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STEAME ACADEMY

TEACHING FACILITATION LEARNING & CREATIVITY PLAN (L&C PLAN) - LEVEL 2

SERVICE TEACHERS: MAKING SOAP FROM SCRATCH - APPLYING SCIENCE IN LIFE

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1. Overview

Title	Making Soap from Scratch - Applying Science in Life		
Driving Question or Topic	<p>How is Chemistry related to our lives?</p> <p>How can we create soap from scratch using basic scientific principles?</p> <p>What are the chemical reactions involved in soap making?</p> <p>How can we ensure the soap is safe and effective for use?</p>		
Ages, Grades, ...	Ages 14-19	Grades 9-12	
Duration, Timeline, Activities	Number of learning hours: 4-5 h.	Timeline/frame, calendar: 7 x 40 min	Number of activities 5
Curriculum Alignment	Science, Engineering, Arts, Entrepreneurship, Innovative subjects: <i>Human & the Living Environment</i>		
Contributors, Partners Abstract - Synopsis	<p>Local soap makers, chemistry teachers, entrepreneurs</p> <p>Students will learn to make soap from scratch using basic chemistry principles. They will explore the chemical process of saponification, develop their own soap recipes and marketing campaigns, and create a basic soap product. The project aims to enhance understanding of chemistry through practical application and entrepreneurial skills.</p>		
References, Acknowledgements	Online resources on soap making and chemistry tutorials.		

2. STEAME ACADEMY Framework*

Teachers' Cooperation	<p>Teacher 1 – T1 (Science/Chemistry): Introduce the chemistry behind soap making and safety measures.</p> <p>Teacher 2 – T2 (Arts): Assist with the design aspects of soap (e.g., shapes, colors, packaging).</p> <p>Teacher 3 – T3 (Entrepreneurship): Guide on marketing the soap and understanding consumer needs. Figure out the best branding and assist with the potential sales/clients.</p>
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STEAME in Life (SiL) Organization	<ul style="list-style-type: none"> ● Engage local soap makers for guest lectures and mentorship. ● Involve parents and grandparents: how soap was made at home back in the day. ● Organize a visit to a local soap making workshop. ● Organize a visit to a local soap factory.
Action Plan Formulation	<p>Stage I: Preparation by Teachers:</p> <ul style="list-style-type: none"> ● Introduce the project and its goals: Explain the concept of making soap and its relevance to everyday life. ● Provide an overview of the saponification process and safety measures: Conduct a demonstration of soap making highlighting the chemical reactions involved. <p>Stage II: Development by Students</p> <ul style="list-style-type: none"> ● Explore soap making principles and content integration: Discuss elements such as the saponification process, safety precautions, and ingredients. ● Develop the soap recipe and content: Students brainstorm and outline the ingredients and process they want to use. They decide on the type of soap, scent, color, and packaging. ● Create a basic soap prototype: Students start making their soap incorporating scientific principles. They create different batches and test their properties. ● Market the soap to an appropriate audience: Students choose their target group (e.g., family, friends, local community). They create advertisements and plan ways to sell their product. <p>Stage III: Configuration & Results</p> <ul style="list-style-type: none"> ● Test the soap and gather feedback: Students use and share their soap, providing feedback on its effectiveness and appeal. ● Present the soap product to the class: Each group presents their soap, explaining their process and choices, and how their product stands out. ● Discuss potential improvements and future developments: Reflect on the feedback and discuss ways to enhance the soap and its advertising further. Consider additional features or products that could be added.

** under development the final elements of the framework*

3. Objectives and Methodologies	
Learning Goals and Objectives	<ul style="list-style-type: none"> ● Understand the chemical process of saponification. ● Apply scientific knowledge to create a tangible product. ● Generate new ideas for soap recipes. ● Develop practical skills in soap making. ● Learn how to advertise the soap product. ● Enhance creativity, problem-solving, and collaboration skills. ● Present the results effectively.
Learning Outcomes and expected Results	<ul style="list-style-type: none"> ● Apply basic chemistry principles in soap making. ● Understand how soap works at a molecular level. ● Create a soap product from scratch. ● Create a marketing campaign for the final product.

	<ul style="list-style-type: none"> ● Analyze and adjust recipes based on scientific principles. ● Assess oneself and other teams. ● Relate Science, Technology, Arts, and Entrepreneurship to real life. ● Identify correct target groups and marketing strategies.
Prior Knowledge and Prerequisites	<ul style="list-style-type: none"> ● Basic understanding of chemistry concepts. ● Basic understanding of entrepreneurship. ● Research skills.
Motivation, Methodology, Strategies, Scaffolds	<ul style="list-style-type: none"> ● Project-based learning with hands-on activities. ● Collaboration with external stakeholders for real-world insights. ● Encouraging creative thinking and innovation through practical application.

4. Preparation and Means

Preparation, Space Setting, <i>Troubleshooting Tips</i>	<ul style="list-style-type: none"> ● Classroom setup for group work. ● Access to a science lab or well-ventilated area for soap making. ● Ensure all safety equipment is available (gloves, goggles, etc.).
Resources, Tools, Material, Attachments, Equipment	<ul style="list-style-type: none"> ● Ingredients for soap making (lye, oils, fragrances, etc.). ● Safety equipment (gloves, goggles, aprons). ● Molds for shaping soap. ● Measuring tools and scales. ● Projector or screen for demonstrations and presentations.
<i>Health and Safety</i>	Emphasize the importance of safety when handling lye and other chemicals. Ensure proper ventilation and protective gear.

5. Implementation

Instructional Activities, Procedures, Reflections	<p>Lesson 1: Introduction to Soap Making and Saponification Principles Duration: 40 minutes Activities:</p> <ul style="list-style-type: none"> ● Introduction to the project and its objectives. ● Overview and demonstration of the soap making process. ● Discussion on the chemical reactions involved in saponification. <p>Lesson 2: Development of Soap Recipes and Design Duration: 2x40 minutes Activities:</p> <ul style="list-style-type: none"> ● Students brainstorm and outline their soap recipes. ● Discussion and selection of ingredients and design elements. ● Begin creating the soap prototype. ● Teachers provide guidance and support throughout the development process. <p>Lesson 3: Creation and testing of the game prototype Duration: 1x40 minutes Activities:</p> <ul style="list-style-type: none"> ● Students continue working on their soap prototypes.
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- Conduct peer testing sessions to gather feedback.

Lesson 4: Marketing

Duration: 2x40 minutes

Activities:

- Students create advertisements for their products.
- Build a marketing campaign.
- Teachers provide guidance and important professional insight.

Lesson 5: Final Presentation

Duration: 1x40 minutes

Activities:

- Present the soap product to the class with demonstrations.
- Reflect on feedback and discuss potential improvements.
- Ongoing feedback during the development process focusing on creativity, problem-solving, and technical skills.
- Final evaluation of the soap based on functionality, safety, marketing and appeal.
- Peer and Self-Evaluation: Students evaluate their own and peers' contributions and learning experiences.

Assessment - Evaluation

Presentation - Reporting
- Sharing

*Extensions - Other
Information*

- Class Presentations: Students present their soap products with demonstrations.
- Marketing campaign for peers and potential target groups.
- Collaboration Opportunities: Foster partnerships with local artisans or educational institutions for future projects and mentorship.