

SKILLS AND COMPETENCIES

ACTIVITY PERFORMED

BNCC - General Competencies	General Competence 1: Value and use historically constructed knowledge about the physical, social, cultural and digital world to understand and explain reality, continue learning and collaborate to build a fair, democratic and inclusive society.	Integration of Biology, Computing and Mathematics knowledge in games and simulations.
	General Competency 2: Exercise intellectual curiosity and use the approach specific to science, including research, reflection, critical analysis, imagination and creativity, to investigate causes, develop and test hypotheses, formulate and solve problems and create solutions (including technological ones) based on knowledge from different areas.	Building algorithms, hypothesis testing and problem solving in Python (e.g., DNA transcription).
	General Competency 4: Use different languages - verbal (oral or visual-motor, such as Libras, and written), body, visual, sound and digital -, as well as knowledge of artistic, mathematical and scientific languages, to express oneself and share information, experiences, ideas and feelings in different contexts and produce meanings that lead to mutual understanding.	Presentation of projects on posters, school bulletin boards and even social media.
	General Competency 5: Understand, use and create digital information and communication technologies in a critical, meaningful, reflective and ethical way in various social practices (including school practices) to communicate, access and disseminate information, produce knowledge, solve problems and exercise protagonism and authorship in personal and collective life.	Using Scratch, Python, Google Colab and Kahoot as learning tools.
	General Competency 6: Value the diversity of knowledge and cultural experiences and appropriate knowledge and experiences that enable you to understand the relationships specific to the world of work and make choices aligned with the exercise of citizenship and your life project, with freedom, autonomy, critical awareness and responsibility.	Students developed protagonism, autonomy and learned about professional applications (bioinformatics).
	General Competency 7: Argue based on reliable facts, data, and information to formulate, negotiate, and defend ideas, points of view, and common decisions that respect and promote human rights, socio-environmental awareness, and responsible consumption at local, regional, and global levels, with an ethical stance regarding self-care, care for others, and the planet.	Defending design choices and explaining programming logic during presentations.
	General Competency 10: Act personally and collectively with autonomy, responsibility, flexibility, resilience and determination, making decisions based on ethical, democratic, inclusive, sustainable and supportive principles.	Group work and appreciation of authorship in productions.

BNCC Computing - Specific Skills	1: Understand Computing as an area of knowledge that contributes to explaining the current world and being an active and conscious agent of transformation capable of critically analyzing its social, environmental, cultural, economic, scientific, technological, legal and ethical impacts	DNA sequence manipulation with lists in Python.
	2: Recognize the impact of computational artifacts and the respective challenges for individuals in society, discussing socio-environmental, cultural, scientific, political and economic issues.	Development of algorithms for Biology programs in Scratch and Python.
	3. Express and share information, ideas, feelings, and computational solutions using different computer languages and technologies in a creative, critical, meaningful, reflective, and ethical manner, respecting the diversity of opinions, knowledge, identities, and cultures.	Creation of original programs such as transcription simulations and interactive games.
	4. Apply the principles and techniques of Computing and its technologies to identify problems and create computational solutions, preferably cooperatively, as well as to support discoveries in various areas of knowledge following a scientific and innovative approach, considering the impacts in different contexts.	Reflection on the role of computing in science and in careers such as bioinformatics.
	5. Evaluate the solutions and processes involved in the computational resolution of problems in various areas of knowledge, being able to construct coherent and consistent arguments, using knowledge of Computing to argue in different contexts based on facts and reliable information.	Abstraction, decomposition and modularization of problems: use of functions and blocks.
BNCC - Skills by area	(EM13CNT205) Use notions of probability and uncertainty to interpret predictions about experimental activities, natural phenomena and technological processes, recognizing the explanatory limits of science.	Interpretation of predictions about experiments and biological processes based on uncertainties in computational models.
	(EM13CNT301) Construct questions, develop hypotheses, predictions and estimates, employ measuring instruments and represent and interpret explanatory models, data and/or experimental results to construct, evaluate and justify conclusions when facing problem situations from a scientific perspective.	Formulation of hypotheses, predictions and conclusions based on experiments and models created in Scratch and Python.

	(EM13CNT302) Communicate, to varied audiences, in different contexts, results of analyses, research and/or experiments - interpreting graphs, tables, symbols, codes, classification systems and equations, preparing texts and using different media and digital information and communication technologies (TDIC) -, in order to promote debates around scientific and/or technological themes of sociocultural relevance.	Communication of results through graphs, tables, codes and digital presentations, promoting debates.
	(EM13MAT406) Use the basic concepts of a programming language to implement algorithms written in current and/or mathematical language.	Implementation of algorithms in Python, transforming mathematical descriptions into executable codes.
BNCC Computing - skills	(EM13CO09) Identify digital technologies, their presence and forms of use, in different activities in the world of work.	Identification of the use of digital technologies in school and professional activities.
	(EM13CO11) Create and explore simple computational models to simulate and make predictions, identifying their importance in scientific development.	Creation of computational models in Scratch and Python to simulate and predict biological phenomena.
	(EM13CO20) Create content, making it available in virtual environments for publication and sharing, evaluating the reliability and consequences of disseminating this information.	Publishing projects in digital environments and social networks, evaluating the impact and reliability of the information.