Title: Introduction to Scenic Technology
Grade: High School
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Lesson Outcomes

After this unit, students will understand and demonstrate shop safety procedures by engaging in exercises, collaborative activities with experienced upper level tech students, and conversations regarding shop safety and scenic construction. Students practice and strengthen skills they will use in future technical theatre lessons. Students will identify tools, materials, and their intended and safe uses. Students will demonstrate inter-disciplinary problem solving and collaborative practices. Students will grow in collaborating with their peers by creating a Broadway flat together. This will enable students to grow both as technicians and as productive members of a team.

Objectives for Unit:

Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, identify hand tools, demonstrate safe and proper use of them, apply shop safety procedures. Students will identify and be able to demonstrate uses of building materials and hardware. They will also be able to identify parts of the theatre and how they are used in production. Working with upper level tech students, students will create a Broadway flat and take the shop safety post-test, in which they will need at least 90% to pass.

National Theatre Standards:

TH:Cr1.1.II.b. Understand and apply technology to design solutions for a drama/theatre work.
TH:Pr5.1.II.b. Apply technical elements and research to create a design that communicates the concept of a drama/theatre production.

Lesson 1 – Safety Pre-Test, Hand Tools and Safety Equipment

Today we will:

Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, identify hand tools, demonstrate safe and proper use of them, and apply shop safety procedures.

Teaching Objectives:

- To introduce Scenic Technology
- To introduce and explain hand tools and their proper uses
- To outline shop safety procedures
- To facilitate student learning of shop equipment and practices
- To illuminate the importance of technical aspects of theatre and their applications to the “real world”

Student Objectives:

- Converse about the applications of scenic practices outside of theatre
- Identify hand tools
- Demonstrate knowledge of hand tools and their proper uses
- Understand and apply shop safety procedures

Essential Questions:

1. How are scenic practices and safety procedures applicable outside of theatre?
2. Why is it important to use safety procedures when working in a scenic shop?
3. Why is it important to have the right tool for the job?

Learning Set

Gain Attention

Introduce the topic, play this video to show students what they will be learning. https://youtu.be/G-URLFsPCM4

"Alright, now that you have seen this very informational video, turn to the person next to you and discuss why you think it is valuable to have hands-on learning in a theatrical environment."

Review/State Prerequisite

"We are starting a brand-new unit today! I know it is going to be a lot of new information, but you probably know more than you think you do! By the end of this unit, you all will create a Broadway flat and take a shop safety post-test, in which you will have to get at least 90% on to pass. Throughout this unit, we will learn about all the tools the shop has to offer and how to safely and properly use them. But, before we begin, let's talk about why this is relevant. Turn to the person next you and discuss: *How are scenic practices and safety procedures applicable outside of theatre?*"

Prompt students with questions:

- Has anyone ever worked on building something with their Dad or Mom?
- Or helped fix something around the house?

While students are answering questions, give feedback and support their answers with words of encouragement or personal experience.

Advance Organizer

1. Introduction, Video, Think-Pair-Share, and Standards (10 minutes)
2. Shop Safety Pre-test (20 minutes)
3. Visit the Shop (5-minute travel time)
    - Hand Tool Matching - Group Activity (20 minutes)
    - Hand Tool use demonstration stations – Group Activity (20 minutes)
4. Review and closure (10 minutes)

2) Present Information

Describe

Part 1:

After the discussing the real-world applications of scenic practices, present some concrete examples.

- Visual art
- Technology and industrial arts
- Design and architecture
- It is a collaborative practice in which teams work in consort to elicit an emotional and intellectual connection between artists and members of the audience
- Inter-disciplinary problem solving

Part 2:

After discussing the applications, lead the class in taking a pre-test on shop safety (found in "Handouts and Supporting Materials" section at the end of the Unit)

Demonstrate

Part 1:

Lead the class into the shop for some activities. Explain and demonstrate the matching tool activity. Give them one example.

Part 2:

After the students complete the matching activity, have them move to hand tool practice stations. Describe and demonstrate the proper and safe uses of each tool.

Students Refine Learning

Practice

Part 1:

Students will be asked to work as a collaborative unit by matching the hand tools' names with the correct tool.

Part 2:

Students will apply shop safety procedures and practice proper use of hand tools.

Feedback

Give students feedback during discussions and reinforce meaningful connections the students are making. Walk around during the activity and give feedback on performance when students are working through the stations. During review, reinforce student responses and try to make sure everyone is making the right connections.

1. What is the safety procedure when using (insert tool they are using at a demonstration station)?
2. Why is it important to use safety procedures when working in a scenic shop?
3. Why is it important to have the right tool for the job?
4. What are some situations you may need to use a multi-tool?

Closure

Summary

Review shop safety procedures.

Have a review discussion to summarize what was learned today.

"What are some of the hand tools and safety equipment we learned? And describe how they are used."

- Student A response. (Possible responses: Wonder bar is used to dislodge nails, screws, staples and pry apart wood or other materials.)
- Student B response. (Possible responses: Tape Measure is used to measure lengths of materials for precision cutting.)

"What is something that you struggled with when you were working through the stations? And were you able to work past it? If so, how?"

- Student C response. (Possible response: When I was using the drill driver, I was stripping the screw a lot. Tech 2 student showed me that I was holding it at the wrong angle, and it was causing the drill to pop out and strip the screw.)
- Student D response. (Possible response: When I was using the staple gun, it kept jamming. Tech 2 student showed me how to safely open and fix the staples.)

