Teacher Preparation Lesson Plan

Subject Area: Science, Technology, Engineering, Arts, and Mathematics (STEAM)
Unit Title: Introduction to Designing Crafts from Ferula Communis Plant Sticks
Grade Level: 12
Lesson Number: 1 of 8

Duration: 8 lessons, 45 minutes each
Date: September 10 - September 24
Teacher: [Your Name]
Room: [Room Number]

Curriculum Standards Alignment

Content Standards:

- Understand the properties and characteristics of Ferula Communis plant sticks
- Apply STEAM principles to design and create innovative crafts and constructions
- Understand the concept of βιοοικονομία (bioeconomy) and its importance in sustainable development

Skills Standards:

- Design and create functional and aesthetically pleasing crafts and constructions
- Demonstrate problem-solving and critical thinking skills
- Communicate effectively through written and verbal presentations

Cross-Curricular Links:

- Science: Understanding the properties and characteristics of Ferula Communis plant sticks
- Technology: Applying STEAM principles to design and create innovative crafts and constructions
- Engineering: Designing and creating functional and aesthetically pleasing crafts and constructions
- Arts: Creating innovative and aesthetically pleasing crafts and constructions
- Mathematics: Applying mathematical concepts to design and create crafts and constructions

Essential Questions & Big Ideas

Essential Questions:

- What are the properties and characteristics of Ferula Communis plant sticks?
- How can STEAM principles be applied to design and create innovative crafts and constructions?
- What is the importance of βιοοικονομία (bioeconomy) in sustainable development?

Enduring Understandings:

- Students will understand the properties and characteristics of Ferula Communis plant sticks and their potential uses
- Students will be able to apply STEAM principles to design and create innovative crafts and constructions
- Students will understand the concept of βιοοικονομία (bioeconomy) and its importance in sustainable development

Student Context Analysis

Class Profile:

Learning Styles Distribution:

- Total Students: 25
- ELL Students: 5
- IEP/504 Plans: 3
- Gifted: 2

- Visual: 40%
- Auditory: 30%
- Kinesthetic: 30%

Introduction to Ferula Communis

Ferula Communis, also known as giant fennel or ferula, is a plant species that has been used for centuries in traditional medicine, food, and crafts. The plant's sturdy sticks can be used to create a variety of products, such as traditional furniture and decorations, toys and games, musical instruments, baskets and woven products, sculptures and decorative items.

Properties and Characteristics of Ferula Communis Plant Sticks

- Sturdy and durable
- Flexible and versatile
- Renewable and sustainable
- Aesthetically pleasing

Design and Planning

Have students design and plan their crafts and constructions, taking into account STEAM principles and βιοοικονομία (bioeconomy) concepts. Encourage students to research and gather ideas from traditional products and modern designs.

Guidance on Design and Planning

- Consider the properties and characteristics of Ferula Communis plant sticks
- Think about the purpose and function of the craft or construction
- Research and gather ideas from traditional products and modern designs
- Sketch and draw designs, considering aesthetics and functionality

Construction and Creation

Have students create their designs, using Ferula Communis plant sticks and other materials. Provide guidance on traditional joinery techniques and construction methods.

Guidance on Construction and Creation

- Use traditional joinery techniques, such as mortise and tenon, or modern construction methods, such as glue and nails
- Consider the properties and characteristics of Ferula Communis plant sticks, such as flexibility and durability
- Use other materials, such as wood, metal, or fabric, to enhance the design and functionality
- Encourage students to experiment and try new things

Decoration and Finishing

Have students decorate and finish their creations, using various techniques and materials. Provide guidance on how to add details and textures to their designs.

Guidance on Decoration and Finishing

- Use various techniques, such as painting, staining, or varnishing, to add color and texture
- Add details, such as carvings or engravings, to enhance the design and functionality
- Use other materials, such as fabric, metal, or wood, to add texture and interest
- Encourage students to be creative and add their own personal touch

Presentation and Exhibition

Hold a final project presentation and exhibition, where students can showcase their creations and share their learning experiences.

Guidance on Presentation and Exhibition

- Have students prepare a presentation, including a description of their design and creation process
- Encourage students to explain their design decisions and the STEAM principles they applied
- Provide feedback and guidance on how to improve their designs and creations
- Encourage students to reflect on their learning experience and what they would do differently next time

Differentiation Strategies

To cater to diverse learners, the following differentiation strategies will be employed:

- Learning centers: Students will have the opportunity to work in different learning centers, each focusing on a specific aspect of the project, such as design, construction, and decoration.
- Tiered assignments: Students will be given tiered assignments that cater to their individual needs and abilities, ensuring that each student is challenged and engaged.
- Technology integration: Students will have access to digital tools and software to enhance their designs and creations, making the project more engaging and accessible for students with different learning styles.

Assessment Opportunities

Continuous feedback and assessment will be provided through:

- Formative assessments: Regular check-ins and feedback sessions will be held to monitor student progress and understanding.
- Summative assessments: A final project presentation and exhibition will be held to showcase student creations and assess their understanding of the learning objectives.
- Peer assessment: Students will have the opportunity to review and provide feedback on their peers' work, promoting collaboration and critical thinking.

Conclusion

This unit plan aims to provide students with a comprehensive and engaging learning experience, combining STEAM principles with traditional craftsmanship and βιοοικονομία (bioeconomy) concepts. By designing and creating innovative crafts and constructions using Ferula Communis plant sticks, students will develop problem-solving and critical thinking skills, while promoting sustainability and environmental awareness.

Final Thoughts

As students complete this unit, they will have gained a deeper understanding of the properties and characteristics of Ferula Communis plant sticks, as well as the importance of βιοοικονομία (bioeconomy) in sustainable development. They will have also developed essential skills in design, construction, and decoration, and will be able to apply these skills to real-world problems and scenarios.