PiPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Intervention Manual

Gibbons & Hardin (2019)

PiPES: Possibilities in Postsecondary Education and Science is a five-year project made possible by a Science Education Partnership Award from the National Institutes of Health (NIH) that seeks to make a positive difference in East Tennessee by providing opportunities for tenth- and eleventh-grade students to explore STEMM careers (science, technology, engineering, math, and medical science) and to promote college awareness. Co-primary investigators from the University of Tennessee, Professors Melinda Gibbons and Erin Hardin, oversee the project.

This project is supported by the Office of the Director, National Institutes of Health under Award Number 1R25 GM129177. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Many of the activities in this manual were adapted from or inspired by the Tools for Tomorrow Program from the Boston College Lynch School of Education and Boston Public Schools (Kenny, Bower, Perry, Blustein, & Amtzis, 2004) and the Project H.O.P.E. curriculum from University of Iowa (Ali, 2012). The use of childhood toys as stimuli for the Week 2 Career Party activity (commonly attributed to Bolles, 1990) was developed by Dr. Christine Cork, formerly at the University of Iowa Carver College of Medicine.

This curriculum is designed to be delivered to 10th grade students across six-weeks of one hour lessons. An 8-week version is also available by request. Additional information is available on our website, http://pipes.utk.edu and in: Gibbons, M. M., Hardin, E. E., Taylor, A. L., Brown, E. B., & Graham, D. L. (2019). Evaluation of an SCCT-based intervention to increase postsecondary awareness in rural Appalachian youth. *Journal of Career Development*. Advance online publication. DOI: 10.1177/0894845319832972

To cite this manual: Gibbons, M. M., & Hardin, E. E. (2019). *PiPES intervention manual*. Knoxville, TN. Retrieved from http://pipes.utk.edu/manual

Table of Contents

Day 1 4
Day 2 14
Day 3 25
Day 4 57
Day 5 68
Day 6 72
Student Handouts to Print 78

PIPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 1

Day 1

Activity: Introduction and Get to Know Each Other

Materials/Resources:

- Folder with all handouts for each student, markers to write names on folders
- Scantrons, pencils, and student ID cards
- PowerPoint presentation with the facilitators' completed Venn diagram worksheet
- Venn Diagram worksheet (1 sheet per group of 3 students)
- 10 Year Reunion Sheet
- Favorite childhood activities worksheet (1/student)

Goals/Objectives:

- To introduce the PiPES program to students
- To allow students to learn about themselves and others in the classroom
- To build rapport for future class meetings

Specific Instructions:

1. Facilitator introduction and survey: The class facilitators will introduce themselves and describe the PiPES program (5-10 minutes)
    a. The PiPES program is a program for all 10th and 11th graders at your school. PiPES stands for Possibilities in Postsecondary Education and Science. We are here to help you learn about options after high school; and to learn about science, technology, engineering, math, and medical science, or STEMM, careers.
    b. You may wonder why we are doing this at your school? Well, we are working with several high schools, including yours, for several reasons. First, we had some connections with people who work here. Second, your schools are within easy driving distance of UT. Third, your principals were interested in having us come to your schools. And fourth, we know that people who live in the more rural counties of Tennessee face a variety of health issues that affect their lives. You are the future of your county, and so we want to make you aware of the many STEMM careers that can help your community. We also want to help answer your questions about types of colleges and post-high school training, how to pay for college, and how to navigate the college-going experience.
    c. Before we begin with today's activities and discussion, we want to learn more about your current thoughts and beliefs about careers and STEMM. We are going to ask you to complete a brief survey. (Pass out scantrons, pencils, and student ID cards).

2. Venn Diagram icebreaker (20 minutes)
    a. Facilitators model the activity (and kinds of disclosures we want) first, then students will get into groups of three (3) to complete the Venn Diagram Worksheet. Encourage students to find similarities and differences not obvious by looking at each other.
    b. Each group will receive a worksheet and be asked to consider ways in which they are alike and different in the following categories:
        i. Gender
        ii. Ethnicity/race
        iii. Where they were born
        iv. Whether their parents went to college
        v. Favorite food
        vi. Favorite type/genre of music
        vii. Three careers they have considered
        viii. Five words they would use to describe themselves
        ix. Where would they most like to travel that they have never been to before
    c. Large group discussion
        i. What did you learn from this activity (prompt if needed – how we have some similarities and some differences or could ask each group introduce self and name similarity all had in common and difference)
        ii. What was the most surprising thing you learned from this activity?
        iii. What did you learn about yourself from this activity?

3. Student Folders (<5 minutes)
    a. Pass out student folders. Have students print names on front. Inform students we will hold onto these folders after each lesson. At the end of the 6 weeks, students will keep the folders.

4. Dreams/Goals Activity (15 minutes)
    a. My 10-year class reunion (Adapted from Hunter-Geboy, 1995): Imagine you are going to your 10 year high school reunion. You will be in your mid-20's. You will be talking with others about what is happening in your life. Be realistic about your goals but dream a little, too.
        i. Handout: My 10-year class reunion
            1. The job I want in 10 years is:
            2. To get that job, I will have to:
            3. My annual salary will be:
            4. In 10 years I will be driving a:
            5. I will live in:
            6. Three of my most important possessions will be:
            7. My family will consist of:

b. Brief large group discussion
    i. Elicit themes from activity -- how are students defining success? How realistic do they think their dreams are – do the things they wrote down seem possible to them?

5. Return to PiPES purpose and introduce STEMM (5 minutes)
    a. We're here to help make these dreams a reality.
    b. Part of doing that is helping you broaden your horizons, expand the choices you consider and think are possible for you.
    c. We are going to focus on career opportunities in STEMM – science, technology, engineering, math, and medical science. Why?
        i. Fastest growing job areas
        ii. Some of the best paying jobs
        iii. Jobs many people don't automatically think of, for lots of reasons.
        iv. Are we saying you all have to become a scientist? No. But we DO want you to explore STEMM-related careers that you may never have thought of before.
        v. STEMM is much broader than most people realize, so our goal is to help you learn about yourself so you can find the STEMM jobs that might be the best fit for you.
    d. To get us started with this, we're going to spend some time next week helping you understand how your personality and interests give you information about the kinds of STEMM jobs you might like
    e. Activity - Favorite Childhood Activities (5 minutes)
        i. To prepare us for next week's discussion of how your interests connect to jobs, we want you to think back to your childhood. Psychologists suggest (e.g., Gottfredson, 1981) that the kinds of toys and games you played as a child relate to your career interests as an adult.
        ii. Think about what you most enjoyed doing when you were in 1st – 3rd grades -- favorite games, activities, hobbies (be sure to highlight full range of these, from playing in the mud in the backyard to playing with store-bought toys). Write or draw your three favorite childhood activities.
        iii. Brief large group discussion. (Have several students share activities). Are any of these activities still ones you enjoy today? Can you make any preliminary connections between jobs you're interested in and the toys you played with as a child?

6. Wrap Up: Take a Minute. (2 minutes)

a. As a way to close our time today and review, take a minute and write down three things that stood out from today's lesson. (As time allows, have a few students share their responses)
b. Collect student folders at the end of the lesson.

Sample Pretest Items
(customize these questions to the needs of your school and population)

Rate your interest in the following items:

I am interested in attending a 2-year or 4-year college.	Not at all interested	Somewhat interested	Interested	Very Interested
I am interested in a science, technology, engineering, mathematics, or medicine (STEMM) career.	Not at all interested	Somewhat interested	Interested	Very Interested

Rate your certainty on the following items:

I know the career path I want to pursue.	Not at all certain	Somewhat certain	Certain	Very certain
I will apply to college.	Not at all certain	Somewhat certain	Certain	Very certain
I can handle the challenges that arise at college.	Not at all certain	Somewhat certain	Certain	Very certain
I can find information on careers related to science, technology, engineering, math, and medical (STEMM).	Not at all certain	Somewhat certain	Certain	Very certain

Rate your level of understanding of the following items:

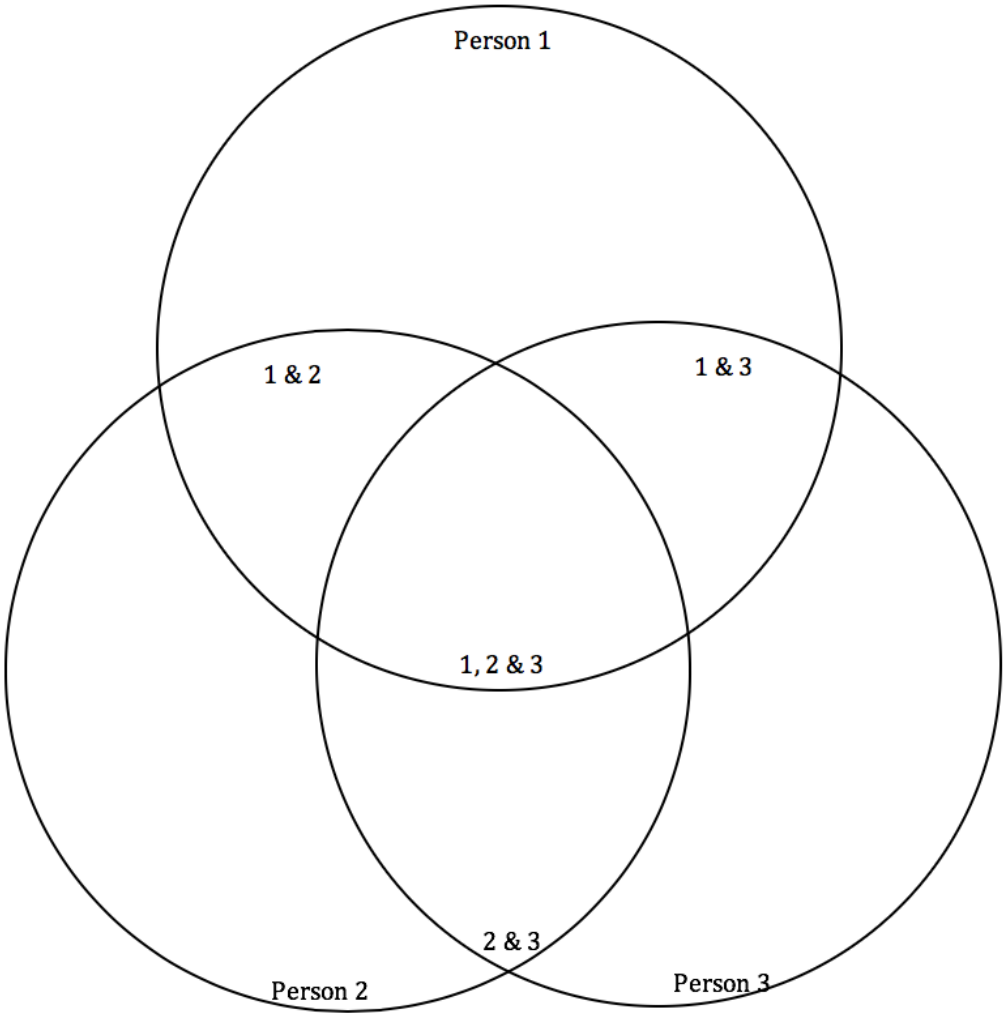
How my interests and strengths connect with my career choices	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to find information about different careers	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to choose what type of education I want after high school	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to understand financial aid options	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How STEMM careers relate to helping with my community's needs	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to make goals related to my future plans	No understanding	Some understanding	Quite a bit of understanding	Total understanding

What are your plans after high school?

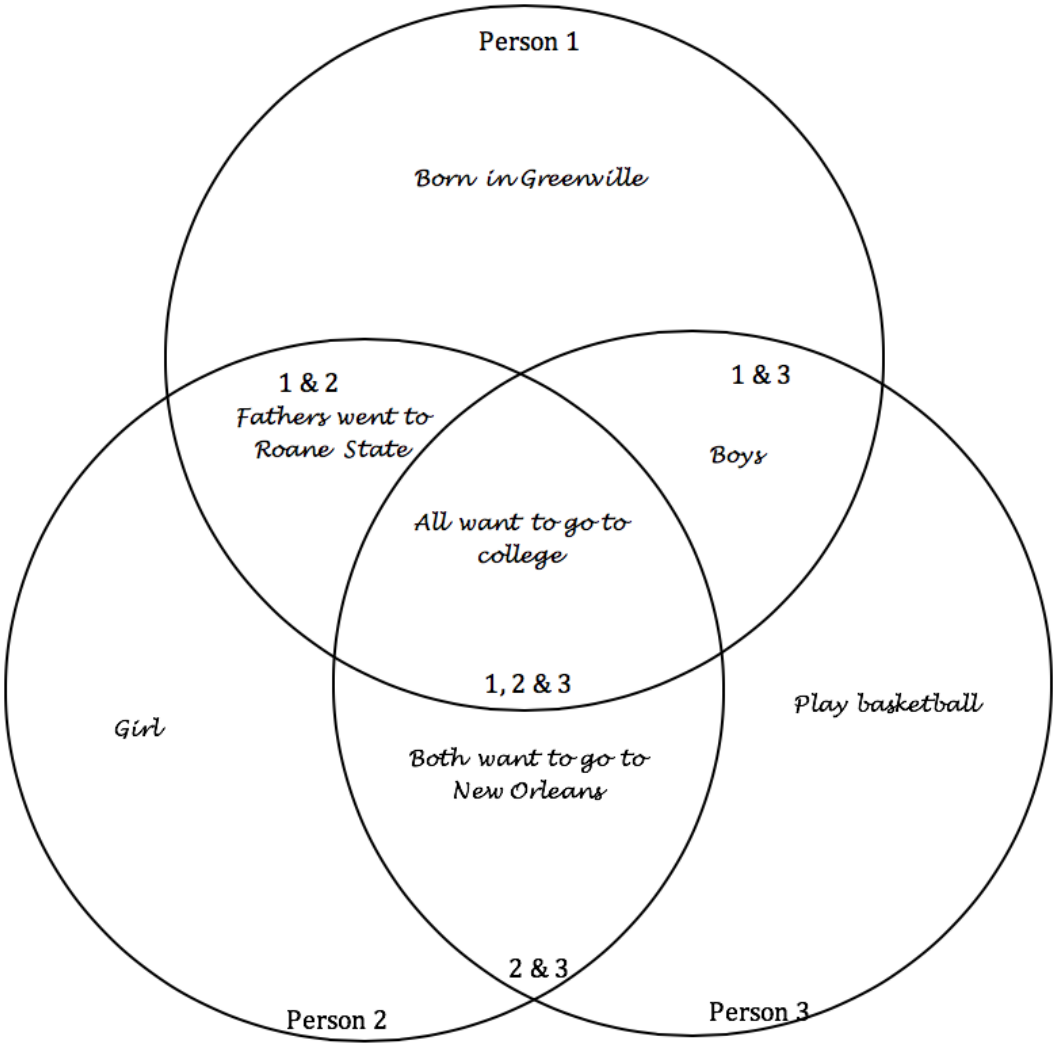
In your group, talk about how you are alike and different in the following ways:

- Gender
- Ethnicity/race
- Where you were born
- Whether your parents went to college
- Favorite type/genre of music
- Three careers you have considered
- Favorite food
- Five words you would use to describe yourself
- Where you would most like to travel that you have never been to before

Write something in each of the areas below.