"What is something that you felt you did well when you were working through the stations?"

- Student A response. (Possible answer: When I was using the C-wrench it was very simple to use. I successfully tightened the nut and bolt together.)

Transfer

"What were some things that your group members did to help you overcome obstacles?"

- Student A response. (Possible answer: They encouraged me to keep trying until I got it right.)
- Student B response: (Possible answer: They showed me how they failed before and what they tried to be successful.)

"During this activity, how did you help your group members? How did you hinder them? And how could you change that for future projects?"

- Student A response. (Possible answer: I observed them and was able to see how they were messing up, so I could suggest solutions.)
- Student B response. (Possible answer: Sometimes I didn't know the solution so I couldn't help. So, I gave up and let them struggle. But I could have found someone how did know how to help to problem solve with us for next time.)

Near Transfer

"Is there any tool that you don't feel confident using as we move toward working in the shop? And what do you feel needs to happen before you can be confident with it?"

- Student A response. (Possible answer: I don't like the Impact Drill because I feel like I can't control it. I think if I had more individual instruction on techniques to use it then I could feel more confident.)
- Student B response. (Possible answer: I don't want to use a hammer. I always feel like I am going to smash my fingers in. I guess if watched some more of my peers use it successfully then I could feel more confident to try it again.)

"Great work today everyone! Next class we will learn about power and stationary tools. Thank you for a great class! Have a wonderful day!"

Modifications for Special Needs:

Students who are behind in writing/reading or have learning disabilities will be accommodated – copies of the notes from the lecture can be provided. For students who struggle to write, the lecture can be recorded; most of this lesson is activity based, not note based. Students with physical disabilities will be accommodated for matching and demonstration activities as according to disability. Students with intellectual disabilities will be accommodated with ideas and prompts when participating in class.

Supplemental Materials:

PowerPoint, Tools, hardware, other materials and matching cards must be provided for the activities.

Sources: https://youtu.be/G-URLFsPCM4

Alternate, shorter more "fun" version to use: https://www.youtube.com/watch?v=oo_uj7T6C2I

Carter, Paul Douglas, and George Chiang. *Backstage Handbook: An Illustrated Almanac of Technical Information*. Broadway Press, 2012.

Lesson 2 – Power and Stationary Tools

Today we will:

Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, identify power and stationary tools, demonstrate safe and proper use of them, and apply shop safety procedures.

Teaching Objectives:

- To introduce power and stationary tools use for scenic construction and how to properly use them.
- To demonstrate proper use and safety when using power and stationary tools
- To reinforce shop safety procedures
- To facilitate student learning in using power and stationary tools to build autonomy in the classroom
- To illuminate the importance of technical aspects of theatre and their applications to the "real world"

Student Objectives:

- Students will identify the different stationary tools.
- Students will safely and properly use the different stationary tools.
- Students will understand the importance of safety when using these tools.

Essential Questions:

1. Why other than safety reasons do you think it is necessary to have these safety procedures?
2. What are some other ways we could make the shop a better and safer place to work?
3. How should we address it when we see something unsafe happening?
4. Why is it important to have the right tool for the job?

Learning Set

Gain Attention

"Today we will be continuing to learn about tools! This lesson we will focus on more power tools and stationary tools. Always use the safety procedures when using power tools, these safety measures help protect you from accidents."

Think-Pair-Share: "What are some of the procedures you remember from the pre-test that revolve around power tools?"

- Student A response: (Possible answer: When using a circular saw, what are the safety steps you should take? Always cut away from your body, Wear safety glasses and ear plugs (and a mask if you want) Hold the saw with both hands in the proper positions and clamp or have someone hold the material so that it doesn't fall while you cut.)
- Student B response: (Possible answer: When working with a power you should never need to exert excess pressure on it. It will work with moderate pressure, patience is key. Exerting excess force can cause injury!!!)

Review/State Prerequisite

"Last class we started our unit with a lesson on hand tools and safety equipment."

Think-Pair-Share: "Someone tell me a hand tool or safety equipment and its purpose that you learned last class."

- Student A response. (Possible answer: Nippers are used to cut off ends of brad nails and staples.)
- Student B response. (Possible answer: C-wrench is used to tighten nuts and bolts.)
- Student C response. (Possible answer: Dust mask is used to protect your nose and mouth from inhaling saw dust or other materials when working in the shop.)

"Amazing! It seems like we learned a lot from last class and that will be useful for when you build your flat for the final project!"

Advance Organizer

1. Introduction and Think-Pair-Share (5 minutes)
2. Review discussion, Objectives and Standards (10 minutes)
3. Visit the Shop (5-minute travel time)
    - Power and Stationary Tool Demonstration (20 minutes)
    - Power and Stationary Tools Demonstration Stations – Group Activity (40 minutes)
4. Review and closure (10 minutes)

2) Present Information

Describe

<u>Part 1:</u>

Remind students of shop safety procedures while describing and demonstrating each power and stationary tool's proper use.

<u>Part 2:</u>

Walk the students through the process of the demonstration stations.

Demonstrate

Lead the class through how to use the power and stationary tools they will be using in the demonstration stations. Always remind them of the safety procedures and equipment they should use with each. Group the students in groups of 2 for the demonstration stations. Tech 2 (Upper-level, experienced) students will be at each station to facilitate when students are struggling with the new tools.

"So, in your groups you must take turns trying out these new tools. Observe each other and try to learn from each other's mistakes. The Tech 2 students will be there if you need assistance. Don't move on until everyone in your group has correctly use the tool. The Tech 2 students will sign off on your demonstrations. I will be walking around to help where I am needed. Are there any questions about what is expected?"

