IU1 Mobile Career Lab Services

K-2 Services:

- **PBS Alphabet Career Book and Career Interest Inventory**

Students will explore a career associated with a letter of the alphabet. Each alphabet career book activity includes: a book associated with a specific career and a PBS career journal. The journal is meant to be worked on throughout the school year with the classroom teacher.

During the session, students will complete a career interest inventory (a color-coded system through World of Work and PBS) and complete a discussion on each career category along with a review of select careers in each interest category. A career book of the teachers choosing will be read with students.

At the conclusion of the session, students will receive a career handout to take home to their parent/guardian that relates to specials classes (art, gym, library, and music). Each handout discusses careers that align with students' specials along with a QR code where they can watch short video clips on selected careers and books associated with specific career fields. Example activities to be completed for each elective are included.

K-2 Career Book List with Summaries

Artifact: Pictures, Copies of Completed Activities from PBS Career Journal, Career Interest Inventory

- **PBS Career BINGO Activity–Chromebooks/Computer Needed**

Students will receive a career BINGO sheet. Then, students will complete basic research to find a job in various categories, such as a job that uses math skills, a job that creates things, etc.

This career BINGO activity can be extended by asking students to conduct more research on one of the jobs they've discovered and then present this information to their classmates (in a format of the teacher's choosing).

- **EntreEd Entrepreneurship Activities: One activity per class session**

Activity: "Community Helpers"

Students will learn about how they can help their family, friends, and community. With the children's book, "The Giving Tree," as a focal text, students will discuss how the tree helped a little boy throughout his life and how this help was free. Students will discuss ways that they can give back to their community. A simple introduction to what an entrepreneur is will occur. (a problem solver as a short, easy to comprehend definition at this age).

Students will then create their own giving tree to display in the classroom or school hallway. Students will write what gifts they can share with their community on a paper leaf. This leaf can be used for a classroom/hallway bulletin board display as the class's "giving tree." This lesson can segway into larger conversations and activities with students about solving problems or helping others in their school or neighborhood community.

Artifact: "The Giving Tree" leaf (personal reflection), pictures of "The Giving Tree" bulletin board

Activity: Bus Design Challenge

Students will go through the entrepreneurial process by designing a product for a customer. The children's book, "Don't Let the Pigeon Drive the Bus," will be the focal text. As a group, students will discuss what would make the pigeon happy besides driving the bus! Although he can't drive the bus, can students create something else that he could drive? How can they solve a problem for Pigeon?

Artifact: Brainstorming of a Product, Finished Product for a Customer

- **BotsIQ MFGexplore**

<u>What is MFGexplore?</u>

BotsIQ MFGexplore is a new curriculum dedicated to exposing K-12 students to in-demand careers in manufacturing. MFGexplore lessons are suitable for all subjects. Lessons are exciting, hands-on, and do not require any background knowledge of manufacturing.

Each unit is coupled with a lesson which spotlights a fictional character and their career journey. The lesson content focuses on skills and competencies needed in a manufacturing career which include collaboration, communication, creativity, and problem-solving.

All BotsIQ programming, including MFGexplore, is available to all educators across our IU1 districts **FREE** of charge.

Manufacturing Careers and Activities:

Industrial Designer: Students will take on the role of an Industrial Engineer and create a catapult using 3D pens. They must consider flaws within their design and continue to upgrade the catapult in order to efficiently launch a small object onto a bullseye.

CNC Programmer: Students will learn how a CNC Machine is programmed and how to write G-code for a CNC router. Using their new knowledge, the kids will make a personalized keychain using G-code.

Industrial Engineer: Students will create an autonomous delivery system using assembled bristle bots.

Manufacturing Engineer: Students will step into the world of a manufacturing engineer and apply an assembly line process to increase production of a simple flashlight.

Industrial Machinery Mechanic: Students will build, test and debug an out-of-order machine on the shop floor using Lego Spike Prime kits.

Robotics Technician: Students will build, install and program a robotic system for a manufacturing plant using Lego Spike Prime kits.

Electrical and Electronic Assembler: Students will assemble an electrical circuit using conductive thread or conductive tape.

Inspector: Students will learn how to measure precisely using calipers and micrometers by sorting materials correctly.

Sales Representative: Students will prototype a solution to a problem and pitch their idea to a group of "sharks."

BioEngineer: Students will research, design and prototype a prosthetic for an animal using recyclable materials.