EXAMPLE



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My 10-Year Class Reunion

Directions: Answer the following questions by thinking about what you would like to tell your friends when you see them again 10 years after you graduate high school.

1. In 10 years it will be the year _____ and I will be _____ years old.
2. The job I want in 10 years is _____
3. To get that job, I will have to:
    a. _____
    b. _____
    c. _____
4. In 10 years I will be driving a _____
5. I will live in:
    a. An apartment
    b. A house I rent
    c. A house I own
    d. My parent's/relative's home
    e. Other: _____
6. The thing I will be most proud of by then is _____

_____

_____

7. The most important experience I will have had is _____

_____

_____

8. Two things I can do starting today to make my plans come true are
    a. _____
    b. _____

WHEN I WAS SIX TO EIGHT YEARS OLD, MY FAVORITE ACTIVITIES WERE:

PiPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 2

Day 2

Activity:

- Career Party and Self-Exploration *(**Facilitators should decide which direction self-exploration will take prior to meeting**)*

Materials/Resources:

- Student Folders
- Career Party descriptions
- Toys, games, etc. to represent each of the Holland themes
- Posters for each station during career party
- Who am I summary worksheet (1 / student)
- Self-exploration sheet copies (depending on activities you decided)
    - Heroes worksheet
    - Strengths worksheet
    - Values worksheet

Goals/Objectives:

- Students will gain an understanding of their personality and interests
- Students will link Holland codes to possible careers
- Students will begin to identify possible career paths
- Students will understand the characteristics they have and want to develop
- Students will identify their personal strengths
- Students will relate characteristics and strengths to career options

Specific Instructions:

Specific Instructions for Selected Activities: Complete either Strengths Exploration OR Heroes; all complete Values activity.

1. Activity option: Strengths Exploration (Adapted with permission from Center for Dependable Strengths; ~20 minutes)
    - Continuing theme of childhood experiences predicting future goals / interests, have facilitator model this first with an unusual experience from 6th grade or earlier
        - Using the worksheet in your folder, write about a good experience from 6th grade or earlier that you enjoyed, were proud of, and thought you did well. We are going to share this, think about something you would be willing to tell your grandmother about. Write down in as much detail as possible.
    - Facilitators model next step: Pair up – have them listen to the other's story and circle the strengths they heard from the story – on the strengths worksheet

- When you talked about your good experience, you demonstrated these strengths
- Have students pair up to circle strengths in each other's stories

2. Activity Option: Thinking about your heroes (~10 minutes)
    a. Pass out Heroes worksheet (adapted from Savickas & Hartung, 2012)
        i. List two or three people, other than your mom or dad, who you admired when you were a child of about six to eight years old. These can be real people you knew or famous people you didn't know personally, make-believe people like superheroes or cartoon characters. Sometimes "hero" feels like a strong word – think about who you look up to.
        ii. For each person, write 2-4 sentences about what you admired about that person. For example, if you admired Dr. Martin Luther King, Jr., you might write that he was a leader who fought for people's rights. (Have team members provide an example of a childhood hero and reason why.)
        iii. Circle the first adjective they used to describe each hero
        iv. Underline any words or similar words that they used to describe more than one p
        v. At the bottom of the page, write down two or three things that the heroes have in common
    b. Discussion
        i. How do these heroes relate to how you want to be? Usually, heroes have characteristics that you want to represent in yourself, or that you feel you already have. In other words, the words you used to describe your heroes are the words you might use to describe who you are or who you want to become.
        ii. What are your thoughts about this?
        iii. What was surprising about this activity?
        iv. How might this relate to the STEMM careers you've been exploring?

3. Activity: Values worksheet (~10 minutes)
    a. What do you think of when you hear the word values? Help students define values as a set of underlying principles or qualities that we use to decide what is most important to us. Values guide us through our days and the way we interact with others.
    b. Pass out Values worksheet.
        i. Read through the list of values and circle 10 that are most important to you. Class discussion about these values and why they are important.
        ii. Now, have students cross of 5 of their 10 circled values leaving only the 5 most important ones.

iii. Class discussion: What was it like choosing a top 5? What made it easy/hard for you? What does this have to do with choosing a career?

4. Career Party activity (see worksheet; 10-15 minutes)
The use of childhood toys as stimuli for the Week 2 Career Party activity (commonly attributed to Bolles, 1990) was developed by Dr. Christine Cork, formerly at the University of Iowa Carver College of Medicine.
    a. Transition to career party activity. As you remember from last week, we discussed childhood toys and how they may connect to your career interests. To continue with this idea, we are going to do a Career Party activity with the help of some toys you might have enjoyed as a child.
    b. Read and post the six career party descriptions from Learn More Indiana (2016). Place the toys/activities near each description.
    c. Point out the various stations around the room. Have students go to stations they are most interested in.
        i. Ask a few students to explain why they chose the station they did. How relate to the favorite childhood activities? Ask students to make a note of the letter of the station they chose – will come back to later.
        ii. Have students move to a second station, repeat discussion.
        iii. If time, have students move to a third station – or ask students to talk about what their LAST choice would be?
        iv. At end, have students write down their three letter code from the activity on their Who am I worksheet
5. Putting it all together: Who am I?
    - Have students complete the Who am I worksheet
    - Students may need to refer to strengths worksheet in their folder if you chose the Heroes activity, and vise versa.
    - Discuss how understanding self (strengths, interests, etc.) is helping them think about career options.
6. Wrap Up: Take a Minute
    - As a way to close our time today and review, take a minute and write down three things that stood out from today's lesson. (As time allows, have a few students share their responses).
    - Collect student folders at the end of the lesson. Have students keep their homework sheet. Remind students to bring completed homework to class next week. All completed homework will receive a prize.

FACILITATORS:

- CONFIRM WITH SCHOOL THAT YOU HAVE COMPUTER LAB SCHEDULED FOR NEXT WEEK
- Find out if students will meet you in lab or regular classroom for you to take to lab

My Strengths

Circle 6 – 8 personal strengths from the list below. Pick the characteristics that best represent your strengths.

Adaptability	Leadership	Tolerance
Bravery	Love of Learning	Trustworthy
Building Relationships	Open-Mindedness	Warmth
Caring	Optimistic	Work Ethic
Communication Skills	Orderly	Working Alone
Computer Skills	Organized	
Creativity	Originality	
Curiosity	Patient	
Determination	Persistence	
Empathy	Persuasiveness	
Energetic	Positive Attitude	
Generosity	Problem-Solving	
Honesty	Responsible	
Hopefulness	Serious	
Humor	Spirituality	
Inspiring	Straightforward	
Intelligent	Task-Oriented	
Kindness	Teamwork	
Knowledgeable	Time Management	

Strengths Exploration

- Think about your childhood up to 6th grade
- Identify a good experience that comes to your mind
    - Something specific that you
        - Did well
        - Enjoyed
        - Are proud of
- Draw this experience or write a short description of it here:

- Now, pair up with someone and listen to their story
- Using the strengths worksheet, circle the strengths you heard from their story
- Share these strengths with your partner

Used with permission from the Center for Dependable Strengths. Adapted from the Dependable Strengths Articulation Process developed by Dr. Bernard Haldane.
www.dependablestrengths.org

Heroes

Think back to when you were a child, about 6-8 years old (kindergarten – third grade). Who were your heroes? Other than your mom or dad, who did you admire? These can be real people you knew or famous people you didn't know personally, make-believe people like superheroes or cartoon characters.

When I was a child, I admired _____

Because……

When I was a child, I admired _____

Because……

When I was a child, I admired _____

Because……

Adapted from Savickas & Hartung (2012)

Values List – Circle 10

- Accountable
- Achievement
- Adaptability
- Altruism
- Ambition
- Attitude
- Balance (home/work)
- Caring
- Commitment
- Community
- Community involvement
- Compassion
- Competence
- Consistency
- Control
- Cooperation
- Correctness
- Courage
- Creativity
- Dependability
- Determination
- Diversity
- Efficiency
- Enjoyment
- Enthusiasm
- Fairness
- Financial stability
- Forgiveness
- Friendliness
- Generosity
- Health
- Honesty
- Humility
- Humor
- Independence
- Initiative
- Inner harmony
- Integrity
- Intelligence
- Intuition
- Job security
- Leadership
- Listener
- Openness
- Patience
- Perseverance
- Personal fulfillment
- Power
- Recognition
- Reliability
- Religion
- Respectfulness
- Risk
- Safety
- Self-actualization
- Self-reliance
- Spirituality
- Spontaneity
- Strength
- Success
- Teamwork
- Tolerance
- Unity
- Vision
- Wealth
- Other : _____

Who am I?

Use this page to summarize what you learn about yourself from today's activities.

MY HEROES

What two or three things do my heroes all have in common?

MY PERSONAL STRENGTHS

What do I and others see as my personal strengths?

MY VALUES

What 4-5 values are the most important to me?

MY PERSONALITY AND INTERESTS

What is my Holland Code?

Career Party

Directions: Read the following descriptions & choose the one that best matches you.

- Group 1: Your friends in this group are talking about everything from sports to raising animals to fixing cars. Everyone in the group enjoys being outdoors and working with their hands, fixing and tinkering with things
- Group 2: Everyone in this group is interested in watching, investigating, analyzing, or solving problems. Some say they like science, others enjoy puzzles and computer games. They're definitely good at finding answers.
- Group 3: This group of your friends is very creative. Some like to draw and paint, others enjoy doing innovative or unusual things. All of them enjoy using their imagination and creativity in unstructured situations
- Group 4: At first you think this group is very loud, but then you realize they just all like to talk. Everyone wants to work with people, some through teaching, others through helping people, while others want to work with people in the medical field
- Group 5: Your friends in this group are 'take charge' people who like to persuade others. They're definitely leaders, some are in leadership organizations, and others say they want to own their own business or make a lot of money some day.
- Group 6: Even though this group is quieter than the others, you can tell that these students like to talk about how they keep things ordered and organized. Most of your friends in this group like working with numbers and data… and they're really good at it.

Career Party Toys

To help students connect the Holland Codes and childhood interests, consider using toys or props.

Code	Suggested Toys
Realistic	Army figures, plastic animals, plastic leaves, softball, jump rope, toy cars, Legos
Investigative	Puzzle, science kit, game of Clue, Sudoku book, nonfiction books
Artistic	Crayons, Play Dough, drawing pad, markers, glitter pens, fiction picture books, musical instruments
Social	Toy phone, stuffed animals, doctor kit, Game of Life, superheroes figurines, toy food
Enterprising	Money, Lemonade stand sign, cash register, games such as Monopoly or Pay Day
Conventional	Magnetic numbers, file folders, phone message pad, dry erase markers, laptop

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 3

Day 3

Activity:

- Explore STEMM Careers

Materials/Resources:

- COMPUTER LAB ACCESS (or bring computers / iPads)
- Student Folders
- STEMM Careers with Holland Code classroom set
- Holland Code Descriptions worksheet
- Career Interests Sheet
- Career Research Sheet (Honors students)
- Adult interview homework sheet (1 / student)

Goals/Objectives:

- Students will link Holland codes to possible careers
- Students will begin to identify possible career paths

Specific Instructions:

1. Holland Codes and STEMM (10-15 minutes)
    a. Describe the Holland Codes (Holland, 1997)
        - John Holland was a career counseling researcher who believed that there were six personal style types related to career. He believed that people and work environments could be coded or categorized into the six categories. He believed that if people learned their category type, and then entered a career field that matched their type, they would be satisfied in that career. On the other hand, if people entered a career that did not match their type, they might find themselves less satisfied or frustrated with parts of their job.
        - A Holland Code is typically 2-3 letters from six possible options. The Career Party activity helped you tentatively identify your three-letter code. Here is another worksheet to help you make sure the letters you selected are accurate (hand out Holland Code Worksheet)
    b. You can use your Holland Code to identify careers that might be a good fit for you. Remember that this activity cannot tell you what career you should enter. It just offers a way to identify careers that match your work personality. You may choose to enter one of these careers, or you may choose to enter a different career. It is all up to you.
    c. Relate to STEMM
        - Give them the STEMM related career list (have a classroom set to keep with you)

- Have students review packet and find at least three careers that match their code. Record these careers on Career Interest Sheet.
- Today will get to spend time learning about the careers they circled, as well as others

2. To learn what careers have certain Holland Code types, you can go online to www.onetonline.org . On this website, you can enter your three-letter code to find careers that match. You can also search for careers by area of interest and learn about different career options.
    a. Suggestion to have students access O*Net from the pipes.utk.edu website.
    b. Walk students through navigation step by step and show example of how to explore a career of interest. Using projector, give tutorial of searching by their Holland Code or searching by specific career. Ask for career example from student and then walk through search process pointing out most important parts (job description, tasks, education, salary, related careers.)

