

Research/Planning for a Debate Using Smart Ideas Concept-Mapping Software

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Project Description:

Students will research and plan for a debate using Smart Ideas software. They will then engage in a debate on a controversial issue. In the outline provided, students will debate topics to enhance their understanding of expectations from the Genetic Continuity Unit. Other science units/topics that involve debatable issues can be easily substituted.

Subject(s)/Strand(s) Covered:

Grade 11 Biology, University Preparation

- Genetic Continuity

Estimated Time Frame:

Approximately four 75 minute periods

Computer Time Required:

Approximately two (or more) 75 minute periods

Computer Programs Used:

- *Smart Ideas* Concept-Mapping Software (or *Inspirations* software can be substituted)
- Any word processor

Prerequisite Skills:

- Basic concept-mapping skills using Smart Ideas (or Inspirations)
- Basic word processing skills

Materials Required:

- Access to the Internet
- Handouts (see Appendices)

NETS ADDRESSED

√	1. Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong-learning, and workplace needs. (2)
√	2. Make informed choices among technology systems, resources, and services. (1, 2)
	3. Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole. (2)
	4. Demonstrate and advocate for legal and ethical behaviours among peers, family and community regarding the use of technology and information. (2)
√	5. Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (3, 4)
	6. Evaluate technology-based options, including distance and distributed education, for lifelong learning. (5)
√	7. Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6)
√	8. Select and apply technology tool for research, information analysis, problem solving, and decision making in content learning. (4, 5)
	9. Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6)
√	10. Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6)

MINISTRY EXPECTATIONS ADDRESSED

Grade 11 Biology, University Preparation

→Genetic Continuity

EXPECTATIONS COVERED
OVERALL COURSE EXPECTATIONS
➤ locate, select, analyse, and integrate information on topics under study, working independently and as part of a team, and using appropriate library and electronic research tools, including Internet sites
➤ compile, organize, and interpret data, using appropriate formats and treatments, including tables, flow charts, graphs, and diagrams
OVERALL EXPECTATIONS
➤ outline the scientific findings and some of the technological advances that led to the modern concept of the gene and to genetic technology, and demonstrate an awareness of some of the social and political issues raised by genetic research and reproductive technology
SPECIFIC EXPECTATIONS
➤ research genetic technologies using sources from print and electronic media, and synthesize the information gained (e.g., describe the Human Genome Project, transgenics, or the process of genetic screening; list the advantages and disadvantages of cloning or the genetic manipulation of plants)
➤ describe and analyse examples of genetic technologies that were developed on the basis of scientific understanding (e.g., the improvement of an experimental procedure to extract DNA from bacterial or plant cells)

SUGGESTED OUTLINE

1. Students are given the handout (**Appendix A**) explaining the **debate assignment**.
2. Students are **assigned topics**. The teacher may choose to assign each student the pro or con side for their topic.
3. Students are provided with **rubrics (Appendix B, C, D)** to ensure an understanding of how they will be evaluated.
4. Students will be given two to three periods to research and plan for their debate using Smart Ideas software. It is suggested that students use the template provided (can be saved in a common drive for student access) or a similar template for their research/planning map set-up (see Appendix E for screen prints of the template). Students can click on the *Notes* (📝) provided on the template for instructions on how to include links to websites, levels, etc.
5. Students submit planning concept map into the hand-in folder (or can be printed and submitted) for evaluation. The teacher may wish to mark the planning/research map prior to the debate to ensure students are on the right track for their debate presentation.
6. Students participate in debates (approximately 15 minutes each in length). See Appendix A for debate set-up.
7. Students complete a reflection piece on their debate experience (see Appendix D). This can be printed out or can be added to their research/planning map as a link.

APPENDIX A



GENETICS DEBATE

Our class will be holding a series of debates on controversial genetic topics. Two periods in the CAL lab will be allotted for debate teams to research and come up with points and counterpoints. The debates will be held on: _____.

Students will be evaluated individually based on their research and planning map (created in Smart Ideas), debate performance and a reflection piece. Please refer to the assessment rubrics provided.

DEBATE TOPICS

1. Should genetic engineering be used on food products?
2. Should embryonic stem cells be used to help in the treatment of disorders (e.g. bone marrow disorders)?
3. Should human cloning be allowed for couples who are infertile?
4. Should authorities be allowed to develop DNA databases of arrested individuals to facilitate forensic analysis in future cases?
5. Should two parental carriers of a known genetic disease be allowed to reproduce?
6. Should parents who use advanced reproductive technologies be allowed to screen embryos for genetic disorders and select healthy embryos?