Industrial Production Manager: Students will create a zipline carrier to transport products from one end of the manufacturing plant to the other.

BotsIQ MFGexplore Program Request Form

Grades 3-5 Services:

- **BotsIQ MFGexplore**

What is MFGexplore?

BotsIQ MFGexplore is a new curriculum dedicated to exposing K-12 students to in-demand careers in manufacturing. MFGexplore lessons are suitable for all subjects. Lessons are exciting, hands-on, and do not require any background knowledge of manufacturing.

Each unit is coupled with a lesson which spotlights a fictional character and their career journey. The lesson content focuses on skills and competencies needed in a manufacturing career which include collaboration, communication, creativity, and problem-solving.

All BotsIQ programming, including MFGexplore, is available to all educators across our IU1 districts **FREE** of charge.

Manufacturing Careers and Activities:

Industrial Designer: Students will take on the role of an Industrial Engineer and create a catapult using 3D pens. They must consider flaws within their design and continue to upgrade the catapult in order to efficiently launch a small object onto a bullseye.

CNC Programmer: Students will learn how a CNC Machine is programmed and how to write G-code for a CNC router. Using their new knowledge, the kids will make a personalized keychain using G-code.

Industrial Engineer: Students will create an autonomous delivery system using assembled bristle bots.

Manufacturing Engineer: Students will step into the world of a manufacturing engineer and apply an assembly line process to increase production of a simple flashlight.

Industrial Machinery Mechanic: Students will build, test and debug an out-of-order machine on the shop floor using Lego Spike Prime kits.

Robotics Technician: Students will build, install and program a robotic system for a manufacturing plant using Lego Spike Prime kits.

Electrical and Electronic Assembler: Students will assemble an electrical circuit using conductive thread or conductive tape.

Inspector: Students will learn how to measure precisely using calipers and micrometers by sorting materials correctly.

Sales Representative: Students will prototype a solution to a problem and pitch their idea to a group of "sharks."

BioEngineer: Students will research, design and prototype a prosthetic for an animal using recyclable materials.

Industrial Production Manager: Students will create a zipline carrier to transport products from one end of the manufacturing plant to the other.

BotsIQ MFGexplore Program Request Form

- **PBS Alphabet Career Book and Career Interest Inventory**

Students will explore a career associated with a letter of the alphabet. Each alphabet career book activity includes: a book associated with a specific career and a PBS career journal. The journal is meant to be worked on throughout the school year with the classroom teacher.

During the session, students will complete a career interest inventory (a color-coded system through World of Work and PBS) and complete a discussion on each career category along with a review of select careers in each interest category. A career book of the teachers choosing will be read with students.

At the conclusion of the session, students will receive a career handout to take home to their parent/guardian that relates to specials classes (art, gym, library, and music). Each handout discusses careers that align with students' specials along with a QR code where they can watch short video clips on selected careers and books associated with specific career fields. Example activities to be completed for each elective are included.

Grades 3-5 Career Book List with Summaries

Artifact: Pictures, Copies of Completed Activities from PBS Career Journal, Career Interest Inventory

- **PBS Career BINGO Activity–Chromebooks/Computer Needed**

Students will receive a career BINGO sheet. Then, students will complete basic research to find a job in various categories, such as a job that uses math skills, a job that creates things, etc.

This career BINGO activity can be extended by asking students to conduct more research on one of the jobs they've discovered and then present this information to their classmates (in a format of the teacher's choosing).

- **PBS "Design Lives Here"** Design Lives Here Registration Form

Any questions can be emailed to ganderson@wqed.org

Participants will be given:
A Design Lives Here orientation and training about the show/event and approaches to

- Engineering in the classroom
- An engineering mentor from the ESWP to provide a real life example of engineering as a career path
- Three engineering design challenges and corresponding curriculum assignments and materials
- Invention Challenge and corresponding curriculum guidance and resources
- Participation in the Design Lives Here event – place and time TBA

Participating programs must:

- Integrate engineering materials and curriculum into their classroom/program
- Welcome a mentor into their classroom
- Internet access
- Organize all trip logistics for Design Lives Here – Invention Convention including but not limited to bussing, permission slips, etc.
- Participate fully in all evaluations, surveys, and communications as requested

More about Design Lives Here
The Design Lives Here initiative is presented by WQED Multimedia in partnership with the Engineers' Society of Western Pennsylvania Design Lives Here is an exciting educational outreach program based on Design Squad Nation (formerly, Design Squad), a reality-based television program that is targeted at middle school students to "inspire the next generation of engineers."

