

HIGH SCHOOL UNIT PLAN: **MODELING SUSTAINABILITY**



STEAM**ARTS**

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MARYLAND COMMON CORE ANCHOR STANDARDS

The Common Core State Standards met by Mastery performance on this project:

CCSS.ELA-LITERACY.RST.9-10.1

Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CCSS.ELA-LITERACY.RST.9-10.3

Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CCSS.ELA-LITERACY.RST.9-10.6

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

CCSS.ELA-LITERACY.RST.9-10.7

Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CCSS.ELA-LITERACY.RST.9-10.8

Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

CCSS.ELA-LITERACY.RST.9-10.9

Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.



NEXT GENERATION SCIENCE STANDARDS

The Next Generation Science Standard met by Mastery performance on this project:

GOAL 6: Environmental Science

EXPECTATION 3

The student will analyze the relationships between humans and the earth's resources.

EXPECTATION 4

The student will develop and apply knowledge and skills gained from an environmental issue investigation to an action project which protects and sustains the environment.

As always, remember that these lesson plans are guides. The times listed are estimates based on our teachers' previous experiences, but as you well know, every class is different, and you know your students best. Use your best judgment in incorporating these lessons into your classroom. We encourage you to modify the lessons as needed, and wherever possible, we have provided choices for you and your students, as well as space for these choices in our materials, our reproducibles, and our handouts.

PROJECT-BASED LEARNING MAJOR DESIGN ELEMENTS

DRIVING QUESTION

How can we, as students and members of our community, create a model to improve our school's sustainability practices?

SUSTAINED INQUIRY

The project will begin with a research phase, during which students will determine their own sources of information, fashion their own questions, and continually revise their research direction(s) as needed to satisfactorily develop a model and an explanation of that model. Once models have been drafted, students will subject their models to testing, using the same experts they consult during the research phase. Through at least two rounds of prototyping and revision, students will need to develop questions that will determine the efficacy and efficiency of their models.

AUTHENTICITY

The students will determine their projects—they will decide what elements of sustainability they will engage with, and they will be responsible for evaluating their own work in connection with teachers across disciplines.

STUDENT VOICE & CHOICE

Students choose which aspects of sustainability to focus on, choose which resources in the community will be best for them to interview, are encouraged to interpret the concept of model creatively, and are involved in brainstorming methods for project completion and improvement from the beginning.

REFLECTION

Students will be responsible for informal daily and weekly reflections on their work, as well as a formal reflection as part of the final product.

CRITIQUE & REVISION

During the prototyping phase, student groups will provide feedback to each other and teachers of different disciplines will provide informal feedback for improvement. Each prototype will be tested by classmates, teachers, and/or experts in the field to help provide suggestions for improvement. Once a final model and presentation have been created, student groups will present and explain their models to a panel of interdisciplinary teachers who will ask questions and provide suggestions for improvement of the presentation and model. The public product will be expected to address these suggestions and questions.

PUBLIC PRODUCT

Students will create a model of improved sustainability practices for their school and plan a presentation of the model for school leadership and community leaders in which students will explain the model and how the new model represents improvements on the school's current practices. The group presentations and explanations will be based on the student group's research findings, their prototyping process, and the responses from the panel of teachers.

These are the seven [Essential Project Design Elements](#) for Gold-Standard Project-Based Learning from the Buck Institute for Education.

DRIVING QUESTION

How can we, as students and members of our community, create a model to improve our school's sustainability practices?



HIGH SCHOOL UNIT PLAN:
DAILY LESSON PLANS

rationale & context

Today is the first day of the unit project. The purpose for today's activities is to engage students with the concept of the project and ensure that students understand the broad strokes of what they will be doing in the coming weeks.

agenda

- Entry Event: Sustainability Modeling Unit Project
- Project Question Review

lesson objective

Students will understand the driving question of the Sustainability Modeling project. They will engage with the entry event and begin thinking about potential interpretations of the question and/or how to address the question. Depending on what the instructor prefers to use as an Entry Event, according to the types of events the instructor is comfortable with and capable of producing, there are three options for today's activities.

INSTRUCTIONAL SEQUENCE OPTION 1

materials needed

- White/chalk board & marker/chalk (this material need will be assumed for remaining lessons)
- Video Projector & Entry Event Video
- Student Guide to unit project handouts

get started

- On board: Make a list of activities in your daily life. For each activity, write a few thoughts about how it affects the environment around you. (4-5 min)

engage/motivate

- Play the Entry Event Video that you have prepared: Clips from waste management processes, recycling processes, examples of community waste, etc., with text posing questions about the impact of these actions on the community. (2-3 min)
- Provide students with a few minutes to return to their reflections, in case the video has given them new ideas or caused them to revise their original ideas. Encourage students to write any questions that the video information may have inspired regarding sustainability and the environment. (2-3 min)

whole group instruction

- Pair/Share: Have students pair up with a partner and discuss their reflections. Ask the students to choose one idea/question from their pairs' reflections to share with the whole group. Keep track of these on the board, or have a student take notes on what is being said by the group, making note of similarities or differences. (10-12 min)
- Distribute the student guide to the unit project and give students a few minutes to read through the document. (3 min)
- Encourage students to ask questions about the project framework, what is expected of them, and informally assess their understanding of the driving question. Clarify as needed. (5 min)

individual practice

- Provide students sustained time to reflect on the driving question and make note of their prior knowledge, their assumptions, and what they are most interested in finding out. Encourage students to use the visual structure of their choice (listing/KWL/web diagrams/pyramids) if it helps them to get started or to free-write if they prefer. (10-12 minutes)

INSTRUCTIONAL SEQUENCE OPTION 2

materials needed

- Students' smart phones/devices with cameras and wifi access
- Projector connected to computer & Internet
- Student Guide to Unit Project handouts

get started

- On board (10-20 min, depending on size of school and how reliable students are):
 - Entry Event Field Research! Take a pass (if needed for your school).
 - You have until [set time] to find at least seven photographs that illustrate the waste and/or sustainability practices here at [your school].
 - You may work with one partner.
- On board when students return: Quietly review your photographs. Reflect and write on what the images represent about sustainability practices here at school. (5-10 min)
- As needed, circulate among students while they are reflecting on their images to ensure appropriateness of content and informally assess their findings.

engage/motivate

- Handout/Present/Project instructions for sharing images and reflections:
 - Choose the one image you think best reflects the ideas you've been writing about.
 - Post that image to Instagram and tag my account for class / Send the photo to me via email (whichever is more comfortable for you as a teacher, or whichever is more comfortable for students)
 - Revise and compose your reflection as a comment on the image for Instagram, or as the body of the email. Use appropriate hashtags, and be thoughtful in your comments. Consider writing constructive, not harmful or hurtful, comments. Remember your audience and your purpose—to indicate the current sustainability/waste practices here at school.
- As needed, circulate among students while they are posting to ensure appropriateness of content.