3. You can also go on collegefortn.org and use your account.
    - www.Collegefortn.org (*or your state college and career website*)
        - Everyone should have an account
        - Open your account and
            - Select Career Planning from the choices at the top
            - On this screen, select Explore Careers
            - On this screen, select Career Finder
            - On this screen, under My Characteristics, choose Interests
            - Start by choosing your top two interest categories to see your matching careers
            - You can also select your first and third categories and your second and third categories to see other careers
            - You can click on any career to learn more about it

4. Facilitators actively circulate in room to make sure students stay on task, to answer questions, etc.

5. ~ 5 -10 minutes before the end, have a brief wrap-up / large group discussion
    a. What did people learn?
    b. What careers do they want to learn more about?
    c. What surprised them?
    d. What questions do they have?

6. Homework: talk to an adult in your family or another adult about his/her current job. Ask:
    a. How did you come to enter this job?
    b. What do you like about your job?
    c. What do you dislike about your job?
    d. How are your strengths or values reflected in your job?
    e. Do think of your current work as a job or a career?
    f. What do you see as the difference between a job and a career?

g. What advice do you have for me as I figure out a career path?

7. Wrap Up: Take a Minute
    a. As a way to close our time today and review, take a minute and write down three things that stood out from today's lesson. (As time allows, have a few students share their responses)
    b. Collect student folders at the end of the lesson.

Holland Code Descriptions

Realistic	Investigative
● Enjoy working with animals, plants, tools, machines, mechanical drawings ● Value practical things you can see, touch, and use ● See yourself as practical, honest, natural ● Like jobs with tangible results (something you can see when you are done) ● Like to work outdoors, enjoy physical activity ● Words that might describe you: Realistic, practical, independent, persistent, athletic, nature lover, mechanical, doer ● Would not enjoy social jobs such as teaching or working with patients	● Enjoy studying and solving math or science problems ● Search for solutions to problems ● Tend to be independent and self-motivated ● Abstract thinkers ● Less social and a strong need to understand the world ● Words that might describe you: thinker, scientific, precise, independent, observant, curious, logical, reserved ● Would not enjoy sales or jobs involving leading and persuading people
Artistic	**Social**
● Creative and expressive ● Value freedom, originality ● Like creative activities such as art, drama, crafts, dance, music, creative writing ● Words that might describe you: creator, imaginative, expressive, open, sensitive, unconventional, original, courageous ● Would not enjoy highly ordered or repetitive activities	● Like to work with people ● Value idealism, kindness, generosity ● Enjoy problem solving through discussion ● Drawn to seek close relationships with others ● Words that might describe you: helper, responsible, kind, forgiving, generous, outgoing, friendly, insightful ● Would not enjoy using machines or tools to achieve a goal
Enterprising	**Conventional**
● Like to manage and persuade others ● Value risk-taking ● Assertive and energetic ● Use verbal skills to lead others ● Words that might describe you: persuader, adventurous, energetic, spontaneous, ambitious, sociable, enthusiastic ● Would not enjoy activities that require careful observation and scientific analysis	● Organized and planful ● Value structure and routine ● Like rules, order, clear guidelines ● Attention to detail, good follow through on others' instructions ● Words that might describe you: organizer, accurate, numerically-inclined, practical, structured, efficient, well-organized, polite ● Would not enjoy unstructured, artistic activities

(Holland, 1997; Sharf, 2013)

STEMM Careers with Holland Codes

Realistic

Code	Occupation	STEM Disciplines	Education Needed
ARI	Architectural Drafters	Engineering	Bachelor's degree
CIR	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	Computer Science	Vocational training, on-the-job experience or associate's degree
CIR	Environmental Compliance Inspectors	Life Sciences	Bachelor's degree
CIR	Information Security Analysts	Computer Science	Bachelor's degree
CR	Pharmacy Technician	Biomedical	High School/GED
CRI	Ophthalmic Medical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
CRI	Phlebotomists	Biomedical	Vocational training, on-the-job experience or associate's degree
CRS	Dental Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
CSR	Ophthalmic Medical Technicians	Biomedical	Vocational training, on-the-job experience or associate's degree
ECR	Biofuels Production Managers	Life Sciences	Bachelor's degree
ECR	Biomass Power Plant Managers	Life Sciences	Bachelor's degree
ECR	First-Line Supervisors of Food Preparation and Serving Workers	Life Sciences	High School Diploma
ECR	Optician	Biomedical	Vocational training, on-the-job experience or associate's degree
ECR	Quality Control Systems Manager	Biomedical	Bachelor's degree
ER	First-Line Supervisors of Animal Husbandry and Animal Care Workers	Life Sciences	Vocational training, on-the-job experience or associate's degree
ERC	Construction Managers	Engineering	Bachelor's degree
ERC	Farm and Ranch Managers	Life Sciences	Bachelor's degree
ERC	First-Line Supervisors of Aquacultural Workers	Life Sciences	Bachelor's degree
ERC	Nursery and Greenhouse Managers	Life Sciences	Vocational training, on-the-job experience or associate's degree
ERI	Architectural and Engineering Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree
IAR	Astronomers	Physics/Astronomy	Graduate degree

IAR	Biochemists and Biophysicists	Chemistry, Life Sciences, Physics/Astronomy	Graduate degree
IAR	Geneticists	Life Sciences	Graduate degree
IAR	Geneticists	Engineering	Graduate degree
ICR	Bioinformatics Scientists	Biomedical	Graduate degree
ICR	Computer Systems Analysts	Computer Science	Bachelor's degree
ICR	Industrial Safety and Health Engineers	Engineering	Bachelor's degree
ICR	Software Developers, Systems Software	Computer Science, Engineering	Bachelor's degree
ICR	Transportation Planners	Engineering	Bachelor's degree
IR	Aerospace Engineers	Engineering	Bachelor's degree
IR	Animal Scientists	Life Sciences	Graduate degree
IR	Atmospheric and Space Scientists	Physics/Astronomy	Bachelor's degree
IR	Biochemical Engineers	Chemistry	Bachelor's degree
IR	Biomedical Engineers	Biomedical	Bachelor's degree
IR	Biologists	Life Sciences	Graduate degree
IR	Biomedical Engineers	Engineering	Bachelor's degree
IR	Chemical Engineers	Chemistry, Engineering	Bachelor's degree
IR	Electrical Engineers	Engineering	Bachelor's degree
IR	Electronics Engineers, Except Computer	Engineering	Bachelor's degree
IR	Geoscientists, Except Hydrologists and Geographers	Geosciences	Bachelor's degree
IR	Human Factors Engineers and Ergonomists	Engineering	Graduate degree
IR	Hydrologists	Geosciences	Bachelor's degree
IR	Marine Engineers	Engineering	Bachelor's degree
IR	Materials Scientists	Engineering	Graduate degree
IR	Microbiologists	Life Sciences	Graduate degree
IR	Pathologists	Biomedical	Graduate degree
IR	Physicists	Mathematics, Physics/Astronomy	Graduate degree
IR	Soil and Plant Scientists	Chemistry, Life Sciences, Physics/Astronomy	Graduate degree
IR	Veterinarian	Biomedical	Graduate degree
IR	Zoologists and Wildlife Biologists	Life Sciences	Graduate degree
IRA	Marine Architects	Engineering	Bachelor's degree
IRA	Biological Scientists	Biomedical	Graduate degree
IRA	Medical Scientists, Except Epidemiologists	Life Sciences	Graduate degree
IRA	Molecular and Cellular Biologists	Life Sciences	Graduate degree
IRC	Bioinformatics Technicians	Life Sciences	Bachelor's degree
IRC	Chemical Technicians	Chemistry, Life Sciences	Vocational training, on-the-job experience or associate's degree
IRC	Chemists	Chemistry, Physics/Astronomy	Bachelor's degree

IRC	Computer and Information Research Scientists	Computer Science	Graduate degree
IRC	Computer Hardware Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Cytogenetic technologist	Biomedical	Bachelor's degree
IRC	Environmental Engineers	Engineering, Environmental Science	Graduate degree
IRC	Environmental Science and Protection Technicians, Including Health	Environmental Science	Bachelor's degree
IRC	Environmental Scientists and Specialists, Including Health	Environmental Science	Bachelor's degree
IRC	Food Scientists and Technologists	Life Sciences	Bachelor's degree
IRC	Industrial Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
IRC	Mathematical Technicians	Mathematics	Bachelor's degree
IRC	Mechanical Engineers	Engineering	Bachelor's degree
IRC	Mechatronics Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Microsystems Engineers	Engineering	Bachelor's degree
IRC	Nuclear Engineers	Engineering	Bachelor's degree
IRC	Petroleum Engineers	Engineering	Bachelor's degree
IRC	Photonics Engineers	Physics/Astronomy	Bachelor's degree
IRC	Product Safety Engineers	Engineering	Bachelor's degree
IRC	Software Developers, Applications	Computer Science, Engineering	Bachelor's degree
IRC	Validation Engineers	Engineering	Bachelor's degree
IRE	Agricultural Engineers	Engineering, Life Sciences	Bachelor's degree
IRE	Environmental Restoration Planners	Life Sciences	Graduate degree
IRE	Fire-Prevention and Protection Engineers	Engineering	Bachelor's degree
IRE	Materials Engineers	Engineering	Bachelor's degree
IRE	Mining and Geological Engineers, Including Mining Safety Engineers	Engineering	Bachelor's degree
IRE	Nanosystems Engineers	Physics/Astronomy	Bachelor's degree
IRE	Soil and Water Conservationists	Life Sciences	Bachelor's degree
IRE	Water/Wastewater Engineers	Engineering	Bachelor's degree
IRS	Dentist	Biomedical	Graduate degree
IRS	Nuclear Medicine Technologists	Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
ISR	Allergists and Immunologists	Biomedical	Graduate degree
ISR	Dermatologists	Biomedical	Graduate degree
ISR	Diagnostic Medical Sonographer	Biomedical	Vocational training, on-the-job experience or associate's degree
ISR	Physician	Biomedical	Graduate degree
R	Fishers and Related Fishing Workers	Life Sciences	High School/GED

RC	Chemical Equipment Operators and Tenders	Chemistry	High School Diploma
RC	Chemical Plant and System Operators	Chemistry	High School Diploma
RC	Cooks, Institution and Cafeteria	Life Sciences	High School Diploma
RC	Fallers	Life Sciences	High School/GED
RC	Food Batchmakers	Life Sciences	High School Diploma
RC	Log Graders and Scalers	Life Sciences	Vocational training, on-the-job experience or associate's degree
RC	Wind Turbine Service Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Aircraft Mechanics and Service Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Drafters	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Electromechanical Equipment Assemblers	Engineering	High School Diploma
RCI	Forest and Conservation Workers	Engineering, Life Sciences	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Equipment Operation Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Monitoring Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	Engineering	Vocational training, on-the-job experience or associate's degree
REC	Computer Network Support Specialists	Computer Science	Bachelor's degree
REC	First-Line Supervisors of Agricultural Crop and Horticultural Workers	Life Sciences	Vocational training, on-the-job experience or associate's degree
REC	Telecommunications Engineering Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RI	Animal Breeders	Life Sciences	Vocational training, on-the-job experience or associate's degree
RI	Automotive Master Mechanics	Engineering	Vocational training, on-the-job experience or associate's degree

RI	Electronics Engineering Technicians	Computer Science, Engineering	Vocational training, on-the-job experience or associate's degree
RI	Fish and Game Wardens	Life Sciences	Bachelor's degree
RI	Manufacturing Engineers	Engineering	Bachelor's degree
RI	Mechanical Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RI	Transportation Engineers	Engineering	Bachelor's degree
RI	Veterinary Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Aerospace Engineering and Operations Technicians	Engineering	Bachelor's degree
RIC	Agricultural Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Specialty Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Avionics Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Biological Technicians	Life Sciences	Bachelor's degree
RIC	Civil Engineers	Engineering	Bachelor's degree
RIC	Computer User Support Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technicians	Computer Science, Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electromechanical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electronics Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Environmental Engineering Technicians	Engineering, Environmental Science	Bachelor's degree
RIC	Food Science Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Histotechnologists	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Logging Equipment Operators	Life Sciences	High School/GED

RIC	Mechanical Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Medical Equipment Repairers	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Medical and Clinical Laboratory Technicians	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Precision Agriculture Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Security Management Specialists	Computer Science	Bachelor's degree
RIE	Forest and Conservation Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIE	Foresters	Engineering, Life Sciences	Bachelor's degree
RIE	Range Managers	Life Sciences	Bachelor's degree
RS	Radiologic Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
RSC	Surgical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
SCR	Medical Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
SCR	Nursing Assistants	Biomedical	High School Diploma
SIR	Agricultural Sciences Teachers, Postsecondary	Life Sciences	Graduate degree
SIR	Chemistry Teachers, Postsecondary	Chemistry, Geosciences	Graduate degree
SIR	Chiropractor	Biomedical	Graduate degree
SIR	Dietetic Technicians	Life Sciences	High School Diploma
SIR	Emergency Medical Technician and Paramedic	Biomedical	Vocational training, on-the-job experience or associate's degree
SIR	Engineering Teachers, Postsecondary	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree
SIR	Physical Therapist	Biomedical	Graduate degree
SIR	Physician Assistant	Biomedical	Graduate degree
SIR	Respiratory Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree
SR	Occupational Therapy Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
SRA	Park Naturalists	Life Sciences	Bachelor's degree

