



## 5-Day Introduction to Quality of Life & Sustainability

*Quality of Life (QOL) is a concept that is referenced in a variety of contexts: healthcare, science, technology, culture, policy, ecology, economics, international development and more. The concept of QOL is particularly important to the field of sustainability. When viewing the various definitions provided, it becomes apparent that QOL is extremely important, particularly in the context of population growth and climate change that may require lifestyle changes. The concept is also fairly subjective.*

The purpose of this project based learned endeavor is to begin thinking critically about QOL. Students will attempt to come up with a universal definition by reflecting on three different levels: self, class, and community. As part of gathering information at the community-level, students will create a survey, gather data using the survey, and ultimately analyze the results of the survey.

Below is an overview of the week-long lesson:

Day One: Introduction - What does QOL mean to you?

Day Two: Surveys - How do we measure QOL?

Day Three: Data collection and ethics - What type of data will we gather? How do we get it ethically?

Day Four: Exploring difference - Is everyone's QOL influenced equally? How are sustainability and QOL related?

Day Five: Analyzing data - What are the findings of our study? What have we learned about QOL?

**Before beginning, students should** know how to calculate basic descriptive data (mean, median, mode) and how to graph data. You may also want students to be familiar with Microsoft Excel if you would like them to graph electronically (as opposed to on paper).

**Essential question: What does QOL mean to you?**

The objective of this lesson is to have students identify what they think is important for a high QOL and for them to notice how various circumstances may impact what is seen as QOL. They will also be introduced to the World Health Organization (WHO) definition.



At the end of the lesson, students will be able to:

1. Define QOL
2. Recognize how QOL may vary between people or over time
3. Identify the elements that influence QOL (physical health, psychological health, independence, social relations, environment, spiritual wellbeing)

**Standards Addressed:** Strand 1: Inquiry Process; Strand 3, Concept 2: Science and Technology in Society

**Themes:** Tradeoffs

**Skills:** Evidence based thinking, problem solving

**Key Vocabulary**

**Quality of Life:** an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns

**Culture:** values or traditions shared by a group

**Value Systems:** principles of right and wrong accepted by an individual or social group

**Goals:** something you hope to accomplish (make the football team, go to college)

**Expectations:** something you anticipate doing (closely related to goals)

**Standards:** the ideal or the basis for comparison

**Teaching Instructions:**

1. Ask students to pair up and discuss what a “good life” is. They should also come up with the top 5 things they think are necessary for achieving their definition of a good life.
2. Ask one representative for each pair to verbally share their discussion with the class. Write down all ideas on the board (putting check marks next to those that repeat).  
  
Pose the following questions to help them consider things that may impact their idea of a good life:
  - a. How did you define a “good life”? What are the top 5 “good life” items identified?
  - b. How do you think your choices compare to the average youth (80% of 12-24 year olds say that having close friends is important)? To your parents?
  - c. Do you think your top 5 items for a good life would change if you were 30 years older? If you had children? If you lived in Alaska?
  - d. Are there any technologies that are part of your good life?
  - e. What other factors do you think might impact what your top 5?

Adapted from Facing the Future, Defining Happiness, by Sandra Rodegher

## INTRODUCTION TO QUALITY OF LIFE

(50 minute lesson)

3. Provide the students with the definition of QOL. a. Define other key terms (see the attached slide show).	Day One
4. Introduce the 6 categories of the WHOQOL and provide examples. a. Physical Health (energy, pain, sleep, illness) b. Psychological Health (body image, memory, learning, self-esteem) c. Level of Independence (ability to work and support self, mobility, need for medicines or physical aids) d. Social Relations (friendships, romantic relationships, social support) e. Environment (freedom, safety, financial security) f. Spirituality (spirituality, religion, personal beliefs)	Day Two
5. Have the students return to their original pairs and ask them: a. Which of the 6 categories (identified in step 4) did each of your top 5 fall in? b. Did any of the 6 categories get overlooked? If so, is it ok that the category was overlooked? Would you like to change your top 5 or add more items to it? Why or why not? c. Would you like to redefine QOL? Use the gray box at the bottom of your worksheet to rewrite your definition.	Day Three
6. Have students share out from their pairs. When sharing their answers, draw attention to their reasons for adding or changing their items. a. Probe as to WHY it was important to do so. The goal here is to have them begin to explore why each of these 6 aspects is important to QOL. b. Have the students look back at their original definition of QOL and rewrite it to include the information they learned today.	Day Four

