

College2Career Forum: Rose State College Cyber Security

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Essential Question(s)

- What steps do I need to take to reach my future goals?
- How can I apply the career information to my current post-secondary plans and academic opportunities?

Summary

The College2Career Forum: Rose State College (RSC) Cyber Security program focuses on career exploration in cyber security and information technology while visiting a Post-Secondary Institution (PSI) campus. Students will visit the respective program locations on the RSC campus to hear from professionals and instructors while engaging in hands-on activities related to their respective career fields. Students will also gain information regarding college applications, expenses, financial aid, and other important information.

Learning Goals

- Explore a PSI (Tanenbaum Aerospace and Cyber Security Center and campus site)
- Connect career information to current academic opportunities and plans for post-secondary opportunities
- Collaborate with career professionals while completing hands-on activities

Attachments

- Road Map to Success—College2Career Forum - Spanish.docx
- Road Map to Success—College2Career Forum.docx
- Visualize Your Career—College2Career Forum - Spanish.docx
- Visualize Your Career—College2Career Forum.docx

Materials

- Road Map to Success handout (attached; one per student)
- Visualize Your Career handout (attached; one per student)
- Name badges (optional)
- T-shirts (optional)
- Pens/pencils
- Electronic devices (optional)

10 minutes

Engage

Facilitator Note: Disclaimer

The following description of what to expect from this Rose State College (RSC) forum event reflects the common structure but may be subject to change based on availability and/or the professional(s) leading your event. For example, professional slide shows may change and/or activities may differ.

Prior to facilitating any forum event, see our College2Career Forum: How to Guide for more information on how to set up a specific forum.

Once you have arrived on site, be sure to check that your mode of transportation has the appropriate parking pass or availability as needed. Walk with your students to the site, and meet your career professional(s).

Before students hear from the professional(s), provide a brief welcome and overview of the day. This overview can include "housekeeping items" such as restroom location, where to store bags, and electronic device policies.

Next, have students use the Fist to Five strategy to gauge what they already know about the careers, institution, and/or degree field they will explore during this visit. Tell students to hold up:

- 0 fingers (a fist) if they know nothing at all
- 1 finger if they have a little understanding
- 2 fingers if they know something but need clarification
- 3 fingers if they have basic knowledge
- 4 fingers if they have an advanced understanding
- 5 fingers if they are an expert and can teach others

Have students share-out their prior knowledge if they are a 3 to 5 and things they want to learn if they are a 0 to 2. Repeat the sharing- out process as often as needed.

Once students have shared their experiences, move on to introducing the career professional(s).

90 minutes

Explore

Students will begin the event speaking with the Rose State recruitment office about scholarships, class sizes, cost, and the application process. Next, a Rose State professor in the Cyber Security field may follow-up the recruitment pitch with a personal story about his career and college pathway, leading into talking more specifically about the importance of cyber security.

A professor will then walk students through an activity where they are asked to recover deleted items from a flash drive. This activity involves many intricate steps. With the professor showing the step-by-step process, students will move slowly. Since files are never actually “deleted” from a drive, this recovery process is a common practice for cyber-security professionals; especially when trying to find things that may be hidden on a drive that someone tried to delete as evidence. In this activity, students practice trying to recover JPEG, GIF, and PNG picture files from the flash drive. Students also search for more familiar programs like Office docs. After the recovery part of the activity, students then try to figure out where to put the files on their computer. Lastly, students look through all the files they recovered to see what evidence they can find.

After the first hands-on file recovery activity, the next event facilitator helps students learn some basic coding in the program Python. Students will get a brief background on coding and what Python is, then dive into the program to explore it more. Students will be given the opportunity to practice typing commands into Python to see how the program works. Some possible discoveries students will find is that the program can talk to them, do math, and draw geometric shapes.

10 minutes

Explain

Have students use the instructional strategy Think-Pair-Share with someone who participated in a different aspect of the activity than them. Students should turn and talk to their neighbors about the part of the activity they just engaged in. Students will also have the opportunity to ask questions about the degree program and/or career.

Facilitator Note: Student Engagement

As the chaperone, your main role through this section is classroom management and encouraging student questions and participation.

30 minutes

Extend

If time and resources permit, pass out the attached **Road Map to Success** handout to each student. Direct them to the https://www.mynextmove.org/ website or the K20 career clusters resource (https://learn.k20center.ou.edu/search?type=student-resources) and have them follow the directions on their handout to find what they need. Explain that they should complete the handout based on their individual searches. If students need help, encourage them to research careers similar to those of the presenting professional(s) or those within the same career cluster.

Facilitator Note: Road Map to Success Activity

If time does not permit, or students don't have electronic devices available, consider completing this activity upon returning to campus.