whole group instruction

- Project Instagram feed or emailed photos while students share their reflections. If class time is running short, have students select the photos they want to hear more about. Encourage students to make note of similarities and differences in the photos and in the ideas they represent. (10-15 min)
- Distribute the student guide to the unit project and give students a few min to read through the document. (3 min)
- Encourage students to ask questions about the project framework, what is expected of them, and informally assess their understanding of the driving question. Clarify as needed. (5 min)

individual practice/homework

- Provide students sustained time to reflect on the driving question and make note of their prior knowledge, their assumptions, and what they are most interested in finding out. Encourage students to use the visual structure of their choice (listing/KWL/web diagrams/pyramids) if it helps them to get started or to free-write if they prefer. (10-12 min)

INSTRUCTIONAL SEQUENCE OPTION 3

materials needed

- Prepared Questions for panel
- Student Guide to Unit Project handouts

get started

- On Board: Take out the four questions you have prepared for our guest speakers today. Make a note of which questions you currently feel are most important: if you only get to ask one question today, which would it be? (1-2 min, while panel gets settled)

whole group instruction

- Distribute the student guide to the unit project and give students a few minutes to read through the document. (3 min)
- Encourage students to ask questions about the project framework, what is expected of them, and informally assess their understanding of the driving question. Clarify as needed. (5 min)

engage/motivate

- Encourage students to add to/revise/edit their prepared questions while the panel is speaking.
- Sustainability Panel (20 min): Question and Answer Panel Session – have a custodian and/or administrator on staff at the school, a waste management specialist from the local municipality trash/recycling center, other school faculty, and/or an expert in the field of sustainability from a local research university/institution/organization sit on the panel. It is best if these community members will also be the panel judging the final public exhibition. Have each member of the panel introduce him/herself. Encourage panel members to be honest and answer to the best of their abilities; if they don't have an answer for a question, they should say so, as it helps students to see that adults don't always have the answers either. Consider choosing one or more of the following general questions to begin the discussion:
 - What, in your opinion, is the single biggest issue relating to sustainability at our school? Please explain why.
 - Explain, to the best of your ability, the waste management and sustainability process that we currently have in place on campus.
 - How does the behavior of students and staff compare in their impact on sustainability and waste management on campus? Why might that be?
 - If there were one thing we could all be doing to make our campus more sustainable, what would it be and why?
- Open up the questioning to the class (10-15 min)

individual practice/homework

- Provide students sustained time to reflect on the driving question and make note of their prior knowledge, their assumptions, and what they are most interested in finding out. Encourage students to use the visual structure of their choice (listing/KWL/web diagrams/pyramids) if it helps them to get started or to free-write if they prefer. (10-12 min)



rationale & context

The students should be familiar with the project's driving question and the student guide, and therefore should have some idea of what is expected of them. The Critique Process will model the project itself for them, as well as the process the instructor will use for evaluating the prototypes as well as the process the judges will use in evaluating the finished projects. Going through the Critique process in class will help the students know what is expected of them, especially for students who may struggle with interpreting assignment instructions abstractly, because they have experienced the evaluation process themselves. They will also provide the instructor with feedback on the project that may indicate any issues, so that these issues can be addressed earlier in the project rather than later.

agenda

- Sample Model and Presentation
- Student Critique of Sample

lesson objective

Students will understand and practice the critique process. Throughout the project students will be expected to critique themselves and each other, so this first critique experience will serve as a model for their future critiques, which will provide students with a method of self-evaluation, goals for revision, and opportunities for reflection.

INSTRUCTIONAL SEQUENCE

materials needed

- Sample Model and Presentation
- Critique Process handouts

get started

- Have Critique Process handouts ready for students to pick up on their way into the room.
- On Board: Read through the Critique Process and make a note of any questions you may have about how the critique will work. (2 min)

whole group instruction

- Review the Critique Process handouts, answering student questions as necessary. Indicate what aspects of the presentation and model they should pay close attention to as you review the handout. Encourage students to take notes on their critique handout as you give the presentation. (5 min)
- Present the model created in the STEAMarts workshop, being sure to model the presentation skills you are encouraging in students, but a bit abbreviated for time. Allow a few minutes for questions from the student judges and answer those questions as best you can. (20 min)

individual practice

- Invite students to view the model more closely as needed, and to spend the next few minutes silently reviewing the project and completing their critique sheets. (10 min)
- Have students meet in small groups, sharing their responses to the model project/presentation. Ask them to determine at least three elements of the model and/or presentation that they thought worked well, and at least two recommendations they would make for improvement to the model and/or presentation. (15 min)

homework

- Ask each student to write their first reflection journal entry:
Reflect on your group's discussion today and on your group's ideas about what works well in the model and what needs improvement. Try to decide on a few qualities of great work that you found in the sample that you would like your own model/presentation to include.

DAY 3

rationale & context

The students have individually and in small groups discussed their evaluations of the sample project. This lesson provides for the whole group to have the chance to compare their thoughts. More importantly, though, this lesson gives students more ownership over the project, as it allows them to determine aspects of the evaluation criteria.

agenda

- Brainstorm Revision techniques
- Review qualities of great work

INSTRUCTIONAL SEQUENCE

materials needed

- Critiques from previous class
- Student Unit Project Guide handouts

get started

- On Board: Return to your groups from yesterday. Share your journal entries. (7 min)

whole group instruction

- Ask each group to share their ideas about what worked well, what needs improvement, and qualities of excellent work they have determined. Keep a running list on the board. (15-20 min)
- For the suggestions for improvement list, have students suggest strategies for addressing these suggestions. Provide your own ideas for revising to model the process for revision. (10-15 min)
- Discuss the qualities of great work list. Ask students to determine which qualities they can all agree on, and have students add these qualities to their project guides. (10-15 min)

informal assessment options

- Collect student critiques for credit; return student critiques the following day so groups can refer to them throughout the process of the project
- Provide students completion credit for their first journal entry, or collect and respond to the journal entries.

This lesson provides for the whole group to have the chance to compare their thoughts. More importantly, though, this lesson gives students more ownership over the project, as it allows them to determine aspects of the criteria by which they will be evaluated.

A photograph of a library or computer lab. In the foreground, a young woman with long dark hair and glasses is looking at a computer monitor. Behind her, a young woman with long blonde hair is leaning over, looking at the same monitor. In the background, several other young women are seated at computer workstations, some looking at their screens and others talking. The room is filled with bookshelves in the background.

RESEARCH PHASE

rationale & context

The research phase begins today. In order for students' plans to be useful to the school community, they must begin with research into current practices at the school and best practices for designing a sustainability program at the school. In addition, students may need a lesson/refresher in research skills. Students will be expected to continue their research as needed throughout the project, but these days should provide them some sustained time to explore the resources available to them in the school media center.

agenda

- Library/Media Center Research Reminder/Introduction Mini-lesson
- Group Roles and Responsibilities

lesson objective

Students will begin researching best practices in sustainability and waste management for public institutions like schools. They will choose their groups based on their shared interests in various sustainability topics, and then select/assign responsibilities for the research portion of the project.

