Digital Promise®

Project Planning Template

CAREER CLUSTER: Architecture & Construction	DURATION: Approximately 20 sessions, but can be modified to fit classroom schedules. (Session = 45 to 50 Minutes)	TEACHER:	U.N. SUSTAINABLE DEVELOPMENT GOAL: #11 — Sustainable Cities and Communities

GLOBAL ISSUE OVERVIEW

Cities are home to human innovation, culture, commerce, and more, but they face challenges related to creating sustainable jobs and expanding infrastructure while respecting land and resources. An estimated five billion people will live in cities by the year 2030, increasing the world's city-dwelling population by 1.5 billion, with cities in developing countries expected to grow the most in the next few decades.

Why is investing in sustainable cities and communities important?

The fast pace of urbanization coupled with the global refugee crisis, means cities must find new solutions to problems like overcrowding, pollution, housing shortages, and underfunded public services. People in cities, especially the 833 million people living in slums, are particularly vulnerable to natural disasters due to their population density.

On top of those considerations, 68.5 million people — more than ever before — have been forced to flee their homes because of conflict or disaster (UNHCR, 2019). Approximately 58% are internally displaced (displaced inside their home countries), 37% are refugees (displaced outside their home countries), and almost 5% are seeking legal asylum in a foreign country (UNHCR, 2019). 85% of the world's total displaced people remain in, or flee to, developing countries (UNHCR, 2019). Most of the 18.8 million people internally displaced by disasters in 2017 were fleeing weather-related events, like floods or tropical cyclones (iDMC, 2018). Cities and communities struggle to provide adequate housing for this influx of people, who often arrive desperate and traumatized.

Internally displaced people, refugees, and asylum-seekers aren't the only ones in need of emergency short-term housing. In 2017, more than 553,000 people were homeless in the United States alone. Emergency shelters can play an important role in ending homelessness (Volunteers of America, 2019).

Regardless of life circumstances or citizenship status, all people have the right to privacy, rest and relaxation, and health and security. People also have the right to access education, to own property, and to participate in the cultural life of a community. Cities play an important role in guaranteeing these universal human rights.

What can we do?

Making cities inclusive, safe, resilient, and sustainable is number 11 on the United Nations' list of Sustainable Development Goals, or SDGs. Specific targets for SDG #11 include ensuring access to adequate housing, protecting people in vulnerable situations, and reducing the number of deaths due to disasters. Professionals and experts in architecture and construction will be vital to this effort especially when it comes to meeting the rising need for temporary housing.

Global Competencies Addressed:

- *Investigate the World*: Initiate investigations of the world by framing questions, analyzing and synthesizing relevant evidence, and drawing reasonable conclusions about global issues.
- *Recognize Perspectives*: Recognize, articulate, and apply an understanding of different perspectives.
- *Communicate Ideas*: Select and apply appropriate tools and strategies to communicate and collaborate effectively, meeting the needs and expectations of diverse individuals and groups.
- *Take Action*: Translate ideas, concerns, and findings into appropriate and responsible individual or collaborative actions to improve conditions.

STANDARDS ADDRESSED		
Career/Technical Knowledge and Skills	**Academic Knowledge and Skills**	**21st Century Skills**
Common Career Technical Core Career Ready Practices 4. Communicate clearly and effectively and with reason. 5. Consider the environmental, social and economic impacts of decisions. 6. Demonstrate creativity and innovation.	**Next Generation Science Standards** Engineering Design: **HS-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	**21st Century Interdisciplinary Themes** - Global Awareness **Learning & Innovation Skills** - Creativity & Innovation

7. Employ valid and reliable research strategies.

8. Utilize critical thinking to make sense of problems and persevere in solving them.

12. Work productively in teams while using cultural global competence.

Architecture and Construction Career Cluster

- **AC 2.** Use architecture and construction skills to create and manage a project.
- **AC-CST 4.** Understand the purpose of scheduling as it relates to the successful completion of a construction project.
- **AC-DES 1.** Justify design solutions through the use of research documentation and analysis of data.
- **AC-DES 2.** Use effective communication skills and strategies (listening, speaking, reading, writing, and graphic communications) to work with clients and colleagues.
- **AC-DES 5.** Identify the diversity of needs, values, and social patterns in project design, including accessibility standards, to appropriately meet client needs.
- **AC-DES 6.** Apply the techniques and skills of modern drafting, design, engineering, and construction to projects.
- **AC-DES 8.** Apply principles, conventions, standards, applications, and restrictions pertaining to the selection and use of construction