20 minutes

Evaluate

Upon returning to your campus and after participating in the College2Career Forum event, use the Mirror, Microscope, and Binoculars strategy to have students reflect on the experience. Pass out the attached **Visualize Your Career** handout to each student and allow them time to reflect on what they learned. Explain the following in as much detail as needed:

- **Mirror** (self reflection): *How do I feel about the career(s) I experienced today? Has this experience helped me think about what I want to do after high school?*
- **Microscope** (close inspection/details): *What are some of the smaller details of the career(s) I experienced today that I hadn't thought about before? How do my skills fit with this/these position(s)?*
- **Binoculars** (bigger picture): *Can I see myself in this career field later in life? How does this field play a role in the bigger world?*

Research Rationale

As research continues, it is becoming increasingly evident that simply telling students about PSI opportunities or career fields isn't enough. Teachers need to give students impactful, relatable, and engaging experiences so that they can actively explore these options. Not only do these experiences help students explore future opportunities, they can also lead to career success later in life. Research shows a strong correlation between career success later in life and job shadowing and workplace visits as a teen. One study found that Canadian students who made a workplace visit by age 15 were 4% less likely to be NEET (Not being in Education, Employment, or Training) than their peers at age 25 (Covacevich et al. 2021). The same study found that Korean students who made the same type of workplace visits were 1.23 times more likely not to be NEET than those who did not take a visit.

Work-Based Learning

In making college and career decisions Work-Based Learning (WBL) opportunities can provide secondary students with experience, clarity, and increased self-efficacy. Field-based learning is a powerful tool in helping students to better understand the core concepts and to raise their enthusiasm (Janovy & Major, 2009; Manzanal et al., 1999, as cited in Pereira & Gheisari, 2017). These experiences also enable students to interact with professionals and perceive fieldwork in a way that is unattainable in a traditional school setting. A research project by Pereira and Gheisari (2017) studied faculty perceptions of the effectiveness of construction site visits during construction courses. The researchers found that faculty members believe observing the construction environment is critical for the students (Pereira & Gheisari, 2017). With student benefits and faculty acknowledgment, WBL can provide a compelling experience for students.

Another WBL study of eleven low-income ethnic minority secondary students aimed to gauge the impact of a school's WBL program. Through data analysis of student interviews, the study revealed that the WBL program promoted hope for their future academic and career success as well as support and mentorship through workplace supervisors within the program (Medvide et al.; M. E., 2020). This hope, support, and mentorship give students—especially low-income students whose backgrounds and lived experiences may hinder them—the self-efficacy to reach their full potential.

Hands-on Educational Experiences

Several research projects prove that hands-on educational experiences can positively impact students' academic and work-related outcomes. One such study followed a group of Australian secondary school students through a year-long science program. This program aimed to strengthen students' science skills in data analysis, experimentation, and scientific writing through current, hands-on research within the context of a significant worldwide health issue (Puslednik & Brennan, 2020). The research team found that the intervention reflected in students' mean score of knowledge growth—per a self-assessment survey—rose considerably. They also found, through VALID 10 testing, that 84% of intervention students would have scored lower on their tested science knowledge, problem-solving, communication, and planning skills than the control group's mean score (Puslednik & Brennan, 2020).

Another similar study evaluated the effectiveness of a hands-on learning experience in cancer research for 20 secondary students. After a two-week science summer camp at The University of the Pacific, the researcher found that 83.33% of the students were interested in participating in another hands-on science learning experience, and the same number reported increased interest in attending The University of the Pacific as their Post-Secondary Institution (PSI) (Argueta et al, 2020). These results showcased the impact and importance of hands-on learning for high school-aged students when considering their future academic and career endeavors.

Resources

- Argueta, C., Vargas, J. S., Parkins, A. S., Ren, J., & G. Pantouris. (2023). Hands-on methods to educate high school students about cancer research. 100(6), 2312–2319. https://doi.org/10.1021/acs.jchemed.3c00141
- Covacevich, C., Mann, A., Santos, C., & Champaud, J. (2021). Indicators of teenage career readiness: An analysis of longitudinal data from eight countries. OECD Education Working Papers, No. 258, OECD Publishing, Paris. https://doi.org/10.1787/cec854f8-en
- K20 Center. (n.d.). Fist to five. Strategies. https://learn.k20center.ou.edu/strategy/68
- K20 Center. (n.d.). Mirror, microscope, binoculars. Strategies. https://learn.k20center.ou.edu/strategy/3020
- K20 Center. (n.d.). Student resources. https://learn.k20center.ou.edu/search?type=student-resources
- K20 Center. (n.d.). Think-pair-share. Strategies. https://learn.k20center.ou.edu/strategy/139
- Medvide, M. B., & Kenny, M. E. (2020). Hope in the lives of low-income students of color: A qualitative study of experiences in a work-based learning program. *Journal of Career Development*, 089484532093743. https://doi.org/10.1177/0894845320937430
- Pereira, Eiris, R., & Gheisari, M. (2017). Site visit application in construction education: A descriptive study of faculty members. *International Journal of Construction Education and Research*, 15(2), 83–99. https://doi.org/10.1080/15578771.2017.1375050
- Puslednik, L., & Brennan, P. C. (2020). An Australian-based authentic science research programme transforms the 21st century learning of rural high school students. *Australian Journal of Education*, 000494412091989. https://doi.org/10.1177/0004944120919890
- U.S. Department of Labor. (n.d.). *My next move*. https://www.mynextmove.org/
- University of the Pacific. (n.d.-a). *Big University Choices With Small College caring*. Masters In Social Work Programs | University of the Pacific. https://socialwork.pacific.edu/