INSTRUCTIONAL SEQUENCE

materials needed

- Research Roles and Requirements (3Rs) Handout
- Suggested Resources for beginning research:

[Energy Saver Guide](#) from the US Department of Energy

[Eco-Schools USA Climate Change Audit](#) from the National Wildlife Federation

The EPA and Energy Star's [step-by-step design process](#) and [guidelines for energy management](#)

Your school's Energy Star Portfolio Manager report (if your school participates in the Portfolio Manager program)

[CarbonMAP](#) from the University of New Hampshire's Sustainability Institute

Please note: requires registration and is designed for college campuses, but may still be useful to students as an analysis and tracking tool

[National Best Practices Manual for Building High Performance Schools](#) from US Department of Energy, available as full-text PDF through ERIC

media center visit

- Class meets in media center, if possible at your school
- If possible, have media specialist lead a research introduction/reminder mini-lesson to ensure students understand:
 - How to research via keyword searches instead of, or in addition to, natural-language searches
 - How to determine the reliability of different sources
 - How to refine their research from a broad topic to a specific but open-ended question
- Review the requirements and role responsibilities sections of the 3Rs Handout to ensure students understand what is required of them for this phase
- Encourage students to choose roles once they have narrowed down their group's research focus. Ensure that you have an even number of groups in the class (this will be important later.)
- Remind students to determine their roles and have the Project Plan section of the Student Unit Project Guide completed by day 9.

INSTRUCTIONAL SEQUENCE - DAY 5-8

formal assessment

Collect groups' project plans on day 9. Provide feedback the following day if possible, especially in cases where you are recommending revisions to their production schedule ideas. Keep in mind, and remind the students throughout the process, that these may change, and possibly should, as needed by the group's process.



rationale & context

Students have developed some content area knowledge regarding environmental sustainability, but they may still be a bit confused about how to incorporate the arts and design thinking into a project about the environment or about something that is “science” to them. Today’s lesson is meant to reiterate ideas about interdisciplinary thinking, which is really just thinking. Students will understand that while we often separate subject matter or disciplines in schooling because it is more efficient to organize their school days in this way, it is not necessarily reflective of the way we interact with the world or the way we understand concepts or the way we learn best. If this is the first interdisciplinary project you are trying, it is helpful to introduce this kind of thought to the class, and even if you are a PBL legend, it can help to remind students of why they’re working in this way. Besides, modeling creative ideas from working artists is always useful.

agenda

- Effects of technology on arts and culture
- Models for using art to explain science

lesson objective

Students will access their prior knowledge/experience with how science, technology, and the arts interact, and will connect that knowledge to their ideas about the project. Students will reflect on their experiences with technology, their research, and their initial ideas for how to construct their projects/designs.

INSTRUCTIONAL SEQUENCE

materials needed

- Suggested Examples of combining art/design and science/tech
 - Nathalie Miebach’s woven sculptures based on weather patterns: https://www.ted.com/talks/nathalie_miebach?language=en
<http://www.greatbigstory.com/stories/the-weather-artist>
 - David McCandless and research team at Information is Beautiful. The process video produced by Office 365 will probably resonate with PBL students.
<http://www.informationisbeautiful.net/>
Process video: <http://www.informationisbeautiful.net/visualizations/making-data-out-of-art-a-short-film/>
<http://www.informationisbeautiful.net/visualizations/timeline-of-the-far-future/>
<http://www.informationisbeautiful.net/visualizations/common-mythconceptions/>
<http://www.informationisbeautiful.net/visualizations/rhetological-fallacies/>
 - Laurie Frick
<http://www.lauriefrick.com/work/>
<http://weburbanist.com/2014/11/10/intangible-data-in-physical-form-12-scientific-sculptures/>
 - Miguel Rivera: <http://www.wired.com/2009/12/hard-drives-sculpture/>
http://www.jennifermaestre.com/pencils_1.htm
<http://iri5.com/>
<http://www.anastassia-elias.com/index.php/rouleaux>
- If you have found artists whose work strongly appeals to you, definitely use them! Keep an eye on our social media accounts and the #STEAMarts, as well, because we are always on the lookout for artists who represent STEAM ideas
- Suggested text:
 - The Atlantic’s 2015 article “From Paint to Pixels”
<http://www.theatlantic.com/entertainment/archive/2015/05/the-rise-of-the-data-artist/392399/>

get started

- On board: What new technology has changed how you experience the world during your lifetime? How so? Once you've brainstormed and clearly explained your thoughts, pick up a copy of the "From Paint to Pixels" article and read through, making note of your reactions to these artists' work. Add any new thoughts to your previous responses. (10-15 min)

whole group instruction

- Show one or some of the videos/artists' websites listed above, or your own choice. (5-10 min)
- Generate a list of student's ideas about tech. Discuss the example artists and their processes, and how these connect to the ideas the students have about tech in their lifetimes. (10-15 min)
- Highlight how art/design, just like science/knowledge and all elements of culture, react to and become redefined by new technologies (10 min)

Examples to think about including:

- From the Atlantic article above: Claude Monet's portable paint tube, Warhol as reaction to/creation of celebrity culture and product design
 - Impact on European society of Gutenberg's press with movable type
 - Transcontinental flight/airlines
 - The Internet and smart devices
- Pass out student materials boxes to each group

individual practice

- Have students to respond to the brainstorming prompt on the student unit project guide. (List your first ideas about how to use these materials to creatively represent the knowledge of sustainability that you have gathered in the research phase.) (3-5 min)

whole group instruction

- Have students get into their project groups and share their initial ideas.
- Remind students that these are first thoughts, so they should all be heard and valued—no critique or narrowing down yet. Just get as many ideas together as possible. (5 minutes - can be added to homework if needed for time)

homework

Instruct students to:

Complete at least five sketches of a model for improving our school's sustainability processes. Interpret the concept of sketching however you would like—draw, write, wireframe/process map, spider web, etc.—but remember that these are initial ideas and drafts, so don't spend your time refining a drawing. Spend your time thinking about the problem and then quickly sketch out your ideas. Try to make the five sketches as distinct as possible—you're not just refining details; you're trying to stretch your mind to the point where you find unexpected solutions. If you get stuck, take a break: take a walk or a shower; listen to a song you love; do your homework for another class—distracting yourself can help you return with a new perspective.

Students will understand that while we often separate subject matter or disciplines in schooling because it is more efficient ..., it is not necessarily reflective of the way we interact with the world.

A woman with long braids is focused on cutting a piece of dark fabric with scissors. She is wearing a blue denim shirt with a small American flag pattern. On the table in front of her is a white glue bottle, a pink shoe prototype, and various pieces of fabric. Another person is partially visible in the background, also working on a project.

DRAFTING PHASE

rationale & context

The students have completed sketches of their process designs individually. The groups will now need to discuss these ideas and determine some ideas to pursue in the drafting/paper prototyping stage. They may also be unaware of how paper prototyping works. This lesson will introduce a modified version of how paper prototyping, which is a method for testing graphic user interfaces at low cost, works and how it can help them to refine their designs before constructing their drafts.

agenda

- Discuss initial concepts with your group
- Introduce Paper Prototyping

lesson objective

Students will understand a method for evaluating tech prototypes, and will understand how elements of user experience can be applied to the artist's process.