Students Refine Learning

Practice

Part 1:

Students will work through the demonstration stations and they can't move on until they have correctly used the tool of that station. Tech 2 students will sign off on their progress.

Part 2:

Students will be asked to use the shop safety procedures during the practice activity so that they can practice using these procedures after learning about them.

Feedback

Give students feedback during discussions and reinforce meaningful connections the students are making. Walk around during the activity and give feedback on performance when students are working through the stations. During review, reinforce student responses and try to make sure everyone is making the right connections.

1. Why, other than safety reasons, do you think it is necessary to have these safety procedures?
2. What are some other ways we could make the shop a better and safer place to work?
3. How should we address it when we see something unsafe happening?
4. Why is it important to have the right tool for the job?

Closure

Summary

Review shop safety procedures.

Have a review discussion to summarize what was learned today.

"What are some of the stationary tools we learned? And describe how they are used."

- Student A response. (Possible responses: The table saw is used to cut sheet goods to size or rip down long lumber to size.)
- Student B response. (Possible responses: The router is used to cut out specific shapes that may not be done with a jig saw and it can also be used to create a decorative edge.)

"What is something that you struggled with when you were working through the stations? And were you able to work past it? If so, how?"

- Student C response. (Possible response: I struggled with the jig saw because the line I was cutting kept getting covered with saw dust, but I learned that if I blew the saw dust away it would reveal the line again.)
- Student D response. (Possible response: I struggled with the palm sander because I didn't know how to hold it to keep it under control, but a Tech 2 student showed me a better way to hold it and I was able to guide it how I wanted.)

"What is something that you felt you did well when you were working through the stations?"

- Student A response. (Possible answer: Working on the Miter Saw I was able to find and move the saw to the needed angles easily.)

"How could these solutions you and your group come up with help you in other situations?"

- Student B response. (Possible answer: I think when we would have each other try a new angle or hand position that could work in any problem-solving situation. It is always good to have someone remind you to look at the problem with a new perspective and not be afraid to try a new angle.)

Transfer

"How do you think these safety procedures can help you when working as a group in other settings?"

- Student A response. (Possible answer: I think that it is always important when working in a group to be considerate of each other's needs.)
- Student B response: (possible answer: When everyone knows how to handle things in case something goes wrong the group can work more efficiently to find solutions to problems.)

"During this activity how did you help your group members? How did you hinder them? And how could you change that for future projects?"

- Student A response. (Possible answer: I helped my group we even the Tech 2 student didn't know what was wrong with the tool, and I got you to come fix it and we learned how to fix that problem for next time.)
- Student B response. (Possible answer: When my group member was struggling, I didn't understand why because I got it easily. I just kept telling them it was easy when I did it, and that didn't help them. Next time, I could try to ask them what they are struggling with so we can problem-solve together to help them get it.)

Near Transfer

"Is there any tool that you don't feel confident using as we move toward working in the shop? And what do you feel needs to happen before you can be confident with it?"

- Student A response. (Possible answer: The Panel saw is intimidating. I am very short, and I feel like something could go wrong. I think if I had more in-depth instruction on all its parts and how it works, I wouldn't feel scared that it could fail.)
- Student B response. (Possible answer: The circular saw is heavy and powerful, and I don't feel confident cutting while it is on sawhorses. Maybe I would feel more comfortable if it was on the floor.)

"Great work today everyone! Next class we will learn about hardware and parts of the theatre. Thank you for a great class! Have a wonderful day!"

Modifications for Special Needs:

Students who are behind in writing/reading or have learning disabilities will be accommodated – copies of the notes from the lecture can be provided. For students who struggle to write, the lecture can be recorded; Most of this lesson is activity based. Students with physical disabilities will be accommodated for activities as according to disability. Students with intellectual disabilities will be accommodated with ideas and prompts when participating in class.

Supplemental Materials:

PowerPoint, power and stationary tools, activity hand-out.

Sources:

Carter, Paul Douglas, and George Chiang. *Backstage Handbook: An Illustrated Almanac of Technical Information*. Broadway Press, 2012.

Lesson 3 – Hardware and Parts of the Theatre

Today we will:

Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, apply shop safety procedures, and identify and be able to demonstrate uses of building hardware. They will also be able to identify parts of the theatre and how they are used in production.

Teaching Objectives:

- To introduce hardware and how we utilize them in scenic construction
- To introduce the different elements of a theatre space and how we use them.
- To reinforce shop safety procedures
- To facilitate student learning of the relationship between scenic construction and the theatre space.
- To illuminate the importance of technical aspects of theatre and their applications to the "real world"

Student Objectives:

- Students will identify the hardware used in scenic construction.
- Students will identify the different elements of a theatre space.
- Students will comprehend the relationship between the theatre space and the construction of a scenic design.
- Students will demonstrate the application of hardware in its intended use.

Essential Questions:

1. How does the knowledge of a theatre space facilitate scenic construction?
2. How do you need the scenic unit to function and what hardware could you use to facilitate that?
3. What are some potential issues that could arise if you don't have the right hardware for the job?
4. What could you do differently if you were to approach the same problem?
5. How can you use the Tech 2 students as a resource for when you are stuck on a problem?
6. How does knowing your workspace help you in other situations?
7. In what other instances is it helpful to have knowledge about hardware?

Learning Set

Gain Attention

"We are going to talk about hardware and parts of the Theatre today!"