For the 2024-2025 school year, Design Lives Here schools, afterschool programs and libraries will receive materials and activity guides to complete three Design Lives Here challenge activities and the Invention Challenge. The initiative will include an Invention Convention, a day of engineering fun, mentorship opportunities, viewings of the television show, and the students will find out the winning video from the invention challenge.

- **EntreEd Entrepreneurship Activity: One activity per class session**

Activity: "What is an Entrepreneur?"
The goal of this lesson is to have students understand the definition of an entrepreneur and realize that an entrepreneur isn't just someone with a physical business.

Three types of entrepreneurs will be discussed: traditional, social, and intrapreneur. In groups, students will be assigned one of the three entrepreneur types listed.

On a Google Slide presentation, students will then create a profile of an imaginary entrepreneur who fits this category: give the entrepreneur a name, describe the business/product/service that this entrepreneur created, and the qualities/personality traits that has made this entrepreneur successful.

Students will end the activity with a reflection: What entrepreneur type do you connect with the most and why? Which type of entrepreneur would suit you best?

Artifacts: Entrepreneur Presentation, Reflection

Activity: "Pitch"
Students will create a solution to a customer's problem. Working in pairs, students will be given an ordinary product to pitch, such as a paper clip, tape, scissors, sock, toothbrush, etc. In a pitch, students will have to explain what the object is used for, why it's the best invention ever created, how it will solve a customer's problem, and why someone should purchase it–the more creative the better, and the product should not be used for what it was intended. The traits of an entrepreneur will be discussed.

Students will create an advertisement for their product.

Artifacts: Advertisement for a product, Writing a sales pitch

Activity: "Build a Gnome Home"

Students will work on the entrepreneurial traits of teamwork, communication, problem solving, customer service, and creativity.

In teams of four, students will design a tower that could comfortably house a gnome community. The tower must be able to withstand movement and fit into size specifications. Students will be given building materials to build their gnome homes.

Then, each team will prepare a pitch to attract gnomes to their gnome home community. What makes your gnome home better than all the rest? What problem(s) would your gnome home solve for our local gnome neighbors?

Artifacts: Pictures of the Activity and "Gnome Homes," Student Pitches

Grades 6-8 Services:

- **BotsIQ MFGexplore**

What is MFGexplore?

BotsIQ MFGexplore is a new curriculum dedicated to exposing K-12 students to in-demand careers in manufacturing. MFGexplore lessons are suitable for all subjects. Lessons are exciting, hands-on, and do not require any background knowledge of manufacturing.

Each unit is coupled with a lesson which spotlights a fictional character and their career journey. The lesson content focuses on skills and competencies needed in a manufacturing career which include collaboration, communication, creativity, and problem-solving.

All BotsIQ programming, including MFGexplore, is available to all educators across our IU1 districts **FREE** of charge.

Manufacturing Careers and Activities:

Industrial Designer: Students will take on the role of an Industrial Engineer and create a catapult using 3D pens. They must consider flaws within their design and continue to upgrade the catapult in order to efficiently launch a small object onto a bullseye.

CNC Programmer: Students will learn how a CNC Machine is programmed and how to write G-code for a CNC router. Using their new knowledge, the kids will make a personalized keychain using G-code.

Industrial Engineer: Students will create an autonomous delivery system using assembled bristle bots.

Manufacturing Engineer: Students will step into the world of a manufacturing engineer and apply an assembly line process to increase production of a simple flashlight.

Industrial Machinery Mechanic: Students will build, test and debug an out-of-order machine on the shop floor using Lego Spike Prime kits.

Robotics Technician: Students will build, install and program a robotic system for a manufacturing plant using Lego Spike Prime kits.

Electrical and Electronic Assembler: Students will assemble an electrical circuit using conductive thread or conductive tape.

Inspector: Students will learn how to measure precisely using calipers and micrometers by sorting materials correctly.

Sales Representative: Students will prototype a solution to a problem and pitch their idea to a group of "sharks."

BioEngineer: Students will research, design and prototype a prosthetic for an animal using recyclable materials.

Industrial Production Manager: Students will create a zipline carrier to transport products from one end of the manufacturing plant to the other.