SRC	Dental Hygenist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRC	Radiation Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRE	Farm and Home Management Advisors	Life Sciences	Graduate degree
SRI	Athletic Trainer	Biomedical	Bachelor's degree
SRI	Physical Therapist Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree

Investigative

Code	Occupation	STEM Disciplines	Education Needed
CI	Clinical Data Managers	Biomedical	Bachelor's degree
CI	Database Administrators	Computer Science	Bachelor's degree
CI	Statisticians	Life Sciences, Mathematics	Graduate degree
CIE	Actuaries	Mathematics	Bachelor's degree
CIR	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	Computer Science	Vocational training, on-the-job experience or associate's degree
CIR	Environmental Compliance Inspectors	Life Sciences	Bachelor's degree
CIR	Information Security Analysts	Computer Science	Bachelor's degree
CRI	Ophthalmic Medical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
CRI	Phlebotomists	Biomedical	Vocational training, on-the-job experience or associate's degree
ECI	Computer and Information Systems Managers	Computer Science	Bachelor's degree
EI	Biofuels/Biodiesel Technology and Product Development Managers	Environmental Science, Life Sciences	Bachelor's degree
EI	Natural Sciences Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Mathematics, Physics/Astronomy	Graduate degree
EIC	Brownfield Redevelopment Specialists and Site Managers	Environmental Science	Bachelor's degree
ERI	Architectural and Engineering Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree
IAR	Astronomers	Physics/Astronomy	Graduate degree
IAR	Biochemists and Biophysicists	Chemistry, Life Sciences, Physics/Astronomy	Graduate degree
IAR	Geneticists	Life Sciences	Graduate degree
IAR	Geneticists	Engineering	Graduate degree
IC	Biostatisticians	Life Sciences	Graduate degree
IC	Computer Programmers	Computer Science	Bachelor's degree
IC	Financial Quantitative Analysts	Computer Science	Bachelor's degree
ICA	Mathematicians	Mathematics	Graduate degree
ICE	Computer Network Architects	Computer Science	Bachelor's degree
ICE	Industrial Engineers	Engineering	Bachelor's degree
ICE	Operations Research Analysts	Computer Science, Mathematics	Graduate degree
ICR	Bioinformatics Scientists	Biomedical	Graduate degree

ICR	Computer Systems Analysts	Computer Science	Bachelor's degree
ICR	Industrial Safety and Health Engineers	Engineering	Bachelor's degree
ICR	Software Developers, Systems Software	Computer Science, Engineering	Bachelor's degree
ICR	Transportation Planners	Engineering	Bachelor's degree
ICS	Pharmacist	Biomedical	Graduate degree
IE	Climate Change Analysts	Environmental Science	Graduate degree
IEA	Industrial-Organizational Psychologists	Life Sciences	Graduate degree
IEC	Business Intelligence Analysts	Computer Science	Bachelor's degree
IEC	Water Resource Specialists	Engineering	Bachelor's degree
IR	Aerospace Engineers	Engineering	Bachelor's degree
IR	Animal Scientists	Life Sciences	Graduate degree
IR	Atmospheric and Space Scientists	Physics/Astronomy	Bachelor's degree
IR	Biochemical Engineers	Chemistry	Bachelor's degree
IR	Biomedical Engineers	Biomedical	Bachelor's degree
IR	Biologists	Life Sciences	Graduate degree
IR	Biomedical Engineers	Engineering	Bachelor's degree
IR	Chemical Engineers	Chemistry, Engineering	Bachelor's degree
IR	Electrical Engineers	Engineering	Bachelor's degree
IR	Electronics Engineers, Except Computer	Engineering	Bachelor's degree
IR	Geoscientists, Except Hydrologists and Geographers	Geosciences	Bachelor's degree
IR	Human Factors Engineers and Ergonomists	Engineering	Graduate degree
IR	Hydrologists	Geosciences	Bachelor's degree
IR	Marine Engineers	Engineering	Bachelor's degree
IR	Materials Scientists	Engineering	Graduate degree
IR	Microbiologists	Life Sciences	Graduate degree
IR	Pathologists	Biomedical	Graduate degree
IR	Physicists	Mathematics, Physics/Astronomy	Graduate degree
IR	Soil and Plant Scientists	Chemistry, Life Sciences, Physics/Astronomy	Graduate degree
IR	Veterinarian	Biomedical	Graduate degree
IR	Zoologists and Wildlife Biologists	Life Sciences	Graduate degree
IRA	Biological Scientists	Biomedical	Graduate degree
IRA	Marine Architects	Engineering	Bachelor's degree
IRA	Medical Scientists, Except Epidemiologists	Life Sciences	Graduate degree
IRA	Molecular and Cellular Biologists	Life Sciences	Graduate degree
IRC	Bioinformatics Technicians	Life Sciences	Bachelor's degree
IRC	Chemical Technicians	Chemistry, Life Sciences	Vocational training, on-the-job experience or associate's degree

IRC	Chemists	Chemistry, Physics/Astronomy	Bachelor's degree
IRC	Computer and Information Research Scientists	Computer Science	Graduate degree
IRC	Computer Hardware Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Cytogenetic technologist	Biomedical	Bachelor's degree
IRC	Environmental Engineers	Engineering, Environmental Science	Graduate degree
IRC	Environmental Science and Protection Technicians, Including Health	Environmental Science	Bachelor's degree
IRC	Environmental Scientists and Specialists, Including Health	Environmental Science	Bachelor's degree
IRC	Food Scientists and Technologists	Life Sciences	Bachelor's degree
IRC	Industrial Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
IRC	Mathematical Technicians	Mathematics	Bachelor's degree
IRC	Mechanical Engineers	Engineering	Bachelor's degree
IRC	Mechatronics Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Microsystems Engineers	Engineering	Bachelor's degree
IRC	Nuclear Engineers	Engineering	Bachelor's degree
IRC	Petroleum Engineers	Engineering	Bachelor's degree
IRC	Photonics Engineers	Physics/Astronomy	Bachelor's degree
IRC	Product Safety Engineers	Engineering	Bachelor's degree
IRC	Software Developers, Applications	Computer Science, Engineering	Bachelor's degree
IRC	Validation Engineers	Engineering	Bachelor's degree
IRE	Agricultural Engineers	Engineering, Life Sciences	Bachelor's degree
IRE	Environmental Restoration Planners	Life Sciences	Graduate degree
IRE	Fire-Prevention and Protection Engineers	Engineering	Bachelor's degree
IRE	Materials Engineers	Engineering	Bachelor's degree
IRE	Mining and Geological Engineers, Including Mining Safety Engineers	Engineering	Bachelor's degree
IRE	Nanosystems Engineers	Physics/Astronomy	Bachelor's degree
IRE	Soil and Water Conservationists	Life Sciences	Bachelor's degree
IRE	Water/Wastewater Engineers	Engineering	Bachelor's degree
IRS	Dentist	Biomedical	Graduate degree
IRS	Nuclear Medicine Technologists	Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
IS	Audiologist	Biomedical	Graduate degree
IS	Dietitians and Nutritionists	Life Sciences	Graduate degree
IS	Epidemiologists	Life Sciences	Graduate degree

IS	School Psychologists	Life Sciences	Graduate degree
ISA	Clinical Psychologists	Life Sciences	Graduate degree
ISA	Neuropsychologists and Clinical Neuropsychologists	Life Sciences	Graduate degree
ISA	Psychologists, All Other	Life Sciences	Graduate degree
ISR	Allergists and Immunologists	Biomedical	Graduate degree
ISR	Dermatologists	Biomedical	Graduate degree
ISR	Diagnostic Medical Sonographer	Biomedical	Vocational training, on-the-job experience or associate's degree
ISR	Physician	Biomedical	Graduate degree
RCI	Aircraft Mechanics and Service Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Drafters	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Electromechanical Equipment Assemblers	Engineering	High School Diploma
RCI	Forest and Conservation Workers	Engineering, Life Sciences	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Equipment Operation Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Monitoring Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	Engineering	Vocational training, on-the-job experience or associate's degree
RI	Animal Breeders	Life Sciences	Vocational training, on-the-job experience or associate's degree
RI	Automotive Master Mechanics	Engineering	Vocational training, on-the-job experience or associate's degree
RI	Electronics Engineering Technicians	Computer Science, Engineering	Vocational training, on-the-job experience or associate's degree
RI	Fish and Game Wardens	Life Sciences	Bachelor's degree
RI	Manufacturing Engineers	Engineering	Bachelor's degree
RI	Mechanical Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RI	Transportation Engineers	Engineering	Bachelor's degree

RI	Veterinary Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Aerospace Engineering and Operations Technicians	Engineering	Bachelor's degree
RIC	Agricultural Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Specialty Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Avionics Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Biological Technicians	Life Sciences	Bachelor's degree
RIC	Civil Engineers	Engineering	Bachelor's degree
RIC	Computer User Support Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technicians	Computer Science, Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electromechanical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electronics Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Environmental Engineering Technicians	Engineering, Environmental Science	Bachelor's degree
RIC	Food Science Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Histotechnologists	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Logging Equipment Operators	Life Sciences	High School/GED
RIC	Mechanical Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Medical Equipment Repairers	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Medical and Clinical Laboratory Technicians	Biomedical	Vocational training, on-the-job experience or associate's degree

RIC	Precision Agriculture Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Security Management Specialists	Computer Science	Bachelor's degree
RIE	Forest and Conservation Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIE	Foresters	Engineering, Life Sciences	Bachelor's degree
RIE	Range Managers	Life Sciences	Bachelor's degree
SEI	Business Teachers, Postsecondary	Computer Science, Mathematics	Graduate degree
SI	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	Geosciences, Mathematics, Physics/Astronomy	Graduate degree
SI	Biological Science Teachers, Postsecondary	Life Sciences	Graduate degree
SI	Health Specialties Teachers, Postsecondary	Life Sciences, Physics/Astronomy	Graduate degree
SI	Occupational Therapist	Biomedical	Graduate degree
SI	Physics Teachers, Postsecondary	Mathematics, Physics/Astronomy	Graduate degree
SIA	Counseling Psychologists	Life Sciences	Graduate degree
SIA	Environmental Science Teachers, Postsecondary	Environmental Science	Graduate degree
SIA	Home Economics Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Mathematical Science Teachers, Postsecondary	Mathematics	Graduate degree
SIA	Psychology Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Speech-Language Pathologist	Biomedical	Graduate degree
SIC	Computer Science Teachers, Postsecondary	Computer Science	Graduate degree
SIC	Nurses	Biomedical	Vocational training, on-the-job experience or associate's degree
SIR	Agricultural Sciences Teachers, Postsecondary	Life Sciences	Graduate degree
SIR	Chemistry Teachers, Postsecondary	Chemistry, Geosciences	Graduate degree
SIR	Chiropractor	Biomedical	Graduate degree
SIR	Dietetic Technicians	Life Sciences	High School Diploma
SIR	Emergency Medical Technician and Paramedic	Biomedical	Vocational training, on-the-job experience or associate's degree
SIR	Engineering Teachers, Postsecondary	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree

SIR	Physical Therapist	Biomedical	Graduate degree
SIR	Physician Assistant	Biomedical	Graduate degree
SIR	Respiratory Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRI	Athletic Trainer	Biomedical	Bachelor's degree
SRI	Physical Therapist Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree

Artistic

Code	Occupation	STEM Disciplines	Education Needed
ARI	Architectural Drafters	Engineering	Bachelor's degree
IAR	Astronomers	Physics/Astronomy	Graduate degree
IAR	Biochemists and Biophysicists	Chemistry, Life Sciences, Physics/Astronomy	Graduate degree
IAR	Geneticists	Life Sciences	Graduate degree
IAR	Geneticists	Engineering	Graduate degree
ICA	Mathematicians	Mathematics	Graduate degree
IEA	Industrial-Organizational Psychologists	Life Sciences	Graduate degree
IRA	Marine Architects	Engineering	Bachelor's degree
IRA	Biological Scientists	Biomedical	Graduate degree
IRA	Medical Scientists, Except Epidemiologists	Life Sciences	Graduate degree
ISA	Clinical Psychologists	Life Sciences	Graduate degree
ISA	Neuropsychologists and Clinical Neuropsychologists	Life Sciences	Graduate degree
ISA	Psychologists, All Other	Life Sciences	Graduate degree
SA	Architecture Teachers, Postsecondary	Engineering	Graduate degree
SIA	Counseling Psychologists	Life Sciences	Graduate degree
SIA	Environmental Science Teachers, Postsecondary	Environmental Science	Graduate degree
SIA	Home Economics Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Mathematical Science Teachers, Postsecondary	Mathematics	Graduate degree
SIA	Psychology Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Speech-Language Pathologist	Biomedical	Graduate degree
SRA	Park Naturalists	Life Sciences	Bachelor's degree

Social

Code	Occupation	STEM Disciplines	Education Needed
ICS	Pharmacist	Biomedical	Graduate degree
IRS	Dentist	Biomedical	Graduate degree
IRS	Nuclear Medicine Technologists	Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
IS	Audiologist	Biomedical	Graduate degree
IS	Dietitians and Nutritionists	Life Sciences	Graduate degree
IS	Epidemiologists	Life Sciences	Graduate degree
IS	School Psychologists	Life Sciences	Graduate degree
ISA	Clinical Psychologists	Life Sciences	Graduate degree
ISA	Neuropsychologists and Clinical Neuropsychologists	Life Sciences	Graduate degree
ISA	Psychologists, All Other	Life Sciences	Graduate degree
ISR	Allergists and Immunologists	Biomedical	Graduate degree
ISR	Dermatologists	Biomedical	Graduate degree
ISR	Diagnostic Medical Sonographer	Biomedical	Vocational training, on-the-job experience or associate's degree
ISR	Physician	Biomedical	Graduate degree
RS	Radiologic Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
RSC	Surgical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
SA	Architecture Teachers, Postsecondary	Engineering	Graduate degree
SCR	Medical Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
SCR	Nursing Assistants	Biomedical	High School Diploma
SEI	Business Teachers, Postsecondary	Computer Science, Mathematics	Graduate degree
SI	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	Geosciences, Mathematics, Physics/Astronomy	Graduate degree
SI	Biological Science Teachers, Postsecondary	Life Sciences	Graduate degree
SI	Health Specialties Teachers, Postsecondary	Life Sciences, Physics/Astronomy	Graduate degree
SI	Occupational Therapist	Biomedical	Graduate degree
SI	Physics Teachers, Postsecondary	Mathematics, Physics/Astronomy	Graduate degree
SIA	Counseling Psychologists	Life Sciences	Graduate degree
SIA	Environmental Science Teachers, Postsecondary	Environmental Science	Graduate degree

SIA	Home Economics Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Mathematical Science Teachers, Postsecondary	Mathematics	Graduate degree
SIA	Psychology Teachers, Postsecondary	Life Sciences	Graduate degree
SIA	Speech-Language Pathologist	Biomedical	Graduate degree
SIC	Computer Science Teachers, Postsecondary	Computer Science	Graduate degree
SIC	Nurses	Biomedical	Vocational training, on-the-job experience or associate's degree
SIR	Agricultural Sciences Teachers, Postsecondary	Life Sciences	Graduate degree
SIR	Chemistry Teachers, Postsecondary	Chemistry, Geosciences	Graduate degree
SIR	Chiropractor	Biomedical	Graduate degree
SIR	Dietetic Technicians	Life Sciences	High School Diploma
SIR	Emergency Medical Technician and Paramedic	Biomedical	Vocational training, on-the-job experience or associate's degree
SIR	Engineering Teachers, Postsecondary	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree
SIR	Physical Therapist	Biomedical	Graduate degree
SIR	Physician Assistant	Biomedical	Graduate degree
SIR	Respiratory Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree
SR	Occupational Therapy Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
SRA	Park Naturalists	Life Sciences	Bachelor's degree
SRC	Dental Hygenist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRC	Radiation Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRE	Farm and Home Management Advisors	Life Sciences	Graduate degree
SRI	Athletic Trainer	Biomedical	Bachelor's degree
SRI	Physical Therapist Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree

Enterprising

Code	Occupation	STEM Disciplines	Education Needed
ECR	Optician	Biomedical	Vocational training, on-the-job experience or associate's degree
ECR	Quality Control Systems Manager	Biomedical	Bachelor's degree
ER	First-Line Supervisors of Animal Husbandry and Animal Care Workers	Life Sciences	Vocational training, on-the-job experience or associate's degree
ERC	Construction Managers	Engineering	Bachelor's degree
ERC	Farm and Ranch Managers	Life Sciences	Bachelor's degree
ERC	First-Line Supervisors of Aquacultural Workers	Life Sciences	Bachelor's degree
ERC	Nursery and Greenhouse Managers	Life Sciences	Vocational training, on-the-job experience or associate's degree
ERI	Architectural and Engineering Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Graduate degree
IRE	Agricultural Engineers	Engineering, Life Sciences	Bachelor's degree
IRE	Environmental Restoration Planners	Life Sciences	Graduate degree
IRE	Fire-Prevention and Protection Engineers	Engineering	Bachelor's degree
IRE	Materials Engineers	Engineering	Bachelor's degree
IRE	Mining and Geological Engineers, Including Mining Safety Engineers	Engineering	Bachelor's degree
IRE	Nanosystems Engineers	Physics/Astronomy	Bachelor's degree
IRE	Soil and Water Conservationists	Life Sciences	Bachelor's degree
IRE	Water/Wastewater Engineers	Engineering	Bachelor's degree
REC	Computer Network Support Specialists	Computer Science	Bachelor's degree
REC	First-Line Supervisors of Agricultural Crop and Horticultural Workers	Life Sciences	Vocational training, on-the-job experience or associate's degree
REC	Telecommunications Engineering Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RIE	Forest and Conservation Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIE	Foresters	Engineering, Life Sciences	Bachelor's degree
RIE	Range Managers	Life Sciences	Bachelor's degree
SRE	Farm and Home Management Advisors	Life Sciences	Graduate degree

Conventional

Code	Occupation	STEM Disciplines	Education Needed
CEI	Auditors	Computer Science	Bachelor's degree
CEI	Risk Management Specialists	Mathematics	Bachelor's degree
CI	Clinical Data Managers	Biomedical	Bachelor's degree
CI	Database Administrators	Computer Science	Bachelor's degree
CI	Statisticians	Life Sciences, Mathematics	Graduate degree
CIE	Actuaries	Mathematics	Bachelor's degree
CIR	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	Computer Science	Vocational training, on-the-job experience or associate's degree
CIR	Environmental Compliance Inspectors	Life Sciences	Bachelor's degree
CIR	Information Security Analysts	Computer Science	Bachelor's degree
CR	Pharmacy Technician	Biomedical	High School/GED
CRI	Ophthalmic Medical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
CRI	Phlebotomists	Biomedical	Vocational training, on-the-job experience or associate's degree
CRS	Dental Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
CSR	Ophthalmic Medical Technicians	Biomedical	Vocational training, on-the-job experience or associate's degree
EC	Pharmaceutical and Medical Equipment Sales	Biomedical	Bachelor's degree
ECI	Computer and Information Systems Managers	Computer Science	Bachelor's degree
ECR	Biofuels Production Managers	Life Sciences	Bachelor's degree
ECR	Biomass Power Plant Managers	Life Sciences	Bachelor's degree
ECR	First-Line Supervisors of Food Preparation and Serving Workers	Life Sciences	High School Diploma
ECR	Optician	Biomedical	Vocational training, on-the-job experience or associate's degree
ECR	Quality Control Systems Manager	Biomedical	Bachelor's degree
EIC	Brownfield Redevelopment Specialists and Site Managers	Environmental Science	Bachelor's degree
ERC	Construction Managers	Engineering	Bachelor's degree
ERC	Farm and Ranch Managers	Life Sciences	Bachelor's degree
ERC	First-Line Supervisors of Aquacultural Workers	Life Sciences	Bachelor's degree
ERC	Nursery and Greenhouse Managers	Life Sciences	Vocational training, on-the-job experience or associate's degree

ESC	Clinical Nurse Specialists	Biomedical	Graduate degree
IC	Biostatisticians	Life Sciences	Graduate degree
IC	Computer Programmers	Computer Science	Bachelor's degree
IC	Financial Quantitative Analysts	Computer Science	Bachelor's degree
ICA	Mathematicians	Mathematics	Graduate degree
ICE	Computer Network Architects	Computer Science	Bachelor's degree
ICE	Industrial Engineers	Engineering	Bachelor's degree
ICE	Operations Research Analysts	Computer Science, Mathematics	Graduate degree
ICR	Bioinformatics Scientists	Biomedical	Graduate degree
ICR	Computer Systems Analysts	Computer Science	Bachelor's degree
ICR	Industrial Safety and Health Engineers	Engineering	Bachelor's degree
ICR	Software Developers, Systems Software	Computer Science, Engineering	Bachelor's degree
ICR	Transportation Planners	Engineering	Bachelor's degree
ICS	Pharmacist	Biomedical	Graduate degree
IEC	Business Intelligence Analysts	Computer Science	Bachelor's degree
IEC	Water Resource Specialists	Engineering	Bachelor's degree
IRC	Bioinformatics Technicians	Life Sciences	Bachelor's degree
IRC	Chemical Technicians	Chemistry, Life Sciences	Vocational training, on-the-job experience or associate's degree
IRC	Chemists	Chemistry, Physics/Astronomy	Bachelor's degree
IRC	Computer and Information Research Scientists	Computer Science	Graduate degree
IRC	Computer Hardware Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Cytogenetic technologist	Biomedical	Bachelor's degree
IRC	Environmental Engineers	Engineering, Environmental Science	Graduate degree
IRC	Environmental Science and Protection Technicians, Including Health	Environmental Science	Bachelor's degree
IRC	Environmental Scientists and Specialists, Including Health	Environmental Science	Bachelor's degree
IRC	Food Scientists and Technologists	Life Sciences	Bachelor's degree
IRC	Industrial Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
IRC	Mathematical Technicians	Mathematics	Bachelor's degree
IRC	Mechanical Engineers	Engineering	Bachelor's degree
IRC	Mechatronics Engineers	Computer Science, Engineering	Bachelor's degree
IRC	Microsystems Engineers	Engineering	Bachelor's degree
IRC	Nuclear Engineers	Engineering	Bachelor's degree
IRC	Petroleum Engineers	Engineering	Bachelor's degree
IRC	Photonics Engineers	Physics/Astronomy	Bachelor's degree

IRC	Product Safety Engineers	Engineering	Bachelor's degree
IRC	Software Developers, Applications	Computer Science, Engineering	Bachelor's degree
IRC	Validation Engineers	Engineering	Bachelor's degree
RC	Chemical Equipment Operators and Tenders	Chemistry	High School Diploma
RC	Chemical Plant and System Operators	Chemistry	High School Diploma
RC	Cooks, Institution and Cafeteria	Life Sciences	High School Diploma
RC	Fallers	Life Sciences	High School/GED
RC	Food Batchmakers	Life Sciences	High School Diploma
RC	Log Graders and Scalers	Life Sciences	Vocational training, on-the-job experience or associate's degree
RC	Wind Turbine Service Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Aircraft Mechanics and Service Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Drafters	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Civil Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RCI	Electromechanical Equipment Assemblers	Engineering	High School Diploma
RCI	Forest and Conservation Workers	Engineering, Life Sciences	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Equipment Operation Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Nuclear Monitoring Technicians	Engineering, Physics/Astronomy	Vocational training, on-the-job experience or associate's degree
RCI	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	Engineering	Vocational training, on-the-job experience or associate's degree
REC	Computer Network Support Specialists	Computer Science	Bachelor's degree
REC	First-Line Supervisors of Agricultural Crop and Horticultural Workers	Life Sciences	Vocational training, on-the-job experience or associate's degree
REC	Telecommunications Engineering Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RIC	Aerospace Engineering and Operations Technicians	Engineering	Bachelor's degree

RIC	Agricultural Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Engineering Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Automotive Specialty Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Avionics Technicians	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Biological Technicians	Life Sciences	Bachelor's degree
RIC	Civil Engineers	Engineering	Bachelor's degree
RIC	Computer User Support Specialists	Computer Science	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technicians	Computer Science, Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Electrical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electromechanical Engineering Technologists	Engineering	Bachelor's degree
RIC	Electronics Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Environmental Engineering Technicians	Engineering, Environmental Science	Bachelor's degree
RIC	Food Science Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Histotechnologists	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Logging Equipment Operators	Life Sciences	High School/GED
RIC	Mechanical Engineering Technologists	Engineering	Vocational training, on-the-job experience or associate's degree
RIC	Medical Equipment Repairers	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Medical and Clinical Laboratory Technicians	Biomedical	Vocational training, on-the-job experience or associate's degree
RIC	Precision Agriculture Technicians	Life Sciences	Vocational training, on-the-job experience or associate's degree
RIC	Security Management Specialists	Computer Science	Bachelor's degree

RSC	Surgical Technologist	Biomedical	Vocational training, on-the-job experience or associate's degree
SCR	Medical Assistant	Biomedical	Vocational training, on-the-job experience or associate's degree
SCR	Nursing Assistants	Biomedical	High School Diploma
SIC	Computer Science Teachers, Postsecondary	Computer Science	Graduate degree
SIC	Nurses	Biomedical	Vocational training, on-the-job experience or associate's degree
SRC	Dental Hygienist	Biomedical	Vocational training, on-the-job experience or associate's degree
SRC	Radiation Therapist	Biomedical	Vocational training, on-the-job experience or associate's degree

Career Interests Sheet

My Holland Code: Letter 1: ___ Letter 2: ___ Letter 3: ___

Careers that might interest me:

1. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

2. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

3. Career: _____

Education Level: _____ STEMM-Related: Yes No One-

Sentence about this Career: _____

_____

_____

_____

4. Career: _____

Education Level: _____ STEMM-Related: Yes No One-

Sentence about this Career: _____

_____

_____

_____

5. Career: _____

Education Level: _____ STEMM-Related: Yes No One-

Sentence about this Career: _____

_____

_____

_____

Career Research

Note for facilitators: This advanced career research worksheet was developed for use with students in honors courses. Students can complete this in addition to the Career Interests Sheet.

TITLE OF OCCUPATION: _____

1. Describe the main duties and responsibilities: _____

_____

_____

_____

2. What are the education and training requirements? _____

_____

3. What is the average wage or salary? _____

4. What is the employment outlook? _____

5. List other similar or related occupations: _____

_____

6. What subjects or courses would help you prepare for this occupation? _____

_____

_____

7. Does this occupation deal mainly with people, data, ideas, or things? _____

8. This occupation interests you because: _____

_____

_____

_____

Career Interview

Who I interviewed: _____

1. What is your current job?

2. How did you come to enter this job?

3. What do you like about your job?

4. What do you dislike about your job?

5. Do you think of your current work as a job or a career?

6. What do you see as the difference between a job and a career?

7. What advice do you have for me as I figure out a career path?

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 4

Day 4

Activity: Thinking about Postsecondary Education (PSE), Overcoming barriers, learning about college, introduce STEMM majors

Materials/Resources:

- Prize to raffle for students who complete HW
- Postsecondary options sheet
- Employment statistics
- Education and salary graph
- College Lingo Sheet
- List of college-going barriers for each facilitator
- Barriers Response Cards

Goals/Objectives:

- Students will learn about available postsecondary options
- Students will understand the differences between different PSE options
- Students will link PSE options with career goals
- Students will begin exploring barriers to PSE
- Students will learn about college
- Students will learn about their biases and preconceived ideas about scientists
- Students will begin to learn about STEMM careers

Specific Instructions:

1. Discussion about homework from last week (5-10 minutes)
    a. Raffle a prize for anyone who did the homework.
    b. What did you learn about the careers of those around you?
        i. Write on board
            1. How they entered the career
            2. Likes about career
            3. Dislikes about career
            4. How job/career builds on personal strengths
            5. Job versus career?
            6. Advice about career planning
        ii. What themes do you see?
            - Highlight ways in which the adults did / did not see their job fitting with their strengths, values, etc., and what that meant for them

2. College Discussion: (10 minutes) Start by asking: What are the options after you graduate from high school? Make a list of the board of responses, making sure the following are included:

    a. Straight to work
    b. Military
    c. Apprenticeship
    d. Trade school (such as Tennessee School of Beauty or HVAC school)
    e. Two-year community college (such as Walters State)
    f. Two-year community college and then transfer to four-year college
    g. Four-year college or university
- After all options are listed, give students the PSE Options Sheet and discuss the differences between each
  - How do you choose the best option?
    - Depends on career choice
    - More education typically leads to more money and benefits (show graph)
    - May depend on what your parents want you to do
    - May depend on what you can afford
  - Why consider attending college?
    - Tally on board how many of the careers people have listed require PSE
    - Employment statistics *(Update with new statistics as needed)*
      - 1/3 of new jobs will be in health care or social assistance
      - Four occupational groups are projected to grow 20% or more
        - Healthcare support (STEMM)
        - Healthcare practitioners (STEMM)
        - Construction
        - Personal care and service
      - 19 of the 30 fastest growing occupations require some form of postsecondary education
      - More education typically equals lower unemployment and higher salary (share unemployment rates data from US Department of Labor)
    - More money
    - More career options
      - Now required by many careers
      - Focus is now on skilled workers
      - World of work is different from when your parents were in school – now there are less jobs available for those with only a high school diploma, and the jobs that do exist provide only a low hourly wage and lack benefits
    - Benefits (health insurance and retirement) – discuss why these are important
    - Learn problem-solving and critical thinking skills
    - More connections/networking
    - Point out that even if they don't think college is the best choice for them right now, that might change. Important to keep as many options as possible open, which means important take things seriously now. If they blow off ACT now, and then decide later they

want to go to college versus take ACT seriously now, and then decide not to go. What's better?

3. What would keep you from going to college? Modified 4 Corners Activity (15-20 minutes) (*This activity can be done as a traditional 4 Corners activity. We have found this works better as a small group activity with our students.)*
    - Everyone gets a card with four words: Strongly Agree, Agree, Disagree, Strongly Disagree
    - Divide class into three groups (or however many facilitators you have)
    - In each group, facilitator reads statements from college-going barriers scale (Adapted from McWhirter, 1997; Revised by Gibbons, 2005) and have students hold up the card with the word that fits for them
    - Keep track of which barriers had consistent / inconsistent responses
    - DISCUSS what the activity was like
    - What barriers had they thought about before? Which were new?
    - Which ones were common / idiosyncratic?
    - Highlight the common barriers / idea that EVERYONE faces potential barriers – doesn't have to stop you, just have to be prepared and know what to do
    - In large group, discuss themes, what stood out (quick summary)

4. Introduce the College Lingo form, go over vocabulary, and respond to questions from students (10-15 minutes)

5. College Majors:
    a. Ask students: what is a major?
        i. A major is a collection of classes revolving around a subject, a theme, or a professional field
            - To graduate from college, you must choose a major and complete a certain number of courses within it
        ii. Some majors provide a direct path to a career, but some are not that specific. For example, if you major in nursing, it prepares you for a career as a nurse. However, if you major in economics, you may choose a career as a credit risk analyst at a bank.
    b. In no particular order, the most popular college majors (Caffee, 2017; National Center for Education Statistics, 2017) include:
        i. Business administration and management
        ii. Psychology
        iii. Nursing
        iv. Biology
        v. Engineering
        vi. Education
        vii. Criminal Justice
        viii. Finance or Accounting
        ix. Communications
        x. English

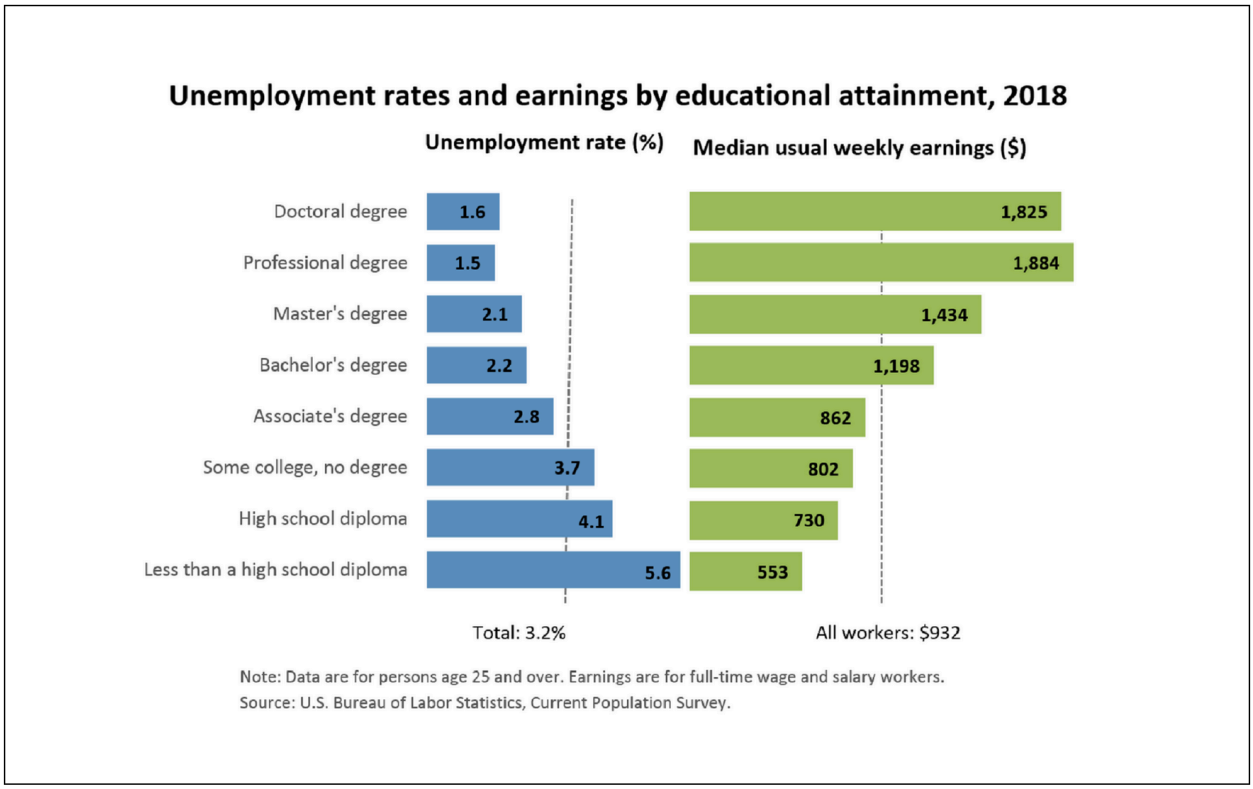
xi. History
xii. Computer Science

6. Activity: College Lingo Game (5-10 minutes)
    a. This activity is inspired by popular word guessing games (e.g., Password or Taboo). Divide class into two teams
    b. Bring a chair to the front of the room, facing students but facing away from the whiteboard
    c. Take turns alternating between teams
    d. You will write a College Lingo term on the board (so student in the chair cannot see), and team will have 45 seconds, using only verbal cues, to get their teammate to say the item written on the board. The only rule is that students must not say the item (in full or in part) that is written
    e. Give students 45 seconds per round to guess the term
    f. Each team scores 1 point for each correctly guessed term

7. Briefly discuss how knowing about these basics affects their perceived barriers.

8. Wrap Up: Take a Minute.
    a. As a way to close our time today and review, take a minute and write down three things that stood out from today's lesson. (As time allows, have a few students share their responses)
        - Collect student folders at the end of the lesson. Have students keep the college lingo sheet to review for homework.

Unemployment rates and earnings by educational attainment



https://www.bls.gov/emp/chart-unemployment-earnings-education.htm

Gibbons & Hardin (2019)

WHAT CAN I DO AFTER HIGH SCHOOL?

Note for facilitators: Additional tools for exploring the military and STEMM careers are provided on our website: http://pipes.utk.edu/stemm-careers/stemm-in-the-military/

- Two-Year Colleges:
    - Offer Associate's degrees
    - Can be public or private
    - Train students for immediate entry into the job marker OR
    - Prepare students to transfer to a four-year college or university
    - Advantages
        - Lower cost
        - Location close to home
        - Smaller class size
        - Flexible class schedules
    - Disadvantages
        - Fewer social activities and ways to connect to campus
        - No on campus housing
        - Must be an independent learner
        - Can be hard to transfer to a four-year college as a junior

- Four-Year Colleges:
    - Offer Bachelor's degrees
    - Students take courses in general education plus specialized areas
    - Advantages
        - Four-year degrees often lead to higher-paying jobs
        - Learn critical and abstract thinking skills
        - Opportunities for social interactions and on-campus living
        - Offer a wide variety of courses
    - Disadvantages
        - Can be costly, especially if it is a private university
        - Can be far from home
        - May feel different from others at the school

- Career or Technical Schools:
    - Provide courses that allow you to start a career in a specific field
    - Offer a variety of programs
    - Often provide a path to licensure or certification in areas such as:
        - Auto mechanic
        - Cosmetology
        - Truck driver
        - Computer programming
    - Advantages

        - Train students for a specific type of job
        - Night and weekend courses are available
        - No need to take courses outside your career focus
    - Disadvantages
        - Private technical schools can be very expensive
        - Courses typically do not transfer to a four-year college
        - May not be close to home
        - No on campus housing

- Apprenticeships:
    - Office education and training specifically targeted to a career field
    - Typically includes on-the-job training
    - Careers may include
        - Construction
        - Electrician
        - plumbing
    - Advantages
        - You begin work right away
        - Learn as you work
    - Disadvantages
        - Pay may be minimal at first

- Military:
    - Entering one of the military branches
    - Advantages
        - Learn career skills while enlisted
        - Earn money for future college-going
        - Learn skills to become a good worker
    - Disadvantages
        - May have to travel far from home
        - Can be dangerous
        - Can delay postsecondary education

Possible Barriers to Furthering Your Education for Modified 4 Corners Activity
(use at least one prompt from each category)

- Not knowing what you want to do career-wise
  - Don't know what kind of school I want
  - Don't know what kind of career I want
- Finances
  - Don't have enough money for college
  - College is too expensive
- Lack of support
  - Friends don't support my plans
  - Parents don't support my plans
  - Others don't think I be successful in college
- Discrimination
  - Might be treated differently because of where I live
  - Others believe that people from where I live don't do well in college
- Lack of role models and knowledge
  - Parents don't have knowledge about college
  - No one in my family goes to college
  - Don't understand what college life is all about
- Negative role models
  - Pressure to get a job rather than stay in school
  - No one around here goes to college
- Family issues
  - Family responsibilities keep me from going to college
  - Feel guilty about going away to college
  - Don't want to move away
- Lack of guidance
  - No one to help me understand college-planning
- Lack of preparedness/social skills
  - Takes a long time to finish schooling
  - Don't think I am prepared enough for college
  - School is too stressful
  - Would not be able to get into college I want
- Not fitting in
  - Not enough people like me at college
  - Won't fit in at a new school

Adapted from McWhirter, 1997; Revised by Gibbons, 2005

Strongly Disagree

Disagree

Strongly Agree

Agree

Strongly Disagree

Disagree

Strongly Agree

Agree

Strongly Disagree

Disagree

Strongly Agree

Agree

Gibbons & Hardin (2019)

College Lingo

Note for facilitators: Some examples are specific to East Tennessee.

Term	Definition
A.A.	Associate of arts, earned at most two-year colleges
Associate's Degree	Degree awarded to graduates of a two-year community college (A.A)
ACT	American College Testing, measures aptitude in English, math, reading, and science reasoning
Advisor	School official assigned by the college, who helps you choose the right courses for your major
B.A. or B.S	Bachelor of arts or bachelor of science, earned at four-year colleges
Bachelor's Degree	Degree awarded to graduates of a four-year college – B.A. or B.S.
Credit Hour	Number of hours assigned to a specific class, usually related to the number of hours per week you are in that class
Expected Family Contribution (EFC)	Amount that indicates how much a family's financial resources should be available to help pay for school
FAFSA	Free Application for Federal Student Aid – application required for all types of financial aid
Fees	Charges that cover costs beyond tuition, including athletic activities, clubs, and special events
Financial Aid	Money available from various sources to help students pay for college
General Education Classes	Classes that give students basic knowledge on a variety of topics; usually required for college graduation
Grant	Type of financial aid that does not have to be repaid
Loan	Type of financial aid that must be repaid, typically after the student finishes school
Major	Your primary area of study, related to the job you want after graduation
Merit-Based	Financial aid given to students who meet requirements not related to financial need, usually based on academic performance or extracurricular involvement
Need-Based	Financial aid given to students who are determined to be in financial need based on their income and family assets
Pell Grants	Federal need-based grants that do not need to be repaid
Private University	University that is privately-funded, usually costing more in tuition. Examples near you include: Carson Newman College, Johnson University, Lee University, Lincoln Memorial University, Maryville College, and Tennessee Wesleyan College
Public University	University partially funded by the government, often called State schools or universities. Examples near you include: University of Tennessee Knoxville, East Tennessee State University, University of Tennessee Chattanooga, and Tennessee Tech University
SAT	Scholastic Aptitude Test, which measures mathematical and verbal reasoning
Scholarships	Need- or merit-based financial awards that typically do not need to be repaid
Syllabus	Description of a course that also lists dates for exams and assignments
Tuition	Amount of money that colleges charge for classroom instruction
Undergraduate	A student at a college or university who has not yet earned a Bachelor's

PIPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 5

Day 5

Activity: Draw a Scientist

Goals/Objectives:

- Students will consider their biases and preconceived ideas about scientists
- Students will learn about STEMM careers

Specific Instructions:

1. Questions from last time?
2. Postsecondary discussion
    a. Last week, we discussed college lingo and postsecondary options. Now, we were wondering what you think people do at college? Have students brainstorm this as a group.
    b. Show video on research at UT (*or supplement with similar video from your local university*) https://www.youtube.com/watch?v=xnkpMesypJQ
    c. Discuss reactions to video
        i. What surprised them?
        ii. Anything seem especially exciting?
        iii. How did all those students make that happen?
3. Draw-A-Scientist (Chambers, 1983) Activity (10-15 minutes)
    a. Ask each student to draw a picture of what they see as a scientist (Use the back of a sheet of paper in the folder)
    b. Ask them to list 5 words about what a scientist looks like and what a scientist does
    c. Write the words on the board
    d. Discussion:
        i. How did you learn these descriptions?
        ii. Do you think they are accurate?
4. Show video on STEM fields: https://www.youtube.com/watch?v=zgB-Diy8imo
5. Discussion:
    a. How has science and technology changed how we communicate, are entertained, find out information?
    b. Generate a list of objects that we use on a regular basis today that parents did not have when they were in high school
    c. Discuss how these were all created by scientists

6. STEMM majors (Langdon, McKittrick, Beede, Khan, & Doms, 2011)
    a. Science, Technology, Engineering, Math, and Medical Science careers
    b. STEMM occupations are projected to grow by 17% between now and 2018 (compared to 9.8% for non-STEMM occupations)
    c. STEMM workers earn 26% more than their non-STEMM peers
    d. 2/3 of STEMM workers have a college degree
    e. Average hourly earnings by educational attainment:
        i. HS diploma or less:
            1. STEM: $24.82
            2. Noon-STEM: $15.55
        ii. Some college or associate degree:
            1. STEM: $26.63
            2. Non-STEM: $19.022
        iii. Bachelor's degree
            1. STEM: $35.81
            2. Non-STEM: $28.27

7. Discussion of STEMM career options (2 year, 4 year, graduate level)

8. How can STEMM careers help your community? Health issues in your community (15 minutes)
    a. What are health issues that people in your community face? Take a piece of paper and brainstorm as many health issues as you can in one minute. (Time students). Make a list of health issues on the board.
    b. Share public health information from the Appalachian Regional Commission (2008, 2012a, 2012b):
        - Appalachian counties rank below national norm on health care access and cost
        - 48% of Appalachian counties rank in lowest quintile of healthcare reimbursement
        - Residents die younger from preventable causes (19% higher preventable mortality rates)
        - Higher rates of decay-related tooth loss and fewer dental providers
        - Higher rates of meth use
        - Higher rates of chronic illness
            i. Lung diseases
            ii. Cancer
            iii. Strong
            iv. Diabetes
            v. Obesity

9. Discussion
    a. How does this information connect with your list? Do you know people affected by any of these health issues?
    b. How do these health issues affect their lives? Your lives?
    c. What can you do to help address these health issues? Reflect on Who am I worksheet, dreams and goals.
        i. Highlight variety of career opportunities that would relate to these community needs
            1. PA, nurse, physician, dentist
            2. Biomedical researcher
            3. Behavioral health specialist

10. Next time is our last meeting – come with any final questions, thoughts, etc.

11. Wrap Up: Take a Minute.
    a. As a way to close our time today and review, take a minute and write down three things that stood out from today's lesson. (As time allows, have a few students share their responses)
    b. Collect student folders at the end of the lesson.

PIPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Day 6

Day 6

Activity: Wrap Up and Evaluate

Material/Resources:

- Goal setting handouts (1 per student)
- Program evaluations (1 per student)
- Scantron sheets and #2 pencils
- ID Cards/list for students

Goals/Objectives:

- Students will begin to create a plan for reaching their goals

Specific Instructions:

1. Finish up discussion from last week. Divide into small groups with facilitators and pick up from last week about STEMM majors, college going, etc. Use the following discussion questions:
    a. What's your biggest fear about going to college?
    b. What STEMM careers do you think you might be interested in? Why?
    c. What do you think college professors are like? What are some ways to connect with college professors?
    d. What do your parents say about the idea of you going onto postsecondary education?
    e. What would your parents say if you told them you wanted to go into a STEMM career?
2. Begin wrap-up
    a. Questions people brought?
    b. We've covered a lot of topics in the past few weeks – exploring who you are, what your goals are, what kinds of careers might be a good fit for you, what college is all about.
3. Goal-setting and planning – have students complete the goal-setting worksheet (15-20 minutes)
    a. What are their next steps?
4. Evaluation (10 minutes)
    a. Our next steps are to make sure that this program is as useful as possible, so we need their feedback
    b. Pass out evaluation sheet

5. Final reflection
    a. What was most important thing they learned?
    b. Look back over materials from program, especially worksheets from early on. What, if anything, has changed? Are dreams / aspirations different? Are they thinking about any new careers?

Sample Posttest Items
(customize these questions to the needs of your school and population)

Rate your interest in the following items:

I am interested in attending a 2-year or 4-year college.	Not at all interested	Somewhat interested	Interested	Very Interested
I am interested in a science, technology, engineering, mathematics, or medicine (STEMM) career.	Not at all interested	Somewhat interested	Interested	Very Interested

Rate your certainty on the following items:

I know the career path I want to pursue.	Not at all certain	Somewhat certain	Certain	Very certain
I will apply to college.	Not at all certain	Somewhat certain	Certain	Very certain
I can handle the challenges that arise at college.	Not at all certain	Somewhat certain	Certain	Very certain
I can find information on careers related to science, technology, engineering, math, and medical (STEMM).	Not at all certain	Somewhat certain	Certain	Very certain

Rate your level of understanding of the following items:

How my interests and strengths connect with my career choices	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to find information about different careers	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to choose what type of education I want after high school	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to understand financial aid options	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How STEMM careers relate to helping with my community's needs	No understanding	Some understanding	Quite a bit of understanding	Total understanding
How to make goals related to my future plans	No understanding	Some understanding	Quite a bit of understanding	Total understanding

Program Evaluation Questions:

PiPES class activities helped me learn more about myself.	Strongly Disagree	Disagree	Agree	Strongly Agree
PiPES class activities helped me learn more about options after high school.	Strongly Disagree	Disagree	Agree	Strongly Agree

PUTTING IT ALL TOGETHER

1. What are three possible career goals?
   a. _____
   b. _____
   c. _____
2. I like these careers because they: _____
   _____
3. One way careers like these fit with my family's or community's values is _____
   _____
4. To achieve these goals, what type of education will I seek after high school? _____
   _____
5. To achieve these goals, I need to:

Spring Semester Sophomore Year

- Do as well as you can in school
- Join a new club or activity
- Consider applying for the PiPES summer camp
- Continue to research possible career options (www.onetonline.org, www.collegefortn.org)
- Look for a summer job or volunteer activity that relates to your future career goal

Junior Year Planning

- Take an advanced class in at least one subject if you feel that you can
- Plan for the ACT
- Write a resume (work and volunteer experience; honors and awards; specialized courses, skills and expertise)
- Start a list of colleges (technical, two-year, four-year) that you might be interested in attending
- Join a club or activity related to your future goal
- Take a leadership role in one of your activities
- Research possible career options (www.onetonline.org, www.collegefortn.org)
- Find out about financial aid and scholarship opportunities (www.fafs.ed.gov, https://studentaid.ed.gov, www.collegefortn.org)
- Job shadow someone related to your future career

Things to Consider

- Are you taking any honors, AP, or dual enrollment courses?
- Could you take an honors, AP, or dual enrollment course next year?
- Have you started your foreign language yet?
- Are you making sure you can get beyond Algebra II in math?
- Is there a course that might help you explore a possible career path?
- Is there a course that might help you increase your computer skills?
- Is there a course that would help you further explore STEM careers?
- Can you add a club or sport next year?
- Is there a club that relates to your career goals?
- Are you doing something that helps others?
- Can you take a leadership role in one of your activities?
- What skills are you learning in your job that you might use in your future career?

6. One way my family, teachers, or others can help me make these changes and achieve my career goals is:

_____

_____

PiPES

POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

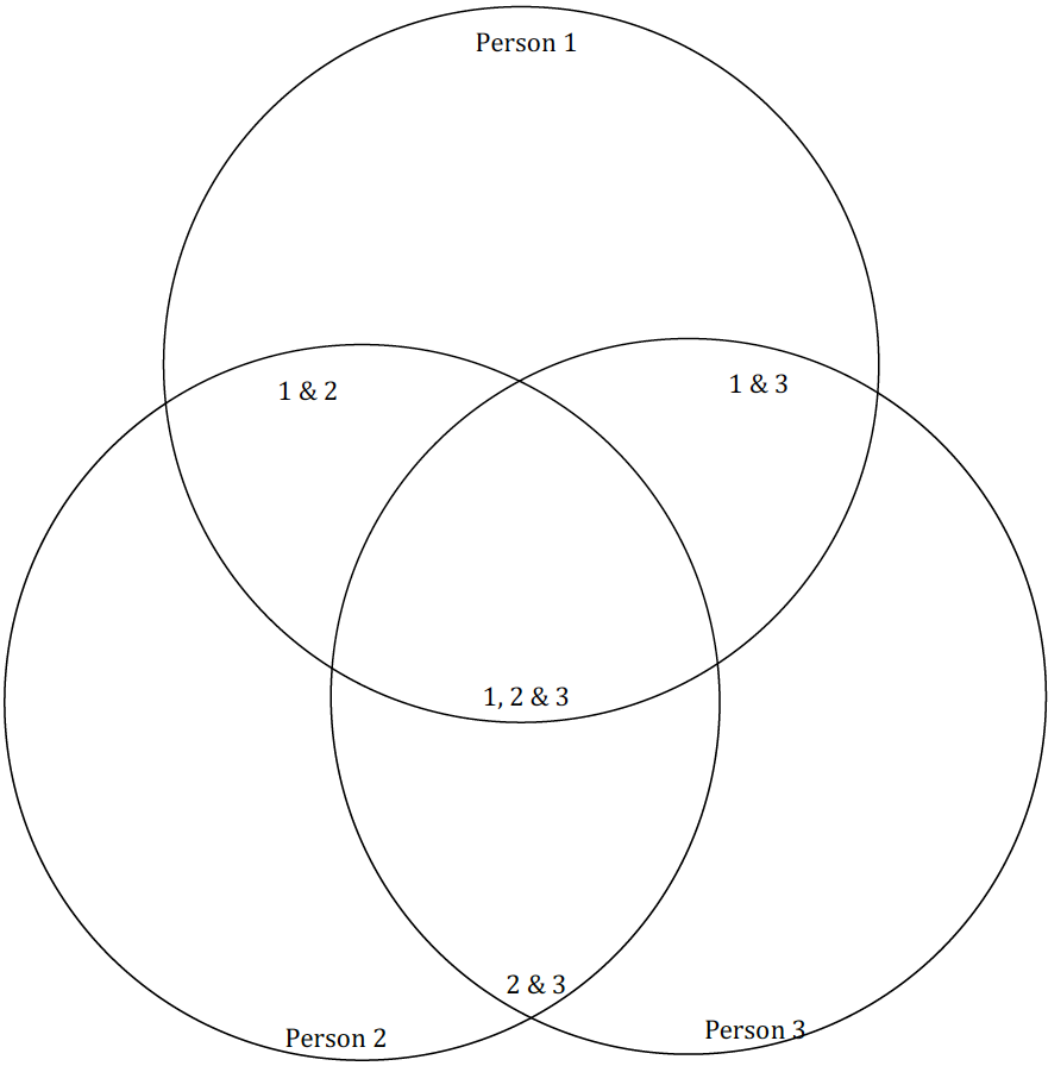
Student Handouts to Print

Name _____

In your group, talk about how you are alike and different in the following ways:

- Gender
- Ethnicity/race
- Where you were born
- Whether your parents went to college
- Favorite type/genre of music
- Three careers you have considered
- Favorite food
- Five words you would use to describe yourself
- Where you would most like to travel that you have never been to before

Write something in each of the areas below.



PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

My 10-Year Class Reunion

Directions: Answer the following questions by thinking about what you would like to tell your friends when you see them again 10 years after you graduate high school.

1. In 10 years it will be the year _____ and I will be _____ years old.
2. The job I want in 10 years is _____
3. To get that job, I will have to:
    a. _____
    b. _____
    c. _____
4. In 10 years I will be driving a _____
5. I will live in:
    a. An apartment
    b. A house I rent
    c. A house I own
    d. My parent's/relative's home
    e. Other: _____
6. The thing I will be most proud of by then is _____

_____

_____

7. The most important experience I will have had is _____

_____

_____

8. Two things I can do starting today to make my plans come true are
    a. _____
    b. _____

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

WHEN I WAS SIX TO EIGHT YEARS OLD, MY FAVORITE ACTIVITIES WERE:

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Holland Code Descriptions

Realistic	Investigative
● Enjoy working with animals, plants, tools, machines, mechanical drawings ● Value practical things you can see, touch, and use ● See yourself as practical, honest, natural ● Like jobs with tangible results (something you can see when you are done) ● Like to work outdoors, enjoy physical activity ● Words that might describe you: Realistic, practical, independent, persistent, athletic, nature lover, mechanical, doer ● Would not enjoy social jobs such as teaching or working with patients	● Enjoy studying and solving math or science problems ● Search for solutions to problems ● Tend to be independent and self-motivated ● Abstract thinkers ● Less social and a strong need to understand the world ● Words that might describe you: thinker, scientific, precise, independent, observant, curious, logical, reserved ● Would not enjoy sales or jobs involving leading and persuading people
Artistic	**Social**
● Creative and expressive ● Value freedom, originality ● Like creative activities such as art, drama, crafts, dance, music, creative writing ● Words that might describe you: creator, imaginative, expressive, open, sensitive, unconventional, original, courageous ● Would not enjoy highly ordered or repetitive activities	● Like to work with people ● Value idealism, kindness, generosity ● Enjoy problem solving through discussion ● Drawn to seek close relationships with others ● Words that might describe you: helper, responsible, kind, forgiving, generous, outgoing, friendly, insightful ● Would not enjoy using machines or tools to achieve a goal
Enterprising	**Conventional**
● Like to manage and persuade others ● Value risk-taking ● Assertive and energetic ● Use verbal skills to lead others ● Words that might describe you: persuader, adventurous, energetic, spontaneous, ambitious, sociable, enthusiastic ● Would not enjoy activities that require careful observation and scientific analysis	● Organized and planful ● Value structure and routine ● Like rules, order, clear guidelines ● Attention to detail, good follow through on others' instructions ● Words that might describe you: organizer, accurate, numerically-inclined, practical, structured, efficient, well-organized, polite ● Would not enjoy unstructured, artistic activities

(Holland, 1997; Sharf, 2013)

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Career Interests Sheet

My Holland Code: Letter 1: ___ Letter 2: ___ Letter 3: ___

Careers that might interest me:

1. Career: _____

Education Level: _____ STEMM-Related: Yes No

One Sentence about this Career: _____

_____

_____

_____

2. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

3. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

4. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

5. Career: _____

Education Level: _____ STEMM-Related: Yes No

One-Sentence about this Career: _____

_____

_____

_____

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Career Research

TITLE OF OCCUPATION: _____

1. Describe the main duties and responsibilities: _____

_____

_____

_____

2. What are the education and training requirements? _____

_____

3. What is the average wage or salary? _____

4. What is the employment outlook? _____

5. List other similar or related occupations: _____

_____

6. What subjects or courses would help you prepare for this occupation? _____

_____

_____

_____

7. Does this occupation deal mainly with people, data, ideas, or things? _____

_____

8. This occupation interests you because: _____

_____

_____

TITLE OF OCCUPATION: _____

1. Describe the main duties and responsibilities: _____

_____

_____

_____

2. What are the education and training requirements? _____

_____

3. What is the average wage or salary? _____

4. What is the employment outlook? _____

5. List other similar or related occupations: _____

_____

6. What subjects or courses would help you prepare for this occupation? _____

_____

_____

_____

7. Does this occupation deal mainly with people, data, ideas, or things? _____

_____

8. This occupation interests you because: _____

_____

_____

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

My Strengths

Circle 6 – 8 personal strengths from the list below. Pick the characteristics that best represent your strengths.

Adaptability	Intelligent	Responsible
Bravery		Serious
Building Relationships	Kindness	Spirituality
Caring	Knowledgeable	
Communication Skills	Leadership	Straightforward
Computer Skills	Love of Learning	Task-Oriented
Creativity	Open-Mindedness	Teamwork
Curiosity	Optimistic	Time Management
Determination	Orderly	Tolerance
Empathy	Organized	Trustworthy
Energetic	Originality	Warmth
Generosity	Patient	Work Ethic
Honesty	Persistence	Working Alone
Hopefulness	Persuasiveness	
Humor	Positive Attitude	
Inspiring	Problem-Solving	

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Strengths Exploration

- Think about your childhood up to 6th grade
- Identify a good experience that comes to your mind
    - Something specific that you
        - Did well
        - Enjoyed
        - Are proud of
- Draw this experience or write a short description of it here:

- Now, pair up with someone and listen to their story
- Using the strengths worksheet, circle the strengths you heard from their story
- Share these strengths with your partner

Used with permission from the Center for Dependable Strengths. Adapted from the Dependable Strengths Articulation Process developed by Dr. Bernard Haldane. www.dependablestrengths.org

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Heroes

Think back to when you were a child, about 6-8 years old (kindergarten – third grade). Who were your heroes? Other than your mom or dad, who did you admire? These can be real people you knew or famous people you didn't know personally, make-believe people like superheroes or cartoon characters.

When I was a child, I admired _____

Because……

When I was a child, I admired _____

Because……

When I was a child, I admired _____

Because……

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Values List – Circle 10

- Accountable
- Achievement
- Adaptability
- Altruism
- Ambition
- Attitude
- Balance (home/work)
- Caring
- Commitment
- Community
- Community involvement
- Compassion
- Competence
- Consistency
- Control
- Cooperation
- Correctness
- Courage
- Creativity
- Dependability
- Determination
- Diversity
- Efficiency
- Enjoyment
- Enthusiasm
- Fairness
- Financial stability
- Forgiveness
- Friendliness
- Generosity
- Health
- Honesty
- Humility
- Humor
- Independence
- Initiative
- Inner harmony
- Integrity
- Intelligence
- Intuition
- Job security
- Leadership
- Listener
- Openness
- Patience
- Perseverance
- Personal fulfillment
- Power
- Recognition
- Reliability
- Religion
- Respectfulness
- Risk
- Safety
- Self-actualization
- Self-reliance
- Spirituality
- Spontaneity
- Strength
- Success
- Teamwork
- Tolerance
- Unity
- Vision
- Wealth
- Other : _____ _____

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Who am I?

Use this page to summarize what you learn about yourself from today's activities. You will add to this worksheet in future weeks, so please don't lose it!

MY HEROES

What two or three things do my heroes all have in common?

MY PERSONAL STRENGTHS

What do I and others see as my personal strengths?

MY VALUES

What 4-5 values are the most important to me?

MY PERSONALITY AND INTERESTS

What is my Holland Code?

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Career Interview

Who I interviewed: _____

1. What is your current job?

2. How did you come to enter this job?

3. What do you like about your job?

4. What do you dislike about your job?

5. Do you think of your current work as a job or a career?

6. What do you see as the difference between a job and a career?

7. What advice do you have for me as I figure out a career path?

WHAT CAN I DO AFTER HIGH SCHOOL?

- Two-Year Colleges:
  - Offer Associate's degrees
  - Can be public or private
  - Train students for immediate entry into the job marker OR
  - Prepare students to transfer to a four-year college or university
  - Advantages
    - Lower cost
    - Location close to home
    - Smaller class size
    - Flexible class schedules
  - Disadvantages
    - Fewer social activities and ways to connect to campus
    - No on campus housing
    - Must be an independent learner
    - Can be hard to transfer to a four-year college as a junior

- Four-Year Colleges:
  - Offer Bachelor's degrees
  - Students take courses in general education plus specialized areas
  - Advantages
    - Four-year degrees often lead to higher-paying jobs
    - Learn critical and abstract thinking skills
    - Opportunities for social interactions and on-campus living
    - Offer a wide variety of courses
  - Disadvantages
    - Can be costly, especially if it is a private university
    - Can be far from home
    - May feel different from others at the school

- Career or Technical Schools:
  - Provide courses that allow you to start a career in a specific field
  - Offer a variety of programs
  - Often provide a path to licensure or certification in areas such as:
    - Auto mechanic
    - Cosmetology
    - Truck driver
    - Computer programming
  - Advantages
    - Train students for a specific type of job
    - Night and weekend courses are available

        - No need to take courses outside your career focus
    - Disadvantages
        - Private technical schools can be very expensive
        - Courses typically do not transfer to a four-year college
        - May not be close to home
        - No on campus housing

- Apprenticeships:
    - Office education and training specifically targeted to a career field
    - Typically includes on-the-job training
    - Careers may include
        - Construction
        - Electrician
        - plumbing
    - Advantages
        - You begin work right away
        - Learn as you work
    - Disadvantages
        - Pay may be minimal at first

- Military:
    - Entering one of the military branches
    - Advantages
        - Learn career skills while enlisted
        - Earn money for future college-going
        - Learn skills to become a good worker
    - Disadvantages
        - May have to travel far from home
        - Can be dangerous
        - Can delay postsecondary education

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POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

College Lingo

Term	Definition
A.A.	Associate of arts, earned at most two-year colleges
Associate's Degree	Degree awarded to graduates of a two-year community college (A.A)
ACT	American College Testing, measures aptitude in English, math, reading, and science reasoning
Advisor	School official assigned by the college, who helps you choose the right courses for your major
B.A. or B.S	Bachelor of arts or bachelor of science, earned at four-year colleges
Bachelor's Degree	Degree awarded to graduates of a four-year college – B.A. or B.S.
Credit Hour	Number of hours assigned to a specific class, usually related to the number of hours per week you are in that class
Expected Family Contribution (EFC)	Amount that indicates how much a family's financial resources should be available to help pay for school
FAFSA	Free Application for Federal Student Aid – application required for all types of financial aid
Fees	Charges that cover costs beyond tuition, including athletic activities, clubs, and special events
Financial Aid	Money available from various sources to help students pay for college
General Education Classes	Classes that give students basic knowledge on a variety of topics; usually required for college graduation
Grant	Type of financial aid that does not have to be repaid
Loan	Type of financial aid that must be repaid, typically after the student finishes school
Major	Your primary area of study, related to the job you want after graduation
Merit-Based	Financial aid given to students who meet requirements not related to financial need, usually based on academic performance or extracurricular involvement
Need-Based	Financial aid given to students who are determined to be in financial need based on their income and family assets
Pell Grants	Federal need-based grants that do not need to be repaid
Private University	University that is privately-funded, usually costing more in tuition. Examples near you include: Carson Newman College, Johnson University, Lee University, Lincoln Memorial University, Maryville College, and Tennessee Wesleyan College
Public University	University partially funded by the government, often called State schools or universities. Examples near you include: University of Tennessee Knoxville, East Tennessee State University, University of Tennessee Chattanooga, and Tennessee Tech University
SAT	Scholastic Aptitude Test, which measures mathematical and verbal reasoning
Scholarships	Need- or merit-based financial awards that typically do not need to be repaid
Syllabus	Description of a course that also lists dates for exams and assignments
Tuition	Amount of money that colleges charge for classroom instruction

Undergraduate	A student at a college or university who has not yet earned a Bachelor's

PiPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

PUTTING IT ALL TOGETHER

1. What are three possible career goals?
   a. _____
   b. _____
   c. _____
2. I like these careers because they: _____
   _____
3. One way careers like these fit with my family's or community's values is _____
   _____
4. To achieve these goals, what type of education will I seek after high school? _____
   _____
5. To achieve these goals, I need to:

Spring Semester Sophomore Year

- Do as well as you can in school
- Join a new club or activity
- Consider applying for the PiPES summer camp
- Continue to research possible career options (www.onetonline.org, www.collegefortn.org)
- Look for a summer job or volunteer activity that relates to your future career goal

Junior Year Planning

- Take an advanced class in at least one subject if you feel that you can
- Plan for the ACT
- Write a resume (work and volunteer experience; honors and awards; specialized courses, skills and expertise)
- Start a list of colleges (technical, two-year, four-year) that you might be interested in attending
- Join a club or activity related to your future goal
- Take a leadership role in one of your activities
- Research possible career options (www.onetonline.org, www.collegefortn.org)
- Find out about financial aid and scholarship opportunities (www.fafs.ed.gov, https://studentaid.ed.gov, www.collegefortn.org)
- Job shadow someone related to your future career

Things to Consider

- Are you taking any honors, AP, or dual enrollment courses?
- Could you take an honors, AP, or dual enrollment course next year?
- Have you started your foreign language yet?
- Are you making sure you can get beyond Algebra II in math?
- Is there a course that might help you explore a possible career path?
- Is there a course that might help you increase your computer skills?
- Is there a course that would help you further explore STEM careers?
- Can you add a club or sport next year?
- Is there a club that relates to your career goals?
- Are you doing something that helps others?
- Can you take a leadership role in one of your activities?
- What skills are you learning in your job that you might use in your future career?

6. One way my family, teachers, or others can help me make these changes and achieve my career goals is:

_____

_____

PIPES
POSSIBILITIES IN POSTSECONDARY EDUCATION & SCIENCE

Name _____

Day 1: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

Day 2: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

Day 3: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

Name _____

Day 4: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

Day 5: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

Day 6: Take a Minute . . .

Three things that stood out to me today are:

1.

2.

3.

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