Introduce hardware by showing examples of DIY hardware fidget boards for toddlers.
https://www.pinterest.com/pin/547046685970169735/?lp=true

"Does anyone have a little brother or sister that could use one of these? Can you name any of the hardware on these DIY boards? What is some other hardware that you think would be good to put on one of these?"

Review/State Prerequisite

"Last class we finished our power and stationary tools lesson. Someone tell me a power or stationary tool you learned from last class and its purpose."

- Student A response. (Possible answer: The panel saw is similar to the table saw in that it cuts sheet goods, but it is different in that it cuts their height while the table saw is usually used to cut width.)
- Student B response. (Possible answer: The jig saw is used to cut out specific designs. Also good for trimming off excess material on flats and platforms.)
- Student C response. (Possible answer: The palm sander is used to smooth material to prep them for painting or round edges to prevent injury.)

"Great! It seems like we learned a lot from last class and that will be useful for when you begin working in the space."

Advance Organizer

1. Introduction, DIY toddler board pictures (5 minutes)
2. Review discussion, Objectives and Standards (10 minutes)
3. Hardware interactive board and instruction (15 minutes)
4. Hardware application activity (20 minutes)
5. Visit Theatre Space - Travel Time (5 minutes)
6. Parts of the Theatre Scavenger Hunt (25 minutes)
7. Review and closure (10 minutes)

2) Present Information

Describe

Part 1:

Lead students through interactive board on hardware.

Part 2:

Tech 2 students help guide these students through Parts of the Theatre Scavenger Hunt.

Demonstrate

Lead the class through how to do the hardware application activity. Give them one visual example and another if they need more. Group the students in groups of 2.

"So, in your groups you must work as a collaborative unit to determine the hardware needed to create the intended scenic unit. I will put it on the screen and then I will give you 5 minutes to decide on what hardware you need – and you must be able to back up your reasons for the ones you choose. There are many ways to go about creating something and I want to hear your ideas! Are there any questions about what is expected?"

Students Refine Learning

Practice

Part 1:

Ask students to work as a collaborative unit to determine the best hardware needed to create to intended scenic unit. Students will be asked to defend their choices.

Part 2:

Students will complete the Parts of the Theatre Scavenger Hunt to learn all the aspects of our theatre space. Tech 2 students will be stationed at specific parts and they will sign off on the part when the students guess the part correctly. The Tech 2 students will give a brief explanation of its purpose before students can move on. Collect scavenger hunt sheets when they're complete.

Feedback

Give students feedback during discussions and reinforce meaningful connections the students are making. Walk around during the activity and give feedback on choices before they present to the class. During review, reinforce student responses and try to make sure everyone is making the right connections.

1. How do you need the scenic unit to function and what hardware could you use to facilitate that?
2. What are some potential issues that could arise if you don't have the right hardware for the job?
3. What could you do differently if you were to approach the same problem?
4. How can you use the Tech 2 students as a resource for when you are stuck on a problem?

Closure

Summary

Have a review discussion to summarize what was learned today.

"What are some hardware pieces we learned?"

- Student A response. (Possible responses: Brad Nails, Narrow Crown Staples, Tech Screws)
- Student B response. (Possible responses: Wood Screws, Carriage Bolts, Nuts, and Washers)

"How is hardware utilized in scenic construction?"

- Student A response. (Possible response: Some hardware, like staples and screws, are used to fasten materials together to create structurally sound units.)
- Student B response. (Possible response: Some hardware is used to create a function of a piece, like hinges, door handles, and rigging hardware.)

"What are some of the parts of the theatre that we learned and how do we use them in productions?"

- Student A response. (Possible answer: The CYC is used to project images onto or cast lights on to create the intended stage picture.)
- Student B response. (Possible answer: The legs are used to mask the wings, so we can store scenic pieces, props and actors before they enter the stage.)
- Student C response. (Possible answer: Borders are used to mask the lights over the stage.)

"How does knowing what hardware a scenic unit is comprised of help when you need to fix a problem or take it apart?"

- Student A response. (Possible answer: When something is put together with screws it is usually easily taken apart and put back together. So, if something isn't level, we can unscrew it and screw it back in correctly.)
- Student B response. (Possible answer: If something is fastened together with wood glue and staples it is probably not able to be fixed if it isn't square. You may have to destroy it and start over.)

Transfer

"How does knowing your workspace help you in other situations?"

- Student A response. (Possible answer: When you know where all the elements of your workspace are, you can spend less time looking for things and more time creating solutions to problems.)
- Student B response: (possible answer: Knowing what you have to work with will give you the confidence to make solutions instead of looking to others who are more familiar.)

"In what other instances is it helpful to have knowledge about hardware?"

- Student A response. (Possible answer: When my door hinge breaks off, I know that reusing the ¾" screws will probably not be a permanent solution and if I use 2" screw it will be more structurally sound.)
- Student B response. (Possible answer: When making a bookshelf or installing shelves on walls I can use L brackets to reinforce the structure to put all my books and pictures on it.)

Near Transfer

"How does the knowledge of a theatre space facilitate scenic construction?"

- Student A response. (Possible answer: When you know all the aspects of the theatre space you can take those into consideration when you are building the set.)
- Student B response. (Possible answer: When you know the limitations or needs of the space, you can be more considerate of others working in the space and how to respect the space when you are working.)

"Great work today everyone! Next class we will learn about materials and flat construction. Thank you for another great class! Have an amazing day!"

