FROM TESTING TO FIELDWORK, AN ACTIVE, CREATIVE AND COLLABORATIVE JOURNEY!

Six approaches to transforming urban space into a learning territory

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THE FOUNDATIONS OF OUR MULTI-DIMENSIONAL EDUCATIONAL APPROACH

For several decades, research in educational sciences has converged towards an observation that transforms our vision of learning: our students understand better when they can act on their real environment rather than passively receiving knowledge.

This evolution is rooted in studies such as those of Piaget, who showed how intelligence is built through action on the environment. The city, with its complexity and multiple challenges, offers precisely these "cognitive resistances" necessary for the active construction of knowledge. When a student observes the flow of water along the slopes of his neighborhood or tests the effectiveness of different urban materials, he is not memorizing: he is understanding.

The urban space, populated by inhabitants with varied skills - artisans, traders, municipal technicians, associations - becomes a territory of expanded learning where each citizen can become a mediator of knowledge.

Neuroscience research also shows that "enriched" environments, characterized by their complexity and novelty, promote the creation of new neural connections. The urban environment, with its sensory and cognitive richness, naturally constitutes such a stimulating environment for the developing brain.

SteamCity draws on this convergence to offer concrete actions in the classroom that transform the city into a true learning territory.

Our approach aims to demonstrate that scientific rigor and creative approaches can reinforce each other, particularly when students engage in exploring their urban environment.

We therefore propose a three-step progression: first, explore to understand urban phenomena, then create scenarios to anticipate complex dynamics, and finally transform to take concrete action on the territory.

Six complementary educational approaches deploy this progression, each combining scientific method and creativity to develop a global understanding of urban space.






EXPLORE - LEARNING BY CONSTRUCTION AND EXPERIMENTATION

The principle: our students discover scientific concepts by manipulating, constructing and experimenting directly with the urban phenomena that surround them.

This initial approach anchors learning in concrete experience. Rather than abstractly explaining the principles of thermal insulation, we invite students to build models of urban habitats using different materials and test their effectiveness.

This method radically transforms students' relationship with scientific knowledge. They no longer endure concepts; they discover them for themselves through their own experiments. This active discovery generates a deep and lasting understanding, much more effective than passively memorizing formulas or definitions. Direct experimentation also develops perseverance and creativity. Faced with the inevitable failures of their first attempts, students learn to analyze the causes of malfunctions and imagine alternative solutions. This ability to adapt and innovate will be invaluable to them throughout their lives.

In an urban context, this approach takes on a particularly rich dimension. Each outing in the neighborhood becomes an opportunity for experimentation: measuring temperature differences depending on urban materials, considering the installation of green walls depending on the weather, mapping urban noise. The city becomes their life-size laboratory.

EXPLORE - DATA-DRIVEN LEARNING USING SENSORS

The principle: students use digital tools to collect, analyze and interpret real environmental data from their territory.

In the digital age, the ability to understand and use data is a fundamental skill. SteamCity transforms this necessity into an educational opportunity by equipping our students with sensors that allow them to measure their urban environment: air quality, noise level, temperature, humidity. This approach revolutionizes students' relationship with mathematics and science. Statistics are no longer abstract exercises but tools for understanding their living environment. When they discover that the temperature varies by 5°C between the tarmac courtyard and the school's green space, the data suddenly takes on meaning and raises new questions.

Collaborative data collection develops a cooperative spirit and scientific rigor. Each student contributes to a shared database that reveals phenomena invisible at the individual level. This concrete experience of collective intelligence prepares students for contemporary working methods. Beyond technical analysis, students discover the art of data storytelling: transforming numbers into captivating stories that reveal the reality of their territory. They learn to construct visual narratives that give meaning to data, to choose the most meaningful graphic representations, and to identify the stories their measurements tell.

Data analysis also develops critical thinking skills. Students learn to distinguish reliable information from inaccurate data, identify measurement biases, and cross-reference sources. These skills will be essential for navigating our information-saturated society.

SCRIPT - LEARNING THROUGH CITIZEN AND SCIENTIFIC INQUIRY

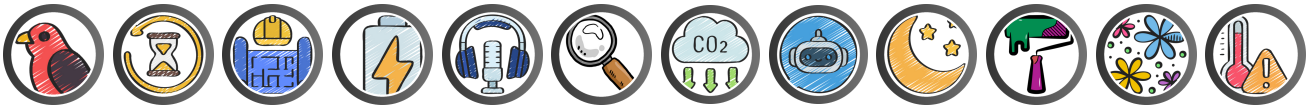
The principle: each student becomes a researcher who observes, questions and analyzes their urban environment using a rigorous scientific method.