BotsIQ MFGexplore Program Request Form

- **PBS "Design Lives Here"** Design Lives Here Registration Form

Any questions can be emailed to ganderson@wqed.org

Participants will be given:
A Design Lives Here orientation and training about the show/event and approaches to

- Engineering in the classroom
- An engineering mentor from the ESWP to provide a real life example of engineering as a career path
- Three engineering design challenges and corresponding curriculum assignments and materials
- Invention Challenge and corresponding curriculum guidance and resources
- Participation in the Design Lives Here event – place and time TBA

Participating programs must:

- Integrate engineering materials and curriculum into their classroom/program
- Welcome a mentor into their classroom
- Internet access
- Organize all trip logistics for Design Lives Here – Invention Convention including but not limited to bussing, permission slips, etc.
- Participate fully in all evaluations, surveys, and communications as requested

More about Design Lives Here

The Design Lives Here initiative is presented by WQED Multimedia in partnership with the Engineers' Society of Western Pennsylvania Design Lives Here is an exciting educational outreach program based on Design Squad Nation (formerly, Design Squad), a reality-based television program that is targeted at middle school students to "inspire the next generation of engineers."

For the 2024-2025 school year, Design Lives Here schools, afterschool programs and libraries will receive materials and activity guides to complete three Design Lives Here challenge activities and the Invention Challenge. The initiative will include an Invention Convention, a day of engineering fun, mentorship opportunities, viewings of the television show, and the students will find out the winning video from the invention challenge.

- ❖ **EntreEd Entrepreneurship Activity: One activity per class session**

Activity: "What is an Entrepreneur?"

The goal of this lesson is to have students understand the definition of an entrepreneur and realize that an entrepreneur isn't just someone with a physical business.

Three types of entrepreneurs will be discussed: traditional, social, and intrapreneur. In groups, students will be assigned one of the three entrepreneur types listed.

On a Google Slide presentation, students will then create a profile of an entrepreneur who fits this category: give the entrepreneur a name, describe the business/product/service that this entrepreneur created, and the qualities/personality traits that has made this entrepreneur successful.

Students will end the activity with a reflection: What entrepreneur type do you connect with the most and why? Which type of entrepreneur would suit you best?

Artifacts: Entrepreneur Presentation, Reflection

Activity: "Pitch"

Students will create a solution to a customer's problem. Working in pairs, students will be given an ordinary product to pitch, such as a paper clip, tape, scissors, sock, toothbrush, etc. In a pitch, students will have to explain what the object is used for, why it's the best invention ever created, how it will solve a customer's problem, and why someone should purchase it–the more creative the better, and the product should not be used for what it was originally intended. The traits of an entrepreneur will be discussed.

Students will create an advertisement for their product and share with the class.

Artifacts: Advertisement for a product, Writing a sales pitch

Activity: "Build a Gnome Home"

Students will work on the entrepreneurial traits of teamwork, communication, problem solving, customer service, and creativity.

In teams of four, students will design a tower that could comfortably house a gnome community. The tower must be able to withstand movement and fit into size specifications. Students will be given building materials to build their gnome homes.

Then, each team will prepare a pitch to attract gnomes to their gnome home community. What makes your gnome home better than all the rest? What problem(s) would your gnome home solve for our local gnome neighbors?

Artifacts: Pictures of the Activity and "Gnome Homes," Student Pitches

- **Consortium for Public Education–Career Journeys Videos and Supplemental Materials**

There's no better way to explore a career than through the eyes of an insider. That's why the Consortium for Public Education launched Career Journeys, a series of video interviews with people in occupations spanning 16 career clusters that the U.S. Department of Labor established to track employment trends. Guests in each Career Journeys video answer questions that students investigating careers would ask during any job-shadow opportunity, including:

- how they became interested in their fields
- what skills make them especially suited for their work
- what advice they'd give to interested students
- what they love about their jobs and even what they don't like so much

Categories for the interviews are broad, taking in multiple industries and many careers. The Career Journeys video library expands regularly. Career Journeys supplemental materials to accompany the videos will be provided.

- **Virtual Reality Career Exploration with Transfr Headsets**

Students will explore careers using Transfr virtual reality headsets. Proper electronic/technology etiquette is expected of all students using the headsets. Improper usage will result in the student being removed from the session. This session is best run in small groups of 4 to 5 students. It is best to have at least 45 minutes to an hour to explore the career modules.

WiFi is needed to use the VR headsets as well as a reliable cell signal as the IU will bring a WiFi hotspot to connect the headsets. A location with ample space for student movement is needed.