INSTRUCTIONAL SEQUENCE

materials needed

- Recycled newspaper for groups
- Computer with Internet and projector
- Suggested articles:
 - [“Paper Prototyping”](#) on A List Apart by Shawn Medero:
 - *Paper Prototyping* by Carolyn Snyder, and [the website that accompanies the text](#)
 - [“Paper Prototyping as a Usability Testing Technique”](#) on Usability Geek by Justin Mifsud, especially the section at the end - “The Advantages of Paper Prototyping”
- Suggested video example:
 - [Hanmail Paper Prototype](#) by channy on YouTube

optional resources/extension of learning

- Scenes from movies where characters have used resources in unexpected ways to solve a difficult problem. For example:
 - *Apollo 13* engineers [making a square filter fit in the round hole](#)
 - [Mulan is able to climb the wooden pillar](#) with the weights because she uses the weighted strap for leverage

get started

- On board: Get into your groups and discuss your concept sketches. Use this time to be sure that all of your group members share their ideas, and that the other group members understand the concepts. (30 min)

informal assessment

- Move around the room and informally assess their sketches for completion credit, if that makes sense for your grading style. Try not to comment on what students are saying to each other, unless you witness something inappropriate for the classroom, or if there are students who are not being engaged by their groups. If students ask for your feedback, try to turn that back to the group members to engage them in providing feedback.

whole group instruction

- Show video of paper prototyping, and/or bring up articles about paper prototyping on screen for class to view.
- Explain the process of paper prototyping, emphasizing its benefits and why ux designers still use it even when there are apps and software programs available for prototyping:
 - Quick and easy to change/update based on feedback
 - Users are more likely to be honest because they won't worry about hurting designer's feelings/when a prototype is "designed," users are less likely to be critical because of the amount of time/effort already put in to the design
- Explain that they will be using some principles of paper prototyping and user experience processes in their project drafts: their drafts will be made of recycled (news)paper, and on day 14, they will meet with other groups to explain their draft designs and receive feedback.

group work

- Give groups these instructions:
With the remaining time, discuss your groups members' ideas, and decide which ideas are most worth exploring. Determine a plan for the construction of your draft—who will do what, and how will you manage your time?

homework

Ask each student to write their second reflection journal entry:
Reflect on your group member's ideas that you discussed today. What ideas did you find interesting/inspiring? Why? How has the research your group has done so far influenced your concepts for the design?

INSTRUCTIONAL SEQUENCE - DAYS 11-13

materials needed

- Recycled newspaper for groups
- Piece of recycled cardboard included in **STEAMARTS** student boxes
- Glue

group work

- For each of these days, students will have the class period to work on their draft designs. Periodically move from group to group to informally assess student progress and provide suggestions or feedback as needed.

homework

Each group should create a draft explanation of the design they are creating. This explanation should be completed by the Group Feedback sessions. Groups will use this explanation during the feedback sessions to ensure the other groups understand their ideas and their design.

rationale & context

One of the most important aspects of design thinking and artistic processes is the sharing of one's work with other practitioners. This lesson allows students to receive timely feedback on their concepts, helping them to refine and revise their ideas early in the creative process.

agenda

- Group Feedback (two sessions)
- Individual Feedback Response

lesson objective

Students will practice the critique process in a low-stakes environment prior to performing the critique process in a more high-stakes situation. Students will explain their ideas to their classmates, and they will understand the ideas of others, as well as provide feedback to make those ideas more clear and more successfully communicated.

INSTRUCTIONAL SEQUENCE

materials needed

- Critique Process Handouts (in case students have not kept them since day 2)
- Student Unit Project Guides

optional resources/extension of learning

- If you have time, these videos and texts may be useful to help remind your students of the critique process and how to ensure it runs smoothly and effectively. These may be helpful to show/read and discuss in class, especially if you have never done a project like this one, or if you've had difficulty with students contributing effective critiques in the past, or to ask students to view/read and respond to as homework.
 - ["The Design Critique"](#) by the NewSchool of Architecture & Design
 - ["Design Critique Cross"](#) by Alisan Atvur
 - ["GV Guide to Design Critique"](#) by GV
 - ["How to Critique"](#) by *The Art Assignment* for PBS Studios: This video is about using the structure of arts/design critiques to help provide better online responses to content, but the middle section in which the conventions of art criticism are summarized may be particularly effective. The description of the video also includes recommended reading that may be useful to you and your students.

get started

- On board: Take out your Critique Process Handout and Student Unit Project Guides from the first week of the project and review the critique process and the elements of great work (in the assessment section) that we agreed on. (2-5 min)

group work

- Review the Critique Process Handouts and give students their pair-up assignments. Ask students to concentrate on the qualities of great work they came up with at the beginning of the project (in the assessment section of the Student Unit Project Guide) while listening to their partner groups' explanations and evaluating the drafts of their projects. Remind students that providing a thoughtful and constructive critique will not only help their partner groups but will often help them improve their own designs. Give groups their partners—mix the groups so that each group meets with two other groups and no groups are left out. (2-3 min)
- Give students approximately twenty minutes in each paired session. Periodically move between groups to ensure that they are splitting their time and both groups share their concepts and drafts. (40 min)
- Before students leave, have them place their draft designs and explanations in a designated area in the classroom where they can be viewed by students in other classes (with the students' permission) and where you will be able to view them for feedback purposes. Respond to and provide feedback on their designs and explanations for the following day.

individual practice/homework

- With remaining class time and/or for homework, students will write/summarize their thoughts on the other groups' work, allowing individual students to provide more in-depth feedback for their partner groups. This is especially helpful for students who have difficulty speaking up in front of their peers, or whose group members may have monopolized the group feedback conversation. Have students type up their feedback overnight and bring two copies to class—one to turn in, and one to provide to the groups they evaluated.



rationale & context

Another important aspect of design and the arts is the iterative revision process. These opportunities for incremental changes, updates, and refinements to a concept provide that many more chances for an artist or designer to get closer to an ideal work or solution. Though most artists and designers recognize that they may never achieve that ideal, the learning process truly lies in the opportunity to experiment with different solutions and react to criticism productively in revision. We believe that most teachers know this, either anecdotally or from their research, but there may not always be time for revision and refinement of ideas in the world of high-stakes testing, which is why we incorporate revision consistently throughout our projects.

agenda

- Reflection on Draft Designs & Feedback
- Revision of Draft Designs
- Presentation Drafts

lesson objective

Students will reflect on the criticism of their peers and use that criticism as a foundation for revising their concepts.

