Welcome to our journey together in achieving student development and success!

As we embark on this new semester, let us embrace this as an opportunity to develop our craft in facilitating student achievement. The effectiveness of these courseware materials that we have provided you is only as good as your commitment and passion in delivering them. May you always have the drive to pursue academic excellence through activities—even going beyond courseware provided these are aligned to learning objectives—that will continually challenge our students to tap their full potential!

We look forward to seeing you keep the fires of passion burning in making sure that our students achieve success!

Yours in the service of student development,

Academic Research Group

TOPIC TITLE: HISTORICAL ANTECEDENTS THAT CHANGED SCIENCE AND TECHNOLOGY

LEARNING OBJECTIVES:

At the end of the topic session, the students should be able to:

LO1. Discuss the interactions between Science, Technology, and Society throughout history;
LO2. Discuss how scientific and technological developments affect society and the environment; and
LO3. Identify the paradigm shifts in history.

MATERIALS/EQUIPMENT:

- Computer with speakers
- LCD projector
- Files (01 Historical Antecedents that Changed Science and Technology)
  - 01 LCD Slides 1.ppsx
  - 01 Readings 1.pdf
  - 01 Readings 2.pdf
  - 01 Readings 3.pdf
  - 01 Readings 4.pdf
  - 01 Readings 5.pdf
  - 01 Skills Checklist.pdf
  - 01 Task Performance 1.pdf
  - 01 Teaching Materials 1.pdf
  - 01 Teaching Materials 2.pdf
  - 01 Teaching Materials 3.pdf
  - 01 Teaching Materials 4.pdf
  - 01 Worksheet 1.pdf
  - 01 Worksheet 2.pdf
  - 01 Video 1.mp4
  - Plickers.pdf
- Software requirements
  - MS PowerPoint
  - Windows Media Player/VLC Media Player

TOPIC PREPARATION:

- The assigned instructor is expected to be adept with the OBE principles and processes. This will ensure that content delivery will allow students to acquire significant learning experiences that they can utilize in future undertaking as professionals. You

may consult your program head or another colleague to explain the concept to you.

- Prior to teaching inside the classroom, the instructor is expected to read materials from relevant sources that will supplement instructions and increase the depth of discussions.
- Go through the **Syllabus and Course Outline** to familiarize yourself with the topics, timeframe, activities and assessment tasks for the course. This will give the instructor a general overview of what needs to be accomplished in the semester.
- Read the Instructor's Guide at least a day prior to classroom instruction to allow the instructor to prepare materials and concepts ahead of time. Review the document as often as needed.
- Ensure that activities are carried out to evaluate learning or to supplement classroom discussion, not to compensate for extra time inside the classroom.
- Task the students to study and analyze the readings at least a day prior to room discussion.
- Instruct them to **ALWAYS** bring a **dictionary** to class to help them with specific vocabularies (terms highlighted in **gray** in the readings). In cases where the terms are not found in regular dictionaries, task the students to use the Web or idiom dictionaries to help them with the definitions. Moreover, encourage them to use the dictionary whenever they encounter new or difficult terms during the course of the subject.
- This session involves information about the specific historical antecedents in which social consideration changed the course of science and technology in the country and the world, how scientific and technological developments affect society and the environment, and the different paradigm shifts in world history.
- The instructor must read the handouts and **01 Skills Checklist 1** prior to the first session.

PRESENTATION OVERVIEW:

A. Introduction 90 min

B.	Instructional Input *In the World: Ancient Period (8th Century AD)* *Middle Ages (8th to 14th Century AD)* *Modern Ages (14th – 20th Century)* *In the Philippines* Explain how historical developments helped shape the course of science and technology in the country and the world	225 min
C.	Generalization	20 min
D.	Digital Learning	15 min
E.	Learning Management System	10 min
	Total duration	360 min

TOPIC PRESENTATION:

A. Introduction

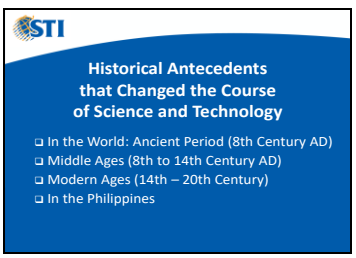
1. Start the first day of the semester by introducing the course and yourself to the students. Discuss the requirements, grading system, and classroom rules for the subject. You may opt to have the class formulate a set of rules that will work for the class and the instructor.

2. Engage the students to share their expectations of the course as future professionals. Remind the class to keep their eLMS accounts active as online activities will be integral to the course.

