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STEAME TEACHER ACADEMY

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STEAME ACADEMY
TEACHING FACILITATION LEARNING & CREATIVITY PLAN (L&C PLAN) - LEVEL 2
SERVICE TEACHERS: Premium Herbal Wellness

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1. Overview

Title	Premium Herbal Wellness		
Driving Question or Topic	*Composition of one or small number of essential questions (or related topics)* *1. What are some common herbs for wellness? Which parts of the plant are appropriate?* *2. Which herbs are safe? Are there any potential side effects, allergic reactions, and any contraindications with existing medications.* *3. How do some herbs interact? How chemistry helps to understand the interaction process?* *4. Are any recommendations related to dosage, quality, and the source of herbs for wellness?* *5. How to develop a business based on herbs?*		
Ages, Grades, …	*Age selection:* *15-18*	*K-12 grade level selection:* *grades 10-12*	
Duration, Timeline, Activities	*Number of learning hours:* 6 hours	*Timeline/frame, calendar:* 6x 50 minutes	*Number of activities:* ***6***
Curriculum Alignment	Plant anatomy Plant taxonomy Ethnobotany Economic botany Biochemistry and phytochemistry, Cosmceuticals Technologies / Biotechnologies Entrepreneurship		
Contributors, Partners	*School partners, Herbal Wellness Enterprise, Herbal cosmeceuticals laboratories*		
Abstract - Synopsis	The objective of the PHW - L&C Plan is to describe how teachers in service can approach STEAME education to empower high-school students with entrepreneurial skills by establishing a sustainable Premium Herbal Wellness (PHW) business taking into account aspects like safety, quality, dosage, interaction and appropriate usage of medicinal herbs as supplementary sources for someone health and beauty (by herbal cosmetics).		
References, Acknowledgements	There is a large volume of information on usage of herbs to support health aspects, common herbs, but also local herbs depending on geographical regions in the world. Here are some references: 1. Kerry Bone, The ultimate herbal compendium : a desktop guide for herbal prescribers, https://archive.org/details/ultimateherbalco0000bone, 2007		

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2. STEAME ACADEMY Framework*

Teachers' Cooperation	Teacher 1 (Biology) cooperates with Teacher 2 (Chemistry), Teacher 3 (Technologies) and Teacher 4 (Entrepreneurship) in the case of learning elements concerning the medicinal products and Herbal cosmetics obtained from herbs, their safety, quality, the appropriate usage for individual wellness, and how to set up a business in the field of Herbal Wellness. *Work plan and steps with clear goals and activities between service and student teachers:* Teacher 1 - is responsible for botanical aspects of herbs, and anatomical parts of humans.

	Teacher 2 - is responsible for chemical aspects when herbs interact when combined both with natural and chemical products. Teacher 3 - is responsible for technical aspects of processing the parts of plants to ensure security of medicinal or cosmetical products under national/international regulations. Teacher 4 - is responsible in updating the entrepreneurial knowledge and to increase the interest of students to develop a successful business.
STEAME in Life (SiL) Organization	*Meeting with business representatives/Applications in real world Entrepreneurship – STEAME in Life (SiL) Days*
Action Plan Formulation	***Work plan and steps with clear goals and activities for student teachers. The following topics will be covered by teachers involved in project:*** *Teachers formulate some hypotheses about the medicinal herbs, their interaction and technical aspects in the context of botany, biochemistry and biotechnologies. The Teacher 4 is business oriented.* ***Activities of Teacher 1:*** 1. *Adapt botany concepts for the grade level.* 2. *Explain Plant Life Cycles, the parts, and the economical value* 3. *Present use cases (Skin care/ Anti-aging Treatment/Skin Protection/Antioxidants/Hair care/Essential oil etc) in order to treat or prevent disease, to "maintain" health and for cosmetic use.* 4. *Encourage observation, classification, gender-specific differentiation.* ***Activities of Teacher 2:*** 1. *Adapt biochemistry concept for the grade level.* 2. *Explain the basic chemical components and the molecules to understand about alkaloids, glycosides, polyphenols, and terpenes. Discuss about flavonoids and their effects.* 3. *Encourage observation and experiment.* ***Activities of Teacher 3:*** 1. *Adapt biotechnology concepts for the grade level.* 2. *Explain the role of biotechnologies for herbs, tools for quality control of herbal products, introduce students to the phyto-pharmacy field and cosmeceuticals.* 3. *Encourage students to make a simple medicinal product and measure the basic characteristics.* 4. *Encourage students to make a simple moisturizing cream or perfume.* ***Activities of Teacher 4:*** 1. Explain basic entrepreneurship concepts 2. Discuss on global trend in Herbal Market (Medicine, Cosmetics) 3. Push the interest on developing product niches. 4. Discuss on regulations and how to certificate a new project. ***Common activity:*** *Discuss the opportunity to design a new combination of herbs to increase the immunity of people/new herbal cosmetics for beauty or restoration. Design a strategy to promote the product in order to set up an entrepreneurial desire for students.*

[*] *under development the final elements of the framework*

3. Objectives and Methodologies

Learning Goals and Objectives	*Identification of goals or objectives using appropriate verbs, related or corresponding to competences (knowledge – skills - attitudes), what learner will be able to do after the project* *Knowledge:* 1. *Name the main parts of plants.* 2. *Identify the part(s) of a specific plant to be used for wellness purposes.*

	3. *Explain how to increase the positive effect of a combination of natural constituents obtained from plants.* 4. *Explain how to control the quality of a medicinal / cosmetic product based on plants.* 5. *Explain how to design a business plan* *Skills:* 1. *Generate medicinal products from plants* 2. *Differentiate between good plants and poisonous plants* 3. *Improve team working style* 4. *Develop a small business based on medicinal plants / Herbal cosmetics.* *Attitudes:* 1. *Be aware of potential issues with herbal medicines/Herbal cosmetics* 2. *Accept the potential of some plants to combine very well to increase the effect of conventional medicine or cosmetics.* 3. *Know about who should avoid herbal medicines and adopt an appropriate attitude to help.* 4. *Recognize the value of interdisciplinary study of herbs to support wellness and produce new drugs/cosmetics taking into account the power of some herbs.* 5. *Know about risks of buying herbal medicines/cosmetics online or by mail order.* 6. *Develop a positive attitude in new product generation and business.*
Learning Outcomes and expected Results	*Definition of Learning Outcomes using action verbs* 1. *Students will acquire knowledge about plants, their life, the chemical aspects of combining herbs and how to produce a medicinal/cosmetic product to support wellness.* 2. *Students will develop practical skills to classify plants, and to use appropriate biotechnology tools.* 3. *Students will gain new experience working with parts of plants and cooperating in order to design a medicinal/cosmetic product to improve the health state and/or beauty of people.* 4. *Students will be able to analyze the received information (from teachers, by searching on Internet, or by invited partners).* 5. *Students will be able to work as a team in new product development and product promotion to colleagues, community, on social media.* 6. *Students will be able to start a business in Herbal Market.* *Expected results:* 1. *Every student will be able to create a portfolio on some category of plants/treatment etc.* 2. *The teamwork will be improved to participate with new ideas to create a medicinal/cosmetic product.* 3. *The entrepreneurial spirit will be increased.*
Prior Knowledge and Prerequisites	*Prior experiences, knowledge and skills required by learners to bring with them to this learning experience* ***Students should have general knowledge in botany, chemistry. Depending on grade level different aspects will be considered including chemical formulas, chemical reactions, in order to prove the result of plants interaction.***
Motivation, Methodology, Strategies, Scaffolds	*Teaching and learning strategies, approaches, methods, and/or techniques for achieving learning objectives (a project-based activity may help the competence development, or gamification, or other methods, etc.)* *Instruction differentiation for students' needs (learning styles, multi-modal representations, roles to students etc.)* *Active students' engagement, individual-team-classroom work, scaffolding techniques, etc.*

	To achieve the learning objectives, teachers apply an adapted strategy depending on the grade level, learning styles and the initial preparation. Appropriate methods will be used as teacher-centered learning, small group based learning, project-based learning, and inquiring learning. *Also the teaching strategies and the plan will be organized to support cooperative learning, experiential learning, and differentiation.*

4. Preparation and Means

Preparation, Space Setting, *Troubleshooting Tips*	*Procedures, spaces, and material preparation* *Setting in classroom, outdoor activity, computer lab, hybrid environment, etc.* *Classroom / Interdisciplinary laboratory* *White boards and markers (Smart board if exists)* *Double sided adhesive tape* *Laptop per student/LCD projector*
Resources, Tools, Material, Attachments, Equipment	*Instructional sources and digital material with the related references needed for the implementation of the learning plan* Teachers will have appropriate learning resources such as presentations, video files, practical examples, and experimental kits established before. - https://www.youtube.com/playlist?list=PLkRuW3pBo2U1L9HQwnhP77raYPlsxIs7L - https://www.naturopathy-uk.com/category/herbal-recipes/ - https://landscapeplants.oregonstate.edu/scientific-plant-names-binomial-nomenclature - Good Manufacturing Practices for Medicinal Products, https://www.youtube.com/watch?v=dS-dJYa-G1g - https://www.nhs.uk/conditions/herbal-medicines/ - https://desygner.com/blog/industry/how-to-market-herbal-shops-business - https://www.marketwatch.com/press-release/herbal-medicines-global-strategic-business-report-2024-market-to-grow-by-over-100-billion-to-2030-growing-inclination-towards-traditional-medicines-to-widen-the-addressable-market-researchandmarkets-com-c1df6892 - https://scientificia.com/index.php/JEBE/article/download/69/65/
Health and Safety	Students and teachers work in a healthy and safe environment.

5. Implementation

Instructional Activities, Procedures, Reflections	*Brief and comprehensive description of the creative activities, tasks, or learning experiences (individual-team-classroom work)* *Engagement and active participation through hands-on practices* *Students' feedback and reflection on their thinking, process, or learning.* *Monitoring students' learning and progress evaluation* Teachers will plan their activities as part of the curriculum, along six activities of 50 minutes allocated to every activity. The planned time can be one day (for all activities). Other variants can be established by teachers from the beginning taking into account the students' opinion. *Activity 1 (50min). The first three teachers (Biology, Chemistry, Technology) establish the working framework in order to address knowledge accumulation about basic concepts in botany, chemistry and technology.* *Activity 2(50 min) The teachers on Technology and Entrepreneurial education will present the type of technologies used by Herbal Enterprises, and the Trends on*

	Herbal market. Examples of successful companies will be shown and students will be able to identify the benefits of a Herbal Wellness project. *Activity 3(50min). The four teachers supervise small groups (of 4-5 students) to solve some tasks like:* - *Identification of a particular category of plants to develop a new product* - *Selection of parts of plants (root, leaves, seeds etc) and identification of the processing technology in order to obtain a mixed composition. Depending on the availability of plants this activity is a practical one in the laboratory, or a simulated one.* - *One member of the group will be a business developer (future entrepreneur) and will design a first draft of a business plan.* *Activity 4 (50min). The four teachers and students evaluate the composition/product taking into account the benefits, risks, and the potential impact on someone's wellness and how much it can be promoted to market. .* *Activity 5 (50min). The four teachers and students cross validate the results of groups to exchange information, best practice and select the best proposal of business in Herbal Market.* *Activity 6 (50min). A discussion panel will be set up taking into account the business developers of every group, and will present a SWOT analysis of their business plan. Teachers will monitor the activity and debate on various aspects of the product/business based on their field of interest.*
Assessment - Evaluation	*Assessment and formative evaluation processes and rubrics to measure the student's ability to perform what was described in the objectives* A rubric will be used during Activity 6, to assess the satisfaction of students along the six activities.
Presentation - Reporting - Sharing *Extensions - Other Information*	*Documents, outputs, artifacts, products produced by the students with references, web links etc., for sharing to media* Conclusions should be presented and future ideas will be exchanged. The findings during activities 3-6 will be shared on the school website/social media.

STEAME ACADEMY Prototype/Guide for Learning & Creativity Approach
Action Plan Formulation

Major steps in the STEAME learning approach:

STAGE I: Preparation by one or more teachers

1. Formulating initial thoughts on the thematic sectors/areas to be covered
2. Engaging the world of the wider environment / work / business / parents / society / environment/ ethics
3. Target Age Group of Students - Associating with the Official Curriculum - Setting Goals and Objectives
4. Organization of the tasks of the parties involved - Designation of Coordinator - Workplaces etc.

STAGE II: Action Plan Formulation (Steps 1-18)

Preparation (by teachers)

1. Relation to the Real World – Reflection
2. Incentive – Motivation
3. Formulation of a problem (possibly in stages or phases) resulting from the above

Development (by students) – Guidance & Evaluation (in 9-11, by teachers)

4. Background Creation - Search / Gather Information
5. Simplify the issue - Configure the problem with a limited number of requirements
6. Case Making - Designing - identifying materials for building / development / creation
7. Construction - Workflow - Implementation of projects
8. Observation-Experimentation - Initial Conclusions
9. Documentation - Searching Thematic Areas (AI fields) related to the subject under study – Explanation based on Existing Theories and / or Empirical Results
10. Gathering of results / information based on points 7, 8, 9
11. First group presentation by students

Configuration & Results (by students) – Guidance & Evaluation (by teachers)

12. Configure STEAME models to describe / represent / illustrate the results
13. Studying the results in 9 and drawing conclusions, using 12
14. Applications in Everyday Life - Suggestions for Developing 9 (Entrepreneurship - SIL Days)

Review (by teachers)

15. Review the problem and review it under more demanding conditions

Project Completion (by students) – Guidance & Evaluation (by teachers)

16. Repeat steps 5 through 11 with additional or new requirements as formulated in 15
17. Investigation - Case Studies - Expansion - New Theories - Testing New Conclusions

18. Presentation of Conclusions - Communication Tactics.

STAGE III: STEAME ACADEMY Actions and Cooperation in Creative Projects for school students

Title of Project: _____
Brief Description/Outline of Organizational Arrangements / Responsibilities for Action

STAGE	**Activities/Steps** Teacher 1(T1) Cooperation with T2 and student guidance	**Activities /Steps** **By Students** Age Group: ____	**Activities /Steps** Teacher 2 (T2) Cooperation with T1 and student guidance
A	Preparation of steps 1,2,3		Cooperation in step 3
B	Guidance in step 9	4,5,6,7,8,9,10	Support guidance in step 9
C	Creative Evaluation	11	Creative Evaluation
D	Guidance	12	Guidance
E	Guidance	13 (9+12)	Guidance
F	Organization (SIL) STEAME in Life	14 Meeting with Business representatives	Organization (SIL) STEAME in Life
G	Preparation of step 15		Cooperation in step 15
H	Guidance	16 (repetition 5-11)	Support Guidance
I	Guidance	17	Support Guidance
K	Creative Evaluation	18	Creative Evaluation