Investigation is at the heart of the scientific approach. At SteamCity, we transform each student into a detective of their territory, equipped with methodical curiosity and appropriate investigative tools. This approach goes beyond simple observation to develop a genuine research approach.

The territorial survey has the advantage of starting with authentic questions that students actually ask themselves about their environment. Why are there more birds in certain streets? How does urban planning influence residents' habits? Where do temperature variations come from in different neighborhoods? These spontaneous questions become the starting point for rigorous investigations.

The research methodology draws on both experimental and human sciences. Students learn to observe systematically, formulate hypotheses, and design verification protocols. They also develop their interpersonal skills by conducting interviews with residents, shopkeepers, and municipal technicians.

This approach particularly develops intellectual autonomy. Unlike traditional school exercises that have predetermined answers, territorial investigations open up authentic discoveries. Students experience the joy of scientific discovery and develop confidence in their investigative abilities.



SCRIPTING - LEARNING THROUGH SIMULATION AND ROLE-PLAYING

The principle: students explore the complexity of urban issues by embodying different actors in the territory and simulating collective decision-making situations.

Urban issues mobilize multiple stakeholders with sometimes conflicting interests: elected officials, residents, retailers, associations, and developers. To understand this complexity without simplifying it, SteamCity uses simulation as a preferred tool for exploring territorial dynamics.

Role-playing radically transforms our understanding of urban issues. The student playing the mayor discovers budgetary and regulatory constraints, the student playing the elderly resident understands accessibility issues, and the future architect explores technical challenges. This multiplicity of perspectives develops empathy and the ability to understand logics different from one's own. Simulations allow students to safely experiment with different decisions and observe their consequences. Students can test various urban planning solutions and discover for themselves the difficulty of democratic arbitration. This exploration of possibilities develops their political judgment and prepares them for the exercise of citizenship.

Facilitating these simulations develops valuable skills: structured argumentation, negotiation, compromise, and public speaking. These transferable skills will be useful in all areas of their future lives, both personal and professional.

TRANSFORM - COLLABORATIVE LEARNING AND FIELD ACTIONS

The principle: students work together to design and carry out concrete projects to improve their urban environment.

This fifth approach transforms students from spectators into actors in their territory. Rather than being subjected to their environment, they actively contribute to its improvement. This actionable dimension differentiates SteamCity from purely theoretical approaches and generates extraordinary engagement.

Collective action reveals learning that is invisible in traditional school situations. Students discover the importance of planning, task allocation, communication, and managing the unexpected. They develop teamwork skills that will be valuable to them throughout their studies.

Collaboration with external partners significantly enriches projects. Neighborhood associations, municipal services, local artisans, and residents become allies who contribute their specialized skills. These interactions reveal the diversity of urban professions and can influence future career paths.

The territorial impact of the projects transforms the students' relationship with their living environment. When their shared garden flourishes, when their awareness campaign changes behaviors, when their development improves the quality of life in the neighborhood, they concretely discover their power to act as citizens. This experience develops a sense of personal and collective effectiveness essential to democratic engagement.

TRANSFORM - PROBLEM-BASED LEARNING

The principle: faced with complex urban challenges, students develop their creativity and their capacity for systemic analysis to propose innovative solutions.

Solving complex problems develops high-level cognitive skills. Students learn to break down a global problem into manageable components, identify cause-and-effect relationships, and anticipate the consequences of their actions. This training in systems thinking will be invaluable in a world marked by the increasing interdependence of phenomena.

The creative approach distinguishes SteamCity from purely analytical methods. Students learn to generate original ideas, combine seemingly disparate elements, and think outside the box. This structured creativity prepares students for the careers of the future that will require a capacity for constant innovation. This approach mobilizes algorithmic thinking: defining the steps necessary to move from a problematic situation to a solution, testing different sequences of actions, and optimizing the process. This training in systems and algorithmic thinking will be invaluable to them in a world marked by the growing interdependence of phenomena.

The prospective dimension of this approach develops a long-term vision. Students don't just solve today's problems; they anticipate tomorrow's challenges and design preventive solutions. This projection into the future prepares them to become the agents of change our society expects.