CTS Agriculture Technology

SUBJECT AREA: CTS Agriculture Technology AGR 1100

GRADE: Introductory

SUMMARY

Students will conduct research to identify a technological need that will address social, economic, or environmental sustainability within the agriculture industry. Students will work to design a simple technological system to address the need they have identified.

MATERIALS

- Access to a construction/fabrication/mechanic's workshop, greenhouse and/or science laboratory.

LEARNING RESOURCES

How Beef Cattle Help Reduce Food Waste (1:00 min)

Vertical mushroom farm in Nisku (2:34 min)

Swiss Leaf Living Lettuce Farm - Westlock County, Alberta (0:30 min)

The Farms of the Tuture (2:59 min)

How Regenerative Agriculture Can Help Farmlands Thrive and Improve Ecosystems (4:36 min)

The Olds College Smart Farm (4:51 min)

ASSESSMENT

Students will provide evidence of learning by:

Identifying and designing a simple technological system that addresses a current need within the agriculture or horticulture industry in Alberta.

TEACHER INSTRUCTIONS

Agriculture Technology

Science and technology are continually partnering to improve and develop mechanical systems and processes that enhance efficiency in agricultural and horticultural operations. As feeding our growing global population is a continuing concern, these developments are often geared toward the ability of sustainable agriculture to maintain our current quality of life.

In order to complete this assignment students will research with a partner, technological needs within the agriculture or horticulture industry in Alberta. As they design a mechanical system and/or process for their suggested solution, they will pay close attention in order to assess their solution during their presentation.

VIEW AND DISCUSS:

A selection of videos to choose from for discussion:

How Beef Cattle Help Reduce Food Waste (1:00 min)
Vertical mushroom farm in Nisku (2:34 min)
Swiss Leaf Living Lettuce Farm - Westlock County, Alberta (0:30 min)
Educational Session: Precision Weed Spraying (6:14 min)
The Farms of the Future (2:59 min)
How Regenerative Agriculture Can Help Farmlands Thrive and Improve Ecosystems (4:36 min)
The Olds College Smart Farm (4:51 min)

General Learner Outcomes:	**Students will:** **3.** Design a simple technological system that addresses a current need within the agriculture or horticulture industry.
Specific Learner Outcomes:	**Students will:** **3.1** Identify a technological need within the agriculture or horticulture industry 3.2 research the need; e.g., talk to others in order to clarify ideas, consider similar needs and how they were addressed and make reasoned judgements regarding design potential **3.3** Generate ideas and alternatives regarding a mechanical system and/or process that will address the need **3.4** Select the most appropriate alternative and design the technology **3.5** construct a drawing/model of the technology by following plans that have been established **3.6** Assess the design process and technology outcomes. **3.7** Identify possible improvements to the design process and/or technology outcomes

STUDENT ASSIGNMENT

Agriculture Technology

Our world is ever-changing, and your province is excited to promote ingenuity in designing simple technological systems for agriculture or horticulture among school students. You, along with your partner, have been challenged to find a need in agriculture or horticulture that you would like to address with a mechanical system or program of your creation. Once you have completed the project you will present your findings to your teacher and peers, answering questions at the end.

In order to assist you in choosing your agricultural or horticultural need to address, complete the decision making model found on the following page on a Google Doc. These planning steps will also be submitted for marking.

TEACHER INSTRUCTIONS

Agriculture Technology

Decision Making Steps	
Problems: Find and list 3–4 technological needs within the agricultural or horticultural industries in Alberta.	
Discuss your ideas: Research and list some ideas to help generate alternatives regarding a mechanical system and/or process that will address the 3–4 technological needs you have listed.	
Evaluate your ideas and make your choice on the one need you will address. Prepare the solution for your choice and get your teacher's approval: After getting your teacher's approval, design the mechanical system and/or process.	
Construct a drawing/model of the technology: Follow the plans that you have made.	
Assess your design: Have the original needs and design intentions been met? Did you make efficient use of resources? Is the design safe for humans and the environment?	
Identify possible improvements: To the design process and/or technology outcomes.	
Bibliography URLs must be collected for information and pictures from the internet. Post URLs is this section as your research progresses.	

Marking Rubric

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Criteria	Excellent	Proficient	Satisfactory	Limited
Completed Solution (drawing /model)	The finished product is a result of careful and meticulous planning. Craftsmanship is outstanding. Significant attention to detail.	The finished product is a result of successful planning. Craftsmanship is well done. Attention to detail is evident.	The finished product is a result of adequate planning. Craftsmanship needs more attention to detail.	The finished product shows little effort and needs more careful planning. Craftsmanship has deficits.
Organization of Decision Making Model	Presents findings in a very organized manner and in an interesting sequence that is easy to follow.	Presents findings in a fairly organized manner and logical sequence that one can follow.	Presents Information in a manner that makes the sequence difficult to follow.	Presentation is difficult to understand because the sequence is lacking and information is disorganized.
Content- Accuracy of Decision Making Model	Students showed a comprehensive understanding of the topic; their information was accurate and well researched, and their assignment was well supported by facts.	Students showed a good understanding of the topic, their information was accurate, and their assignment was supported by facts.	Students showed some understanding of the topic, but their research was incomplete, and/or their assignment was not supported by facts.	Students demonstrate little or no understanding of the topic; they did not appear to have done much research, and their assignment was not supported by facts.
Conclusion: Identify possible improvements to the design process and/or technology outcomes.	Conclusion was presented. Opinions and suggestions for change are logical and well thought out.	Conclusion was presented. Some suggestions for change and/or opinions are included.	Conclusion was presented but no suggestions for change and/or opinions are included.	Conclusion was not presented.
Presentation	Group members explain ideas very clearly. They accurately answer any questions related to the information presented.	Group members explain ideas clearly. They answer any questions related to the information presented.	Group members have some difficulty explaining ideas clearly. They answer most questions related to the information presented.	Group members have difficulty explaining ideas presented.They have difficulty answering questions related to the information presented.