3. Tell them that handouts, seatwork, and other requirements will be posted in the portal and strict compliance to deadlines will be enforced. Reviews, quizzes, and other forms of assessment will also be administered through the portal. The eLMS requirements will be part of their grade, which will be computed as follows:

Class Activities (SW, HW, quizzes)	20%
Major Exams	30%
Task Performance (eLMS activities, Skills Checklist, Task Performance)	50%

Slide 1

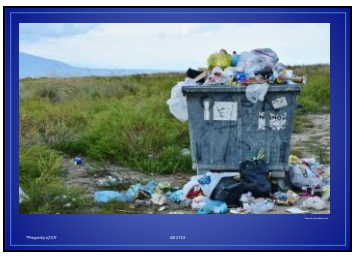


4. Discuss **01 Skills Checklist 1.** Tell the class that this will measure how well they have accomplished the goals set for the semester. Ask them to download a copy of the checklist and go through its content. Explain that they will need to tick the skills/competencies they have achieved at the end of every period. Accomplished checklist/s will serve as part of their performance task and must be submitted before the exam schedule.

5. Present ***Slide 1*** of **01 LCD Slides 1** to the class to give them an overview of the module topics. Mention the activities and expectations related to the concepts flashed on the screen.

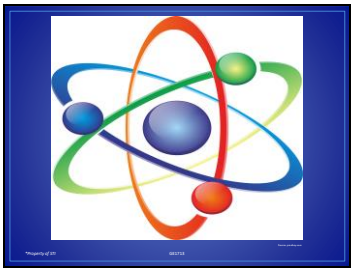
Slide 2

Slide 3



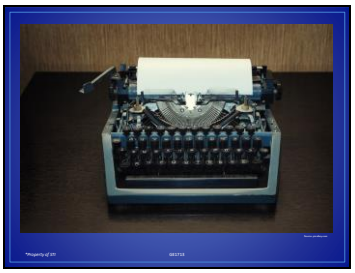
6. Divide the class into three (3) groups. Tell them that the teacher will be flashing images ***(Slides 2-7)*** on the screen and as a group, they ust identify if each image symbolizes/represents Science, Technology, or Society. In no more than three (3) sentences, the group must write their justification for each image in a sheet of bond paper.

Slide 4



Slide 5

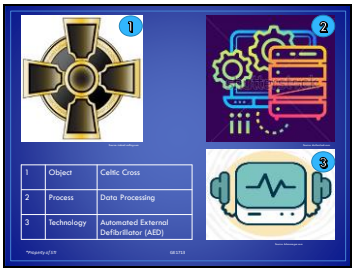
Slide 6



Slide 7

7. Afterwards, present the images again and ask members from each group to give their classification and justifications. If there are images where the answers of the groups differ, let the students defend their answer.

Slide 8



8. Then, randomly assign each group to work on drawings representing Science, Technology, and Society. The first group will draw Objects, the second Process, and the last will be Technology. Show ***Slide 8*** for sample output.

9. After they have created their drawings, shuffle the groupings such that a group will have three (3) members with three (3) different drawings. Let them discuss the interrelatedness of science, technology, and society.

10. They will also be tasked to craft and show a creative output presentation as a group discussing the interrelatedness of the three (3) concepts. The presentation must not be longer than 15 minutes in length. Critiquing will follow every group presentation, guided by the instructor.

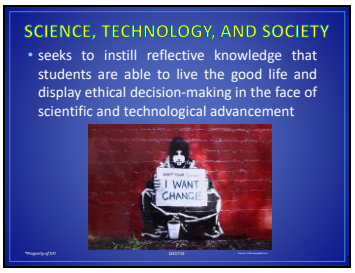
11. The drawings will be submitted to the instructor together with the written justification for the previous task. Use the first two (2) rubrics in **01 Teaching Materials 1** to evaluate their work.

Slide 9

12. Then use ***Slides 9-12*** *to* characterize Science, Technology, and Society (STS), their differences and interrelatedness.

Slide 10

Slide 11



Slide 12

13. Proceed to reflection after the short discussion on STS. Distribute **01 Worksheet 1.** Ask the students to answer the questions in the worksheet in no more than seven (7) sentences. Discuss their answers afterwards to probe their understanding of the topics. Use the rubric in the worksheet (also found in **01 Teaching Materials 1)** to grade their work.

Steps 14-18
Activity: Homework
Learning Objective(s): LO2

14. As preparation for the next session, guide students in composing four (4) groups to research on the great inventions in history. Group 1 will research on Ancient History (8th century AD), Group 2 on Medieval period (8th to 14th Century AD), Group 3 on Modern History (14th – 20th century), and Group 4 to work on Philippine inventions.

