

CAREER CLUSTER: Information Technology	DURATION: Approximately 20 sessions, but can be modified to fit classroom schedules. (Session = 45 to 50 Minutes)	TEACHER:	U.N. SUSTAINABLE DEVELOPMENT GOAL: #1 — No Poverty
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GLOBAL ISSUE OVERVIEW

Over 700 million people live in poverty worldwide — that’s 11% of the global population — equivalent to more than twice the population of the United States (World Bank, 2017).

What is poverty?

The global poverty line is \$1.90, meaning that families living in poverty survive on less than \$1.90 per person per day. Millions of others make only slightly more. Poverty is multifaceted, but some of its main causes are unemployment, disease, natural disasters, and conflict.

Why is ending poverty important?

Poverty affects people all over the world, but 70% of people in extreme poverty live in Southern Asia or sub-Saharan Africa. In fact, as many as 42% of people in sub-Saharan Africa live below the global poverty line. Small countries prone to conflict or upheaval are more likely to show high rates of extreme poverty; however, there are also 30 million children in the world’s richest countries being raised in poverty. Young women are disproportionately affected—122 women between the ages of 25 and 34 live below the global poverty line for every 100 men in the same age group.

Not only do families living in poverty struggle to meet their daily financial needs, they also face hunger, malnutrition, discrimination, and limited access to education, health care, and sanitation. They are often excluded from participating in decision-making processes that affect them. In other words, families living in poverty experience a daily violation of several basic human rights. Ending poverty is also important for people who aren’t poor. Global poverty contributes to social unrest and political tension, and is bad for economies and peace worldwide.

What can we do about it?

There’s hope: global poverty rates have been cut in half since 2000. Significant progress has been made in Eastern and Southeastern Asia particularly. Addressing poverty is a high priority for problem solvers all over the globe. In fact, eliminating poverty — in all its forms everywhere — is number one on the United Nations’ list of [Sustainable Development Goals](#). This list is made up of 17 targeted goals to transform our world by 2030. Specific targets for this goal include:

- Cutting the proportion of men, women, and children living in extreme poverty in half.
- Ensuring that all people, particularly poor and vulnerable people, have equal access to economic resources like land, new technologies, and financial services.
- Helping poor and vulnerable people better prepare for and recover from environmental emergencies and disasters.
- Mobilizing resources to build the capacity of developing countries to implement policies and programs for ending poverty.
- Creating frameworks for national, regional, and international policy that supports ending poverty related to conflict.

Global Competencies:

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	21 st Century Skills
<p>Common Career Technical Core Career Ready Practices</p> <p>4. Communicate clearly and effectively and with reason. 6. Demonstrate creativity and innovation. 8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>Information Technology Career Cluster</p> <ul style="list-style-type: none"> • IT 1. Demonstrate effective professional communication skills and 	<p>Next Generation Science Standards Engineering Design:</p> <ul style="list-style-type: none"> • 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. • HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more 	<p>21st Century Interdisciplinary Themes</p> <ul style="list-style-type: none"> • Global Awareness <p>Learning & Innovation Skills</p> <ul style="list-style-type: none"> • Creativity & Innovation • Critical Thinking & Problem Solving • Communication • Collaboration

<p>practices that enable positive customer relationships.</p> <ul style="list-style-type: none"> • IT 2. Use product or service design processes and guidelines to produce a quality information technology (IT) product or service. • IT 3. Demonstrate the use of cross-functional teams in achieving IT project goals. • IT 5. Explain the implications of IT on business development. • IT 6. Describe trends in emerging and evolving computer technologies and their influence on IT practices. 	<p>manageable problems that can be solved through engineering.</p> <ul style="list-style-type: none"> • 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. <p>Common Core Academic Standards</p> <p>ELA/Literacy:</p> <ul style="list-style-type: none"> • 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. • CCRA.L.1. Demonstrate command of the conventions of standard English 	<p>Information, Media, & Technology Skills</p> <ul style="list-style-type: none"> • Information Literacy • ICT Literacy <p>Life & Career Skills</p> <ul style="list-style-type: none"> • Flexibility & Adaptability • Initiative & Self Direction • Productivity & Accountability • Leadership & Responsibility
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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 Nation's list of 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 #1: No Poverty with a focus on using informational technology products or services to reduce poverty. After completing research, students will design an information technology product or service to help reduce an aspect of poverty in a country they select. IT products or services could include apps, websites, data management systems, analytic tools, physical products, and more. Students could be given the choice of a product/service to design or one could be assigned depending on curricular needs and expectations.

