

Themes: fossils, brainstorming, teamwork, delegating tasks, synthesizing information, history of life on earth

Lesson Description and Objectives:

Brainstorming sessions have a number of characteristics in common with debates. Students will learn to value the ideas of their peers, think about them, and use strategies and structures for brainstorming sessions which are well-established in the business world. They will conduct brainstorming sessions for the purpose of creating a mascot based on animal fossils found on the “Magnificent Rocks” website.

Students will work in groups of four, and each group member will have a particular role in the process. A fossilized animal from New Brunswick will be assigned to each group. Options for fossilized animals are found in various sections of the site:

“Neogene” (5 animal fossils)

“Silurian” (1 fish fossil)

“Devonian” (1 scorpion fossil and 1 shark fossil)

“Upper Carboniferous” (1 centipede fossil and 1 reptile fossil)

Time Required: Five 60-minute periods

Learning Outcomes:

(Biology)

Build knowledge and understanding of concepts related to the life sciences, and apply this understanding to the interpretation, integration and broadening of own knowledge.

- Organization of the living world: Show understanding of concepts related to basic biology (diversity of life on Earth: fossils serving as a historical timeline of life on Earth).

(Entrepreneurship)

Understand how to plan and organize an entrepreneurial project.

- Prepare the “description” component of an entrepreneurial project: criteria for choosing the name of the project (mascot) include the purpose, type of product or service, name is recognizable and easy to pronounce, specificity of the project and the target audience (“Magnificent Rocks” website).

(French)

Demonstrate an ability to convince a target audience of the value of a product (cultural or other) or validity of an opinion using sound, clearly presented arguments.

(Transdisciplinary)

Information and communication technology: Use information and communication technology (ICT) sensibly in a range of situations.

- Express ideas using design and word-processing software independently and effectively, and use different software to process image, sound and video.

Critical thinking: Demonstrate capacity for critical analysis and creative thinking in solving problems and making individual and collective decisions.

- Solve problems by defining the relevant aspects of an issue, identifying information to incorporate into the problem-solving process, analyzing the information collected, proposing a range of possible solutions, evaluating these solutions, and choosing the most logical solution.

Personal and social development: Build own identity, embrace a healthy lifestyle, and show openness to diversity taking into account tangible individual values, rights and responsibilities.

- Evaluate and analyze own roles and responsibilities as a member of various groups, and fine-tune strategies for improving own effectiveness and involvement within these groups.

Work habits: Develop goals and methods to reach them, analyze ways of identifying and using available resources, and evaluate the effectiveness of strategies and processes.

- Develop and apply strategies independently and effectively to anticipate, plan and manage assigned tasks, to analyze, evaluate and manage appropriate resources for completing the tasks, and to analyze, evaluate and share success stories and challenges.
- Show initiative, perseverance, and flexibility in performing tasks independently, and gain personal satisfaction from a job well done.

SECTION TWO: Project/Lesson Implementation

Equipment/Materials Required:

- Computers with access to the Internet and to the “Magnificent Rocks” website
- A blackboard or notebook to take notes
- Items chosen by the students to stimulate their creativity
- Drawing or design software or art tools to design the mascot

Lesson Procedures/Teaching Strategies:

- 1- Invite the students to form groups of four and assign each group a fossilized animal found on the “Magnificent Rocks” website.
- 2- Students will divide up the roles, do extensive research on their animal/fossil/era and search for any other relevant information on the “Magnificent Rocks” website and in additional sources.
- 3- They will also follow instructions for conducting a brainstorming session aimed at stimulating creativity and sharing ideas with their peers. The background, appearance and name of their mascot will draw on the ideas and suggestions of their peers.
- 4- A brainstorming session requires planning. Each group will choose the items to be used to inspire each other, formulate questions to ask during the session, choose the types of information they want to receive and record, and consider how tasks will be delegated within the group. They may also choose to prepare a PowerPoint presentation.
- 5- Following the brainstorming sessions, the groups will review every idea recorded and produce a diagram (mental map) in order to organize the ideas, connecting them and grouping them together. This will enable the students to have an overall view of the ideas and choose the elements of most interest to them.
- 6- Lastly, students will present their creation: a mascot inspired by the ideas of their peers. They may draw it by hand or produce a design on a computer. The image should be accompanied by a 500-word essay describing the mascot and the process used to sort out and integrate the ideas of the students involved.

Background and definitions:

“Brainstorming involves bringing people together to explore a problem as a group. First, everyone works together to identify as many solutions and ideas as possible in relation to the problem at hand. Next, the group organizes and prioritizes the ideas together!”