INSTRUCTIONAL SEQUENCE

materials needed

- Sample presentation from day 2
- Critique Process Handouts
- Student Unit Project Guides
- Computer with presentation screen

get started

- On Board: Turn in one copy of your detailed feedback, and give the other copy to the groups for whom you provided feedback. Get into your group and read through your classmates' thoughts carefully. Make sure that everyone in your group reads all of the feedback you were given.

group work

- Students will read through their group's feedback from the other students. (10 min)

individual practice

- Have students individually complete the Feedback Reflection portion from the Critique Process Handout. Encourage students to complete this activity thoughtfully, as reflection and incorporating critiques are integral parts of project-based learning. (10 min)

group work

- Have students share their reflections with their group, focusing on the feedback suggestions and how they might be incorporated to the group's design and/or explanation, and on the questions other students had and how they might be answered by the design and explanation. (20 min)

whole group instruction

- Bring up the sample presentation from Day 2 on the presentation screen
- Review the qualities of a strong presentation that students added to the assessment section of the Student Unit Project Guide.

group work

- Have groups split up the following tasks: begin wireframing/storyboarding the presentation design, revise the project draft/design, revise the written explanation of the project to provide the content for the presentation.

formal assessment

Try to evaluate and respond to students' evaluations of other groups before the presentation portion of the project to allow students time to use your suggestions in their projects. We have built in group work days over the next two class periods, during which you may want to respond to and return students' detailed feedback assignments, or to discuss these assignments with individual students.

INSTRUCTIONAL SEQUENCE - DAYS 16-17

materials needed

- If possible at your school, bring a set of laptops or tablets into class for these two days so students can be working on the visual aspects of the presentation, or have the class meet in a computer lab with some form of presentation software

group work

- Provide students these class periods to work on their revisions and presentations.
- Periodically move between groups and provide informal feedback and assessment as needed.
- Remind students to be ready to rehearse in class on Day 18.

homework

- Have students continue the reflections they began in Individual Practice on day 14, and turn in on day 18.

rationale & context

Students are often unnecessarily nervous about public speaking. Provide them the opportunity to practice their presentations to help alleviate some of their nerves. In practicing their presentations together, they will have the opportunity to ensure that they transition clearly from one idea to the next and are clear on who will present what information and in what order.

agenda

- Presentation rehearsals

lesson objective

Students will improve their presentations by walking through them. Students will practice their presentations and by hearing them, they will notice areas for improvement in clarity and delivery.

INSTRUCTIONAL SEQUENCE

materials needed

- Have class meet in a larger area where groups can spread out—perhaps in small group meeting rooms in the media center, or in different corners of the cafeteria, or in different areas of an outdoor space—to provide students the space to rehearse the presentations without disturbing other groups.
- If possible at your school and appropriate for the location, laptops/tablets as needed for students to rehearse both the visual and oral parts of the presentation together

get started

- Provide students with these instructions as a handout or list projected on class screen: Make the following list in your notes, and finish the statements as you rehearse your project. I suggest you practice once all the way through your presentation before you complete any of these statements, and then rehearse at least once more before you complete the last few. One copy for group of these is fine, as long as everyone in the group is participating in the rehearsal/revision process
 - The two-three best slides in our presentation are:
 - A slide that needs attention in our presentation is:
 - The two-three best points/pieces of information in our presentation are:
 - A part of the presentation that might be confusing or unclear is:
 - The visual and oral parts of our presentation make the most sense together when:
 - The visual and oral parts of our presentation didn't quite match up when:
 - The part of the presentation most improved on our second run-through was: because:
 - If we were the audience during our presentation, our reaction to it would be: because:

group work/homework

- Make revisions as needed to your presentations based on your group's responses to these rehearsals. Submit a digital copy of your visual presentation, your revised written explanation, and your notecards/outline/annotations for feedback before class tomorrow.



COMPREHENSIVE PHASE

rationale & context

As feedback, reflection, and revision opportunities are a cornerstone of good project-based learning, the in-class draft presentations are another useful way for the student groups to improve their designs before moving on to the finished product. These presentations are like the comprehensive layout step in the design process. The focus of this process should be on celebrating what the students have done well and providing them with suggestions for improvement.

agenda

- Comp presentations

lesson objective

Students will present their comprehensive designs and explanations to the class and receive specific feedback to help them in their last stage of revision before the public presentations.

INSTRUCTIONAL SEQUENCE - DAYS 19-21

materials needed

- Critique Process Handouts
- Computer with projector and screen

individual practice

- While groups present their comprehensive designs and presentations, students should use the Critique Process Handout to guide their note-taking and reflection process.
- After each presentation, provide students with 5-10 minutes of uninterrupted reflection time to gather their thoughts on both the visual and verbal aspects of the presentation and its explanation of the design.

whole group instruction

- For each group, make the four following lists on the board:
 - Qualities of great work in the presentation
 - Suggestions for Improvement
 - Most successful element of the presentation
 - Questions raised by the presentation
- Invite students to contribute to these lists, starting with the positive feedback. Once students begin providing suggestions for improvement, remind them as necessary to be as specific as possible as to how their suggestions will impact the presentations and/or designs. Remind students that having questions be raised by a presentation is not necessarily a problem—that raising questions that go beyond the scope of the project may make a stronger presentation overall—but if the questions indicate confusion or a lack of clarity, they may need to be addressed. Provide about 10 minutes for each feedback session.

homework

- After their practice presentation and feedback session but before class on day 22, each group should complete the Feedback Reflection section of the Critique Process Handout again, and bring to class on day 22.



rationale & context

What we spend time on in the classroom often sends an unspoken or seemingly unconscious indication of what is important. When we expect students to complete their creative projects outside of class, we often indicate that the process of making things is less important than the thing or product itself, or less important than knowing facts and explaining opinions. In design and the arts, the process is often the most important part, so in this project, we want to provide students the time to experience the process together and with the support and encouragement of the instructor. It's also time to use those recycled materials **STEAMARTS** provided!

agenda

- Final model design construction

lesson objective

Students will present their comprehensive designs and explanations to the class and receive specific feedback to help them in their last stage of revision before the public presentations.

INSTRUCTIONAL SEQUENCE DAYS 22-24

materials needed

- The **STEAMARTS** student project boxes
- Glue/adhesive

group work

- Have students work in their groups to construct their final models.
- Periodically move around the room to provide feedback or support and to ensure that each group is on-task.

homework

- Revise presentation over the course of these days, as needed, to be prepared for the rehearsal in the exhibition space on day 25.

informal assessment

- While students are constructing their finished product designs on day 22, circulate, review their reflections on the Feedback process, give them completion credit, and respond as needed to any questions or concerns raised in their reflections.