Goals:

- Students will gain an understanding of the SDGs initiative and develop empathy for other cultures.
- Students will develop their global competence (global career readiness skills) while simultaneously developing IT skills.
- Students will identify links between the information technology sector and 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 poverty, the importance of eliminating poverty, and the role of information technology in poverty reduction.
- Research the significant causes and effects of poverty in a specific country.
- Brainstorm and evaluate possible IT products or services that could address one or more dimensions of poverty in a specific country.
- Identify a specific IT product or service that addresses one or more dimensions of poverty in a specific country.
- Develop and execute a work plan to complete models and/or prototypes of the IT solution within a team.
- Evaluate and revise the IT product or service to maximize efficacy.
- Communicate the potential impact of the team's solution to peers, adults, and industry experts.

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

You work on the social engagement team at the large global IT company, Tech Assist. Your team has been tasked with researching, identifying, and proposing a new product or service that Tech Assist can launch to help reduce global poverty. Due to your project's budget, you will have to limit the scope of your proposal to addressing poverty in one specific country. You must research the causes and effects of poverty in your chosen country and choose one aspect to address.

Essential Questions

- What is global poverty?
- Why is eliminating poverty important?
- How can the IT industry support the U.N. Sustainable Development Goal #1: No Poverty?

Grade Level Adaptations

- Lower level informational technology classes can create and present ideas for IT products and services; higher level classes can create real prototypes and models of IT products and services.
- Teachers can choose to require that project proposals stay within a predetermined budget.
- If it is relevant to the class, this unit can center around building a particular kind of IT product or service. For example, in a Web & Digital Communications class, all students could design a mobile app to address a certain dimension of poverty in their target country.
- The project could be presented as a class competition where teams compete against one another to create the best IT solution.

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	X	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
- Blank posters
- Software, programming, and/or other supplies to design and/or build an IT product or service
- Project rubric
- Written explanation rubric

Resources:

- Library access for two to four days (access to journals, magazines, newspapers, online research, and/or books)
- [World Bank: Understanding Poverty](#)
- [U.N. Sustainable Development Goals](#)
 - [Goal #1: No Poverty](#) (includes links to the U.N. Development Programme, the U.N. Children’s Fund, the International Monetary Fund, and more)
- [USAID Exposure](#) (photos and stories from USAID projects fighting extreme poverty all over the world)
 - [Increasing Nigerian farmers’ resilience to droughts and floods](#)
 - [Fighting zika in Jamaica](#)
- [Using mobile technology to end violence against women](#) (United Nations Development Programme)

- On [farm-to-market roads in the Philippines](#) (World Food Prize)
- Video resources:
 - OPHIOxford’s video, “[Poverty in El Salvador?](#)” (7:55) People living in poverty in El Salvador answer the question, “What is poverty?” according to their own life experiences.
 - IFAD’s video, “[Rural Poverty: In Their Own Words, Ghana](#)” (2:48) One rice farmer tells her story.
 - Optimist’s eight-part series, “[Great Resources for Teaching About Global Poverty](#)” (three to eight minutes long) A group of U.S. college students who tried living for \$1 a day in rural Guatemala.
 - 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.

Possible Constraints & Solutions:

- Authenticity of final presentations could be limited due to availability of volunteer industry representatives, community members, and/or people involved in nonprofit/poverty reduction work. To mitigate this, consider utilizing Skype, Zoom, or another video conferencing program to showcase the final presentations. See the Global CTE Toolkit for places to help at <http://digitalpromise.org/cte>.

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 resources in weeks 1 and 2.
- Prepare a predetermined work plan for week 3, and check in at the end of each day to monitor students’ progress.
- Create rubrics to guide students in giving feedback during week 4.

Extensions:

- Advanced students may choose to enter their projects in a contest or fair such as the [Google Science Fair](#) or [Microsoft’s Imagine Cup](#).

