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Designing Cities for Coexistence: Wildlife and Urban Spaces



BIOS4YOU
AR 2.0

BIO-INSPIRED STEM TOPICS FOR ENGAGING YOUNG GENERATIONS
THANKS TO THE USE OF AUGMENTED REALITY

Project Number: 2023-1-DE03-KA220-SCH-000126516

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General information

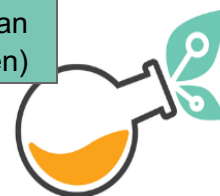
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Name of the exercise:	Eco-Visionary AR App
Description of the exercises:	"Eco-Visionary" AR app allows students to explore a real-world location, e.g. a city park, and then interact with virtual 3D models, like green infrastructure, wildlife habitats and info panels, directly onto that space. Each virtual object comes with an informational panel explaining its ecological purpose and how it contributes to a more biodiverse city. By physically walking through their augmented design, students gain a deeper, more intuitive understanding of how individual ecological elements can connect to create a cohesive and vibrant urban ecosystem.
Participants:	This activity can be carried out individually or in small groups, encouraging peer-to-peer feedback and collaborative reflection on how individual ecological elements can connect to create a cohesive and vibrant urban ecosystem.
Participants' age range:	14-18 Participants should have a basic understanding of environmental science concepts (e.g., water recycling), along with fundamental literacy, numeracy, and ICT skills. They need access to a computer or tablet with internet connectivity and a willingness to engage with digital tools such as AR apps and Delightx. No prior coding or AR development experience is required.
STEM subject and specific topic:	STEM Subject: Bio-Architecture: Urban Ecosystem Integration Related Areas: Environmental Science, Biology, Geography, Urban Planning, Design Technology, Art Topic: Designing Cities for Coexistence: Wildlife and Urban Spaces
Gamification process:	Rewards for Exploration: New AR models and design tools are unlocked as students explore different locations or successfully complete challenges, encouraging them to apply their knowledge in diverse settings.
Written or graphic description of Augmented info:	• Animated Elements & Information Overlay: Virtual objects include info prompts. • Floating 3D Choices: Students interact with sustainable or unsustainable design options by tapping AR icons or models within the environment. • Static AR Environments: Each location in the urban ecosystem (e.g., city park, street corner, rooftop garden)





	is represented as a themed AR diorama showing ecological elements in context. • Bonus Interactive Hotspots: Hidden facts and ecological insights are revealed through exploration and interaction. The App is designed for classroom tables or desks, allowing students to explore and design without needing to move physically through the space.
External (or extra) tools required	Students will need a mobile device or tablet with AR capabilities, along with an internet connection for the initial file loading. A printed AR marker sheet or a screen-displayed trigger image may also be used to activate the AR experience.
Links (video, images, text online and so on).	-

Pedagogical specifications

Here we will collect information on how to use the exercise in the learning session and the results and benefits of using it, from a pedagogical perspective.

How can this augmented information be used to address a STEAM topic in a more interesting way for students?

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This AR activity makes urban biodiversity and sustainable city design engaging by turning abstract STEM topics into hands-on, interactive experiences. Students explore real-world spaces overlaid with virtual 3D ecological elements, combining **Science, Technology, Engineering, Art, and Math (STEAM)** in a playful and intuitive way. Using tablets or mobile devices, students interact with **3D models** like rain gardens and green roofs, and access **information overlays** explaining ecological roles. **Interactive hotspots** provide additional information enriching understanding and engagement.

Which pedagogical objectives are addressed through this scenario?

Understand Urban Ecosystems: Learn how ecological elements connect to create sustainable urban environments.

Develop Critical Thinking: Make decisions about sustainable vs. unsustainable options and reflect on consequences.

Encourage Collaboration and Peer Learning: Work in small groups, share ideas, and provide feedback.

Foster Emotional Engagement and Environmental Awareness: Use immersive AR experiences to motivate learning, spark curiosity, and promote responsibility for the environment.

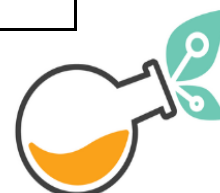
The exercise combines knowledge acquisition and mindset development. Students not only learn specific ecological and urban planning concepts but also develop curiosity, analytical thinking, and collaborative skills that are harder to cultivate through traditional teaching methods.

Which results are expected to be reached with its use?

Students will understand how urban ecological elements interact to create sustainable environments, gaining knowledge that is hard to grasp through traditional teaching. They will develop a STEM-oriented mindset through experimentation, critical thinking, and problem-solving in the AR environment. Working individually or in groups promotes collaboration, reflection, and peer learning. The immersive and gamified experience also increases engagement, motivation, and environmental awareness.

Which benefits are expected to be reached with its use?

Students will gain a clearer understanding of urban ecosystems and sustainability, applying STEM concepts in an interactive way. AR's visual and sensory features make learning more engaging and memorable, while its safe, hands-on environment encourages experimentation. Gamified and collaborative elements add enjoyment, reduce stress, and promote teamwork, helping students connect positively with STEM learning.





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Technical specifications

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AR INFORMATION	
Technology	Augmented Reality
If it's needed a marker, description of the marker	QR Code:  Share Code: LBV-UNA Share link: https://edu.delightex.com/LBV-UNA
Hardware and software needed:	Smartphone, tablet, laptop, PC
Type of Augmented data	3D models
Written description of the AR data	Students can explore 3D models such as rain gardens and green roofs, each accompanied by informational panels explaining their ecological purpose and benefits. Animated elements like squirrels, butterflies, and parrots bring the virtual environment to life, illustrating biodiversity in urban ecosystems.
If Image	-
If Text	Rain Garden Board: "A Rain Garden collects rainwater, filters pollutants, and creates a



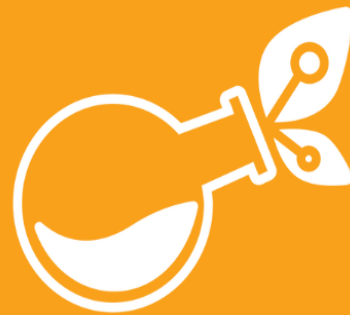


	small wetland habitat for amphibians and insects, benefiting the local ecosystem." Green Roof Board: "This is a Green Roof! It helps keep buildings cool, reduces stormwater runoff, and provides vital habitat for insects and birds in the city."
If video	-
If audio	-
If 3D model	The formats needed are:.obj,. stl.





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