

and then places an X on a space on his or her Bingo card with a corresponding career fact that best fits that career. For example, a student exploring the biochemist career fact sheet could put an X on the Bingo square that says “uses chemicals.” The student must also write “biochemist” in the square to indicate which career fact sheet provided the information. Some facts, such as salary, may fit more than one career. In this case, students can choose which square they want to mark off—this can be useful when trying to complete a row to achieve Bingo! Before moving to a different station, the student must then complete that row of the STEM Bingo Worksheet (Figure 2) to gather more information about the career.

After the worksheet is completed, the student moves to another station and completes the steps described above. The game ends when a student has completed a horizontal, vertical, or diagonal row on his or her card, and yells “Bingo!” At this point, the teacher or students can check to see if the card has been completed correctly. If the facts match up with the careers listed on the card, then a winner is declared and a new round can begin. If the card is incorrect, restart the game until another Bingo is declared.

The high-tech version

In the high-tech version of this game, students become mobile career stations that their classmates must visit to gather the

CONTENT AREA

STEM

GRADE LEVEL

5–9

BIG IDEA/UNIT

STEM career information

ESSENTIAL PRE-EXISTING KNOWLEDGE

None

TIME REQUIRED

15–75 minutes

COST

None

FIGURE 2: STEM Bingo Worksheet

STEM Bingo Worksheet		Name _____ Date _____	
What’s your STEM career match?			
Career	Match on Bingo card	Interested?	Fun facts
<i>Food scientist</i>	<i>Requires a bachelor’s degree and good communication skills</i>	<i>Maybe</i>	<i>Food scientists make chemistry fun by developing ways to make ice cream less fattening and still taste good!</i>
What traits do you have that might make you successful in this career?			
Career	Match on Bingo card	Interested?	Fun facts
What traits do you have that might make you successful in this career?			
Career	Match on Bingo card	Interested?	Fun facts
What traits do you have that might make you successful in this career?			
Research a career that you learned about today. Write one or two paragraphs about the career, why you chose it, and what you would need to do to get hired for that career.			

necessary career information. Instead of reading the career information from handouts, students will download short video presentations of the information by scanning Quick Response (QR) codes. The codes are printed on 20 × 20 cm cards that are hung from lanyards worn by students (Figure 3). Scanning the codes using an app on a tablet or smart phone will open a link to a job description video presentation, some of which were created by the authors (see Resources). Feel free to use these presentations with your class or create your own if you are familiar with the necessary technology. Many free QR reader apps are available (see Resources). Students will need to download one to their device before the start of the game.

As in the low-tech version, students circulate throughout the room collecting the career information and completing their Bingo cards and worksheets. Students should wear their lanyards so that the QR codes are displayed on their backs and be reminded to hold still when another student is trying to scan the code. Students should wear earbuds, if possible, when listening to the videos. If earbuds are not available, they can listen with the volume turned down low.

If time permits, have students start researching and writing a paragraph describing a STEM career they might want to pursue. These can be finished as homework.

Postassessment

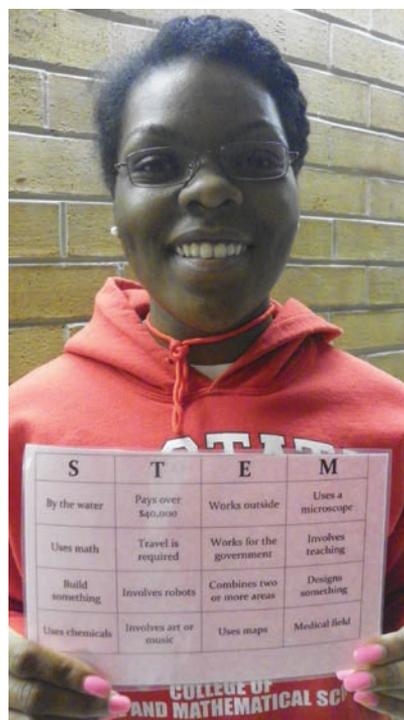
The day after the bingo activity,

ask students to brainstorm another list of STEM careers. Typically, students will be able to expand on the list they generated prior to the activity and provide more accurate job titles, such as aeronautical engineer in place of airplane builder. After they have completed their list, ask for volunteers to read their paragraphs about STEM careers they might want to pursue.

STEM career awareness in the Next Generation Science Standards

By connecting STEM activities to career exploration, teachers are also addressing the *Next Generation Science Standards*, which emphasize college and career readiness. STEM career exploration engages students in crosscutting disciplines, allowing them to see how classroom activities and future careers relate to subjects, college majors, and career disciplines such as physics and algebra (NGSS Lead States 2013). Moreover, career explorations are recommended for upper elementary school and middle school students, to provide them with information that may be relevant to their lives and increase their interest and the development of goals (Orthner et al. 2013; Wang and Degol 2013). STEM Bingo provides a way to insert career exploration into virtually any topic in an engaging way and can be played many times throughout the year. ●

FIGURE 3: A lanyard allows students to display the QR codes



REFERENCES

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NGSS Lead States. 2013. *Next Generation Science Standards: For states, by states*. Washington, DC: National Academies Press. www.nextgenscience.org/next-generation-science-standards.

Orthner, D.K., H. Jones-Sanpei, P. Akos,

and R.A. Rose. 2013. Improving middle school student engagement through career-relevant instruction in the core curriculum. *The Journal of Educational Research* 106 [1]: 27–38.

Wang, M.T., and J. Degol. 2013. Motivational pathways to STEM career choices: Using expectancy-value perspective to understand individual and gender differences in STEM fields. *Developmental Review* 33 [4]: 304–340.

RESOURCES

Game boards, informational sheets,

and other materials—<http://stemcareerawareness.wikispaces.com/HOME+PAGE>

Free QR reader apps— i-nigma, Kaspersky's QR Scanner, Quick Scan [<http://uqr.me/blog/best-qr-code-readers/#QuickScan>]

STEM career videos—<http://stemcareerawareness.wikispaces.com/VIDEO+LIST>

ONLINE SUPPLEMENTAL MATERIALS

STEM Bingo Worksheet and sample Bingo cards, fact sheets, and scripts—www.nsta.org/scope1709

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