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: Teacher or guest introduces SDG #1. Lesson focuses on	Initiating: Teacher or guest expands on and deepens Monday’s conversation. Lesson	Initiating: Students produce as many questions as possible about poverty, the	Initiating: Assign questions from Wednesday to students (or pairs or small groups	Initiating: Students (or research pairs/groups) give brief, informal presentations to the class about what they

<p>answering the question, “What is global poverty?”</p>	<p>focuses on answering the question, “Why is eliminating poverty important?”</p>	<p>importance of reducing poverty, and the role of IT in poverty reduction. Emphasize the exploratory nature of the process: building good solutions starts with asking good questions.</p> <p>Questions could be generated by having student groups write down as many questions as they can think of in 10 minutes. At the end of 10 minutes, groups share their questions with the whole class; if another group had the same question, they must cross it off their list. The group with the highest number of unique questions wins.</p> <p>Alternatively, utilize the Question Formulation Technique to help students narrow down and focus on one question. You can learn about this technique in the free online module at https://www.ctelearn.org/elc/mod/resource/view.php?id=12344 (Skip</p>	<p>of students). Students research answers to these questions. Encourage students to look for answers in a variety of sources both domestic and international: online or print journals, magazines, books, websites, or newspapers.</p>	<p>learned on Thursday. Students organize and analyze the information by comparing and contrasting it with their own (group’s) findings.</p>
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		to section 1.22 in the Menu). Additional free resources are available at https://rightquestion.org/education/ .		
Week 2				
<p>Initiating: Students find and share examples of projects or organizations using IT products or services in the developing world.</p> <p>At the end of class, students reflect on the act of asking. They may include what it feels like to explore the subject matter or their thoughts on the subject matter itself.</p>	<p>Planning: Divide class into project teams, and have teams select their country of focus (If desired, you can assign countries to teams.). Students research poverty in their target country. What are the major effects of poverty in your target country? Are certain demographic groups or geographical areas affected more than others? If so, why?</p>	<p>Planning: Student groups continue research on their target country. By the end of the day, they should zero in on a particularly significant cause or effect of poverty in their target country (If desired, you can provide a list of causes/effects of global poverty from which students can choose.). Topics might be things like lack of education, health care, unemployment/underemployment, food insecurity, lack of job training, natural disasters, or inadequate transportation to school or work.</p>	<p>Planning: Considering the information gained from the last week and a half, and the IT strengths and interests within their teams, students brainstorm an IT product or service to address the problem they zeroed in on Wednesday. What kinds of products or services could help address the problem? What is the target audience for these products/services?</p>	<p>Planning: Continue brainstorming. By the end of the day, teams should have an idea for an IT product or service that addresses a specific dimension of poverty in their target country.</p> <p>At the end of class, students reflect on the process of deciding on their final idea.</p>
Week 3				
<p>Planning: Teams make a work plan for the week. By the end of the week, they</p>	<p>Executing: Team work time according to student work plans.</p>	<p>Executing: Team work time according to student work plans.</p>	<p>Executing: Team work time according to student work plans.</p>	<p>Executing: Team work time according to student work plans.</p>

<p>should have a detailed concept of an IT product or service. Students must create a written explanation of how the product or service works to address the poverty dimension they selected within their country context. They may also choose to build a model or prototype of the product or service. Students identify tasks, set goals for each day, and assign tasks to team members. Work plans are approved by the teacher.</p>				<p>At the end of class, students reflect on the process of creating their product.</p>
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Week 4				
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<p>Executing: Introduce or remind students about the concept of constructive criticism. Emphasize the importance of revision: identifying the weak points of our products, services, or presentations is an important part of making our projects stronger.</p> <p>Teams present their product or service to another team, provide feedback to each other, then work to implement feedback in their own projects. Repeat as time allows.</p>	<p>Executing: Students present product/service to whole class; gather feedback and revise.</p>	<p>Executing: Students present product/service to whole class; gather feedback and revise.</p>	<p>Closing: Students present product/service to industry representatives, community members, and/or people involved in nonprofit/poverty reduction work.</p>	<p>Closing: Students present product/service to industry representatives, community members, and/or people involved in nonprofit/poverty reduction work.</p> <p>At the end of class, students reflect on the process of showing their product to potential users as well as giving and receiving feedback.</p> <p>Be sure to celebrate the successful completion of the projects.</p>
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STUDENT REFLECTION ACTIVITIES: How will students reflect on their work? Add reflection questions and/or activities here.

- Students reflect individually after each step of the project cycle. Allow ten minutes for reflection at the end of class on the second Monday (Initiating), the second Friday (Planning), the third Friday (Executing), the second Friday (Closing), and on the fourth Friday (Closing). Encourage students to write, draw, or sketch to express their thoughts.

Adapted from:

- “Sustainable Development Goals: Goal 1: End Poverty in All its Forms Everywhere,” 2018, New York: The United Nations. Retrieved from <https://www.un.org/sustainabledevelopment/poverty/>
- “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:

- World Bank. (2017). *Population, total* [Graph and data set, ID: SP.POP.TOTL]. Retrieved from <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=US> Creative Commons License CC BY-4.0.