**Homework (see worksheet):** Find an example (book, newspaper, movie, etc.) of someone who has a different lifestyle than you. Write a brief summary about this person/people and, putting yourself in their shoes, write what you think QOL means to them in one paragraph.

Additional Resources: <http://www.who.int/en/>, [www.facingthefuture.org](http://www.facingthefuture.org)

Day Five

Adapted from *Facing the Future, Defining Happiness*, by Sandra Rodegher

**Essential question: How do we measure QOL?**

*By sharing others' stories, students will begin to see in a more concrete manner how QOL may vary. They will be introduced to subjective and objective methods of data gathering and brainstorm potential objective and subjective survey questions. The purpose of the upcoming survey is to start examining the differences and similarities in what people view as necessary/important for a high QOL.*



Day One

At the end of the lesson, students will be able to:

1. Discuss why certain facets of QOL are important to some and not others
2. Provide examples of subjective and objective measures
3. Construct survey questions about QOL

Day Two

**Standards Addressed:** Strand 1: Inquiry Process

**Themes:** Tradeoffs

**Skills:** Evidence based thinking, team skills

**Key Vocabulary**

**Indicators:** *measurements of a category*

**Objective:** *judgment based on observable phenomena (the water is 90 degrees)*

**Subjective:** *judgment based on an individual's feelings or perceptions (the water is cold)*

**Double-Barreled Questions:** *questions that ask two questions at once (Do you like ice cream and frozen yogurt? Some people may like one or the other!)*

Day Three

**Teaching Instructions:**

1. Warm Up: Ask students to pair up and share their answers from the previous lesson's homework.
  - a. Specifically, ask them to compare their rankings.
  - b. Are they the same or different?
  - c. If they are different, ask them why they think that is?
  - d. Ask students to decide from their chosen examples which person they think has the better QOL. Why?
2. Have students share out from their discussion. Use their opinion-based ideas of choosing which person has the better QOL to begin opening the door for creating a way to measure.
  - a. Ask more than one person: How did you decide which person has a higher QOL? Compare the various answers.
3. Introduce the idea of subjective and objective means by which to measure QOL.
4. Objective: Indicators
  - a. Measurable by quantity or time
  - b. How could you measure ice cream consumption using quantity?

Day Four

Day Five

Created by Sandra Rodegher

<p>c. How could you measure ice cream consumption using time?</p> <p>5. Subjective: People’s opinions/perceptions. Talk about what makes a good survey question.</p> <p>6. Ask them to come up with 2 objective (quantitative) &amp; 2 subjective (qualitative) survey questions about ice cream consumption.</p> <p>a. Ask for example survey questions and brainstorm with students: Which survey questions are better than others and what makes them better? Good survey questions are:</p> <ol style="list-style-type: none"> <li>i. Clear</li> <li>ii. Measuring what it intends to measure</li> <li>iii. NOT double-barreled (asking only one question)</li> <li>iv. Not pressuring the participant (biased or leading)</li> </ol> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Unclear: Would you enjoy the consumption of ice cream sometime?</li> <li>• Not measuring what it is trying to measure: What size ice cream cone do you get?</li> <li>• Double-barreled: Do you like ice cream and frozen yogurt?</li> <li>• Pressuring participant: Isn’t ice cream your favorite?</li> <li>• Good Wording: Do you like ice cream? Or Rate the degree to which you agree with this statement – “I like ice cream”</li> </ul> <p>b. Have students re-write any “bad” survey questions to be better survey questions.</p>	Day One
<p>7. Break off into 6 groups (one per category of QOL). These groups will become their QOL Survey Question Groups, which is where they will conduct most of the unit’s activities.</p> <p>8. Using the attached worksheet, each group should come up with at least 2 options for objective and 2 options for subjective questions for their QOL category.</p> <p>9. Once the groups have their questions, they should pair up with another group and provide each other feedback.</p> <p>a. Each group should finally decide on 3 questions (for a total of 18)</p>	Day Two
<p>10. The groups should rejoin and share their final decisions with the entire class.</p>	Day Three
	Day Four
	Day Five