15. Specifically, each group will be researching on the following:

    a. Geography

    b. Politics and Society

    c. Civilizations formed (Ancient History)

    d. Agriculture, trade, economy, and industries (if present)

    e. Inventions, discoveries, introductions

f. Significant Personalities

g. Art and Architecture

h. Language, Literacy, and Education

i. Social classes

j. Form of Currency

k. Justice system/system of punishment

l. Mathematics

m. Culture (Myths, Festivals, Food, Drinks, etc.)

n. Religion/Mythology

o. Community life and structure

p. Death and burial practices

q. Health, Medicine, and Beauty

r. Gender and Sexuality

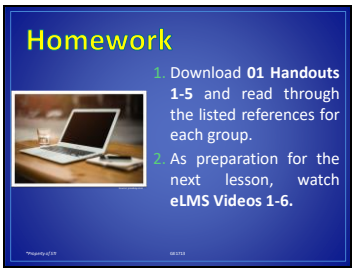
s. Household Structure

t. Rise and Decline of the Period

16. Also, each group member must research on a particular invention from the past, and write the historical antecedent for it in their notebook. This will be used for the next session. They will also exhibit their creative group presentation for their assigned topic, starting with the Ancient History group.

17. Remind each group to bring 1/8 illustration board (per student), pencils, markers, crayons/coloring materials, glue, and a pair of scissors for the next session.

Slide 13



18. Assign the required videos and readings for the next session by discussing the contents of ***Slide 13***. Remind the students that analyzing them is necessary to fully understand the topics for the next session.

    Note: The handouts listed the particular readings for each group (**01 Handout 1** for **Group 1**, **01 Handout 2** for Group 2 and so on) which can be found at the eLMS portal. **01 Handout 5** contains the graphical timeline of world history which they can consult to organize their presentations. Ask them as well to read the required readings for the module (**01 Readings 1-5**).

B. Instructional Input

1. Two (2) sessions will be needed to prepare the students for the two (2) activities: drawing their chosen invention and the group presentation for their group's assigned historical periods.

2. The first session (90 minutes) will be used by the class in the following manner:

    a. Review students' concept of STS by asking them of the differences among the three (3) related concepts (science, technology, and society).

    b. Ask one (1) or two (2) students to share their opinion on the role of science and technology in today's world.

    c. Relate the students' answers to the development of science and technology in history by stating that advances in S&T affect the environment, society, and history. The instructor may cite an example or two (2) to reiterate this point (i.e. discovery of paper and metal).

    d. Instruct the students to sit with their groupmates (as determined in the previous session). Individually, they will work on drawing their chosen invention by using the materials assigned to them beforehand. Each student must write the antecedent of the chosen invention at the back of the illustration board. The antecedents must not be more than three (3) sentences and the board must bear their name and group number. Explain how their work will be evaluated using the first rubric in **01 Teaching Materials 1**.

    e. Encourage the students to make their drawings neat and presentable. Provide 30 to 45 minutes of the session time for this activity. They may talk to one another to ask for suggestions and clarifications regarding their chosen invention.

    f. After the activity, ask the students to submit their work by group and clean their area.

    g. Explain to the students that 30 minutes will be used by their respective groups to brainstorm for the storyboard of their group presentation next meeting. They must present a short skit or a story-telling presentation portraying the historical antecedents in which social considerations changed the course of science and technology of the assigned period in history. Their presentation must not be more than 20 minutes in length. Use the second rubric in **01 Teaching**

Materials 1 to explain the rubric in evaluating their presentation.

h. With 10-15 minutes remaining, ask the students to break away from their groups. Distribute **01 Worksheet 2** and let the students answer it in 10 minutes. Once they have submitted their work, ask two (2) or three (3) students to share their answers with the rest of the class. Clear out misconceptions and link related concepts. Use the rubric in the worksheet (also found in **01 Teaching Materials 1** to evaluate their work.

3. The second session (90 minutes) will be spent by the students in carrying out their presentation. Peer critiquing will follow after the last group has presented. Let the students use the rubric in **01 Handout 6** in evaluating each other's presentations. Refer to **01 Teaching Materials 2** to grade their presentation.