- **HS-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **HS-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Common Core Academic Standards

ELA/Literacy:

- **RST.11-12.9.** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- **CCRA.W.4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **CCRA.SL.1** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- **CCRA.SL.4** Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

- Critical Thinking & Problem Solving
- Communication
- Collaboration

Information, Media, & Technology Skills

- Information Literacy

Life & Career Skills

- Flexibility & Adaptability
- Initiative & Self Direction
- Productivity & Accountability
- Leadership & Responsibility

| materials, components and assemblies for project design. | • **CCRA.L.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Mathematics:
• **MP.1.** Make sense of problems and persevere in solving them.
• **MP.5.** Use appropriate tools strategically. | |

PROJECT DEFINITION & GOALS/OBJECTIVES

This project stems from the United Nations Sustainable Development Goals (SDGs) initiative. The SDGs are a set of 17 goals that aim to end poverty, fight inequality, and stop climate change. Specifically, this project focuses on Global Goal #11: Sustainable Cities and Communities, with a focus on using architectural and construction design solutions to provide temporary emergency housing. Students will design a temporary housing unit that could be used to help cities and communities guarantee the rights of forcibly displaced persons and/or assist the homeless population. Students will engage in a design process to define the problem, brainstorm possible solutions, create a model of a temporary housing unit, and present their models to community and/or global partners.

Goals:
- Students will gain an understanding of the United Nations Sustainable Development Goals (SDGs) initiative and develop empathy for people displaced by violence or conflict and homelessness.
- Students will apply architectural design and/or construction knowledge to a complex real-world problem.
- Students will use a design process to develop solutions to a complex real-world problem.

Objectives:
- Research the causes and effects of global displacement and/or homelessness and the role of cities and communities in addressing these issues.
- Brainstorm and evaluate various designs for temporary housing units.
- Design a temporary housing unit for displaced persons and/or homeless people in a specific environmental context.
- Develop a work plan to complete a scale model of the temporary housing unit with a team.
- Build a scale model of a temporary housing unit with a team.
- Evaluate and revise the design to maximize efficacy.
- Communicate the potential impact of the model to peers, adults, and industry experts.

SCENARIO OR PROBLEM: What scenario or problem will you use to engage students in this project?

Experts working everywhere from the United Nations Refugee Agency (UNHCR) to IKEA have designed temporary housing units for refugees, internally displaced persons, and homeless populations. The design of these shelters must consider factors like waste control, privacy and security, and even ease of shipping and assembling. Now, it's your turn. With a team, design and build a scale model of a temporary housing unit that could be used by displaced and/or homeless people within your community. Research the issues that face your local population and determine who is currently in need of temporary housing solutions and who might be at risk for displacement in the future. Be sure to consider environmental causes of displacement (e.g., floods, blizzards, hurricanes, fire, etc.) as you research the issue. Your design should also focus on sustainability. What local resources are available to make your prototype more sustainable (e.g., old railway cars, shipping containers, etc.)? Present your model housing solution to local officials.

Essential Questions	Grade Level Adaptations
- How does where you live influence temporary housing solutions? - Why is investing in sustainable cities and communities important? - How does the global refugee crisis impact cities and communities? - What is the role of architects and construction professionals in supporting SDG #11: Sustainable Cities and Communities?	- Lower-level classes may produce only a design or blueprint of their housing unit rather than a physical model. - Depending on the focus of the class, this project can be adapted to emphasize either the architectural design or the construction and assembly of the housing unit.

ASSESSMENT: How will you determine what students have learned? (Check all that apply.)			
FORMATIVE		**SUMMATIVE**	
Quizzes/Tests		Multiple Choice/Short Answer Test	
Notes/Graphic Representations		Essay Test	
Rough Draft		Written Product with Rubric	**X**
Practice Presentation		Oral Presentation with Rubric	
Preliminary Plans/Goals/Checklists of Progress	**X**	Other Product or Performance with Rubric	
Journal/Learning Log	**X**	Self-evaluation or Reflection	**X**
Other:		Evaluation by Authentic Audience	**X**
		3D model	**X**
		Other:	

MATERIALS, RESOURCES, or CONSTRAINTS: What materials and resources will be needed? Are there any perceived challenges?

