



**5-E CLASSROOM STEM ACTIVITY:**  
**WELCOME TO THE WEB**

By Dr. Alexandra Owens

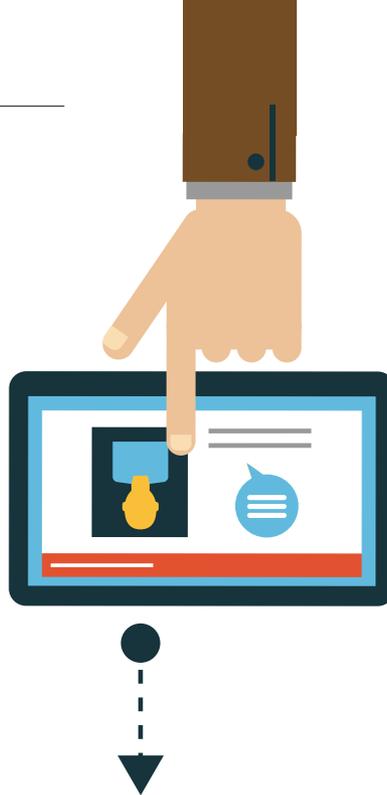


# THERE'S MORE TO MARKETING THAN MEETS THE EYE

BY ELLEN EGLEY

If you've ever gone to a store knowing exactly which brand or product you wanted to purchase, you should probably thank (or blame!) a marketing professional. Responsible for connecting companies and products to their target audience, marketers are in every industry and use communication, creativity, and data analysis skills to spread their message and meet their companies' goals.

To get a better understanding of one of the jobs in this broad field, STEM Jobs spoke with web content producer Meltonya Wakefield about her STEM-powered career.



**STEM JOBS:** What is your role, and what all does that encompass?

**MELTONYA WAKEFIELD:** As a web content producer, I am responsible for creating and updating content on the company website, which includes writing, reviewing, and editing; producing and moderating webinars with authors; and contributing to the marketing video program by contacting video subjects, directing filming, scripting footage, and posting clips to the web. I am also responsible for collecting and analyzing data to optimize the website experience for users.

**SJ:** What type of education is needed to be qualified for your position?

**MW:** To be qualified for my position, you need to have a knowledge of how a website works – HTML coding; what colors look best; and how to track and analyze page visits, click-throughs, time spent on a site, and more. You can learn these types for things from classes that teach web design and coding. My position also requires me to proofread, edit, and write descriptions of our programs, products, and services. Strong writing skills are very important.

**SJ:** What STEM skills are required in your job?

**MW:** STEM skills required for my job are HTML coding, data analytics, and video production.

**SJ: What experiences did you have that were the most valuable on your path to your current career?**

**MW:** I work for an education association that produces products and services for educators. Many of my friends and family are teachers and principals – they would be my “customers.” Knowing and understanding what types of challenges they face with a lack of resources and what types of things would be most helpful to them allows me to give input when decisions are being made regarding creating new or updating existing products and services.

**SJ: What is the most rewarding part of your job?**

**MW:** The most rewarding part of my job is seeing my ideas come to life and make an impact. Knowing that something I wrote or had a hand in is making a difference in someone else’s work is very gratifying.

**SJ: What are some of the different STEM roles available in marketing?**

**MW:** There are many STEM roles available in marketing. They can include data analyst, social media coordinator, e-commerce specialist, web designer, and many more.