4. The last session for Week 2 will be spent in the following manner:

   a. Carry out the "Toss a Die" activity to reinforce students' learnings for the past two (2) sessions.

   b. Sit them in groups of six (6) with a die for each group. You may use the die template found in **01 Teaching Materials 3** for this activity.

   c. Prior to this session, print a copy of **01 Teaching Materials 4**. There are six (6) questions that individual members of the groups must answer. The students must give a personal view or preference related to the topic. Give students a copy of the questions prior to the activity to allow them to think about their responses. You may also opt to give them 5-10 minutes of think time before proceeding to the next step.

   d. Randomly assign a representative for each group to share the summary of the activity and one (1) note-taker to record the proceedings. They will need to submit their answers in a sheet of bond paper at the end of the session.

   e. One (1) person in the group will roll the die and answer the question on the sheet that corresponds with the number thrown. The others listen to the student's response.

   f. The student to the left of the die roller then asks a question about what they have heard. After the question has been answered, other students in the group can ask the roller a question based on what has been shared.

g. The die is then passed onto the person sitting to the right of the die roller. The process is then repeated until all members of the group have the opportunity to respond to at least two (2) questions.

h. After the discussion, the group representatives will share with the rest of the class what has been imparted with their respective groups.

i. Present **01 Video 1** to the class to further what has been shared within their groups. After the viewing, ask the students if the video's theme coincides with their personal opinions. Ask several students to share their views with the rest of the class.

Wrap up the session by sharing with the class that the interrelatedness of developments in science and technology greatly affects the environment, history, and society. These developments affect politics, agriculture, infrastructure and productive capabilities, human resources, and a rapidly expanding global social network.

Step 5
Activity: Task Performance
Learning Objective(s): LO1, LO2, and LO3

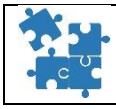
5. Discuss **01 Task Performance 1** with the class, detailing the requirements for the Task Performance. Ensure that students have a grasp what ought to be done and the steps necessary to produce the final output.

Steps 6-7
Activity: Homework
Learning Objective(s): LO2

6. As preparation for the next module, guide students in creating eight (8) groups to research on the different intellectual revolutions. The said revolutions are as follows (in correct order): Copernican, Darwinian, Freudian, Information, Meso-American, Asian, Middle Eastern, and African. The students can use the uploaded materials for Module 2 in the eLMS portal (**02 Handout 1-8)** but they can source materials from the Web and the school library.

7. Remind each group to bring bond paper, used illustration boards from the previous activity, pencils, markers, coloring materials, glue, and a pair of scissors for the next session.

C. Generalization



Steps 1-3
Activity: We Learned What?
Learning Objective(s): LO1 and LO2

1. To gauge the students' understanding of the topics discussed in the previous sessions, the instructor will ask students to write open-ended questions on index cards. Sample questions are given below:

    a. Would you rather live in the Medieval Era or the Renaissance? Why?

    b. How different would life be if (a particular invention) was not invented?

2. Two (2) students are selected to come forward. The first student draws a question and card and poses the question to the class. The class will be given time to discuss their answer with their seatmate/s. Then the second student draws a student name card to respond to the question. The length of this activity depends on the teacher's judgment of the students' depth of learning and remaining time.

3. The instructor must correct misconceptions and link related concepts. The question cards may still be used for the next session as a review or reinforcement of learning.

D. Digital Learning

Steps 1-4
Tool: Plickers
Resources: Tablets with installed Plickers Application, Plickers Cards, and Internet Connection

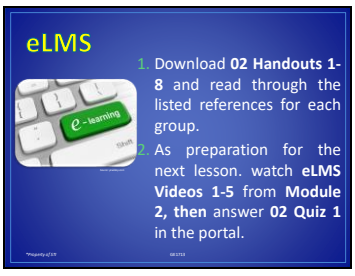
1. Prepare your device prior to using the Plickers Application in the classroom.

2. Distribute to the class the Plickers Cards and explain thoroughly how to use the cards.

3. Perform a quick demonstration with the class on how to use the Plickers Cards. Prepare 10 multiple choice questions for this activity.

4. Afterwards, save and send the scores of the students to your e-mail account.

Slide 14



E. Learning Management System

Steps 1-2
Tool: eLMS (Neo - LMS)
Learning Objective(s): LO4

1. Present ***Slide 14*** to the students and discuss the eLMS activities for this session and the next lesson.

2. Remind the students that viewing the assigned videos for the next lesson is a **MUST** and not an option.

REFERENCES:

40 Ways to leave a lesson. (n.d.). Retrieved January 23, 2017, from St. Michael - Albertville Schools: http://www.stma.k12.mn.us/documents/DW/Q_Comp/40_ways_to_leave_a_lesson.pdf

Georgia, U. S. (n.d.). *A brief history of the internet*. Retrieved January 19, 2017, from Online Library Learning Center: http://www.usg.edu/galileo/skills/unit07/internet07_02.phtml

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