

ATOMIX

STUDENT LOG

WORKING DOCUMENTS

The project	1
Creating the context	2
Gathering information	5
Completing the project	13
Validating the project	17

EVALUATION DOCUMENTS

My evaluation	13
Evaluation grid	14

PROCEDURE AND EVALUATION: SSC2 – SCIENCE

The project

COLLECTIBLE CARDS: A BOOMING BUSINESS!

Laval – Playing cards featuring characters with supernatural powers are a big hit with young people. In fact, these cards are so popular that the educational toy manufacturer Scientifix has decided to launch its own series of cards. The company's goal is to make science fun!

Laval, September 13, 2008

Educational toy manufacturer seeks creative designers

JOB REQUIREMENTS: Excellent knowledge of science. Discipline and imagination are also required.

RESPONSIBILITIES: Design and produce playing cards featuring superheroes with characteristics inspired by elements of the periodic table. Card design will meet the the following requirements:

- **On the front of the card:**

- **identification of the element** using Lewis notation. The Lewis structure must appear in the top right-hand corner of the card.
- **the character's name**, based on the etymology of the name of the element
- **an illustration of the character**, inspired by the physical description of the element. The illustration can be a drawing, a collage, a photomontage, etc.
- **a short description of the character's personality**, based on the physical or chemical characteristics of the element. It should be an imaginative and colourful description of the character's main personality traits.
- **a list of the character's powers (at least two)**, based on uses or applications of the element
- **a description of the character's weapons**, based on the toxicity of the element
- **a list of the character's allies**, namely, other elements with similar chemical properties. The allies must be among the first 20 elements in the periodic table and must be identified using Lewis notation.

- **On the back of the card:**

- **a chart for marking points**, with the number of game levels the character must reach and the number of points to win at each level. The chart takes the form of the Rutherford-Bohr atomic model of the element.

In this context, you must design and make a playing card.

Creating the context

Selected element: _____

I ask myself questions

1. What is an element?

2. What is the periodic table of the elements?

3. What is an atom?

4. What is an atomic model? Why do we use such models?

5. What is the etymology of a word?

6. Who are you designing and making a playing card for?

7. What questions should guide you in your information gathering?



Creating the context *(continued)*

Selected element: _____

I must

8. Reformulate the goal of the project.

I think

9. What kind of character do you think could represent your element? Explain your answer.

What I know and what I must find out

10. Write the information you already know and the information you need to find out.

What I know	What I must find out
-------------	----------------------



Gathering information

Selected element: _____

I do research

1. a) What is the Rutherford-Bohr atomic model?

b) What is the atomic number?

c) What is a group?

d) What is a valence electron?

e) How can you determine the number of valence electrons in an atom?



Gathering information *(continued)*

Selected element: _____

f) What is a period?

g) How can you determine the number of electron shells in an atom?

h) What is Lewis notation?

i) How will you choose your character's allies?



Gathering information *(continued)*

Selected element: _____

I apply my research results

2. Apply what you have learned from your research by answering the following questions. Make sure that you cite your sources.

- a) Identify the information you will use to draw the Rutherford-Bohr atomic model of your element.

- b) Identify the information you will use to represent an atom of your element with a Lewis structure.

- c) Identify the information you will use as inspiration for your character's name.

- d) What information will inspire your character's physical appearance?



Gathering information *(continued)*

Selected element: _____

- e)** Identify the information you will use to define your character's personality.

- f)** Identify the information you will use to determine your character's powers.

- g)** Who will your character's allies be? How will you describe them?



Name: _____

Group: _____

ST

Completing the project

Selected element: _____

1. Prepare the plan for your playing card.

2. What will you put on the back of your card?

3. Make your playing card.

Reflection

Yes

No

Have I considered other approaches?

☐☐

Validating the project

Selected element: _____

I justify my approach

1. Justify the following content on your playing card:

a) the physical description of your character

b) the character's personality

c) the character's powers

d) the character's weapons

e) the character's allies

2. Suggest improvements to your work. What could have made the design process easier?

My evaluation

Use the evaluation grid on the following page to evaluate yourself. Write A, B, C, D or E in the “Me” column of the chart below.

SSC2—Makes the most of his/her knowledge of science and technology				
Criteria*	Observable indicators	Me	Teacher	Comments
1	Creating the context		<input type="checkbox"/> With help	
	Definition of the goal and formulation of the questions for gathering information			
2	Gathering information		<input type="checkbox"/> With help	
	Selection of relevant information that meets the requirements for the card design			
3	Completing the project		<input type="checkbox"/> With help	
	Production of the playing card			
4	Validating the project		<input type="checkbox"/> With help	
	Justification of various content on the playing card			

*Evaluation criteria

- 1 Formulation of appropriate questions
- 2 Appropriate use of scientific and technological concepts, laws, models and theories
- 3 Relevant explanations or solutions
- 4 Suitable justification of explanations, solutions, decisions or opinions

Evaluation grid

SSC2 Makes the most of his/her knowledge of science and technology

Criteria*	Observable indicators	A	B	C	D	E
1	Creating the context Definition of the goal and formulation of the questions for gathering information	The goal of the project is very clearly defined, and all the questions for gathering information are relevant to the project.	The goal of the project is clearly defined, and most of the questions for gathering information are relevant to the project.	The goal of the project is not very clearly defined, OR only some of the questions for gathering information are relevant to the project.	The goal of the project is not very clearly defined, AND only some of the questions for gathering information are relevant to the project.	The work must be done again.
2	Gathering information Selection of relevant information that meets the requirements for the card design	All of the information is relevant and meets the requirements for the card design.	Most of the information is relevant and meets the requirements for the card design.	Some of the information is relevant and meets the requirements for the card design.	The information is not very relevant.	The work must be done again.
3	Completing the project Production of the playing card	All of the elements of the playing card respect the design requirements and the scientific concepts.	Most of the elements of the playing card respect the design requirements and the scientific concepts.	Some of the elements of the playing card respect the design requirements, OR the card contains some scientific errors.	The playing card does not respect the design requirements, OR it contains many scientific errors.	The work must be done again.
4	Validating the project Justification of various content on the playing card	All of the justifications are relevant and based on the scientific information gathered.	The justifications are relevant, and most are based on the scientific information gathered.	The justifications are partially relevant, OR only some are based on the scientific information gathered.	The justifications are partially relevant, AND only some are based on the scientific information gathered.	The work must be done again.

*Evaluation criteria

- 1 Formulation of appropriate questions
- 2 Appropriate use of scientific and technological concepts, laws, models and theories
- 3 Relevant explanations or solutions
- 4 Suitable justification of explanations, solutions, decisions or opinions