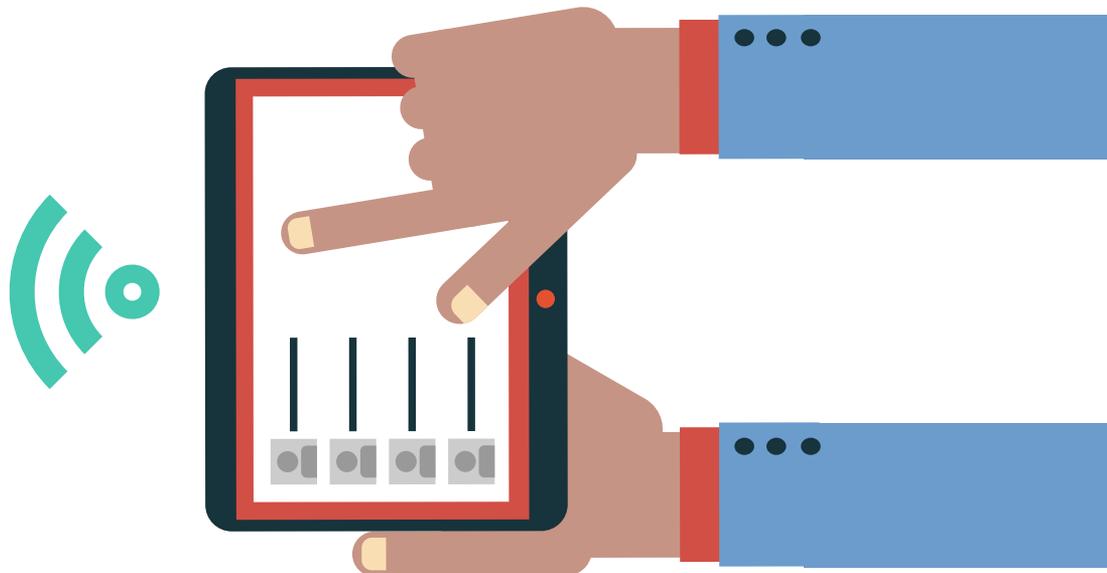
**SJ: What advice would you give to high school students who are interested in a career in marketing?**

**MW:** I would tell high school students who are interested in a career in marketing to never stop learning. Industries are constantly changing, and you always want to be ahead of the game. Know your product and most importantly – know your audience. Understand that marketing is multi-faceted, so what you can do as a marketer is limitless. □

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**MELTONYA WAKEFIELD**  
WEB CONTENT PRODUCER  
DEGREE: BACHELOR’S IN PSYCHOLOGY  
YEARS IN THE INDUSTRY: 10  
STEM TYPE: INTEGRATOR



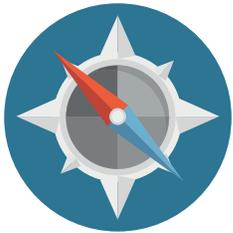
# 5-E CLASSROOM STEM ACTIVITY: WELCOME TO THE WEB

Here are some ideas for how middle school teachers could use this story as a launching point for integrated STEM learning. Our activities follow the 5-E Learning Cycle Model.



## Part 1: Engage

- 1 Hold a class discussion about frequently visited websites. Project examples of websites for students to observe.
  - a. What are some websites you visit? Why?
  - b. What is appealing about the website?
  - c. What features of the website do you like?
  - d. What would you change about the website?
- 2 Have students read the article "There's More to Marketing than Meets the Eye" in *STEM Jobs* magazine. Discuss the following questions:
  - a. Beyond creating a website, what is a web content producer responsible for?
  - b. Why is data collection and analysis important to web design?
  - c. What STEM skills are needed to be a web content producer?
- 3 Ask students to consider a club, sports team, or other community group that would benefit from having a website. Provide time for students to discuss ideas with a partner.



## Part 2: Explore

- 1 Break students into small groups of three or four students.
- 2 Present the challenge to the students: Design a webpage for a school or community organization that will meet their needs. Interview the organization and create a website that will be published.
- 3 Allow students to select an organization of their choice, ensuring that no two groups select the same organization.
- 4 Provide time for students to communicate with the organization to determine their needs and audience. This is essential to creating an effective webpage.
- 5 You may use the webpage provider suggestions found at [edu.STEMjobs.com/teacher-resources](https://edu.stemjobs.com/teacher-resources), or select your own web provider. Those listed in the resources are free. Remind students that they will need to be able to collect and analyze data, just as a professional web content producer would. This may influence which web provider they select.
- 6 Ask students to design the website over the coming days to present to the class. Remind students that the webpage should be designed specifically for the organization and its desired audience.