**Homework (see worksheet):** Using the final list of 18 measures of QOL, the students should reflect on what might impact how people answer these questions. (This will pave way for the demographic information students will identify on day three.)

Additional Resources: N/A

## DATA COLLECTION AND ETHICS (90-120 minutes or 2 60-minute lessons)

### **Essential question: What type of data will we gather? How do we get it ethically?**

Students will continue to develop their survey design skills using the homework from days one and two to explore demographic data. They will also learn different types of survey answers and pre-test their questions on each other. They will generate a final survey and a plan for gathering data.



At the end of the lesson, students will be able to:

1. Identify various demographic characteristics
2. Create examples of both closed and open ended questions
3. Explain how they can analyze various types of data

**Standards Addressed:** Science, C2, PO3; Science, C2, PO4

**Themes:** N/A

**Skills:** Written communication, team skills, research skills

### Key Vocabulary

**Demographics:** statistical characteristics of human populations (like age or income) used to identify markets; a market or segment of the population identified by demographics

**Open Ended Questions:** allow the respondents to write in their own answers

**Closed Ended Questions:** provide the respondents answer options to choose from

**Nominal Data:** data that is categorical in nature (like gender). You cannot find an average for gender. They are just categories.

**Ordinal Data:** data that is the result of ranking various items, people, etc.

**Interval Data:** data that is equidistant on a scale. Temperature is an example.

**Ratio Data:** data that is equidistant on a scale but also has a true zero

**True Zero:** a zero that reflects something as “non-existent” (i.e. the absence of the thing being measured). Zero degrees F does not have a true zero but amount of time spent reading a book does.

**Likert Scale:** a scale participants use to rate how much they agree with a statement

**Mutually Exclusive:** the inability to do two things at the same time. A mutually exclusive closed ended question would only allow a respondent to circle one answer.

**Beneficence:** doing good

**Nonmaleficence:** doing no harm

**Fidelity:** being faithful to promises

**Responsibility:** duty

**Integrity:** honest; following moral guides

**Justice:** being fair; treating people as equals

**Rights:** the freedom to act or refrain from acting

**Dignity:** getting treated with respect or honor

Day One

Day Two

Day Three

Day Four

Day Five

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# DATA COLLECTION AND ETHICS (90-120 minutes or 2 60-minute lessons)