Modifications for Special Needs:

Students who are behind in writing/reading or have learning disabilities will be accommodated – copies of the notes from the lecture can be provided. For students who struggle to write, the lecture can be recorded; most of this lesson is activity based. Students with physical disabilities will be accommodated for activities as according to disability. Students with intellectual disabilities will be accommodated with ideas and prompts when participating in class.

Supplemental Materials:
PowerPoint, interactive hardware board, hardware hand-out, Scavenger Hunt hand-out.

Sources: https://www.pinterest.com/pin/547046685970169735/?lp=true

Carter, Paul Douglas, and George Chiang. *Backstage Handbook: An Illustrated Almanac of Technical Information*. Broadway Press, 2012.

Lesson 4 – Materials and Flats

Today we will:
Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, apply shop safety procedures, and identify and be able to demonstrate uses of building materials, especially for flat construction.

Teaching Objectives:

- To introduce materials of scenic construction and how we utilize them
- To introduce parts and proper construction of a flat
- To reinforce shop safety procedures
- To facilitate student learning of scenic materials and creative uses of them
- To illuminate the importance of technical aspects of theatre and their applications to the "real world"

Student Objectives:

- Students will identify materials used in scenic construction.
- Students will analyze how various materials can be utilized in scenic construction.
- Students will identify the difference between a Broadway Flat and a Hollywood Flat.
- Students will demonstrate understanding of the terminology of flat construction.
- Students will understand the sequence of construction used when building a flat.

Essential Questions:

1. How are materials utilized in scenic construction?
2. What is the difference between Broadway and Hollywood Flats?
3. When do we use both of these in scenic construction?
4. Why is it important to have the right material for the job?
5. Why is it important to work as a collaborative team when you are making creative decisions?

Learning Set

Gain Attention
Introduce the topic of the day: materials of scenic construction and flat construction. Introduce materials by showing scenes made from different materials. Ask students what they notice about each scene. Ask what material they think the pieces are made of.

Review/State Prerequisite
"Last class we finished our hardware lesson and we learned the different parts of the stage. Someone tell me a part of the theatre and the main purpose of it that you learned last class."

- Student A response. (Possible answer: The main curtain is at the front of the stage and it is used to hide the scenery before the show begins and it can be used to represent the beginning and end of each act.)
- Student B response. (Possible answer: The wings are the areas on either side of the stage used as a staging place for scenery, props, and actors before they go onstage.)
- Student C response. (Possible answer: The catwalk is a walkway above the house that is sometimes used to access the booth and hang lighting instruments from.)

"Great! It seems like we learned a lot from last class and that will be useful for when you begin working in the space. Just a reminder by the end of this unit, you all will create a Broadway flat and take the shop safety post-test, in which you will have to get at least 90% on to pass. Including this class period, you have two more classes before we do those final activities. So, you still have a good amount of time to study and prepare!"

Advance Organizer

1. Introduction, Scenery slide show (5 minutes)
2. Review discussion, Objectives and Standards (10 minutes)
3. Materials Guided notes and instruction- pass around materials (15 minutes)
4. Material usage activity (20 minutes)
5. Broadway and Hollywood Flats, Think-Pair-Share (5 minutes)
6. Hand-out fill out as a class: parts of flat – talk about hardware and adhesives (10 minutes)
7. Flat construction memory palace (5 minutes)
8. Review Shop safety procedures (15 minutes)
9. Review and closure (10 minutes)

2) Present Information

Describe

Part 1:

Lead students through guided notes on materials as materials are passed around.

Part 2:

Fill out parts of a flat hand-out as a class. Go through flat construction memory palace.

Demonstrate

Lead the class through how to do the material usage activity. Give them one visual example and another if they need more. Group the students in groups of 4.

"In your groups you must work as a collaborative unit to determine the materials needed to create the intended scenic unit. I will put it on the screen and then I will give you 5 minutes to decide on the materials – and you must be able to back up your reasons the materials you choose. There is no right answer and you don't have to use the same materials that were used to create it in the image. There are many ways to go about creating something and I want to hear your ideas! Are there any questions about what is expected?"

Students Refine Learning

Practice

Part 1:

Ask students to work as a collaborative unit to determine the best materials to create to intended scenic unit.

Part 2:

Ask students to defend their choices.

Feedback

Give students feedback during discussions and reinforce meaningful connections the students are making. Walk around during the activity and give feedback on choices before they present to the class. During review, reinforce student responses and try to make sure everyone is making the right connections.

1. Why is it important to have the right material for the job?
2. What are some different materials you could use to create the same scenic unit?
3. How could you justify your choice of materials to a production manager?
4. When, if ever, is it non-negotiable to choose the materials you use?

Closure

Summary

Review shop safety procedures.

Have a review discussion to summarize what was learned today.

"What are some of the materials we learned? "

- Student A response. (Possible responses: Homasote, plywood, muslin)
- Student B response. (Possible responses: Masonite, PVC, stick lumber)

"How are these materials utilized in scenic construction?"

- Student C response. (Possible response: Homasote is used to reduce sounds on platforms.)
- Student D response. (Possible response: Muslin us used to make projector scenes, lightweight scenery that is painted on like a canvas, or as specialty wrap on sculpture pieces.)

"When do we use a Broadway flat? "

- Student A response. (Possible answer: when we need the scenery to be lightweight and moveable, or to fly.)

"When do we use a Hollywood flat? "

- Student B response. (Possible answer: when we want the scenery to be permanent like a box set.)

