



Critical Thinking as Visual Thinking: Using Concept and Argument Maps in a French Literary Seminar

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INTRODUCTION

Currently, pedagogical literature in French explores how to teach critical thinking (*la pensée critique*) as visual thinking (*la pensée visuelle*) and educators at all levels of instruction are encouraged to use different mapping strategies such as mind-mapping, concept maps, or argument maps, to help today's students to hone their critical thinking skills, organize their knowledge, and structure their various types of presentations (oral, written, or mixed-media). As the 2016-2017 Wisconsin Teaching Fellow, I conducted a research project examining advantages of teaching critical thinking through visual thinking in a French upper-division seminar on French Literature in Fall 2016.

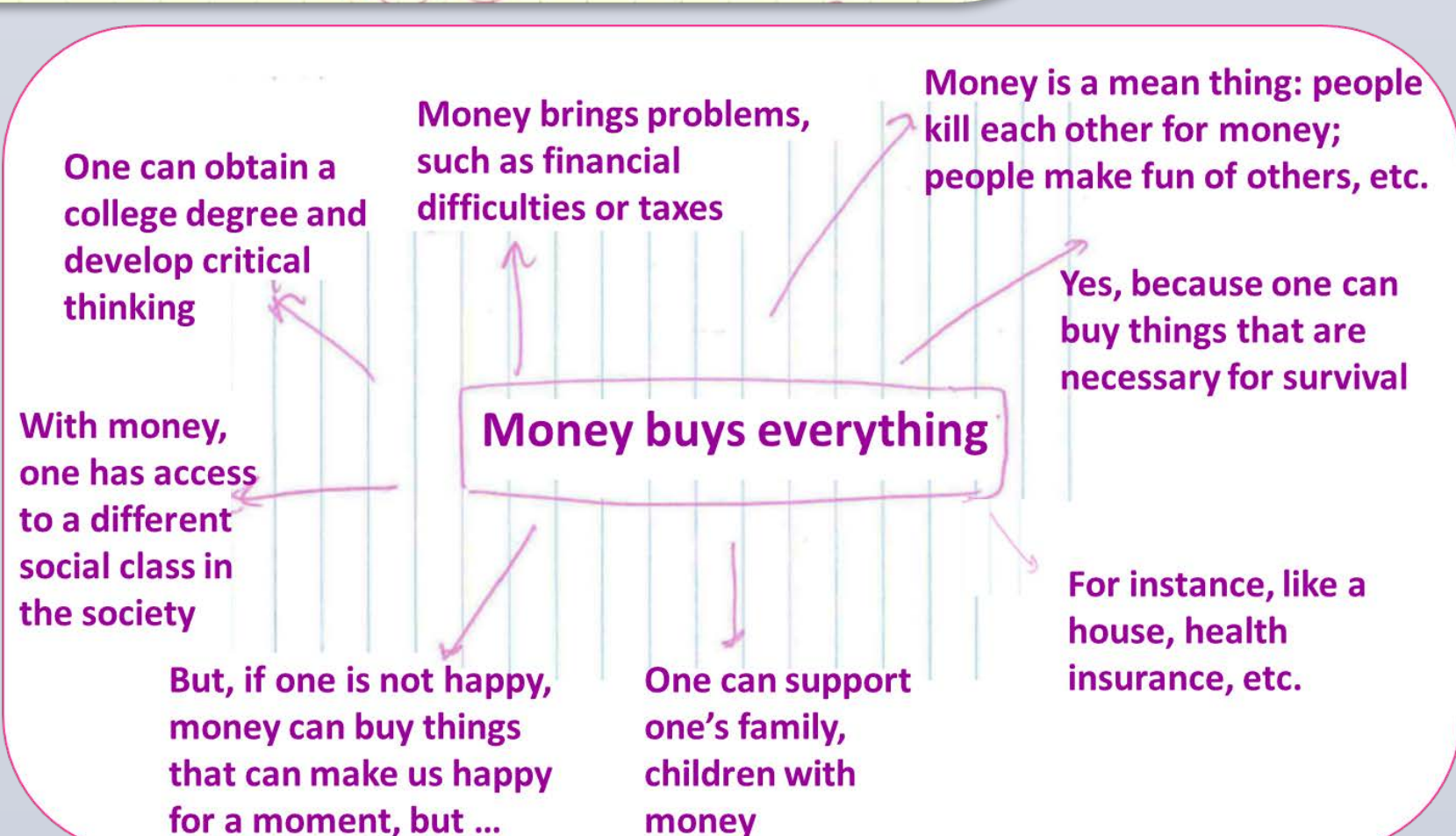
MATERIALS AND METHODS

In "Visual Mapping to Enhance Learning and Critical Thinking Skills" (2011), Héctor C. Santiago points out that in our time there are multiple tools and visual maps to capture different types of thinking processes. For instance, instructors may use these tools for the following functions: for "picturing the thinking process (mind mapping), exploring the structure of knowledge (concept mapping), developing premises, counter arguments and conclusions around a contention (argument maps), exploring the learner's own thinking process (@Thinking Maps)" (125). Martin J. Eppler, in his study "A comparison between concept maps, mind maps, conceptual diagrams, and visual metaphors as complementary tools for knowledge construction and sharing" (2006), also confirms that "the different visualization formats can be used in complementary ways to enhance motivation, attention, understanding and recall" (202).

To evaluate the effectiveness of mapping techniques in a French seminar on literature, the following learning activities were implemented: 2 in-class oral debates, 2 written concept/mind maps and 1 argument map used for the debates, 2 written essays produced based on the maps, 1 map (of choice) to structure the final research project; and 1 student feedback survey (SFS). The data collected was assessed with several rubrics: In-Class Debate Rubric, Basic Argument Construction & Mapping Rubric, Oral Communication and Written Communication Rubrics.