Prior to this session, schools will need to distribute the Transfr career interests checklist to students–which will be sent by the career readiness coordinator. The checklist provides an overview of all available virtual reality modules on the headsets and helps to familiarize students with the options prior to using the VR headsets. Students will select their top three career interest choices to explore through the VR headsets and mark them on the checklist–please collect once complete and return to the career readiness coordinator on the day of the session.

If additional time remains in the session, students may complete an additional exploration activity. After the session, students will complete reflection questions on the experience.

Artifacts: Reflection Questions, Photos of the Activity in Action

Grades 9-12 Services:

- **Consortium for Public Education–Career Journeys Videos and Supplemental Materials**

There's no better way to explore a career than through the eyes of an insider. That's why the Consortium for Public Education launched Career Journeys, a series of video interviews with people in occupations spanning 16 career clusters that the U.S. Department of Labor established to track employment trends. Guests in each Career Journeys video answer questions that students investigating careers would ask during any job-shadow opportunity, including:

- how they became interested in their fields
- what skills make them especially suited for their work
- what advice they'd give to interested students
- what they love about their jobs and even what they don't like so much

Categories for the interviews are broad, taking in multiple industries and many careers. The Career Journeys video library expands regularly. Career Journeys supplemental materials to accompany the videos will be provided.

- **BotsIQMFGexplore**

What is MFGexplore?

BotsIQ MFGexplore is a new curriculum dedicated to exposing K-12 students to in-demand careers in manufacturing. MFGexplore lessons are suitable for all subjects. Lessons are exciting, hands-on, and do not require any background knowledge of manufacturing.

Each unit is coupled with a lesson which spotlights a fictional character and their career journey. The lesson content focuses on skills and competencies needed in a manufacturing career which include collaboration, communication, creativity, and problem-solving.

All BotsIQ programming, including MFGexplore, is available to all educators across our IU1 districts **FREE** of charge.

Manufacturing Careers and Activities:

Industrial Designer: Students will take on the role of an Industrial Engineer and create a catapult using 3D pens. They must consider flaws within their design and continue to upgrade the catapult in order to efficiently launch a small object onto a bullseye.

CNC Programmer: Students will learn how a CNC Machine is programmed and how to write G-code for a CNC router. Using their new knowledge, the kids will make a personalized keychain using G-code.

Industrial Engineer: Students will create an autonomous delivery system using assembled bristle bots.

Manufacturing Engineer: Students will step into the world of a manufacturing engineer and apply an assembly line process to increase production of a simple flashlight.

Industrial Machinery Mechanic: Students will build, test and debug an out-of-order machine on the shop floor using Lego Spike Prime kits.

Robotics Technician: Students will build, install and program a robotic system for a manufacturing plant using Lego Spike Prime kits.

Electrical and Electronic Assembler: Students will assemble an electrical circuit using conductive thread or conductive tape.

Inspector: Students will learn how to measure precisely using calipers and micrometers by sorting materials correctly.

Sales Representative: Students will prototype a solution to a problem and pitch their idea to a group of "sharks."

BioEngineer: Students will research, design and prototype a prosthetic for an animal using recyclable materials.

Industrial Production Manager: Students will create a zipline carrier to transport products from one end of the manufacturing plant to the other.

BotsIQ MFGexplore Program Request Form

- **Virtual Reality Career Exploration with Transfr Headsets**

Students will explore careers using Transfr virtual reality headsets. Proper electronic/technology etiquette is expected of all students using the headsets. Improper usage will result in the student being removed from the

session. This session is best run in small groups of 4 to 5 students. It is best to have at least 45 minutes to an hour to explore the career modules.

WiFi is needed to use the VR headsets as well as a reliable cell signal as the IU will bring a WiFi hotspot to connect the headsets. A location with ample space for student movement is needed.

Prior to this session, schools will need to distribute the Transfr career interests checklist to students–which will be sent by the career readiness coordinator. The checklist provides an overview of all available virtual reality modules on the headsets and helps to familiarize students with the options prior to using the VR headsets. Students will select their top three career interest choices to explore through the VR headsets and mark them on the checklist–please collect once complete and return to the career readiness coordinator on the day of the session.

If additional time remains in the session, students may complete an additional exploration activity. After the session, students will complete reflection questions on the experience.

Artifacts: Reflection Questions, Photos of the Activity in Action