Design and the arts focus on the process. In this project, we provide students the time to experience process together, with the support and encouragement of both instructor and classmates.

rationale & context

This class will provide the students with an opportunity to practice in the exhibition space prior to the day of their presentations, which will help to solve any issues with the technology in the space, while providing students the opportunity to rehearse their revised presentations within their group. The rehearsals on this day don't put so much emphasis on the content of the presentation as on giving the students a chance to feel comfortable and confident in the space.

agenda

- Setting up presentation materials
- Run through the presentation twice, if possible
- Make your last adjustments to your oral and visual presentations

INSTRUCTIONAL SEQUENCE

materials needed

- Presentation space
- Laptops or tablets for students to display presentations

whole group instruction

- Meet class in exhibition space
- Walk them through the schedule for the exhibition day so they know what to expect
- Explain the three agenda points for today and remind them to take advantage of this last opportunity to ask for feedback
- Remind students to submit their written and visual presentation materials before the public exhibition begins
- Let groups begin setting up their materials for the exhibition
- Periodically circulate between groups to provide support and feedback

homework

- Revise presentation as needed, and submit prior to public presentations

PUBLIC PRESENTATIONS



rationale & context

As the culmination of the Modeling Sustainability project, students will present their models to a panel of community members and experts in the field of sustainability/waste management. They will explain their models and the advantages of their models over the current system of waste management/sustainability protocol for the school. Providing the students with the opportunity to present their findings to professionals within the community affords the project its real-world authenticity, as well as allows the students to interact with community members they might not otherwise engage with. It also encourages more in-depth mastery of the scientific concepts through the requirements to communicate their ideas in multiple ways.

agenda

- Information Fair

lesson objective

Students will present their models and findings to their peers and community and school leadership. Students will reflect on their project and the processes they used to design their models. Students will be prepared to answer questions related to their models and presentations.

INSTRUCTIONAL SEQUENCE

materials needed

- Presentation Space (if possible, hold exhibition in public area and invite community members for presentations, and/or connect with other classes in the school and have students present projects at the same time)
- Digital presentation materials
- Rubrics for judges
- Peer evaluation rubrics
- Student Unit Project Guides

assessment

- Provide community members with Judges' Rubrics
- Provide student guests with peer evaluation rubrics
- Remind students in the class about project reflection and peer evaluation section of project guide
- Judges Panel should rotate around the information fair, allowing each group to present their findings as part of the summative assessment
- Judges Panel will meet to determine the strongest model and proposal presentation
- Collect peer evaluation rubrics from student guests
- Remind students to complete their project reflection and peer evaluations for homework
- Transport models and presentations to gallery space for school/public viewing

homework

- Complete project reflection and final peer evaluations

Students presenting their findings to professionals within the community affords the project its real-world authenticity and allows them to interact with community members they might not otherwise engage with.

rationale & context

This class period provides students with a much-needed break and reward after jobs well done.

agenda

- Sharing project reflections
- Judges' Decision Announcement
- Celebrating our excellent work

lesson objective

Students will provide the instructor with feedback on the project, providing them with more agency as members of the classroom.

INSTRUCTIONAL SEQUENCE

whole group instruction

- Provide students time to share their reflections on the project – both what they've learned, as well as suggestions for improving the framework of the project in the future
- Collect reflections and final week journal from students
- Provide students with your opinion on their work, and congratulate them for their creativity and their perseverance over the course of these few weeks.
- Announce the Judges' Panel decision, as well as the winners of their classmates' peer review
- Celebrate!

REPRODUCIBLE HANDOUTS

STUDENT GUIDE TO MODELING SUSTAINABILITY PROJECT

DRIVING QUESTION: How can we, as students and members of our community, create a model to improve our school's sustainability practices?

PUBLIC PRODUCT

Your group will create a model of improved sustainability practices for the school and present your model to school and community leadership.

- Your model must be three-dimensional and made entirely from donated recycled objects from **STEAMARTS** that you use in creative and unexpected ways.
 - You are encouraged to interpret the term “model” in broad, creative, unexpected ways.
- Your presentation must be digital and must explain:
 - the model
 - your process for designing, constructing, testing, revising, and editing the model
 - how the model would impact the school's current sustainability practices
- Do not simply fill PowerPoint slides with text and read from them. Use the skills you've developed to create an engaging presentation.

PRESENTATIONS

Each group will have twenty minutes to present their model and their work processes to the judges' panel made up of school and community leadership, including time for questions from the panel. The presentation day will be structured like an information fair so that the rest of the school community will be in attendance and informally interacting with each group's work. The fair will include not just these projects, but others as well, and will last approximately two class periods to allow for time for the judges to determine the strongest proposal and for as many students from other courses to hear your findings. Be prepared to answer questions from both the judges' panel and other students.

PHASES

RESEARCH

We will spend some of our class periods in the Library/Media Center conducting research into best practices in sustainability and waste management, in addition to hearing from local experts on our school's current practices and their work. During this phase, each group will determine a research question, narrow that question to ensure its usefulness to you, locate both primary and secondary sources, and evaluate these sources in relation to your project. The Research and Drafting phases may overlap to some degree, depending on groups' progress, and your group is expected to continue researching as needed throughout the remaining phases of the project.

DRAFTING

Each group will present their initial concepts to other groups in the class and receive feedback, then construct

a newspaper draft of their model design using recycled paper provided by STEAMARTS. The groups will share these drafts with other groups and receive another round of feedback from classmates and the instructor. Each round of feedback will provide suggestions for improvement in clarifying the project's message and in overall design.

COMPREHENSIVE DESIGNS

Each group will revise the draft design and create a comprehensive design and presentation. Comprehensive designs are one step of development further than drafts; they are designs that are complete and would in other situations possibly be considered a final. The benefit of producing a round of comps is that each group will have a completed, almost-finished design and presentation, which will be presented for the instructor, before the final round of revision. Thus, you will be expected to fine-tune your drafts and presentations after this round of comprehensive designs in preparation for the public presentation day.

CRITIQUE

An important aspect of design thinking and the artistic process is the critique, during which your peers and instructor will provide you with constructive criticism in order to help you determine areas of your design and presentation that are effective or need improvement, as well as suggestions for how to improve. We will practice a critique session early in the project to serve as a model for the critiques that will come later.

REFLECTION

All students will be required to reflect on the progress of their group and on their own process throughout the unit. Reflection is the most significant activity that you can participate in as you attempt to complete any task—it is through reflection that you not only experience the pride appropriate to tasks you've completed successfully, but also where you recognize areas for improvement, and without this recognition, your progress will stagnate. By thinking about how you've been thinking, you will start to recognize any patterns in your process, patterns that may be beneficial or counterproductive. This recognition will allow you to evaluate your process and make modifications to it as needed.

EVALUATION

Your group will be evaluated using the unit project rubric, included in this guide. Early in the project, the class will participate in a practice critique session, which will provide you with the opportunity to determine some criteria on which your projects will be evaluated.

PROJECT PLAN REQUIREMENTS

You will submit a typed summary of your project plan using the following sections.

ROLES AND RESPONSIBILITIES

Decide group roles using Research Roles & Responsibilities handout, and explain your choices.

- PROJECT LEADER:
- FACILITATOR/EDITOR:
- INTERVIEWER:
- RESEARCH EVALUATOR:
- VISUAL DESIGNER:

RESEARCH QUESTION

Define your research question, and explain the process you went through to develop/narrow your topic.

RESEARCH

Compile your 10 most useful sources into an annotated bibliography. Include transcriptions of your interview(s), or your notes from the interview(s).

VISUAL PLAN FOR PROJECT

Visually represent your plan for your project, including elements to be completed by each group member and a draft timeline for completion. This plan is a guideline, and the timing may change, but try to be as comprehensive as possible in developing your project elements now, to ensure that you will have sufficient time to complete them to the best of your ability.

EXPLANATION OF VISUAL PLAN

There should be a written explanation of the visual plan to accompany it. This explanation may be incorporated into the visual or separate, as needed by your visual.

RESEARCH PROCESS REFLECTION

Each group member will submit separate reflections on the research process at the same time as the plans are due.

CRITIQUE & REFLECTION PROCESS HANDOUT

You will be participating in the critique process at multiple stages throughout the project. This process can incite powerful moments of discovery and inspiration in moving your projects from one phase to the next. The more seriously you apply yourselves to critiquing your own work and each other's, the more successful your final designs and presentations will be. For these critiques to be useful, though, you must be prepared to have an honest discussion and to provide detailed, specific feedback to others. "I like it," or "I don't really like it" will not work. These will be **COMPASSIONATE READINGS** of the work you and your classmates create, which means that you will take the work seriously, consider its merits and intent, and provide feedback based on those considerations. This handout provides some guidelines and two ways to structure your critique, which we will talk about in more detail as the project continues. We are all equals in the critique process; therefore, every idea presented constructively to assist you in improving your work should be afforded the utmost respect, even if you choose not to implement it.

GUIDELINES FOR DISCUSSION:

- Be specific.
- Identify emphasized elements of the work and explain why those elements seem to be emphasized.
- Identify patterns in or relationships between parts of the work and explain what those patterns or relationships might mean to the whole.
- Make connections between the work and your previous experiences—does the work remind you of something else you've seen/experienced, and does that help you to make sense of this work?
- Keep an open mind while providing your critique and while listening to your classmates and instructor.
- There may be no "correct" analyses of a work of art, but some analyses are better than others because they are based on the details of the work itself and the viewer's experience with the work.
- No creative work is ever finished. There is always an opportunity for improvement.
- Enjoy the process, and the results will come.

THE CLASSIC ART CRITIQUE: ANALYSIS & JUDGMENT

ANALYSIS

When analyzing a work of art, we examine the elements and principles of art used by the artist, breaking down the whole into its constituent parts. Critiques of your designs will borrow these aspects of art criticism: focusing on how the work is organized, what elements of form the work uses, and how those elements work together to express the idea of the work.

ELEMENTS OF ART TO EXAMINE:

shape, line, texture, value, space, form, color

JUDGMENT

Your judgment regarding a work of art/design is based on your analysis. Express the conclusion of your analysis by stating whether the elements used in the design are successful or not, and why or why not. You are encouraged to begin with what is successful and why before moving on to the areas where improvement is needed. When identifying areas that need improvement, you are encouraged to provide specific changes that would make the work stronger and more successful.

THE DESIGN CRITIQUE CROSS

adapted from Alisan Atvur

USER CONTEXT, GOALS, NEEDS What problem are we trying to solve? What are the user's needs?	LOGIC What design decisions did the group make and why? What are the suggested solutions and how do they relate to the question?
EMOTION What emotion(s) does the design inspire in the viewer/user/reader? What experience does the design create for the viewer/user/reader?	PROJECT GOALS What other considerations have driven the decisions made by the group, and why? How have these other considerations strengthened the solution the group has come to?

Sources:
["Five Best Practices for Effective, yet Sensitive Critiques"](#) by Johanna Inman, Temple University Teaching and Learning Center; ["Four Step Art Critique"](#); ["The Critique Cross"](#)

CRITIQUE REFLECTIONS

When you're learning by doing, which is what project-based learning is all about, reflection is a critical step. Without pausing from time to time to think about your own thinking, your own process of learning, and what you

have learned, it is difficult to apply that learning to new experiences, new projects, or new phases of the same project. That's why you'll be reflecting throughout this project, especially after a critique.

DURING THE CRITIQUE OF YOUR WORK

- Take notes on what your classmates and instructor are saying about your group's work.
- Listen. Do not respond, or try to defend your work. Use this time to find out if your work speaks for itself.

DURING THE CRITIQUES OF OTHERS

- Make note of any ideas about other groups' work that might be helpful or useful to you. Often the best idea for improvement of one person's work may be a suggestion made to someone else.

AFTER THE CRITIQUE

1. Review your notes from your classmates, and begin with the ideas that are most interesting or exciting to you. For each of these ideas, give yourself some time to think about the idea and decide:
 - What about this idea is interesting and why?
 - How could you implement this idea?
 - How would implementing this idea affect other parts of your design?
 - How would implementing this idea help you achieve your goals for the project?After some sustained thinking time—even if that thinking is happening in the back of your mind while you're actively doing something else—write down some of your thoughts about these ideas that are interesting to you.
2. Choose at least one idea that you found difficult, or that didn't seem interesting to you, or that you think wouldn't work or improve your project. Repeat the thought process and write down some ideas about how you could make that idea work.

REFLECTING ON THE FEEDBACK PROCESS

In the process of reflecting on the feedback you received, you should also reflect on the process itself. You will be asked to reflect on the critique/feedback process. Consider using these prompts to get your thoughts going:

- How effective were the suggestions you received from other students? from your instructor?
- How effectively did you use time while critiquing others?
- How effectively did your classmates use time during your critique?
- What is the biggest drawback to the critique process as you have experienced it? the biggest advantage?
- How have you thought differently about your own thinking because of the feedback you've received and the reflections you've been asked to complete?
- How could the critique, feedback, reflection process be presented visually?
- How could the process be improved?

END OF PROJECT SELF-EVALUATION AND REFLECTION

Use the Peer Evaluation handouts to evaluate your group members' contributions to the project, as well as your own.

Reflect on the project. Address some or all of the following questions, and type up your responses to turn in:

- Driving question: How useful did you find the driving question of the project? What is the kind of question that led you into more inquiry, more questions, or to simple answers? How did you interpret the question differently than other groups? Did you feel the question was open-ended enough to allow for varied solutions to the problem?
- Project phases: Which phase of the project did you find to be the most helpful? the least helpful? What elements of those phases made you make these determinations? Are there missing pieces to the project that would make it more effective? How so?
- Length/Pace of project: How did you experience the time of the project? Did you have enough/too much time during certain phases or not enough? How would you adjust the time of the project to allow for more sustained inquiry and more engagement on your part?
- How would you change the project in the future to improve the experience for other students? Provide constructive suggestions.
- What else would you like to say about the project? Have your final word.

RESEARCH ROLES & RESPONSIBILITIES

It may be difficult to figure out how to split up work while researching a topic, so below are some ideas for you. Within your group, ensure that each of these responsibilities is covered by at least one group member so you can be sure your group is working equally and fairly and so you can be sure you find as much information from as many varieties of sources as possible. If your group is smaller than six people, split up the remaining roles within your group in a way that makes the most sense to you to cover all of the responsibilities equitably.