Transfer

"Why is it important to work as a collaborative team when you are making creative decisions?"

- Student A response. (Possible answer: So that the scenic units are safely made and do the job they were intended for.)
- Student B response: (Possible answer: To get the aesthetic look that the designer intended to make the world onstage come to life for the audience.)

"How do you think what you learned about materials will help you outside of this classroom?"

- Student A response. (Possible answer: When repairing home items, it is important to have the correct material for the job.)
- Student B response. (Possible answer: I now know different mediums with which to create creative pieces.)

Near Transfer

"What materials will we be using to construct a Broadway flat?"

- Student A response. (Possible answer: stick lumber 1x4, to create the frame)
- Student B response. (Possible answer: 1/4" plywood to create the corner blocks and keystones to link the lumber together.)

"Great work today everyone! Next class we will review shop safety procedures to make sure you all are ready for the final test. We will also be talking about building Broadway and Hollywood Flats and parts of a flat to make sure everyone is ready for the final project. Have a great day!"

Modifications for Special Needs:

Students who are behind in writing/reading or have learning disabilities will be accommodated – copies of the notes from the lecture can be provided. For students who struggle to write, the lecture can be recorded; some of this lesson is activity based. Students with physical disabilities will be accommodated for activities as according to disability. Students with intellectual disabilities will be accommodated with ideas and prompts when participating in class.

Supplemental Materials:

PowerPoint, Materials Guided Notes, Parts of Flat hand-out.

Sources:

Carter, Paul Douglas, and George Chiang. *Backstage Handbook: An Illustrated Almanac of Technical Information*. Broadway Press, 2012.

Lesson 5 – Broadway Flat Construction

Today we will:

Students will engage in conversation regarding the relevance of shop practices, understand the importance of shop safety, identify tools and demonstrate safe and proper use of them, and apply shop safety procedures. Students will create a Broadway flat and take the shop safety post-test, in which they will need at least 90% to pass.

Teaching Objectives:

- To administer the Shop Safety Post-Test
- To reinforce shop safety procedures
- To facilitate students during their flat construction projects to set them up for success
- To illuminate the importance of technical aspects of theatre and their applications to the "real world"

Student Objectives:

- Students will demonstrate appropriate knowledge of safety procedures in order to work in the shop.
- Students will collaborate to create a Broadway flat.
- Students will apply proper use of tools and materials when building the flat.

Essential Questions:

1. Which shop safety procedures are you using while creating your flat?
2. How do you think working on this project could help you in other group projects outside of this classroom?
3. What is one thing you learned that you will take with you when you move onto the next unit and future projects in this class?
4. How can you highlight the strengths of the members in your group?

Learning Set

Gain Attention

"It is building day! But first you must take your Shop Safety Post-Test. We will do a quick review and then you need to take a pencil and put away all your study materials. Once everyone has completed the test, we will pass the test to a partner and grade it as a class and discuss questions we got wrong. Then, you will move into your flat construction groups to collaborate and prepare what you need to do to build your flat. Once we have all had time to prepare as a group we will move to the shop and begin to build our flats! Are there any questions about what is expected of you?"

Review/State Prerequisite

"Last class we finished our materials and flat construction lesson. Someone tell me a material we will be using in our flat construction today. "

- Student A response. (Possible answer: We will use Lauan to create our corner blocks and keystones.)
- Student B response. (Possible answer: We will use 1x4 to create our stiles and toggles.)

"Great! It seems like we know what we need to build our flats! Are there any questions, concerns, comments before I pass out the test? Just a reminder you will have to get at least 90% to pass the post-test. In case you forgot, here are your groups for the flat construction project. Everyone know who's group they are in? Are there any questions about that?"

Advance Organizer

1. Introduction, Review discussion, Objectives and Standards (10 minutes)
2. Shop Safety Post-Test (20 minutes)
3. Grade Shop Safety Post-Test (10 minutes)
4. Preparation and Collaboration (10 minutes)
5. Building time! (30 minutes)
6. Review and closure (10 minutes)

2) Present Information

Describe

Part 1:

Lead students through Shop Safety Post-Test and grading of the test (found in "Handouts and Supporting Materials" section at the end of the Unit)

Part 2:

Guide students through the preparation and collaboration portion of the flat construction project.

Guide students through the flat construction portion of the project.

Demonstrate

Lead the class through the preparation process and building process of their flat construction project.

"Move into your groups of 4 for the project. In your groups, you must work as a collaborative unit to determine the best course of action for the building portion of your project. Divide the tasks among each group member. Are there any questions about what is expected?"

Students Refine Learning

Practice

Part 1:

Students will complete the Shop Safety Post-Test to assess their knowledge about the procedures. Then, students will be asked to practice using these procedures during the building portion of their flat construction project.

Part 2:

Students will practice working together to create a Broadway Flat. This is the culmination of everything that they have learned in this unit. They will practice using their knowledge of tools, hardware, and materials all together to create the intended scenic unit. For a tutorial go to: "How to Build a Broadway Flat" by wikiHow

Feedback

Give students feedback during discussions and reinforce meaningful connections the students are making. Walk around during the activity and give feedback on choices before they present to the class. During review, reinforce student responses and try to make sure everyone is making the right connections.

1. How can you use your time most effectively?
2. How can you highlight the strengths of the members in your group?
3. What are you doing to ensure that everyone is involved?
4. Which shop safety procedures are you using while creating your flat?

Closure

Summary

Have a review discussion to summarize what was learned today.

"Now that it's over, what are your first thoughts about this overall project? Are they mostly positive or negative?"