## Part 3: Explain

- 1 Groups will share their website with the class. Each member should present the information that they were responsible for. Students should explain their design and important elements, such as colors, text, images, and interactive elements, and why each was chosen. Students must also be able to explain how they will collect pertinent data for analysis.
- 2 If possible, have a representative from each organization attend during the presentations so they can provide feedback.
- 3 After each presentation, allow audience members to ask questions and offer constructive critique.
- 4 Allow students to make any revisions to their website. If arrangements have been made, share work with the organization intended. Once approval is granted, publish the site.



## Part 4: Elaborate

- ① Once the website has been published, have students collect and analyze their web data over the course of at least a week.
- ② Students should create a short presentation to share with the class and display their statistics and analysis.
- ③ Using this analysis, revisions to the website should be made.
- ④ Once the website is revised and running smoothly, have students grant the organization web maintenance access.



## Part 5: Evaluate

Students will be evaluated for their website and data analysis using the following rubric. Provide the rubric at the beginning of the lesson to clarify expectations and objectives. Each group will be graded, therefore all students in the group will receive the same score.

### Scoring Rubric

\_\_\_ /20 Website

- Was research on the organization completed?
- Did they consider the needs of the organization in their web design?
- Was the website user friendly and created with the appropriate audience in mind?

\_\_\_ /20 Participation

- Did each student contribute to the overall project?
- Did each student assist in creating the website and analytics?

\_\_\_ /10 Data Analysis

- Was pertinent data collected regarding web traffic? Was the data analyzed for trends?
- Were changes made to improve the website based on this data?

\_\_\_ /50 Total

## Standards Addressed:

### Common Core State Standards - Math

CCSS.MATH.PRACTICE.MP1 Make sense of problems and persevere in solving them.  
 CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.  
 CCSS.MATH.PRACTICE.MP4 Model with mathematics.  
 CCSS.MATH.CONTENT.6.SPA.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.  
 CCSS.MATH.CONTENT.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  
 CCSS.MATH.CONTENT.6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:  
 CCSS.MATH.CONTENT.6.SP.B.5.A Reporting the number of observations.  
 CCSS.MATH.CONTENT.6.SP.B.5.B Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  
 CCSS.MATH.CONTENT.6.SP.B.5.C Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

### Common Core State Standards - ELA

CCSS.ELA-LITERACY.RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.  
 CCSS.ELA-LITERACY.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.  
 CCSS.ELA-LITERACY.SL.6.1.A Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.  
 CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.  
 CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.  
 CCSS.ELA-LITERACY.SL.6.1.D Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.  
 CCSS.ELA-LITERACY.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.  
 CCSS.ELA-LITERACY.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.  
 CCSS.ELA-LITERACY.SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.  
 CCSS.ELA-LITERACY.SL.6.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.  
 CCSS.ELA-LITERACY.SL.7.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.  
 CCSS.ELA-LITERACY.SL.7.1.A Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.  
 CCSS.ELA-LITERACY.SL.7.1.B Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.  
 CCSS.ELA-LITERACY.SL.7.1.C Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.  
 CCSS.ELA-LITERACY.SL.7.1.D Acknowledge new information expressed by others and, when warranted, modify their own views.  
 CCSS.ELA-LITERACY.SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.  
 CCSS.ELA-LITERACY.SL.7.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.  
 CCSS.ELA-LITERACY.SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.  
 CCSS.ELA-LITERACY.SL.7.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.  
 CCSS.ELA-LITERACY.RI.8.7 Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.  
 CCSS.ELA-LITERACY.SL.8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.  
 CCSS.ELA-LITERACY.SL.8.1.A Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.  
 CCSS.ELA-LITERACY.SL.8.1.B Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.  
 CCSS.ELA-LITERACY.SL.8.1.C Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.  
 CCSS.ELA-LITERACY.SL.8.1.D Acknowledge new information expressed by others and, when warranted, qualify or justify their own views in light of the evidence presented.  
 CCSS.ELA-LITERACY.SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.  
 CCSS.ELA-LITERACY.SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.  
 CCSS.ELA-LITERACY.SL.8.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.  
 CCSS.ELA-LITERACY.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.  
 CCSS.ELA-LITERACY.RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

