REPROHEALTH & GENDER

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The moment a child is born, the mother is also born. She never existed before. The woman existed, but the mother, never. A mother is something absolutely new.

TITLE OF THE PROJECT:

Reprohealth & gender: study of human reproduction and fertility though the use of plastinated organs

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- **PROJECT** of (choose one):

	SPORT-health
	MENTAL-health
	NUTRI-health
	NEUMO-health
	CARDIO-health
X	REPRO-health

- **Learn- STEM Model**

X	COMPLEX
X	PROGRESS-ORIENTED
X	HOLISTIC
X	PRACTICAL
X	SOCIAL

KEY COMPETENCES OF THE PROJECT (choose one or more):

	Literacy
X	Multilingual
X	Mathematics, Science, Technology & Engineering
X	Personal, social and learning to learn
	Citizenship
	Entrepreneurship
X	Cultural awareness

SUSTAINABLE DEVELOPMENT GOALS of the project (choose one or more):

	No poverty
	Zero Hunger
X	Good Health and Well-being
X	Quality Education
X	Gender Equality
	Clean water and Sanitation
	Affordable and Clean Energy
	Decent Work and Economic Growth
	Industry, Innovation and Infrastructure
	Reduced Inequality
	Sustainable Cities and Communities
	Responsible Consumption and Production
	Climate Action
	Life Below Water
	Life on Land
	Peace and Justice Strong Institutions

	Partnerships to achieve the Goal

SUBJECTS OF THE CURRICULA worked in this project:

X	Mathematics
X	Technology & Engineering
X	Geography & History
X	Biology & Geology
X	Physical Education
X	English
X	Arts

Description of the project:

SPECIFIC STUDENTS' COMPETENCES TO DEVELOP (LEARNING OUTCOMES)

- Observing
- Creating guide questions
- Developing Team Job skills
- Solving Problems
- Identifying connections and relationships
- Acquiring and interpreting data
- Learning how to communicate
- Learning to design routes
- Discussing relevant arguments
- Respecting deadlines and tasks' instructions
- Debating
- Self assessing

SCIENCE / BIOLOGY

LEARNING UNIT 1: The human reproductive system

OBJECTIVES	1. Identify the main organs in the reproductor system of vertebrates. 2. Understand the physiology and function of the main organs in the reproductor system. 3. Identify the most common causes of infertility. 4. Assimilate new scientific vocabulary related to the reproductive system.
MAIN QUESTIONS TO BE ANSWERED BY STUDENTS MAKING THIS PROJECT	• Which are the main organs involved in reproduction? • How does the female and male reproductive system work? • Where does the development of the embryo take place? • Which are the healthy habits related to the reproductive system?
STUDENTS´ ORGANIZATION	Groups of 4-5 students (depending on the number of students in the group).
TIME	4 sessions: • 1st session: female reproductive system. • 2nd session: male reproductive system. • 3rd session: fertilisation, embryo development and birth. • 4th session: diseases of the reproductive system and assisted reproduction techniques.
RESOURCES	• Organkits. • Smartphone/video camera. • Textbook/source of information.
ASSESSMENT & EVALUATION	Final product: video recorded by students in which they identify and explain the main organs involved in reproduction.

TIPS & TRICKS	
PROCESS OF WORK	

• Explanation of the Organkit contents:
  ○ Organs included in the kit.
  ○ Anatomical structures.
  ○ Functions.
  ○ Specific vocabulary.
• The students record a video explaining the organs and structures included in the Organkit.	

DIGITAL RESOURCES	
• Female reproductive system picture (English) • Female reproductive system picture (Spanish) • Female reproductive system video (English) • Female reproductive system video (Spanish) • Male reproductive system picture (Spanish) • Male reproductive system picture (English) • Male reproductive system video (Spanish) • Male reproductive system video (English) • Fertilization phases picture	

TECHNOLOGY

LEARNING UNIT 2 : 3D scanning and printing of the reproductive system

OBJECTIVES	• Develop spatial intelligence. • Know 3D scanning techniques. • Value the importance of 3D scanning techniques in medicine. • Scan organs of the female reproductive system to create polymer PLA prosthesis (cervix, ovaries, etc.) for assisted reproduction using a 3D printer.
MAIN QUESTIONS TO BE ANSWERED BY STUDENTS MAKING THIS PROJECT	• Which are the main 3D scan techniques? • Which are the main applications of 3D scanning in medicine? • Are 3D ultrasound and 3D scan the same technique? • Which 3D print prosthesis have made pregnancy possible in infertile patients?
STUDENTS´ ORGANIZATION	Groups of 4 students.
TIME	6 sessions: • 1st session: 3D scanning techniques and awareness-raising of its importance in medicine. • 2nd and 3rd sessions: scanning of different organs available in the Reprohealth and Gender Organkit. • 4th session: basic parameters of 3D print. • 5th and 6th sessions: 3D printing of selected prosthesis.
RESOURCES	• Reprohealth & Gender Organkit • 3D Scanner • Laptops • 3D printer • PLA filament

ASSESSMENT & EVALUATION	The assessment of each group of students will be carried out by a rubric which will include the following points: • Raising a problem • Objectives • Theoretical framework • Methodology • Results analysis • Built object
TIPS & TRICKS	• The files obtained with the scanned organs will be available for any department which could be interested in using them (e.g. it would be interesting if the Biology and Geology department made an identification of the different structures in the reproductive system).
PROCESS OF WORK	
• Firstly, the students in each group will develop a research project in which they must find answers to the questions in point nº 2. • Secondly, they will begin with the scanning of the organs included in the Organkit. • Afterwards, using the knowledge acquired during the sessions in Biology and Geology and the appropriate software, they will identify the main structures in each organ. • Finally, using additive manufacturing (3D printer), they will obtain the most important structures according to the research performed by each group.	
DIGITAL RESOURCES	
• Cervix 3D printed prosthesis article (Spanish) • Cervix 3D printed first birth article (Spanish) • 3D scanning characteristics article (Spanish)	

ENGINEERING

LEARNING UNIT 3: THE GENETIC ALGORITHM

TARGET GROUP	15-16 years old students
PREREQUISITES	Basic elements of computer science Language analysis
FINAL OUTCOME	Implementation of an algorithm for selecting to determine an evolution of its assigment
KEY COMPETENCES	To design, identify links and relationships; to collaborate and participate, to communicate, acquire and interpret information
COMPETENCE ACHIEVEMENTS	To understand the essentials of programming languages. Choose appropriate procedures for defining an algorithm. Development of logical thinking and critical thinking. Use IT tools and technologies
LEARNING OBJECTIVES	Observation, interpretation, experimention and communication
CONTENTS	The evolutionAlgorithms The ant algoritm The weight of nodes
SUBJECT OBJECTIVES	To know how to define a simple genetic algorithm
IMPLEMENTATION AND TIME	March -April / 8 hours
TEACHING METHOD	Active learning, Project based learning, interactive lesson, debate. Know how to define a simple algorithm
RESOURCES	Educational videos , supplementary multimedia material, textbooks, Internet resources
EVALUATION	Formative and summative

ARTS

LEARNING UNIT 4: The Gestational Anatomy of Frida Kahlo

TARGET GROUP	16-17 years old students
PREREQUISITES	Basic elements of arts
FINAL OUTCOME	Video, Power point, text production
KEY COMPETENCES	Creates personal and creative works based on an original conception and design, applying the knowledge and rules of visual language, choosing different techniques and materials in a functional way even with the integration of multiple media and expressive codes. Masters the main elements of visual language, reads and understands the meanings of still and moving images, audiovisual movies and multimedia products.
COMPETENCE ACHIEVEMENTS	Reads the most significant works produced in ancient, medieval, modern and contemporary art, knowing how to place them in their respective historical, cultural and environmental contexts; recognizes the cultural value of images, works and handicrafts produced in countries other than one's own. Recognizes the main elements of the cultural, artistic and environmental heritage of its territory and is sensitive to the problems of its protection and conservation. Analyzes and describes cultural heritage, static and multimedia images, using the appropriate language
LEARNING OBJECTIVES	Observation, interpretation, experimention and communication
CONTENTS	• Surrealism • Naife Art • Symbolism • Frida Kahlo • The Relationship between the work of Frida Kahlo and Freudian psychoanalysis • The Gestational Anthology in Frida Kahlo
SUBJECT OBJECTIVES	To know how to art about the gestational theme.
IMPLEMENTATION AND TIME	10h
TEACHING METHOD	Introductory lesson Brain storming on selected works Analysis of works in circle time Extrapolation of recurring themes Co-presence with the science teacher Multimedia work production
RESOURCES	Multimedia Interactive Whiteboard, plastinates, textbook.

EVALUATION	The evaluation will be carried out on the products developed.

HISTORY

LEARNING UNIT 5: Women's empowerment and motherhood

TARGET GROUP	16-17 years old students
PREREQUISITES	Basic elements of history
FINAL OUTCOME	Video, Power point, text production
KEY COMPETENCES	Planning, identifying links and relationships; collaborating and participating, communicating, acquiring and interpreting information
COMPETENCE ACHIEVEMENTS	be aware of the historical evolutionary path that has led to a re-evaluation of the role of women in society
LEARNING OBJECTIVES	Observation, interpretation, experimention and communication
CONTENTS	Role of women from post-unification Italy to the present day
SUBJECT OBJECTIVES	Kathe Schirmaker post-unification period in italy urbanization of the second post-war The sexual revolution
IMPLEMENTATION AND TIME	10h
TEACHING METHOD	Introductory lesson Brain storming on selected works Analysis of works in circle time Extrapolation of recurring themes Co-presence with the science teacher Multimedia work production
RESOURCES	Multimedia Interactive Whiteboard, plastinates, textbook.
EVALUATION	The evaluation will be carried out on the products developed.

MATHS & PHYSICS

LEARNING UNIT 6: Statistics

TARGET GROUP	15-16 years old students
PREREQUISITES	Operations with rational numbers Number representations (fractions, decimal numbers, percentages) Approximations by defect and excess Fundamentals of logic
FINAL OUTCOME	Graphs and tables of social surveys, interviews with classes "sample classes"
KEY COMPETENCES	Planning, identifying links and relationships; collaborating and participating, communicating, acquiring and interpreting information
COMPETENCE ACHIEVEMENTS	Identifying real difficult situations that occur daily; questions on situations to be examined, data collection and tabulation of information
LEARNING OBJECTIVES	Observation, interpretation, experimention and communication
CONTENTS	Statistical survey Graphical representations Analysis of statistical distributions
SUBJECT OBJECTIVES	To understand the importance of the statistical method in order to make choices and decisions. To know how to carry out a statistical survey by identifying with certainty the relevant phases: reading, interpreting and ordering data. To be able to graphically represent summarised data collected in the survey (by "hand" and using Excel). To know how to analyse statistical distributions using position and variance indices (by "hand"and using Excel).
IMPLEMENTATION AND TIME	November – January/ 8h
TEACHING METHOD	Active learning, Project based learning, interactive lesson, debate.
RESOURCES	Educational videos , supplementary multimedia material, textbooks, Internet resources
EVALUATION	Formative and summative

LEARNING UNIT 7: Birth data statistic analisys

TARGET GROUP	15-16 years old students
PREREQUISITES	Operations with rational numbers Number representations (fractions, decimal numbers, percentages) Approximations by defect and excess Fundamentals of logic
FINAL OUTCOME	Graphs and tables of social surveys, interviews with classes "sample classes"
KEY COMPETENCES	Planning, identifying links and relationships; collaborating and participating, communicating, acquiring and interpreting information
COMPETENCE ACHIEVEMENTS	Identifying real difficult situations that occur daily; questions on situations to be examined, data collection and tabulation of information
LEARNING OBJECTIVES	Observation, interpretation, experimention and communication
CONTENTS	DEMOGRAFIC INDICATORS Birth rate Life Expectancy at Birth Infertility statistics data
SUBJECT OBJECTIVES	To be able to read the demografic statistical data in order to interpretate phenomens Interpret statistical data Detect consequences from statistical data To know how to analyse statistical distributions using position and variance indices (by "hand"and using Excel).
IMPLEMENTATION AND TIME	November – January/ 8h
TEACHING METHOD	Active learning, Project based learning, interactive lesson, debate.
RESOURCES	Educational videos , supplementary multimedia material, textbooks, Internet resources
EVALUATION	Formative and summative

PHYSICAL EDUCATION

LEARNING UNIT 8: Pelvic floor and reproduction

OBJECTIVES	1. Identify the main reproductive organs of the human being differentiated by binary gender. 2. Know the physiological functioning according to the muscle fibres and muscles of which they are composed. 3. Being able to recognise the pelvic floor. 4. To experience the different toning exercises and their direct relationship with their improvement in terms of the physiological functioning of the reproductive organs. 5. To be able to generate specific models from the plastinated organs.
MAIN QUESTIONS TO BE ANSWERED BY STUDENTS MAKING THIS PROJECT	• What are the main human reproductive organs? • What is their physiological functioning under normal conditions? • What are the main pathologies of these organs in the presence of muscular hypology? • What are the most recommended exercises to improve the pelvic floor? • Would you be able to reproduce a muscular model of the pelvic floor?
STUDENTS´ ORGANIZATION	Groups of 4-5 students (depending on the number of students in the group).
TIME	3 sessions: • 1st session: Presentation/explanation of reproductive organs and pelvic floor musculature. Practical implementation of the main pelvic floor strengthening exercises. • 2nd session: Reproduction of the pelvic floor model based on the plastinated organs and using

	the 3D digital anatomical atlas model. Eva rubber will be used as a material to recreate the pelvic floor musculature. • 3rd session: Each group will create a presentation of their pelvic floor model together with a practical explanation of the basic exercise sequence to achieve the proposed health objectives.
RESOURCES	Organkits: Plastinated organs. 3D digital anatomical atlas model. Eva rubber.
ASSESSMENT & EVALUATION	Hetero Assessment rubric for the student-generated presentation template.
TIPS & TRICKS	
PROCESS OF WORK	
The plastinated organs are presented and the explanation is reinforced by using the 3D digital anatomical atlas to connect the content to the pelvic floor. The practical explanation of the pelvic floor exercises is followed by a practical explanation of the pelvic floor exercises. The next step is to generate a real 3D model that connects the plastinated organs with the musculature generated with eva rubber. Finally, a presentation is created as a routine explaining the physical exercises for the improvement and/or maintenance of pelvic floor health.	

ENGLISH LANGUAGE

LEARNING UNIT 9: Speaking about reproductive system

OBJECTIVES	1. To enable students to recognize and learn in English the reproductive organs after biology lessons. 2. To learn vocabulary related to the reproductive system (male and female).
MAIN QUESTIONS TO BE ANSWERED BY STUDENTS MAKING THIS PROJECT	• What is reproduction? • How does reproduction happen? • Which are the reproductive organs?
STUDENTS´ ORGANIZATION	• Whole class (brainstorming & feedback). • Pairs (matching flashcards game). • Whole class (online game: quiz show).
TIME	• 2 sessions
RESOURCES	• Computer/ whiteboard/ blackboard • Worksheet (true/false) • Definition cards (flashcards) • Videos: reproductive systems • Organkit
ASSESSMENT & EVALUATION	• Recognition of vocabulary. • Worksheet (true or false). • Matching activity (word - definition). ex: "testis - egg shaped organs where sperm is produced."
PROCESS OF WORK	
1st Session • Brainstorming: Ask students to mention the key words learnt in the Biology lessons to translate them into English. Post them on the board at the same time they remember the vocabulary (Flashcards)	

- True or False: The teacher will show the organkits to students and read aloud some statements about the process of reproduction and the reproductive systems. Students have to tick on their worksheets if the sentences are true or false. Once they have finished, the teacher collects the worksheets to be checked after the Quiz Show.
- Game: Quiz show : In turns, students answer the questions in groups of four.

2nd Session

- Watching videos related to both reproductive systems focusing on the key words previously studied in class.
  Female reproductive system / male reproductive system
- Matching activity : face down cards with reproductive vocabulary and definitions. In pairs, the students have to match them correctly.
- Feedback: Once the matching activity has finished, the teacher hands out the true/false worksheets done by the students the day before, so that each one corrects himself/herself the task as a feedback activity of the contents previously worked.
  Students share their new results to the rest of their mates to check how well/badly they have acquired the different contents and vocabulary related to the reproductive systems.

DIGITAL RESOURCES

- Quiz show
- Female reproductive system video
- Male reproductive system video

ORGANKITS OERs

SELF-ASSESSMENT

This checklist has been included to promote the self-reflection about this designed educational project.

	yes	no	Not sure
This proposal is based on **PBL** (Project Based Learning)	X		
The project has be designed from a **muldisciplinary** perspective, with the integration of different subjects and approaches to knowledge	X		
The educational design is **flexible**, every secondary school will be able to adapt it to its contexts, students' profile or educational needs.	X		
We have considered the **key competences** and the **ODS** to design the project	X		
We use **OrganKits** as the core of the project	X		
We recommend some **open resources** (available in open access on internet)	X		