(Université du Québec à Rimouski)

“The main objective is to ‘maximize creativity while also minimizing preconceptions, critical judgement, etc.’”

(UQAM – Department of Philosophy)

6 Principles of Brainstorming

1. Lack of judgement (encourage free, creative thinking)
2. Equality (every idea is valid)
3. Respect (consideration for all participants without criticism)
4. Record keeping (every idea should be noted)
5. Discipline (maintaining a balance between structured discussion and sharing of ideas)
6. Originality (focusing on creativity, humour and context)

(Université du Québec à Rimouski)

It is important to give free rein to creativity and to allow participants to speak with open minds. The use of props, imagery and reading of a light-hearted introduction before the group dives into the topic is encouraged. The use of open-ended questions to stimulate discussion is essential for success and to generate the most responses.

Roles of Group Members:

1. Group Leader

- Tasks are carried out before and after the brainstorming session
- Responsible for preparing information before the session
- Responsible for producing a synthesis of the ideas, using diagrams
- Makes sure that everyone’s ideas are considered after the session
- Makes sure that the other group members understand their roles during the session

2. Facilitator

- Tasks are carried out during the brainstorming session
- Facilitator leads the discussion, organizes the contents, and makes sure there is a good flow as ideas are shared
- Presents the theme and the creative activity so participants will understand the background
- Asks questions and prompts students to change the subject, elaborate on answers, and keep the discussion going

- Bounces off ideas to lead to a related subject during the discussion
- Facilitates and encourages the participation of the class
- Treats all participants fairly and as equals
- Manages the discussion so one idea is shared at a time
- Redirects or focuses the discussion if ideas go off-topic

(Université du Québec à Rimouski)

Examples of comments which may be made by the facilitator to stimulate more ideas:

- *“Keep going! What other ideas do you have?”*
- *Repeat what others have said: “So far, we’ve got X, Y, Z... What else can we add?”*
- *If participants seem to be missing or avoiding a topic you would like to suggest, you can introduce it. However, make sure you are not interrupting someone who is developing another idea.*

(Miller, 2012)

3. Moderator

- Tasks take place during the brainstorming session; the moderator manages the group by monitoring or “policing” the behaviour of participants and making sure they are respectful
- Helps to establish rules of fairness and discipline among the participants and to ensure they are followed
- Makes sure speakers are not being silenced and that all ideas are being treated fairly and equally
- Lists the rules of brainstorming at the beginning of the session
- Along with the Facilitator, ensures that no participant disputes, criticizes or judges the ideas of others
- Makes sure that time to speak is shared fairly among all participants and that no one monopolizes the discussion

(Université du Québec à Rimouski)

4. Secretary

- Tasks are carried out mainly during the brainstorming session

- Responsible for recording everything that is said during the discussions
- May choose to take notes in front of the class (on the blackboard) or more discreetly (in a notebook)
- May choose to organize the ideas by grouping them together by theme or by question; this may also be done after the session
- His or her participation in the discussion and in managing the session is less important than the task of taking note of the ideas shared by the others

Suggested Assessment Strategies:

Students will be assessed on their research and their presentation, using a scale or rubric developed in advance by the teacher, based on the teacher's priority learning outcomes (critical thinking, teamwork, relevance to the site, etc.).

Vocabulary:

- brainstorming

SECTION THREE: Project/Lesson Resources

Supplementary Resources:

Magnificent Rocks:

http://www.nbm-mnb.ca/magnificent_rocks-roches_magnifiques/home-accueil-eng/

Disclaimer:

The online resources recommended in this document have been selected according to their relevance in terms of the age and grade level of the students. However, given that the content of online materials is subject to change at any time, teachers are advised to consult the websites before recommending them to their students.

Extension/Enrichment:

(Other activities which may be added)

SECTION FOUR: Additional Information

Credits: Sophie Auffrey and Sara Waitzer

Bibliography:

Miller, B. C. (2012). *Quick Brainstorming Activities for Busy Managers*. New York: American Management Association.

UQAM- Department of Philosophy. (N/A.) *Méthodologie du travail intellectuel: Le remue-méninges*. Retrieved 03 19, 2014 from http://www.er.uqam.ca/nobel/philuqam/metho/index.php?n1=accueil&n2=etapes&n3=preparation&id_ress=91

Université du Québec à Rimouski (2012, 05 15). *Guide des meilleures pratiques*. Retrieved 03 19, 2014, from Chaire CRSNG-UQAR en génie de la conception: http://www.uqar.ca/files/genie-conception/fiche_remue_m%C3%A9ninges.pdf.