## Teaching Instructions:

<p>1. Warm up: Introduce the concept of demographic data and show why it is important. Through reflecting on their first night's homework, the students can begin to establish how various individual characteristics may put them at a disadvantage or advantage).</p> <ol style="list-style-type: none"><li>Have students take turns in their QOL Survey Question Groups sharing one item of influence for their QOL questions from their homework. The rules are:<ol style="list-style-type: none"><li>They can each only give one item at a time while alternating turns.</li><li>They cannot repeat items another student already mentioned.</li></ol></li><li>The students should then lump any related items into categories. Did they provide the answers: "being old" and "being young"? The category they might come up with is age. Other possible categories may be: race/ethnicity, class/economic status, religious beliefs, education level, location, family situations, gender.</li><li>Write the students' lumped categories on the board.</li></ol>	Day One
<p>2. Defining Demographics</p> <ol style="list-style-type: none"><li>Read out loud the Merriam-Webster definition of demographics: <b>1 plural:</b> the statistical characteristics of human populations (like age or income) used to identify markets, <b>2:</b> a market or segment of the population identified by demographics.</li><li>Ask the students: What does the definition I just read mean to you? Prompts: What are "statistical characteristics"? Is there just <i>one</i> human population? What does human population mean? (They should begin to say that the population may vary on who is being studied. Maybe the "population" is the world or maybe it is the United States or maybe it is just Phoenix.)</li><li>Ask the students: Why is this important? Why do we care about demographic data?</li><li>Ask them: Did any of the categories listed on the board impact your characters from the first night's homework assignment? Do you think belonging to any of those categories impacts how they might define QOL? Students should begin to recognize that there may be inequalities based on demographic data.</li></ol>	Day Two
<p>3. Activity: Demographic Questions</p> <ol style="list-style-type: none"><li>Before beginning, ask students if they would like to add any more categories to the board based on the previous conversation.</li><li>Vote: On a piece of paper, have students choose <b>SIX</b> demographic categories they would like to include on their survey from the choices on the board. The six with the most votes will be included in the survey.</li><li>Assign each of the QOL Survey Question Groups one of the chosen categories.</li><li>Have the groups come up with one good survey question based on their given demographic category. Before beginning, remind them what makes a good survey question (refer to day two).</li></ol>	Day Three
<p>4. The next section transitions to a discussion of the overall survey – NOT just the newly written demographic questions.</p>	Day Four
	Day Five

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## DATA COLLECTION AND ETHICS (90-120 minutes or 2 60-minute lessons)

<ul style="list-style-type: none"><li>e. Read the definitions of closed ended and open ended questions.</li><li>f. Guide students through the example question. (How many books do you read per month?)</li><li>g. Before providing them with the example answers in the PowerPoint, ask them to brainstorm as a class what a potential closed ended and open ended question might look like.</li></ul>	Day One
<p>5. Closed ended questions, Data types, and Analysis. Using the corresponding slide, lecture on the following information.</p> <ul style="list-style-type: none"><li>a. Nominal: data that fits within categories<ul style="list-style-type: none"><li>i. Provide the following examples: Yes/No, Male/Female</li><li>ii. Have students come up with other categories. Examples include: religion, ethnicity/race, vegetarian or carnivore.</li></ul></li><li>b. Ordinal: ranking. (When you hear ORDinal, think of putting things in ORDer.)<ul style="list-style-type: none"><li>i. "From favorite to least favorite"</li><li>ii. Again have them come up with their own examples (first to last to enter the room, tallest to shortest, oldest to youngest).</li></ul></li><li>c. Interval: scaled. Increments on the scale should be equidistant from each other.<ul style="list-style-type: none"><li>i. What is the temperature outside?</li><li>ii. Likert Scale: "Rate the degree to which you agree with this statement..."<ul style="list-style-type: none"><li>a) 1 - Strongly agree, 2- agree, 3 - somewhat agree, 4- neither agree nor disagree, 5 -somewhat disagree, 6 - disagree, 7 - strongly disagree</li><li>b) More points on the scale allow the respondent to be more specific.</li></ul></li></ul></li><li>d. Ratio: This one is tricky because it is closely related to interval. The difference is with ratio, there is a "true zero."<ul style="list-style-type: none"><li>i. A true zero means that a 0 indicates "an absence" of the measure. Degrees Fahrenheit does not have a true zero. Why? Because when it is 0 degrees there is not an absence of temperature. It is just cold!</li></ul></li><li>e. Always consider including a "N/A" and an "Other" category when doing closed ended answers! – Ask the students why that might be.<ul style="list-style-type: none"><li>i. Question might not apply to them (i.e. How long have you been married?)</li><li>ii. You might not provide them with the category they need so they might need to write in their own answer.</li></ul></li><li>f. Quickly review the slide about common analyses to do with data types.<ul style="list-style-type: none"><li>i. Make sure students understand the idea of percentages, frequencies, and mean, median, and mode as well as the various types of graphs.</li><li>ii. Let students know that you will be returning to this topic on day five. They do not need to know how to do any of the math yet, but they may want to consider this when they go on to the next activity.</li></ul></li></ul> <p><b>Here is where the lesson may be stopped if broken into two days</b></p>	Day Two
	Day Three
	Day Four
	Day Five

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## DATA COLLECTION AND ETHICS (90-120 minutes or 2 60-minute lessons)

<p>6. Activity: Answering your questions</p> <ol style="list-style-type: none"><li>The students should return to the four questions they constructed (1 demographic question and 3 QOL questions from day two). Have them decide whether each question should be closed or open ended and also which data type would be a best fit for the question. They should use the worksheet from day three to record their answers.</li></ol>	Day One
<p>7. Pre-testing survey questions</p> <ol style="list-style-type: none"><li>Ask students why they might want to pre-test the survey questions.</li><li>If they are unsure what you mean by pre-test, suggest that they think of it as a trial run. What might they learn from a trial run?</li></ol>	Day Two
<p>8. Activity: Pre testing the survey questions</p> <ol style="list-style-type: none"><li>Have each QOL Survey Question Group pair up with another group to answer each other's survey questions.</li><li>After answering the questions, each group should take turns interviewing the other group regarding the survey questions that were created. They should ask questions that allow them to refine the questions<ol style="list-style-type: none"><li>Did you understand the question?</li><li>Was it confusing?</li><li>Is there a way I could have made it clearer?</li><li>Were the answer choices adequate?</li><li>What do you think I was measuring? (Does what they think you were measuring match up with what you were actually measuring?)</li></ol></li><li>After they have refined the survey questions they should submit them to you so you can enter them into the finalized survey for distribution.</li></ol>	Day Three
<p>9. Introduce the homework assignment, which is to ask their survey questions and gather data.</p> <ol style="list-style-type: none"><li>Refer to the PowerPoint slide and have students brainstorm the pros and cons of each survey medium.<ol style="list-style-type: none"><li>Internet: can get a lot of people from all over, but is restricted to people who have access to both a computer and the Internet</li><li>Phone: time consuming for researcher; limited to people with phones</li><li>Interview: time Consuming; researcher may ask questions differently</li><li>Mail: no time! It is more likely to get thrown out but it is more confidential.</li></ol></li><li>Interview or Internet will probably be their best bet. Have students do a quick vote on which medium they want to use. Each student should get at least two people to complete their survey.</li></ol>	Day Four
<p>10. Before students can gather data, teach them how to treat their participants ethically and with consideration.</p> <ol style="list-style-type: none"><li>Introduce the terms:</li></ol>	Day Five

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## DATA COLLECTION AND ETHICS (90-120 minutes or 2 60-minute lessons)

- i. Beneficence and Nonmaleficence: helping people and not hurting them
  - ii. Fidelity and responsibility: act professionally
  - iii. Integrity: be accurate and truthful; do not lie!
  - iv. Justice: everyone should benefit from your research (not just your class)
  - v. Respect for people's rights and dignity: they can say no to participating; they can stop participating at any point in time.
- b. Explain what adhering to these ethical principles look like:
- i. Surveys should be anonymous – we do not know who said what. (Confidential means: “We know, but we are not telling”! There is a difference.)
  - ii. Allow participants to learn about the results of the survey; provide them with the teacher's email address or school telephone number.
  - iii. Remind people that they do not HAVE to participate and can stop at any point in time if they feel uncomfortable.

**Homework:** Gather data via asking people to participate in their survey and providing the link or paper copy.

Additional Resources: N/A

Day One

Day Two

Day Three

Day Four

Day Five

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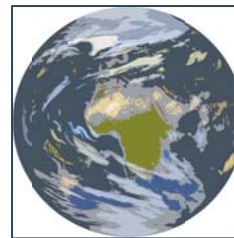
## EXPLORING DIFFERENCE

(50 minute lesson)

### **Essential question: Is everyone's QOL influenced equally? How are sustainability and QOL related?**

Students take a break from the challenging work of survey design and begin investigating the relationship between sustainability and QOL.