PROJECT LEADER

As project leader, your job is to organize the group, evaluate each group member's skill sets, and be sure that each group member is assigned a task that will benefit them as well as the group. You'll be responsible for ensuring that the content of your project meets the standards set out by the rubric, as well as any set up within your group itself. You'll also be responsible for coming up with ideas to help solve any problems that the group experiences. When a group member is stuck or having difficulty, you are the person he/she will come to. Don't be afraid to challenge your group members to try something new, though. This role is right for you if you enjoy making agendas and find it fun and rewarding to encourage others to do their best.

FACILITATOR/EDITOR

This group member works closely with the project leader to ensure that each group member participates in discussion and brings their best effort to the group. The facilitator will also be responsible for the details of any group submissions and ensuring that any work divided up still maintains a consistent voice and quality. A facilitator will be sensitive to any group member feeling left out of the conversation and will engage that group member through a direct question, invitation, or suggestion as to how to help out. This role is right for you if you are attuned to those around you and you have a keen eye for detail as well as a strong grasp of grammar, mechanics, and how to organize information.

INTERVIEWER

One important element in your research for this project is that you must interview at least one member of the community that will be impacted by your design. As the designated Interviewer, you will work closely with the research evaluator and the editor to ensure the quality of your questions, which must be informed by accurate content understanding and clarity of language. This role is right for you if you are comfortable directly engaging new people, if you have the ability to think on your feet to come up with follow-up questions, and if you take excellent notes while others are talking (or if you enjoy the prospect of transcribing a recording).

RESEARCH EVALUATOR

Everyone in the group will be responsible for finding reliable sources and summarizing their arguments, but this role will be responsible for correlating all of the print sources, weighing them against each other, and determining which are the most useful in answering the agreed-upon research question and driving the design of the project. This role helps to ensure that while group members may be separately researching different aspects of the question, the direction the group will take in designing the project will make sense to everyone. The evaluator will read each summary and create an abstract, which the group will use as the guiding direction in the project and presentation. This role is for you if you find it easy and interesting to interpret information from different sources and phrase it in your own words.

VISUAL DESIGNER

This group member will work closely with the research evaluator and project leader to develop the visual voice of the project. During the research phase, in addition to locating sources along with the rest of the group, the visual designer will be responsible for the visual presentation of the project plan. This role is for students who prefer to use graphic organizers and find that information is always clearer when presented in a chart or a graph. During the later phases of the project, this role will work closely with the project leader to create and refine the visual voice of both the design and the presentation.

WRITER

This group member will be responsible for any written materials that the group needs to compose and turn in. This role will work closely with the research evaluator to help explain the group's ideas based on the research summaries that the evaluator provides. This role works closely with the project leader and facilitator/editor to ensure the quality of the writing. The writer also works closely with the visual designer to ensure that the explanation of the project plan and of the design are clear. The writer also ensures that the presentation tells a clear and coherent story about the design.

Take notes on the back of this handout during the Media Center presentation on how to identify reliable sources.

PROJECT MASTERY EVALUATION CRITERIA

CONCEPT

Design & presentation are clear, focused, engaging, and supported. The idea presented is original and creative. Addresses a question that is relevant and specific.

ORGANIZATION

Design and presentation show logic in arrangement and structure. The sequencing of the presentation creates interest and supports the development of the concept.

VISUAL AESTHETICS

The design and presentation reveal depth of understanding of artistic principles such as form, color, texture, and shape. Both the model and presentation are visually arresting and engage the viewer.

TEXTUAL CONVENTIONS

The presentation moves fluently, using language, mechanics, and syntax that not only inform, but delight, the audience.

DELIVERY

The speakers are not only prepared and confident, but poised. The speakers build rapport with the audience.

FAMILIARITY WITH CONCEPTS

The group deftly anticipates and addresses questions from the audience and judging panel.

ADDITIONAL CRITERIA DETERMINED BY CLASS:

Sources:

Many of these elements borrow heavily from the [6+1 Traits® Condensed 5-Point Writer's Rubric](#), which is a writing rubric that we highly recommend, and is free to use in educational contexts.

EVALUATION FORM FOR JUDGES & GUESTS

The form works on a scale of 1-5, where 1 is “disagree strongly,” and 5 is “agree strongly.” You are encouraged to use the open space under each description or on the back of this form for open-ended comments.

CONCEPT

1 2 3 4 5

Design & presentation are clear, focused, engaging, and supported. The idea presented is original and creative. Addresses a question that is relevant and specific.

ORGANIZATION

1 2 3 4 5

Design and presentation show logic in arrangement and structure. The sequencing of the presentation creates interest and supports the development of the concept.

VISUAL AESTHETICS

1 2 3 4 5

The design and presentation reveal depth of understanding of artistic principles such as form, color, texture, and shape. Both the model and presentation are visually arresting and engage the viewer.

TEXTUAL CONVENTIONS

1 2 3 4 5

The presentation moves fluently, using language, mechanics, and syntax that not only inform, but delight, the audience.

DELIVERY

1 2 3 4 5

The speakers are not only prepared and confident, but poised. The speakers build rapport with the audience.

FAMILIARITY WITH CONCEPTS

1 2 3 4 5

The group deftly anticipates and addresses questions from the audience and judging panel.

ADDITIONAL CRITERIA DETERMINED BY CLASS:

PEER AND SELF-EVALUATION FOR GROUP MEMBERS

You will submit a typed peer and self-evaluation at the end of the project.

YOUR ROLE(S) AND RESPONSIBILITIES

Explain which role(s) you performed during the project, what responsibilities you took on or were assigned, and your work process during the course of the project. Evaluate and reflect on the work that you performed.

- How did you contribute to the successes of the group? How did you contribute to any failures? What did you do to help the group carry on despite difficulties or differences?
- What would you do differently, and how could that improve the project, its process, or the final product?
- How proud are you of your work on this project, and why?

YOUR GROUP MEMBER'S ROLES AND RESPONSIBILITIES

This is not an opportunity to complain about your classmates. Try to be as objective as you can about their contributions to the project and the process of completing it. Reflect on and evaluate your group members on the work they performed. Use the same questions as above to get you started, if needed.

EVALUATION OF YOUR GROUP'S PROJECT

Use the descriptions of mastery for this project to evaluate your group's final product. Explain how closely you agree with each category description and why.

CONCEPT

Design & presentation are clear, focused, engaging, and supported. The idea presented is original and creative. Addresses a question that is relevant and specific.

ORGANIZATION

Design and presentation show logic in arrangement and structure. The sequencing of the presentation creates interest and supports the development of the concept.

VISUAL AESTHETICS

The design and presentation reveal depth of understanding of artistic principles such as form, color, texture, and shape. Both the model and presentation are visually arresting and engage the viewer.

TEXTUAL CONVENTIONS

The presentation moves fluently, using language, mechanics, and syntax that not only inform, but delight, the audience.

DELIVERY

The speakers are not only prepared and confident, but poised. The speakers build rapport with the audience.

FAMILIARITY WITH CONCEPTS

The group deftly anticipates and addresses questions from the audience and judging panel.

ADDITIONAL CRITERIA DETERMINED BY CLASS:



