UNIT OUTLINE AND LESSON PLANS

Social Studies 90 Project: Scientific and Environmental Technology linked to Government and Educational Institutions

Exemplar and Lesson Focus: Smartflower Development and Implementation at Bishop James Mahoney High School

LESSON		OUTCOMES	ACTIVITY	RESOURCES & MATERIALS	ASSESSMENT	HOURS*
#1	**Technology and Social Structures in Contemporary Canada**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Research on technologies used in daily life	Topic Powerpoint lesson, board, markers, computers	Formative check on progress of research	1-2
#2	**Smartflower Lesson**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Key Questions notes and feedback	Key Questions written on looseleaf (or printed), continued research on their technologies from last lesson	Formative notes on the smartflower lesson	1
#3	**Research Project introduction**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Review smartflower lesson and relate to SS 90 curriculum, research project explained and assigned	Computers, handouts for the research project, sign-up list for project topics / group names	Formative in ALL students having a topic to research	1
#4	**Research Time**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Discover and continue to learn about their products in all areas, begin to organize the information into a concept for presentation	Computers, research assignment sheets	Formative check-ins with all groups	2
#5	**Presentation Creation and Practice**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Compile research into an informative presentation	Computers, research assignment sheets	Formative check-ins with all groups	2
#6	**Present Topics and Assess**	IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3	Present, self-assessment, peer-asessment	Computers, research assignment sheets	Self, peer-assessment on the experience to go along with my assessment	2-3 given number of groups

**Instructional time may vary depending on student comprehension and lesson selection*

LESSON #: 1

Introduction to Technology Today and Research Top 3-5 (1-2 hours)

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

- SIEC website, Siemens website loaded in browser for presenting (https://saskatooniec.ca/, https://www.siemens.com/global/en.html)

ACTIVITIES

- Discussion on technologies that help us in daily lives
- Based on discussion, fill board with ideas and discuss how and why they exist and have success
- Computer time to do focused research technologies students actively use in their everyday life

MATERIALS

Smartflower lesson powerpoint file, whiteboard, markers, student looseleaf and pen / pencil, computer cart, research frame printouts

KEY TERMS

- Social structures, technology, institutions

PROCEDURE

- Review social structures that allow specific technologies to be developed and sought out (government and political supports, scientific developments, environmental links to the technology development, business / commerce investors, educational institutions to produce scientists and technology, public interests)
- questioning inquiry on technologies that are present in our everyday lives. Link this technology to our concept in Saskatchewan about our worldview and what is supported by our society.
- discussion on what students know about the actual development and timeline for those technologies to be present in our lives

- Student computer time focused on top 3 topics from the board they are interested in learning about in some way (use frame to begin to complete with each level of social organization that helped create that technology)
- Start on the SIEC website and highlight Siemens as supplement for ideas**

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS
- Verbal class review on research progress as it goes (independent or group)

ASSESSMENT
- Formative check-in and notes on student research progress

LESSON #: 2

Research Review and Smartflower lesson (1 hour)

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

- SIEC website, Siemens website loaded in browser for presenting (https://saskatooniec.ca/, https://www.siemens.com/global/en.html)
- Eco-Canada website to show education to career link open as well (https://eco.ca/educators/program-accreditation/current-programs/)

ACTIVITIES

- Discuss the previous activity research results
- Present smartflower lesson
- Explore SIEC, Siemens, and Eco-Canada websites
- Students continue research into top 3 student technologies and try to narrow down to one

MATERIALS

- Computer cart, key question sheet for lesson, smartflower powerpoint lesson

KEY TERMS

- Smartflower, SIEC, Siemens, Green Umbrella

PROCEDURE

- Review and share some of the research students were able to find last day
- Transition to a focused introduction to the Smartflower development lesson
- Key question: How many aspects of our society today were needed for the Smartflower to be installed and implemented at Bishop James Mahoney high school?
- Highlights:
- SIEC focus on ‘Green Umbrella’

1) Explore the technology itself
2) Careers it provides for and drives more research (focus and do some digging on huge variety of studies and professional careers)
3) Current special projects and divisions (‘garbage’ cars – recycling robotic cars, ecohomes, **smartflower**)

- Begin the powerpoint lesson on the development and installation of the smartflower at BJM.