- Student A response. (Possible responses: I really enjoyed this project. I like to work with my hands, so this project really helped solidify everything have been learning so far.)
- Student B response. (Possible responses: I didn't really like this project. I didn't like getting saw dust all over my clothes.)

"How well did you and your team communicate overall?"

- Student A response. (Possible response: I thought my team did a great job communicating. Everyone had a job and knew what we needed to do to complete the project.)
- Student B response. (Possible response: My group did alright. There were times when one person would finish their task before the others, and they had to just wait around for them.)

"What did you learn were your greatest strengths? Your biggest areas for improvement?"

- Student A response. (Possible answer: I am a perfectionist, so I made sure all our measurements were correct but sometimes it that can make the process slower. I need to balance accuracy and efficiency.)
- Student B response. (Possible answer: I am a good worker and I work well in a team. I think one thing I need to be better at is taking initiative when I see a gap in tasks or when problems arise.)

Transfer

"What were some of the most interesting discoveries you made while working on this project? About the problem? About yourself? About others?"

- Student A response. (Possible answer: How easy it is to create something when you have to right tools and materials. I feel like I can use this to make other things now if I wanted to.)
- Student B response: (Possible answer: I discovered how things go smoothly when you are working with a group. Like we could all try to make a flat by ourselves, but together we can help each other to create the best possible project.)

"How do you think working on this project could help you in other group projects outside of this classroom?"

- Student A response. (Possible answer: I think the most important part for this project was clearly communicating each member's task and responsibilities. So, in other projects we could do that too. Then, everyone is involved, and the responsibilities are shared.)
- Student B response. (Possible answer: Finding the right tools for the task at hand was important, and in other projects that could mean finding the right sources or mode of presentation.)

Near Transfer

"What one thing you learned that you will take with you when you move onto the next unit and future projects in this class?"

- Student A response. (Possible answer: It is important to be respectful of each other's workspace. Because it takes many elements coming together to put on a production and we need to be willing to share the space with others so that they can accomplish the tasks they need to.)
- Student B response. (Possible answer: I personally, I will have more confidence in my abilities to try new things. I never saw myself as someone who could create something like a flat. So now I am excited to see all the things I can do!)

"Amazing work today everyone! Everyone did a great job on their flat construction projects. Next class we will start a brand-new unit on Lighting Technology. Thanks for your fantastic work today. Have a good day!"

Modifications for Special Needs:

Students who are behind in writing/reading or have learning disabilities will be accommodated – copies of the notes from the lecture can be provided. For students who struggle to write, the lecture can be recorded; Most of this lesson is activity based. Students with physical disabilities will be accommodated for activities as according to disability. Students with intellectual disabilities will be accommodated with ideas and prompts when participating in class.

Supplemental Materials:

PowerPoint, Shop Safety Post-Test, tools, hardware, materials needed for flat construction.

Sources:

https://www.wikihow.com/Build-a-Theatre-Flat

Carter, Paul Douglas, and George Chiang. *Backstage Handbook: An Illustrated Almanac of Technical Information*. Broadway Press, 2012.

Handouts and Supporting Materials
can be found on the following pages.

Shop Safety Pre-Test

Name: _____

Choose the best answer for each question. On True or False questions, if the answer is false then give the correct answer. If you don't know the answer, then guess! This is just a pre-test and will not be for a grade. I am simply using this to gauge what you know so that I can adjust the unit accordingly. (Keep in mind you will re-take this test at the end of the unit and you will need to score at least 90% in order to pass.)
Questions: (1 point each)

1. What of the following injuries can be caused by using power tools?
A. Abrasions
B. Lacerations
C. Amputations
D. Eye Injuries
E. All of the Above

2. When using a circular saw, what are the safety steps you should take?
A. Always cut away from your body
B. Wear safety glasses and ear plugs (and a mask if you want)
C. Hold the saw with both hands in the proper positions
D. Clamp or have someone hold the material so that it doesn't fall while you cut
E. All of the above

3. Which of the following is not a general safety practice you should follow when using hand and power tools?
A. Keep your tools in good working order
B. Wash the tool with soap and water after using
C. Use the correct tool for the job
D. Know how to properly operate tools before using them
E. Always wear proper personal protective equipment

4. True or False: When using a Mitre Saw or Radial Arm Saw be sure to have one hand on the wood and be sure not to cross your arms.

5. True or False: No matter how safe you try to be, if your tools are in bad condition, you are likely to have an accident.

6. Before using a noisy power tool, you should do what of the following?
A. Tell everyone to put on their ear plugs
B. Squeeze the trigger once to see if it is working
C. Yell NOISE to alert everyone
D. Clear the room

7. Before plugging in a power tool you should do what of the following?
A. Check it's housing for cracks
B. Verify that switches are not loose or damaged
C. Carefully inspect hoses or power cords to make sure that they are not cracked, frayed or otherwise damaged.
E. All of the above

8. If the area you are working in is dimly lit you should do the following?
A. Get a handheld flashlight
B. Continue working
C. Set up portable lights
D. Use a cigarette lighter

9. True or False: You should never leave tools on top of a ladder.

10. True or False: When using grinders, you should always wear a full-face safety shield, ear plugs, and gloves.

11. True or False: When you are lowering a baton, you need to keep an eye on it and say “baton moving” to alert other workers in the space.

12. True or False: When working overhead and handling loose hardware be sure to alert the people working below you by saying “loose hardware overhead”.