Materials:

- Computers with internet access
- Architecture/construction design software
- Supplies to build models of housing units
- Project rubric
- Written explanation rubric

Resources:

- Library access (access to journals, magazines, newspapers, and/or books)
- U.N. Sustainable Development Goals
    - Goal #11: Sustainable Cities and Communities
- The Internal Displacement Monitoring Centre
- The U.N. Refugee Agency
- Dezeen: Design for Refugees
- Laura C. Mallonee's article, "Homes for Refugees: Eight New Designs for Conflict Housing" (*The Guardian*)
- National Alliance to End Homelessness
- Volunteers of America's article, "Assisting Homeless People"
- Video resources:

- United Nations Foundation's video, "A Look at the Sustainable Development Goals" (1:00). An introduction to the 17 Sustainable Development Goals from the United Nations Foundation.
- EarthAgain's video, "U.N. Sustainable Development Goals: Sustainable Cities and Communities" (1:18) An introduction to SDG #11: Sustainable Cities and Communities.
https://www.youtube.com/watch?v=NVz1thUnMLk
- CSACCounties' video, "Yuba County's '14Forward' Temporary Housing for the Homeless" (4:02) This video details a new temporary homeless shelter complex called 14Forward in Yuba County, California.
https://www.youtube.com/watch?v=Yh7j81iT6HA
- GeoBeats News' video, "IKEA Ships Easy-to-build Refugee Shelters to Syria" (1:07) IKEA works with UNHCR to provide shelters for people in Syria.
- Dezeen's video, "Modular Temporary Housing to Tackle Homelessness" (1:00) Prefabricated homeless housing concepts in Los Angeles aims to bridge the gap between life on the streets and permanent accommodation.

Possible Constraints & Solutions:

- The professional quality of students' final designs and models will depend on department funding for architectural design/construction supplies. Community sponsorships or grant funding may be available.
- Authenticity of final presentations could be limited due to availability of volunteer industry representatives and/or community members. To mitigate this, consider showcasing the final presentations via Skype, Zoom, or another video conferencing program.

SUPPORT, MODIFICATIONS, AND EXTENSIONS: What is needed to provide support for students who have difficulty learning the content, modify for students with special learning needs, or to provide enrichment for advanced students?

Support & Modifications:

- Provide assistance navigating library resources in weeks 1 and 2.
- Assign a population (e.g., internally displaced, refugee, homeless) and geographic location (e.g., hot/cold, stormy/temperate, violent/peaceful) to guide student projects.
- Prepare a predetermined work plan for week 3 and check in at the end of each day to check students' progress.
- Create rubrics to guide students in giving peer feedback during week 4.

Extensions:

- Advanced students can go beyond a scale model and build a full-size temporary housing unit. This may require funding from community or global organizations.

CALENDAR OF MAJOR LEARNING ACTIVITIES: What are the learning activities or tasks for each day? Are there any project milestones? When will formal assessment activities occur?				
Week 1				
Monday	Tuesday	Wednesday	Thursday	Friday
Initiating: Introduce SDG #11. Lesson should focus on answering the question, "Why is investing in sustainable cities and communities important?" Include information about homelessness in the United States.	**Initiating:** Expand on and deepen Monday's conversation. Lesson should focus on answering the question, "How does the global refugee crisis impact cities and communities?" Also, investigate communities in the U.S. displaced due to environmental issues like hurricanes and fires. Facilitate class discussion around the essential question, "How does where you live influence temporary housing solutions?"	**Initiating:** Students produce as many questions as possible about displacement, the refugee crisis, homelessness, and the role of cities in addressing these issues. In this phase, the number and quality of questions should be valued over answers. Questions could be generated by posting pictures and statistics about internal displacement/the refugee experience/homelessness around the room and having students peruse them as if they were in a museum exhibit, writing down questions as they go. Students could then compile these individual questions into a class list.	**Initiating:** Assign questions generated on Wednesday to students (either individually or as pairs/small groups). Students use library and online resources to find answers to the questions. Encourage students to look for answers in a variety of sources: online or print journals, magazines, books, websites, or newspapers. Encourage diverse as well as international sources.	**Initiating:** Students choose a research focus with a local connection: internal displacement, refugees, or homelessness. Students begin researching specific problems facing their chosen population. How long does this population need temporary housing? What factors influence the demand for temporary housing? Are these factors easy or difficult to predict? What are the particular physical, emotional, and social needs of the population? At the end of class, students individually reflect on the following questions: • What made you think in class this week?