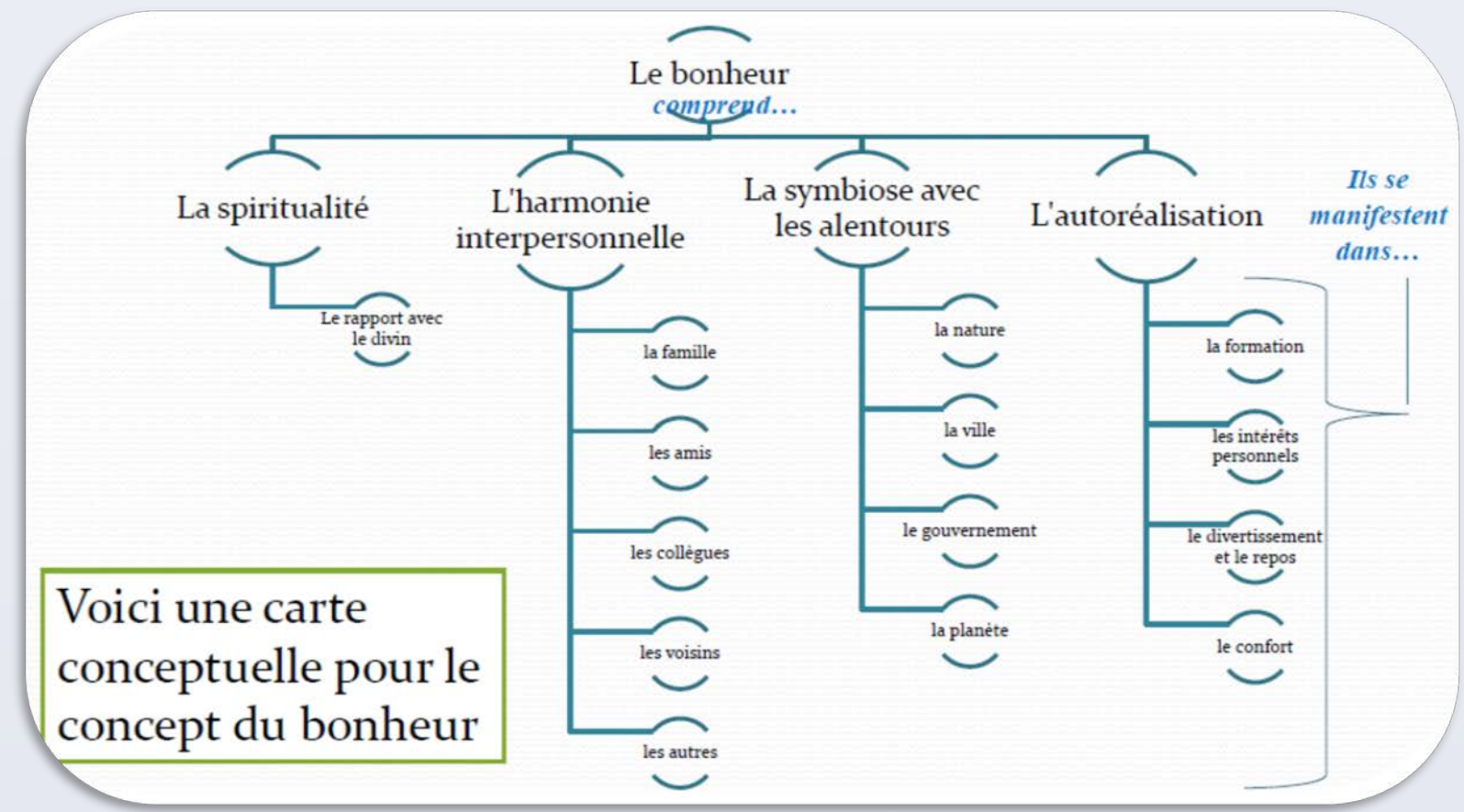
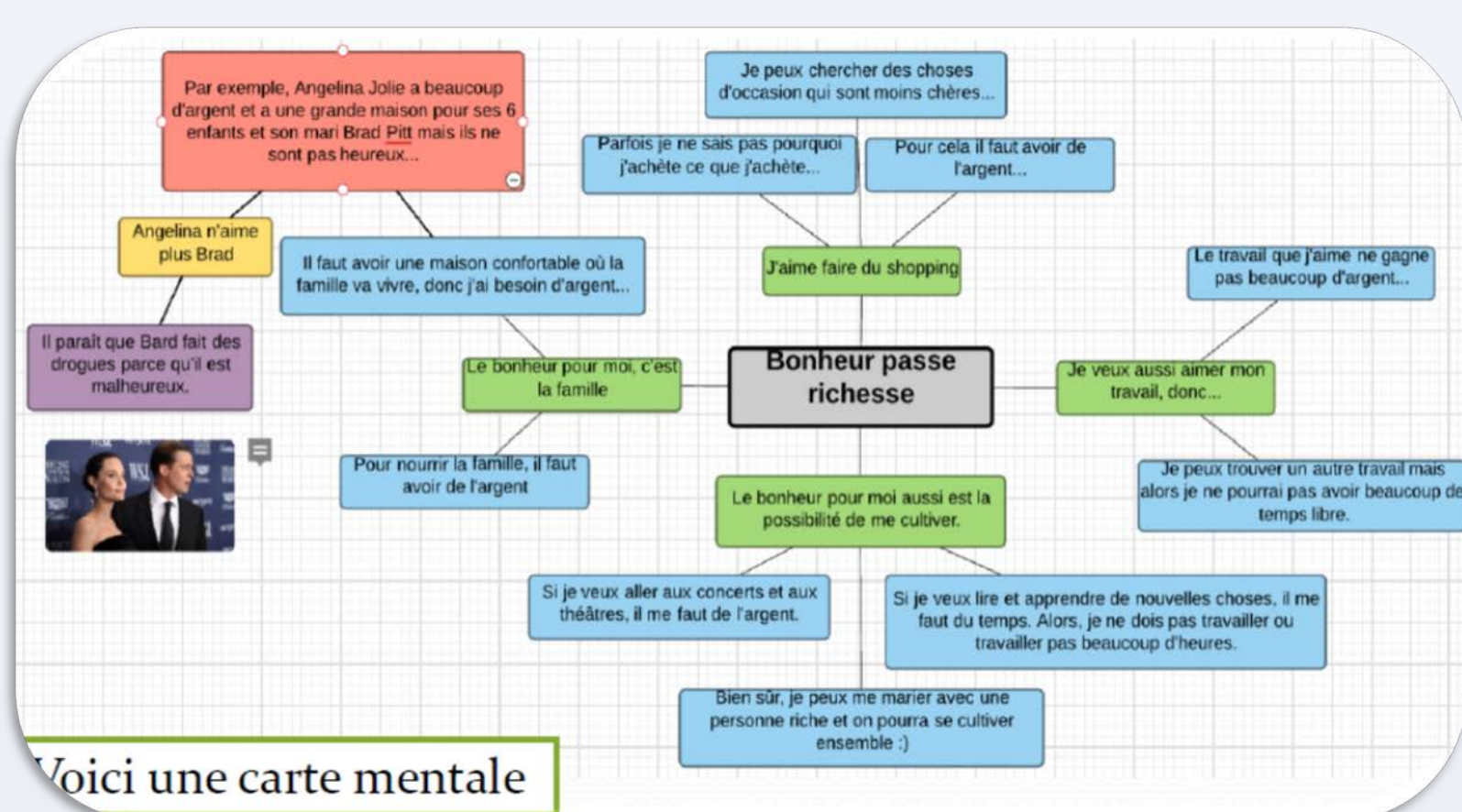
SAMPLES OF STUDENT WORK

First Class Debate based on Molière's play *Le Bourgeois gentilhomme*: Two Concepts Maps – "Happiness prevails over fortune" & "Money buys everything"



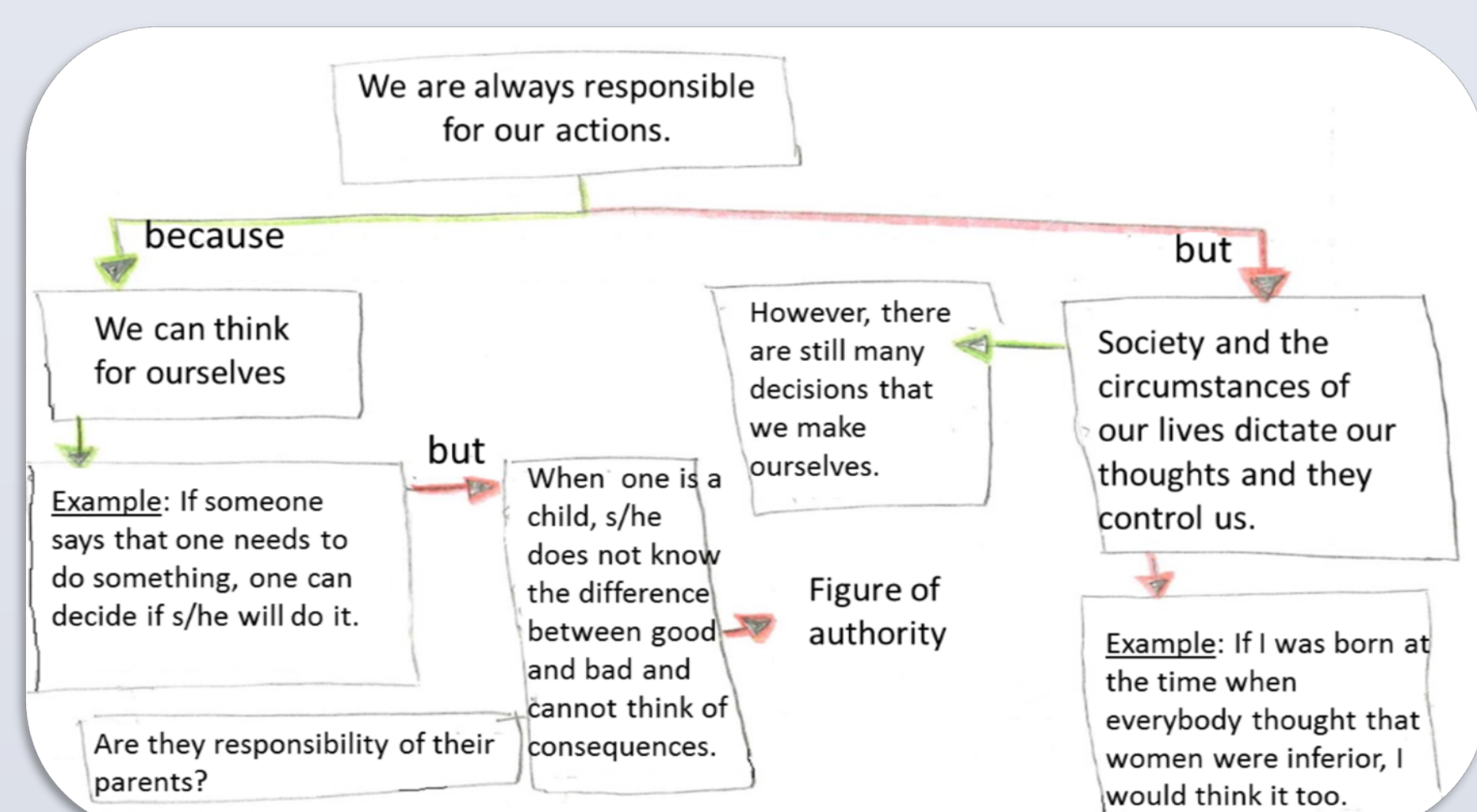
Students 1 & 2 (originals in French, translation is mine): Logical connectors are not present; information is ordered by color or position; associative flow prevails.

MIND, CONCEPT & ARGUMENT MAPS



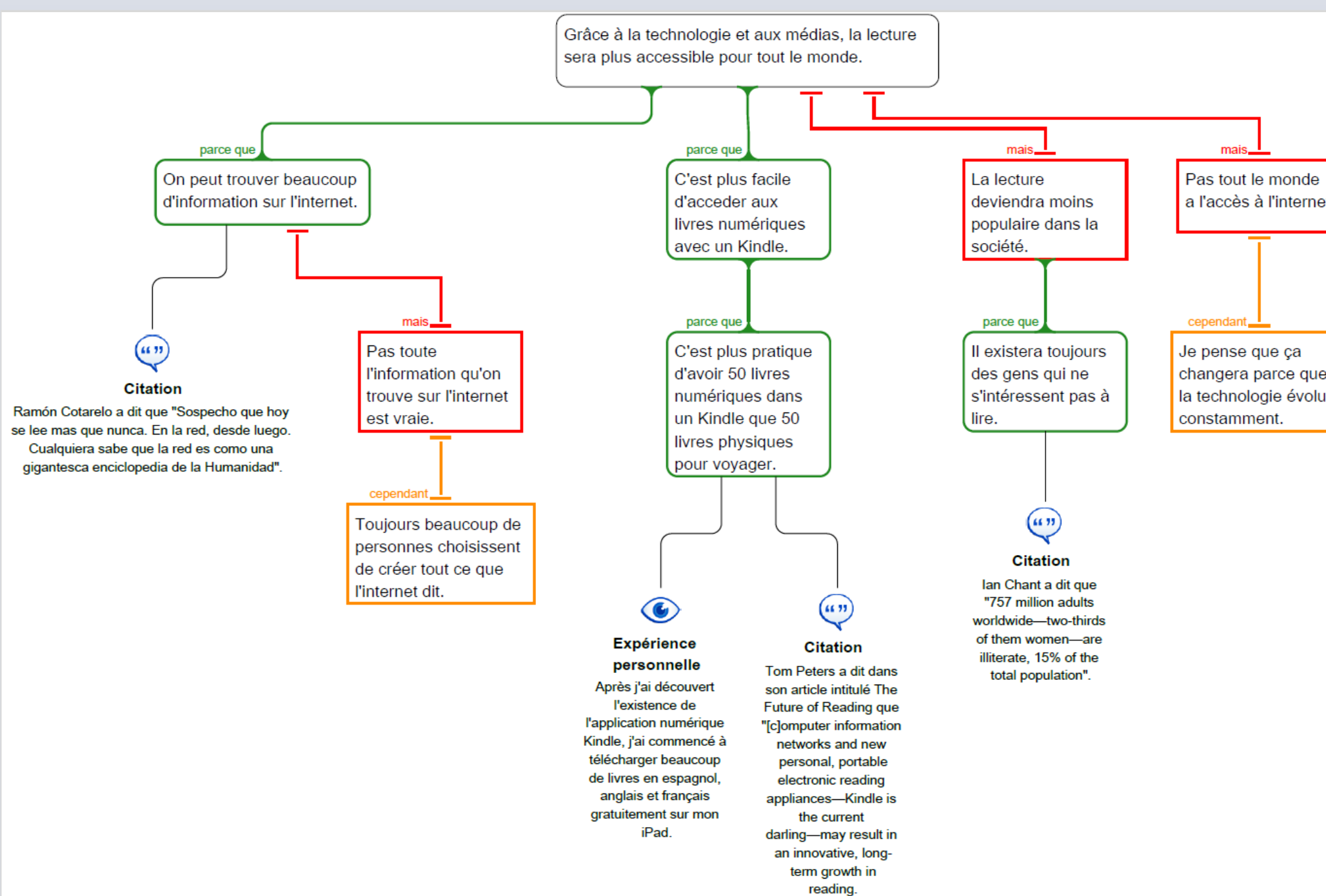
Instructor's maps exemplify differences between mind and concept maps.

Second Class Debate on Françoise Sagan's novel *Bonjour Tristesse*: One Argument Map – "We are always responsible for our actions"



Student 3 (original in French, translation is mine): This map shows logical flow. It also included logical connectors for supporting claims (*because*), objections (*but*) and even a rebuttal (*however*).

Final Research Project on the Future of Reading: Students had a choice of visual mapping types/ tools to use



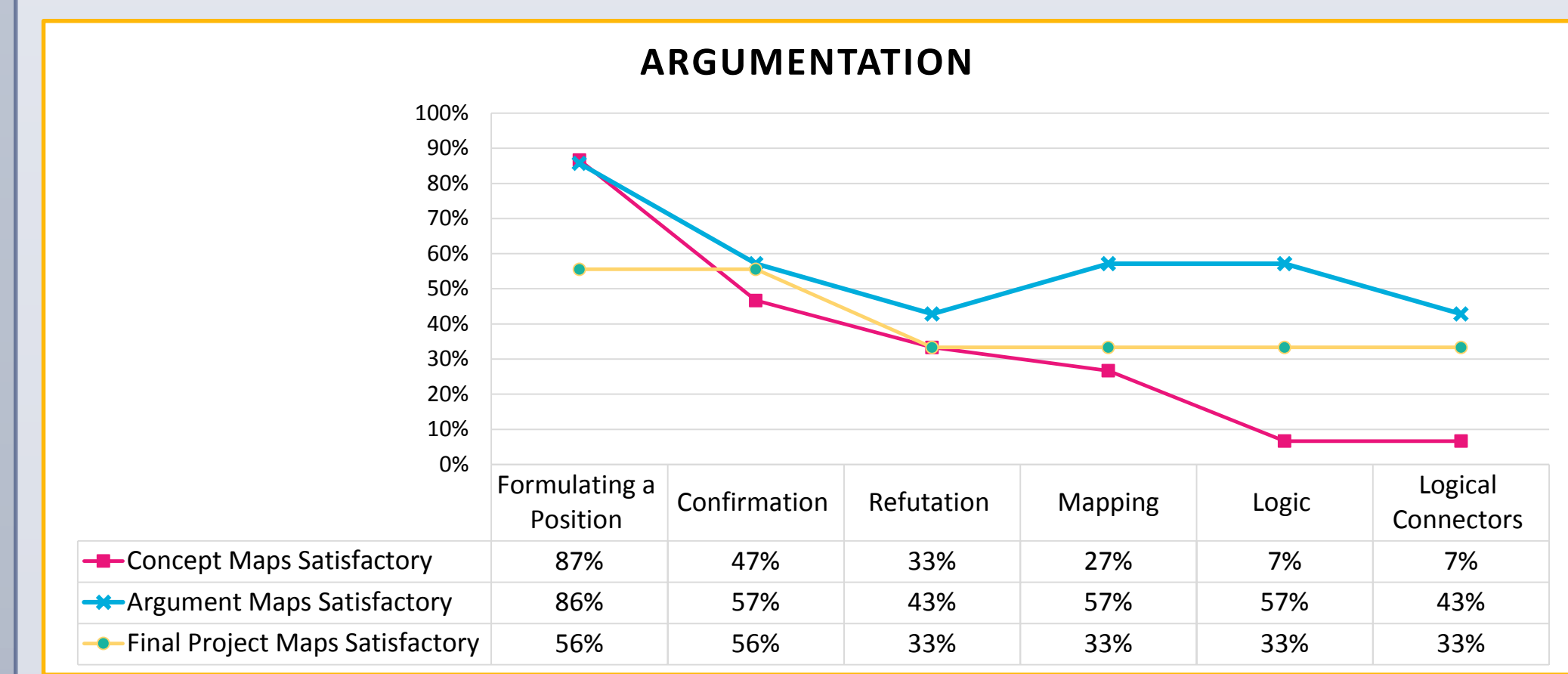
Student 4: Original French is preserved to illustrate this exemplary work produced in the target language. The argument map includes several supporting claims with different types of evidence (citations from peer-reviewed articles, personal experiences, etc.) as well as complex counter-claims (objections and rebuttals). The logical flow is immediately visible and can be easily evaluated for its accuracy. This map was prepared with Rationale, an online argument mapping software, which supports several languages.

<https://www.rationaleonline.com/>

RESULTS

Basic Argument Construction & Mapping Rubric

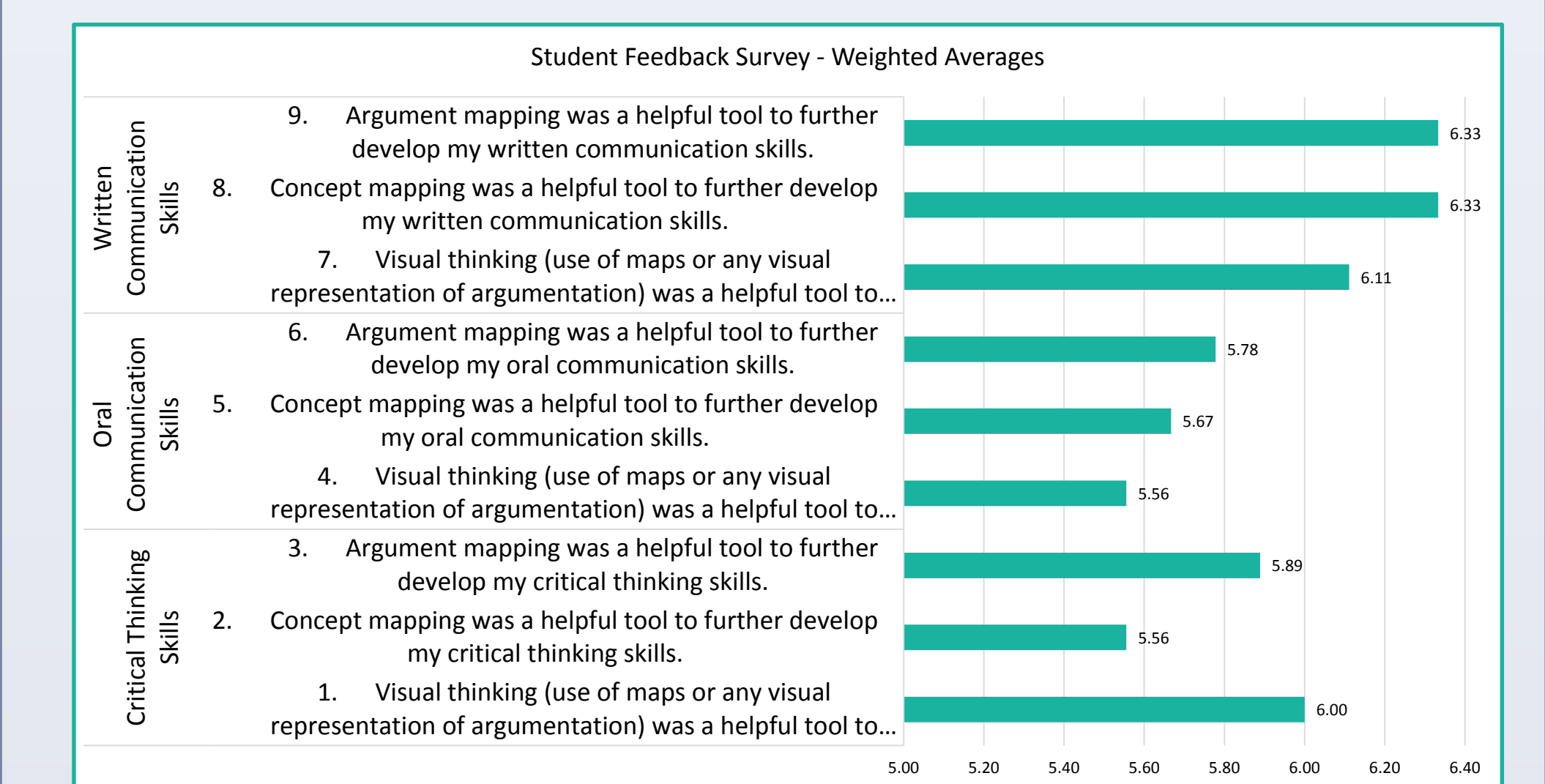
Criteria	DEVELOPING		SATISFACTORY	
	DOES NOT MEET EXPECTATIONS	DEVELOPING TOWARDS MEETING EXPECTATIONS	MEETS EXPECTATIONS	EXCEEDS EXPECTATIONS
FORMULATING A POSITION	Position (i.e. ultimate conclusion) is stated, but is simplistic and obvious.	Position is vague.	Position is clearly stated.	Position is clearly stated and thought-provoking.
CONFIRMATION	Supporting claims and evidence are minimal.	Supporting claims and evidence are present but not fully developed or only a few points are considered.	Supporting claims and evidence are discussed and several points are considered.	Supporting claims and evidence are discussed at length and various points help reveal the complexity of the issue.
REFUTATION	No refutation is provided.	One type of counterclaims (i.e. objection(s)) is provided.	Two types of counterclaims (i.e. an objection and a rebuttal) are provided and help consider different sides of the issue.	More than two counterclaims (i.e. objections and rebuttals) are provided and help reveal the complexities of the issue.
MAPPING	No mapping is provided or little effort is evident in the visual arrangement of the argument.	The visual arrangement of the parts of the argument is somewhat confusing and does not indicate always if the claims are used to confirm or refute the previous claims.	The visual arrangement of the parts of the argument facilitates understanding and evaluation of the argument. It is logically arranged, indicating clearly if the claims are used to confirm or refute the previous claims.	The visual arrangement of the parts of the argument is aesthetically pleasing and facilitates understanding and evaluation of the argument. It is logically arranged, indicating clearly if the claims are used to confirm or refute the previous claims.
LOGIC	Reasoning contains some faulty premises or illogical connections between claims (i.e. faulty inferences).	Reasoning contains some weak premises and/or some of the connections are not logically sound.	Reasoning mostly contains strong premises and the logical relationships between various claims are sound.	Reasoning contains strong premises and the logical relationships between various claims are sound, strengthening the epistemic force of the whole argument.
LOGICAL CONNECTORS	No logical connectors are used or some connectors are used incorrectly.	Only a few logical connectors are used.	Logical connectors as well as the syntactic progression of the argumentation are used to make apparent the argument logic.	Varied logical connectors along with the syntactic progression of the argumentation are used to help make apparent the argument logic.



At first, mind mapping seemed to be a more effective tool because students found it less intimidating. This type of mapping is more aligned with their previous work such as simple brainstorming activities or outline generation. This type of visualization of information builds on generalized knowledge. Lacking in depth and logical rigor, this generalized-knowledge exercise was still knowledge-producing because students came prepared for the class debate – furnished with multiple arguments that they could contribute for the class discussion. The argument mapping – more structured and higher-order thinking exercise – was met with some frustration and reluctance. Students had less success generating enough of counter-claims and evidence-supported claims to fortify their positions.

- Mind maps were easier to complete and were met with greater enthusiasm by students than argument maps.
- 56% of students used mind maps for their final research project over 44% who used argument maps.
- Proper concept maps were not produced by students.
- Only 11% of maps were concept maps over 89% of mind maps.
- Associative flow of mind maps lacks rigor and logical connections.
- In concept/ mind maps, 7% used logical connectors
- In argument maps, 43% used logical connectors.

- Clarity of argumentation is mostly achieved in argument maps.
- Argument maps outperformed mind/ concept maps:
 - 43% over 33% in refutation, 57% over 27% or 33% in clarity of visualizing of the argumentation, 57% over 7% or 33% in logical representation and 43% over 7% or 33% in the use of logical connectors.
- Use of color in mapping seems to assist students to group ideas that are related. However, it does not make student reflect on the nature of inferences or links between ideas.
- 52% used color in their maps (16 maps out of 31 total maps)



Feedback questionnaire used the Likert scale (1-7), 7 indicating strongly agree. Number of students = 9

- Argument maps were judged by students as more difficult and were less well-produced. However, in the qualitative portion of the student feedback survey, they reported that they would use argument maps to structure their arguments in the future.
- 79% (7 out of 9 students) felt that argument maps were the most helpful to develop critical thinking skills (SFS).
- *Student Comments:* "[Argument maps] seem to be more in depth, and challenged my opinions"; "[They] make you think about ideas from multiple perspectives. Concept maps, it's kind of just your perspective."

CONCLUSIONS

Based on the assessment of student performance and feedback, it was confirmed that visual thinking enables students to further develop their critical thinking skills while also improving their oral and written communication skills. After having created mind, concept, and argument maps to prepare for class debates and written assignments, students became more aware of a variety of arguments they could use to defend their point of view in the target language. While working on the maps, they had to consider not only the subject matter but also the clarity of exposition, argument structure and logic, as well as the applicability and reliability of supporting evidence. As one student reported in the feedback survey: "[In] classes where there is too much data & too many arguments to consider, I already find myself referencing back to the theories we learnt here."

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