## Standards Addressed (Cont.):

### Next Generation Science Standards

MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.  
*Science and Engineering Practices*

Asking Questions and Defining Problems. Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions.  
*Disciplinary Core Ideas*

ETS1.A: Defining and Delimiting Engineering Problems

The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.

MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.  
*Science and Engineering Practices*

Developing and Using Models. Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs.  
*Disciplinary Core Ideas*

ETS1.B: Developing Possible Solutions

A solution needs to be tested, and then modified on the basis of the test results, in order to improve it.

ETS1.C: Optimizing the Design Solution

The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.

### ISTE Standards for Students

1d Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

4b Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

4c Students develop, test and refine prototypes as part of a cyclical design process.

5a Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

5b Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

6a Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

6b Students create original works or responsibly repurpose or remix digital resources into new creations.

6c Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

6d Students publish or present content that customizes the message and medium for their intended audiences.

### Texas Essential Knowledge and Skills - Math

6-8.1.A apply mathematics to problems arising in everyday life, society, and the workplace.

6-8.1.B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

6-8.1.D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.

6-8.1.E create and use representations to organize, record, and communicate mathematical ideas.

6.12.A represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots

6.12.B use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution

### Texas Essential Knowledge and Skills - Science

6-8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.

## Standards Addressed (Cont.):

### Texas Essential Knowledge and Skills - Technology

- 6.1.A identify, create, and use files in various formats such as text, raster and vector graphics, video, and audio files
- 6.2.A participate in personal learning networks to collaborate with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies
- 6.2.B communicate effectively with multiple audiences using a variety of media and formats
- 6.3.D process data and communicate results
- 6.4.B plan and manage activities to develop a solution, design a computer program, or complete a project
- 6.4.C collect and analyze data to identify solutions and make informed decisions
- 6.4.D use multiple processes and diverse perspectives to explore alternative solutions
- 6.4.E make informed decisions and support reasoning
- 6.4.F transfer current knowledge to the learning of newly encountered technologies
- 6.5.A understand copyright principles, including current laws, fair use guidelines, creative commons, open source, and public domain
- 6.5.B practice ethical acquisition of information and standard methods for citing sources
- 6.5.C practice safe and appropriate online behavior, personal security guidelines, digital identity, digital etiquette, and acceptable use of technology
- 6.6.A define and use current technology terminology appropriately
- 6.6.B select technology tools based on licensing, application, and support
- 6.6.C identify, understand, and use operating systems
- 6.6.D understand and use software applications, including selecting and using software for a defined task
- 6.6.F understand troubleshooting techniques such as restarting systems, checking power issues, resolving software compatibility, verifying network connectivity, connecting to remote resources, and modifying display properties
- 6.6.G demonstrate effective file management strategies such as file naming conventions, location, backup, hierarchy, folder structure, file conversion, tags, labels, and emerging digital organizational strategies
- 6.6.M plan and create non-linear media projects using graphic design principles
- 7.1.A identify, create, and use files in various formats such as text, raster and vector graphics, video, and audio files
- 7.2.A participate in personal learning networks to collaborate with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies
- 7.2.B communicate effectively with multiple audiences using a variety of media and formats
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- 8.1.A identify, create, and use files in various formats such as text, raster and vector graphics, video, and audio files
- 8.2.A create and manage personal learning networks to collaborate and publish with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies
- 8.2.B communicate effectively with multiple audiences using a variety of media and formats
- 8.3.D process data and communicate results
- 8.4.B plan and manage activities to develop a solution, design a computer program, or complete a project
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