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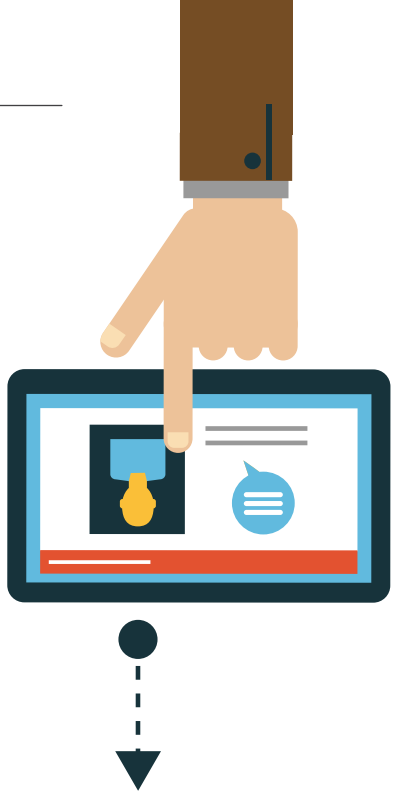
5-E CLASSROOM STEM ACTIVITY:
WELCOME TO THE WEB

By Dr. Alexandra Owens

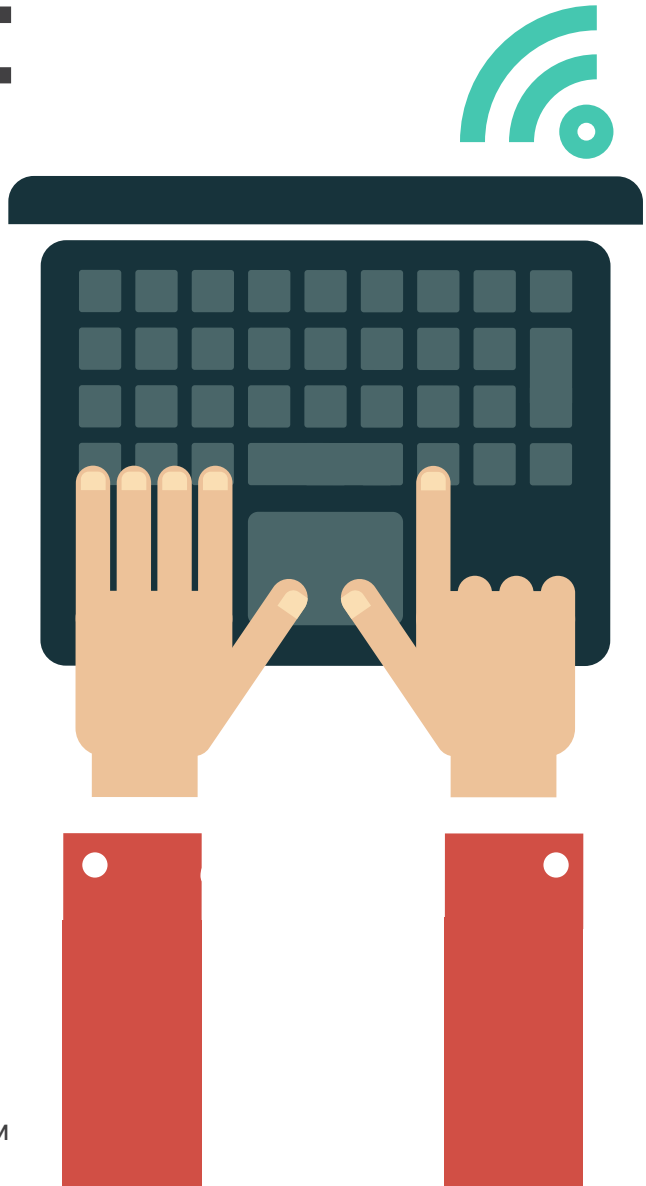


THERE'S MORE TO MARKETING THAN MEETS THE EYE

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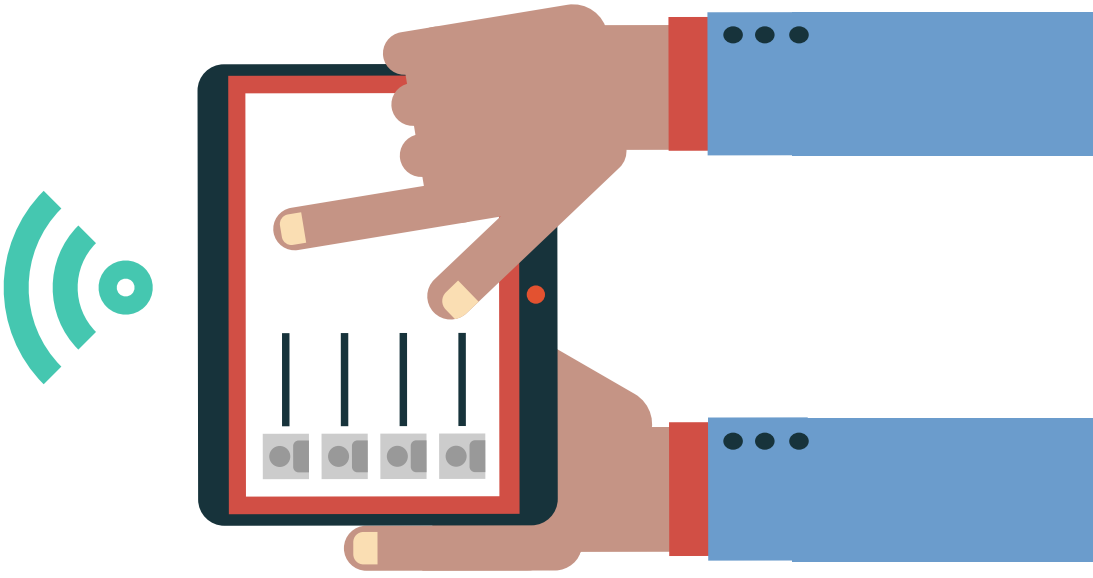
MELTONYA WAKEFIELD
WEB CONTENT PRODUCER
DEGREE: BACHELOR'S IN PSYCHOLOGY
YEARS IN THE INDUSTRY: 10
STEM TYPE: INTEGRATOR



5-E CLASSROOM STEM ACTIVITY: WELCOME TO THE WEB

Here are some ideas for how high 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

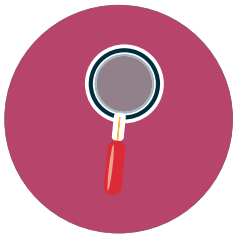
1. Hold a class discussion about frequently visited websites. Project examples of websites for students to observe.
   - **a.** What are some websites you visit? Why?
   - **b.** What is appealing about the website?
   - **c.** What features of the website do you like?
   - **d.** What would you change 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**, 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.

Common Core State Standards - ELA

CCSS.ELA-LITERACY.RST.9-10.4 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 9-10 texts and topics.
CCSS.ELA-LITERACY.RST.11-12.4 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 11-12 texts and topics.
CCSS.ELA-LITERACY.RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g. quantitative data, video, multimedia) in order to address a question or solve a problem.
CCSS.ELA-LITERACY.SL.9-10/11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10/11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
CCSS.ELA-LITERACY.WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Next Generation Science Standards

HS-PS4-2 Evaluate questions about the advantages of using digital transmission and storage of information.
Science and Engineering Practices
Asking Questions and Defining Problems. Evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.
Disciplinary Core Ideas
PS4.A: Wave Properties
Information can be digitized (e.g., a picture stored as the values of an array of pixels); in this form, it can be stored reliably in computer memory and sent over long distances as a series of wave pulses.

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

A.1.A apply mathematics to problems arising in everyday life, society, and the workplace.
A.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.
A.1.D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.
A.1.E create and use representations to organize, record, and communicate mathematical ideas.

Texas Essential Knowledge and Skills - Science

B.3, C.3, P.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom.

Texas Essential Knowledge and Skills - Technology

1.A Investigate and explore various career opportunities within the computer science field and report findings through various media.
1.E Create web pages using a mark-up language.
1.G Design creative and effective user interfaces.
2.C Publish information in a variety of ways such as print, monitor display, web pages, and video.
4.A Demonstrate the ability to insert applets into web pages.
4.B Find, download, and insert scripting code into web pages to enhance interactivity