They will explore conflicting views on QOL and how increasing one person's QOL might mean a decrease in QOL for someone else. You may insert this as day two, if you feel it is more appropriate for your students.



At the end of the lesson, students will be able to:

1. Provide examples of the link between QOL in the US and other countries and vice versa
2. Describe what tradeoffs may occur when we change our environment
3. Identify two linkages between QOL and sustainability

**Standards Addressed: Science: S3, C1, PO1; Science: S3, C3, PO1**

**Themes:** Systems thinking, tradeoffs

**Skills:** Evidence based thinking

### **Teaching Instructions:**

- |   |
|---|
| 1. Begin by checking with students about the data collection homework. Students may already be handing in surveys. If they are using the Internet, remind them of the time you will be closing the survey (i.e. exporting the data from the internet and into Excel).   |
| 2. Provide an introduction and placement for the video on the PowerPoint slide. <ol style="list-style-type: none"><li>a. We have learned that people have similarities in QOL, but may also have significant differences, depending on demographic and geographic characteristics, but what do the difference <i>actually</i> look like???</li></ol>  |
| 3. Play the video. Have students fill out the day four worksheet while they watch the video "Good Fortune – Teaser" (Youtube link: <a href="http://www.youtube.com/watch?v=SQKkqCiJT4k">http://www.youtube.com/watch?v=SQKkqCiJT4k</a> ). <ol style="list-style-type: none"><li>a. After the video, have students review their answers to the worksheet.</li><li>b. Ask students: What are the sustainability issues in the video? They should think about the environment, society, and the economy.</li><li>c. What are the QOL issues in the video?</li><li>d. Do you think that the QOL and sustainability issues are interconnected? If yes, how are they connected?</li></ol> |
| 4. Whose Resource Is It (adapted from Virginia Tech's Education for Sustainable Development)? <ol style="list-style-type: none"><li>a. Frame the scenario for the class.<ol style="list-style-type: none"><li>i. We are all residents of Town "X."</li><li>ii. Selltech would like to build a power plant in our town.</li></ol></li></ol>  |

Adapted from Virginia Tech's Education for Sustainable Development by Sandra Rodegher

## EXPLORING DIFFERENCE

(50 minute lesson)

<ul style="list-style-type: none"><li>iii. There is a disagreement on whether this power plant should be built or not.</li><li>iv. A taskforce has been assembled to decide whether it should be built.</li><li>v. During this meeting we will all voice our opinions and at the end we MUST vote to determine whether or not the power plant will be built.</li><li>b. Distribute the Town “X” handout. Have everyone read it but do not discuss it.</li><li>c. Assign roles to volunteers:<ul style="list-style-type: none"><li>i. If there are 5 (class of 14 or less) volunteers give each volunteer one of the characters. They are not allowed to discuss the details of their character with any one else</li><li>ii. If there are 10 (class of 15 or more) volunteers, there are two people per character. They can discuss their character with their partner but not the rest of the class. Their focus is on their character’s goals.</li><li>iii. The students NOT playing characters are objective 3<sup>rd</sup> party characters. They can discuss the town and weigh pros and cons.</li></ul></li><li>d. Students should be encouraged to consider:<ul style="list-style-type: none"><li>i. The various perspectives</li><li>ii. Societal, economic, and environmental impacts</li><li>iii. Trade offs</li><li>iv. Compromises</li></ul></li><li>e. They should list on the board 3-5 solutions to vote on. They MUST all vote!</li></ul>	Day One
<ul style="list-style-type: none"><li>5. After they have voted, ask them to come up with 2-3 ideas of how this story might play out.<ul style="list-style-type: none"><li>a. If they are unsure how to begin, frame it in terms of “best case” and “worst case.”</li><li>b. They should include in their story extensions elaborations on QOL, sustainability, and how the two are interacting.</li></ul></li><li>6. Ask them to consider the following questions:<ul style="list-style-type: none"><li>a. How do you feel about the task force decision?</li><li>b. Will anyone’s QOL be improved by this decision? How?</li><li>c. Will anyone’s QOL be degraded by this decision? How?</li><li>d. Will anyone’s QOL be both improved AND degraded?</li><li>e. How do <b>you</b> think the decision ties into the concepts of QOL and sustainability?</li><li>f. Again, if they have trouble with this question, prompt them by reminding them about the environment, society and economy.</li></ul></li></ul>	Day Two
	Day Three
	Day Four
	Day Five