13. True or False: It is okay to listen to music while working in the theatre space as long as no one is working overhead.

14. True or False: You may need to exert excess pressure on a power tool to make it work.

15. True or False: You don’t need to unplug your tools before changing blades or bits.

16. True or False: When a screw is difficult to drill in, try to shimmy it out by hand to loosen it.

17. When using a pneumonic power tool, you must.
A. Unplug it from the air supply before reloading.
B. Never point it at another person
C. Keep hands clear before pulling the trigger
D. Double check to make sure that the hardware is the correct size of your material.
E. All of the Above

18. True False: When using the Panel Saw be sure to bring the blade back to the top after finishing the cut.

19. Ture or False: When working on a ladder, a genie, or in the grid be sure to secure any necessary tools to your clothing and leave any non-essential items on the ground.

20. What is the proper attire to wear when working in the shop?
1.
2.
3.
4.

Total: _____/20

Shop Safety Pre-Test (Answer Key)

Name: _____

Choose the best answer for each question. On True or False questions, if the answer is false then give the correct answer. If you don't know the answer, then guess! This is just a pre-test and will not be for a grade. I am simply using this to gage what you know so that I can adjust the unit accordingly. (Keep in mind you will re-take this test at the end of the unit and you will need to score at least 90% in order to pass.)

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B. Wear safety glasses and ear plugs (and a mask if you want)
C. Hold the saw with both hands in the proper positions
D. Clamp or have someone hold the material so that it doesn't fall while you cut
E. All of the above

3. Which of the following is not a general safety practice you should follow when using hand and power tools?
A. Keep your tools in good working order
B. Wash the tool with soap and water after using
C. Use the correct tool for the job
D. Know how to properly operate tools before using them
E. Always wear proper personal protective equipment

4. True or False: When using a Mitre Saw or Radial Arm Saw be sure to have one hand on the wood and be sure not to cross your arms.
True!

5. True or False: No matter how safe you try to be, if your tools are in bad condition you are likely to have an accident.
True!

6. Before using a noisy power tool you should do what of the following?
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E. All of the above

8. If the area you are working in is dimly lit you should do the following?
A. Get a handheld flashlight
B. Continue working
C. Set up portable lights
D. Use a cigarette lighter

9. True or False: You should never leave tools on top of a ladder.
True!

10. True or False: When using grinders, you should always wear a full-face safety shield, ear plugs, and gloves.
True!

11. True or False: When you are lowering a baton, you need to keep an eye on it and say "baton moving" to alert other workers in the space.
False, you do need to keep an eye on the baton to ensure it doesn't hit anything on while it is moving but you need to indicate which baton you are moving and which direction it is going so that people are aware which part of the stage to be careful of. For example, "Line set 17 coming in!" or "Line set 23 going out!"

12. True or False: When working overhead and handling loose hardware be sure to alert the people working below you by saying "loose hardware overhead".
True!

13. True or False: It is okay to listen to music while working in the theatre space as long as no one is working overhead.
False, music should not be listened to during shop hours. It is a safety hazard, we need to be able to hear each other if something goes wrong and there are already lots of noises to distract.

14. True or False: You may need to exert excess pressure on a power tool to make it work.
False, you should never need to exert excess pressure on a power tool. It will work will moderate pressure, patience is key. Exerting excess force can cause injury!!!

15. True or False: You don't need to unplug your tools before changing blades or bits.
False, always unplug tool before adjusting or changing anything. This is for your safety!
16. True or False: When a screw is difficult to drill in, try to shimmy it out by hand to loosen it.
False, after drilling a screw it is HOT and will burn your fingers if you try to touch it. Use other methods of removal if the drill won't work.

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True!

20. What is the proper attire to wear when working in the shop?
1. Close-toed shoes
2. No Jewelry
3. No loose fit clothing
4. Long hair tied back

Shop Safety Post-Test

Name: _____

Choose the best answer for each question. On True or False questions, if the answer is false then give the correct answer. (You will need to score at least 90% in order to pass and be permitted to work in the shop.)

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Total: _____/20

Shop Safety Post-Test (Answer Key)

Name: _____

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Intro to Scenic Technology
Spring 2018

Broadway Flat Construction Project

Name: _____ Group: _____ Date: _____

Broadway Flat Built __/10	**Unsatisfactory** No flat built. 0-2	**Making Progress** Flat half built or built with wrong structure. 3-6	**Good** Flat completed, some minor flaws, not square, etc. 7-8	**Excellent** Flat successfully built, no structural flaws, carpentry well done. 9-10
Preparation __/10	**Unsatisfactory** No evidence of preparation. Student did not utilize time. 0-2	**Making Progress** Some evidence of preparation. Student utilized some time. 3-6	**Good** Materials prepared, and student utilized most of their time effectively. 7-8	**Excellent** Flat is well prepared, and student utilized all of their time effectively. 9-10
Use of Tools and Materials __/10	**Unsatisfactory** Proper tools and materials were not utilized. 0-2	**Making Progress** Some tools and materials were used properly. 3-6	**Good** Most tools and materials used properly. Some mistakes occurred. 7-8	**Excellent** All tools and materials where used properly and effectively. 9-10
Collaboration __/10	**Unsatisfactory** There was no team work. 0-2	**Making Progress** Some members work together while most watch the process. 3-6	**Good** Almost all members work together to complete the task. Maybe one or two outliers. 7-8	**Excellent** All members of the group are actively contributing to the task. Everyone's ideas are heard and valued. 9-10

Total: _____/40