1) What it is
2) Where it came from
3) Partners involved and what they individually do in our society
4) Careers involved and educational backgrounds needed for it to be developed and installed. **videos of partners and their explanation of how and why they became involved**
5) Overall timeline from concept of the smartflower design to installation showing how all partners were involved, when and how the partnerships drive one another to allow us to grow in a positive direction
6) Practical implications of this technology in our school. What does it do? How can we use it in our classes? School? Community?
7) Future implications it may have as it grows and uses for solar technology in and around our communities

- Student hand in what they learned about the key question**

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS
- Continue research from last day and try to narrow down to one technology to focus on

ASSESSMENT
- Formative feedback on key question sheet (students hand this in as an exit slip)

LESSON #: 3

Student Directed Research Project (1 hour)

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

- none

ACTIVITIES

- Review of smartflower development and aspects of society that were involved
- Self-directed study handed out, discussed, and then students begin their research

MATERIALS

- Handouts of the research assignment, rubric for assignment (self and peer), computers, whiteboard, sign-up sheet for names and topics of research

KEY TERMS

- none

PROCEDURE

- Hand back key question notes from last day with feedback on them
- Class review of the key aspects of society and the development of the Smartflower
- Student directed study introduction:

1) Handouts outlining their research project
2) Outline the self-directed study and rubric

- Students can pick what they were researching from first day or change topics from a provided list or come up with their own topic pending teacher approval
- Go over the rubric and answer any questions about assessment on research and presentation itself
- Research time on topic (they are free to e-mail, call, or contact businesses to find information, or just research online if the information is readily available). Computers needed*

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS

- none

ASSESSMENT

- formative check-ins with each student or group

LESSON #: 4

Research Time on Topics Chosen (2 hours)

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

- SIEC, Siemens, Eco-Canada and Government of Canada websites given to students for reference

ACTIVITIES

- Research using computers – students encouraged to e-mail companies responsible fr the product, the producers, the manufacturers, etc as available

MATERIALS

- Handouts for the project, rubric handout, computer cart or library booked out

KEY TERMS

- none

PROCEDURE

- Research and creation of the presentation format
- Work on presentation ideas and materials for the chosen technology

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS

- none

ASSESSMENT

- formative check-ins with each student or group on progress

LESSON #: 5

Work to Finish the Research and Begin Presentation Creation (2 hours)

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

SIEC, Siemens, Eco-Canada and Government of Canada websites given to students for reference

ACTIVITIES

- finish the research of information needed to present about their technology
- plan and prepare the actual presentation based on the information student(s) have gathered

MATERIALS

- computer cart or library booked, provide materials for students as necessary (poster board paper, markers, etc)

KEY TERMS

- none

PROCEDURE

- finish research on chosen technology
- create the presentation of choice on their technology
- practice the delivery of the presentation with any remaining time

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS

- none

ASSESSMENT

- formative feedback on progress and assist students that are ‘behind’ the timeline in any way possible

LESSON #: 6

Present Projects

LEARNING OUTCOMES

IN 9.1-9.4, DR 9.1-9.4, PA 9.19.3, RW 9.1-9.3

SUPPORTIVE RESOURCES

- none

ACTIVITIES

- each group presents on their topics
- after students present, they will in their own self and peer-assessment sheets
- actively listen to peer presentations and question them as necessary

MATERIALS

- computer files of presentations or parts of presentations sent to my e-mail
- self and peer-assessment forms

KEY TERMS

- none

PROCEDURE

- students present their technologies to the class one at a time (any electronic files should have been sent to me via e-mail and saved to my computer so nothing is lost and I have the copy to assess later on)
- after each presentation, students fill in and submit their own self and peer-assessment of their group member (if they chose to have one)

FOLLOW-UP ACTIVITIES/OPTIONAL ASSIGNMENTS

- none

ASSESSMENT

- cumulative assessment using the rubric provided
- individual self and peer-assessment forms are taken into consideration with my assessment of their presentation