**Homework:** Continue recruiting survey participants and gathering data.

Additional Resources: <http://susdev.agecon.vt.edu/curriculum.htm>

*Adapted from Virginia Tech’s Education for Sustainable Development by Sandra Rodegher*

## ANALYZING DATA

(50 minute lesson)

### **Essential question: What are the findings of our study? What have we learned about QOL?**

*Even at a college level, students are often unaware of why they might use one graph to represent data over another. Ideally, by exploring data, the students will begin to see through trial and error that certain visual representations can be more useful and/or appropriate than others. Students can use Excel or simply graph paper to make their graphs. Before giving this lesson, you should prepare the Excel sheet of survey data results for each QOL Survey Question Group.*



*At the end of the lesson, students will be able to:*

- 1. Create graphs or charts that tell stories*
- 2. Analyze their survey results*
- 3. Think critically about QOL and redefine or refine the previous definition*

**Standards Addressed:** Science, S3, C3, PO6; Science, S3, C4, PO1, PO2, PO3; Math, S2, C1, PO1-5

**Themes:** Tradeoffs, transdisciplinarity

**Skills:** Written communication, evidence based thinking, team skills, research skills, quantitative skills

### **Teaching Instructions:**

1. Warm up
  - a. Distribute to each student an Excel sheet with all of the collected data.
  - b. Students should pair up to look at the data and think about how they can potentially display it.
    - i. Students may feel overwhelmed at this point. This is ok! A valuable lesson here is that data IS overwhelming and that we need to find ways to organize it.
  - c. After students brainstorm about how to display the data, have them share out.
    - ii. Students should come up with things we discussed on day three (means, percentages, frequencies, pie charts, etc.). However, if they come up with more creative ways to share the data, encourage them to work out how they might represent their ideas.
2. Review: remind students of how they might use numbers or figures to represent the data and have it tell a story. At this point try not to TELL them, but have them tell you.
3. Activity: Data Analysis
  - a. Students should return to their QOL Survey Question Groups.
  - b. Each survey group is responsible for analyzing the survey questions they constructed. Distribute the appropriate Excel sheet to each group (with their raw

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## ANALYZING DATA

(50 minute lesson)

<p>data from their demographic and survey questions).</p> <ul style="list-style-type: none"><li>c. They should come up with a number and/or figure for the demographic data of ALL participants (i.e. 60% of the survey sample were women and 40% were men).</li><li>d. They should come up with a number and or figure for:<ul style="list-style-type: none"><li>i. ALL participants for the three QOL survey questions (i.e. 70% of all respondents felt that...)</li><li>ii. ALL participants, broken down by DEMOGRAPHIC DATA for each QOL survey question (i.e. 30% of the men and 10% of the women felt that...)</li></ul></li><li>e. They should be reminded that they will be presenting this to the rest of the class.</li><li>f. Keeping asking them: What is the best way to tell the story?</li></ul>	Day One
<ul style="list-style-type: none"><li>4. Share out<ul style="list-style-type: none"><li>a. Have groups take turns sharing out their data.<ul style="list-style-type: none"><li>i. After each group shares, the class as a whole should talk about what these data might mean.<ul style="list-style-type: none"><li>a) How does it relate to sustainability?</li><li>b) How does it relate to QOL?</li></ul></li></ul></li></ul></li></ul>	Day Two

**Homework:** N/A

Additional Resources: <http://www.gcsescience.com/hsw12.htm>

Day One

Day Two

Day Three

Day Four

Day Five

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