

LOCAL LENS ON SCIENCE: HOW CONTEXTUALIZATION AND LOCALIZATION CAN TRANSFORM EDUCATION

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Science unlocks the secrets of our world. Yet, it can often feel like students are adrift in a sea of complex ideas with no connection to their everyday lives. That is where contextualization and localization jump in to build a bridge. These approaches connect abstract scientific theories to the real-world experiences students can relate to, making science come alive.

“Why do we have to learn this?”

This is one of the most important questions to answer in science teaching [1]. And not being able to answer this question is rooted to a very important problem – a potential lack of connection between the scientific content and daily life events. Contextualization and localization are some of the ways to overcome this failure. Not only they help learners remember, understand, and apply information, but also, they help learners build new skills and knowledge regardless of their starting point.

Contextualization refers to the educational process of relating the curriculum to a particular setting, situation, or area of application to make the competencies relevant, meaningful, and useful to learners. It takes science off the abstract shelf and places it right in your own backyard. Familiar examples from the environment can illuminate broader scientific principles. For example, students can be asked to compare the layers of a hard-boiled egg with the layers of the Earth and tell the class about the limitations of the model. In this way, students will start with something they already know. A study by Saro et al.

(2023) highlights the effectiveness of contextualized science materials in improving student learning performance [2].

On the other hand, Localization, as a degree of contextualization, is relating the content of the curriculum and the processes of teaching and learning to the local environment. It is the process of relating content specified in the curriculum to local information and materials from the learner's community [3]. Both contextualization and localization share a core principle: making science education adaptable and student-centered. This means lessons become flexible, relevant, and engaging by tailoring them to students' backgrounds, understanding, and specific learning needs. It's all about fostering creativity and meaning for each student.

The use of contextualization and localization can benefit science education in many ways. First, it can promote increased engagement in students. Research suggests that students who find Science to be relevant to their out-of-school lives show increased motivation and interest in learning Science [4]. Next, Real-world examples can make abstract concepts more concrete and easier to grasp [2]. And also, focusing on a local context respects different learning styles and creates welcoming learning spaces for everyone.

However, despite the clear advantages of contextualization and localization, there are still some roadblocks to consider along their path. These includes the need to invest in teacher trainings. Teachers need to be empowered with the understanding and tools to make learning relevant to students' backgrounds and cultures. Also, teaching universal scientific concepts and addressing the specific needs of a particular context needs to be carefully balanced.

In conclusion, contextualization and localization are powerful tools for making science education more relevant, engaging, and culturally responsive. By connecting

science concepts to students' lives and backgrounds, we can turn them into curious thinkers who can tackle problems in their communities and around the world.

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