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STEAME TEACHER ACADEMY

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STEAME ACADEMY
TEACHING FACILITATION LEARNING & CREATIVITY PLAN (L&C PLAN) - LEVEL 1
STUDENT 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	How is Chemistry related to our lives? How can we create soap from scratch using basic scientific principles? What are the chemical reactions involved in soap making? How can we ensure the soap is safe and effective for use?		
Ages, Grades, …	**Ages 11-14**	**Grades 5-8**	
Duration, Timeline, Activities	Number of learning hours: 4-5 h.	Timeline/frame, calendar: 6 x 40 min	Number of activities 5
Curriculum Alignment	Science, Engineering, Arts, Innovative subjects: *Human & the Living Environment*		
Contributors, Partners Abstract - Synopsis	Local soap makers, chemistry teachers, entrepreneurs 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.		
References, Acknowledgements	Online resources on soap making and chemistry tutorials.		

2. STEAME ACADEMY Framework*

Teachers' Cooperation	**Teacher 1 – T1** (Science/Chemistry): Introduce the chemistry behind soap making and safety measures. **Teacher 2 – T2** (Arts): Assist with the design aspects of soap (e.g., shapes, colors, packaging).
STEAME in Life (SiL) Organization	• 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	**Stage I: Preparation by Teachers:** • 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. **Stage II: Development by Students** • 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). **Stage III: Configuration & Results** • 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. 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	• 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. • Enhance creativity, problem-solving, and collaboration skills. • Present the results effectively.
Learning Outcomes and expected Results	• **Apply** basic chemistry principles in soap making. • **Understand** how soap works at a molecular level. • **Create** a soap product from scratch. • **Analyze** and adjust recipes based on scientific principles. • **Assess** oneself and other teams. • **Relate** Science, Technology and Arts to real life.
Prior Knowledge and Prerequisites	• Basic understanding of chemistry concepts. • Research skills.

Motivation, Methodology, Strategies, Scaffolds	• Project-based learning with hands-on activities. • Encouraging creative thinking and innovation through practical application.

4. Preparation and Means

Preparation, Space Setting, *Troubleshooting Tips*	• 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	• 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.
Health and Safety	Emphasize the importance of safety when handling lye and other chemicals. Ensure proper ventilation and protective gear.

5. Implementation

Instructional Activities, Procedures, Reflections

Lesson 1: Introduction to Soap Making and Saponification Principles
Duration: 40 minutes
Activities:

- Introduction to the project and its objectives.
- Overview and demonstration of the soap making process.
- Discussion on the chemical reactions involved in saponification.

Lesson 2: Development of Soap Recipes and Design
Duration: 2x40 minutes
Activities:

- 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.

Lesson 3: Creation and testing of the game prototype
Duration: 1x40 minutes
Activities:

- Students continue working on their soap prototypes.
- Conduct peer testing sessions to gather feedback.

Lesson 5: Final Presentation
Duration: 1x40 minutes
Activities:

- Present the soap product to the class with demonstrations.
- Reflect on feedback and discuss potential improvements.

Assessment - Evaluation	• Ongoing feedback during the development process focusing on creativity, problem-solving, and technical skills. • Final evaluation of the soap based on functionality, safety and appeal. • Peer and Self-Evaluation: Students evaluate their own and peers' contributions and learning experiences.
Presentation - Reporting - Sharing	• Class Presentations: Students present their soap products with demonstrations. • Marketing campaign for peers and potential target groups.
Extensions - Other Information	• Collaboration Opportunities: Foster partnerships with local artisans or educational institutions for future projects and mentorship.