				• What would it be like to live in emergency housing? • How would you rate your ability to equip cities and communities to meet temporary housing needs? Why?

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<tr><td colspan="5" align="center">Week 2</td></tr>
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Initiating: Divide class into groups based on their chosen research focus. These will be the groups students work in for the remainder of the project. Guide students to research regions around the world with high populations of displaced and/or homeless people. What housing solutions are currently being used in these regions? Are these areas rural or urban? What is the weather like? What natural disasters might a temporary shelter need to withstand (e.g., flooding, hurricanes, etc.)? Students then use this research to help them plan their solution for their local population considering their unique constraints (e.g., geographical, cultural, etc.).	**Planning:** In their groups, students brainstorm designs for a temporary shelter that meets the needs of their chosen population. By the end of the day, students should have three to five basic concepts.	**Planning:** Student groups evaluate the pros and cons of each of their brainstormed concepts based on their research from week 1. By the end of the day, students should select one design.	**Planning:** Student groups begin work on a detailed blueprint of their design, according to industry standards.	**Planning:** Student groups finish the detailed blueprint of their design. At the end of class, students individually reflect on the following questions: • What made you think in class this week? • What would it be like to live in emergency housing? • How would you rate your ability to equip cities and communities to meet temporary housing needs? Why?

Week 3				
Executing: Teams make a work plan for the week. By the end of the week, they should have a scale model of their temporary shelter. Students must create a written explanation that a) places their model in the context of the population and region they chose and b) explains and justifies their design choices. Students identify tasks, set goals for each day, and assign tasks to team members. Work plans are approved by the teacher. The PMIEF Toolkit for Teachers has resources to assist with student project management.	**Executing:** Team work time according to student work plans.	**Executing:** Team work time according to student work plans.	**Executing:** Team work time according to student work plans.	**Executing:** Team work time according to student work plans. At the end of class, students individually reflect on the following questions: • What made you think in class this week? • What would it be like to live in emergency housing? • How would you rate your ability to equip cities and communities to meet temporary housing needs? Why?
Week 4				
Executing: Introduce or remind students about the concept of constructive criticism. Emphasize the importance of revision: identifying the weak points of our models is an important part of making our projects stronger. Set up a small fair displaying all teams' models. Students	**Executing:** Teams pair up to present their models and provide feedback to each other. Rotate teams and repeat as time allows.	**Executing:** Students implement feedback gathered from Monday and Tuesday.	**Closing:** Teams present model to industry representatives and/or community members.	**Closing:** Teams present model to industry representatives and/or community members. At the end of class, students individually reflect on the following questions:

leave both compliments and ideas for improvement in writing at different models.				• What made you think in class this week? • What would it be like to live in emergency housing? • How would you rate your ability to equip cities and communities to meet temporary housing needs? Why?

STUDENT REFLECTION ACTIVITIES: How will students reflect on their work? Add reflection questions and/or activities here.

Students reflect weekly on what it would be like to live in emergency housing, and on their confidence in their ability to equip cities and communities to meet temporary housing needs. At the end of the project, students can draw connections between journal entries and look for evidence of how their perspective evolved over the course of the project.

Adapted from:
- "Sustainable Development Goals: Goal 11: Make Cities and Human Settlements Inclusive, Safe, Resilient, and Sustainable," 2018, New York: The United Nations. Retrieved from https://sustainabledevelopment.un.org/sdg11
- "The Universal Declaration of Human Rights," by The United Nations, 1948, Paris: The United Nations. Retrieved from http://www.un.org/en/universal-declaration-human-rights/
- "Unit Planning Template" by the Southern Regional Education Board, n.d., Atlanta: Southern Regional Education Board.

Works Cited:
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- Volunteers of America. (2018). Assisting Homeless People: Working to end homelessness. Retrieved from https://www.voa.org/homeless-people