DEBATE FORUM

The debate forum will be set-up as follows:

1. 3 minutes for pro presentation
2. 3 minutes for con presentation
3. 2 minutes for rebuttal preparation
4. 2 minutes for pro rebuttal
5. 2 minutes for con rebuttal
6. Audience questions
7. Vote of audience

Only one group member at a time will be permitted to speak during the forum. There will be two people assigned for the pro side and two people for the con side for each debate topic. Students are responsible for deciding who will do the initial presentation and who will do the rebuttal presentation. Audience questions must be directed to one member of the debate team. The "other" side will also have a chance to respond to the question.

EVALUATION

Students will be evaluated on:

1. A debate research and planning map (using the Smart Ideas template provided).
2. Their debate performance.
3. A reflection piece consisting of their actual opinion before and after the debate, reasons for their opinion and an analysis of their own debate performance.

APPENDIX B

Debate Research and Planning Map

(created in Smart Ideas using template)

DUE DATE: _____

The student...

Name: _____

Criteria	LEVEL 4	3	2	1	R
Knowledge /15					
Includes appropriate pro AND con arguments					
Provides appropriate and relevant evidence for each argument presented					
Includes suggested rebuttal arguments in support of "their side"					
Inquiry /10					
Demonstrates exemplary critical thinking and research skills by including all relevant information					
Selects appropriate website sources (minimum of 5) and provides links					
Communication /15					
Communicates arguments and ideas clearly and in a straight-forward manner on map					
Includes images or clip-art to reinforce ideas/arguments					
Presents information in an organized way with appropriate "connectors" and links to relevant websites, levels, effective use of colour					

APPENDIX C

Debate Rubric

DATE OF DEBATE: _____

The student...

Name: _____

Criteria	LEVEL 4	3	2	1	R
Knowledge /15					
Demonstrates a thorough knowledge of scientific facts and terms					
Provides enough background information and any required definitions so that the audience understands the points stated					
Presents accurate and up-to-date information					
Inquiry /5					
Uses effective critical thinking skills to analyze information and provides valid and convincing points					
Communication /15					
Clearly and articulately states his/her position					
Speaks audibly and persuasively					
Communicates with a strong sense of audience and purpose					
Application /10					
Considers other position and effectively incorporates or counters it					
Provides the audience with implications/effects/impact of the issue on human health and/or well-being					

APPENDIX D

Reflection Piece Rubric

The student...

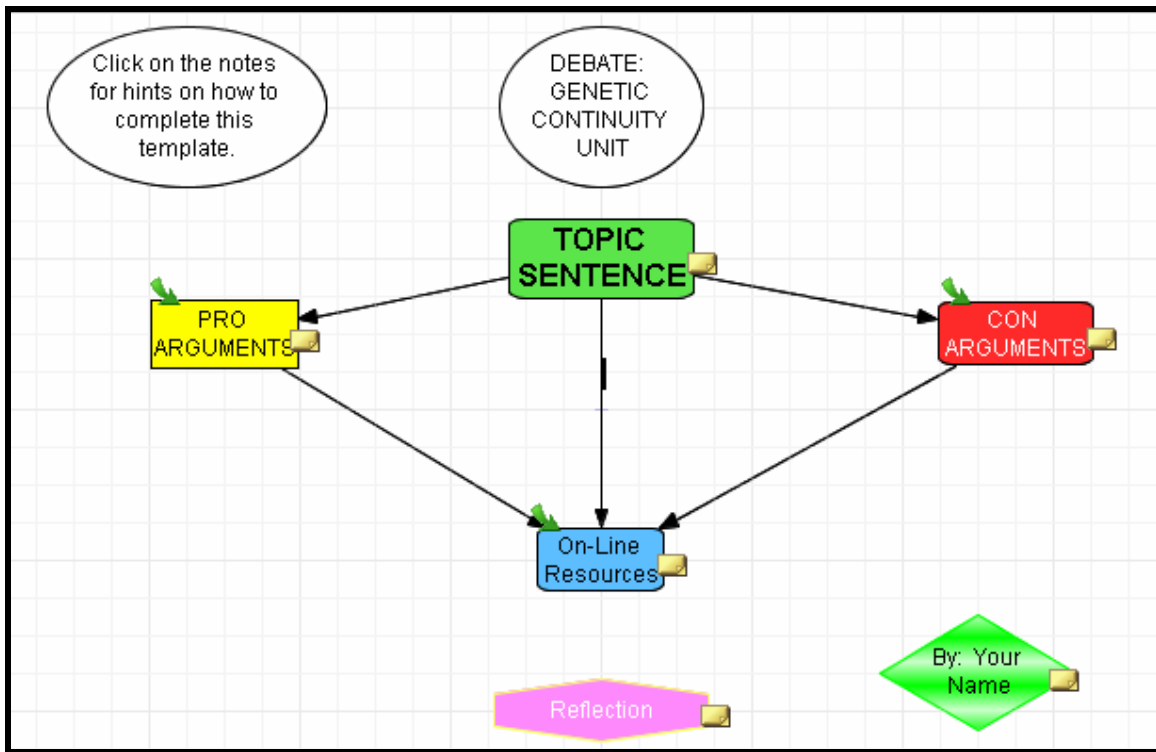
Name: _____

Criteria	LEVEL 4	3	2	1	R
Knowledge /5					
Demonstrates an understanding of the scientific concepts in their reasons					
Inquiry /5					
Uses effective critical thinking skills to analyze their own debate performance					
Communication /15					
Clearly states their own opinion before and after the debate					
Communicates and explains how the debate has influenced his/her opinion on the topic					
Ensures that his/her journal is: spelling and grammar error-free, written in paragraph form, typed, less than one page in length					

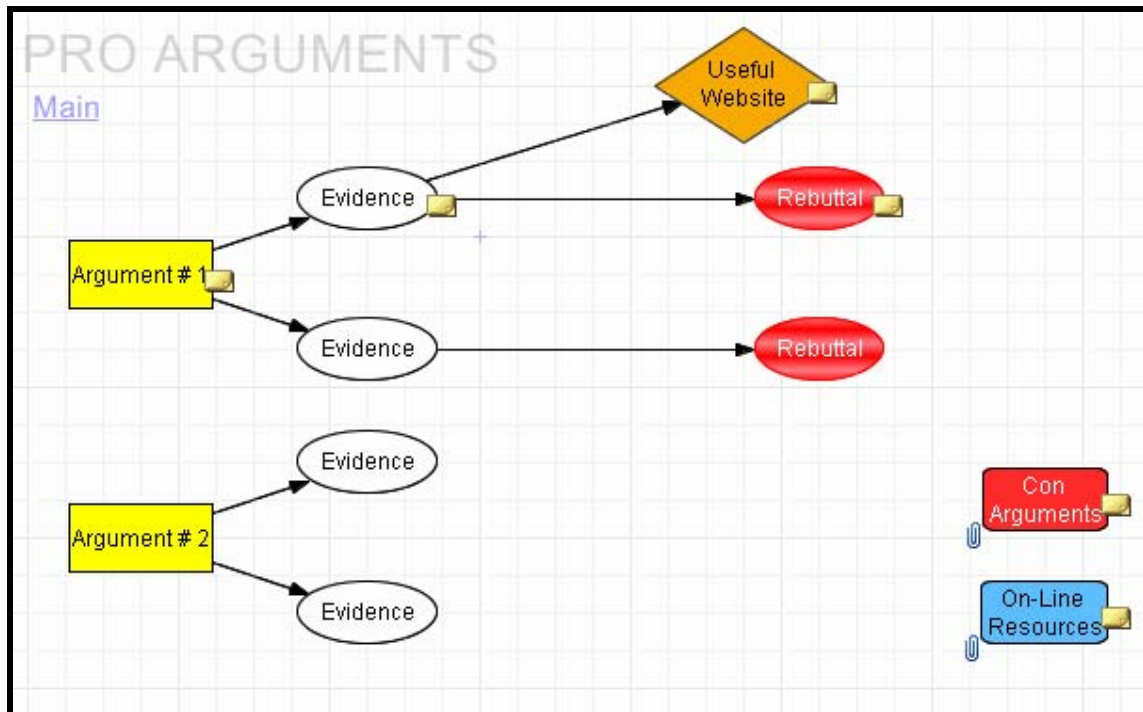
APPENDIX E

NOTES: Students can view hints on using the template by clicking on the small NOTES icons (📄).

MAIN LEVEL:



PRO ARGUMENTS LEVEL:



ON-LINE RESOURCES LEVEL:

