# THE IMPACT OF OUTDOOR LEARNING ON STUDENT ENGAGEMENT IN SCIENCE.

**PLAY**
is the highest form of
**research**
Albert Einstein




***Do outdoor learning environments enhance student engagement and foster independent learning in primary science education?***

## PROBLEM STATEMENT

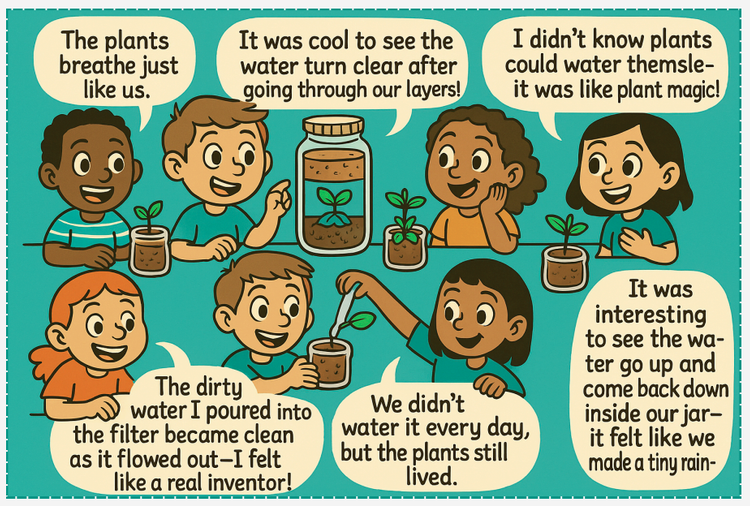
Limiting science to traditional classroom settings reduces student engagement, hinders independence and restricts deeper understanding.

## PURPOSE OF STUDY

Explore if outdoor science boosts engagement, autonomy, and understanding.

## INTERVENTION FRAMEWORK

Inquiry-based science tasks in outdoor settings designed to boost engagement, independence, and collaboration.




## PEDAGOGICAL APPROACH: FACILITATING INDEPENDENCE AND OWNERSHIP

In this action research, these theories are applied through outdoor science tasks that:

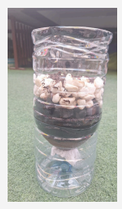
- Encourage student ownership of learning
- Promote independence and peer engagement in real-world contexts
- The teacher's role shifts from direct instruction to facilitation, enabling students to direct their learning and gain a sense of achievement.

## THEORETICAL FRAMEWORK

- Student engagement is strengthened through autonomy-supportive teaching practices that prioritize student choice and motivation.
- According to Self-Determination Theory (Deci & Ryan, 2000), students thrive when their needs for autonomy, competence, and relatedness are fulfilled.
- Burns et al. (2020) found that primary students showed greater cognitive, emotional, and behavioral engagement when teachers provided Choice in tasks; Opportunities for collaboration; Constructive, meaningful feedback.
- These findings align with constructivist theories (Piaget, 1952; Vygotsky, 1978), which emphasize:Learning through hands-on exploration and Social interaction and peer learning

## INTERVENTION

**Key Stage 1** - *Soil Erosion Study*
**Lower Key Stage 2** - *Water Filtration System*
**Upper Key Stage 2** - *Terrarium*
Three-year groups across KS1. LKS2 and UKS2 participated, with approximately 60 students involved in each group.



## TRACKING LEARNING THROUGH THE INQUIRY CYCLE


**Diagnostic Quiz (Before exploring):** An initial quiz to gauge students' baseline knowledge.

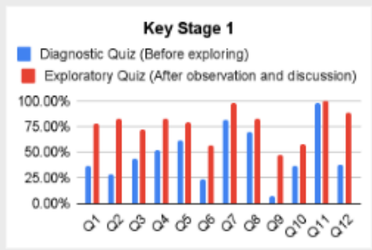
**Explanatory Quiz (after Collaborative Peer Observation & Discussion)** Assessed students' understanding developed through independent exploration and peer dialogue.

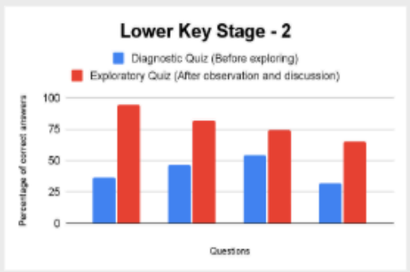
**Research Quiz (After independent research):** A concluding quiz assessed overall knowledge and progress from the learning activities.

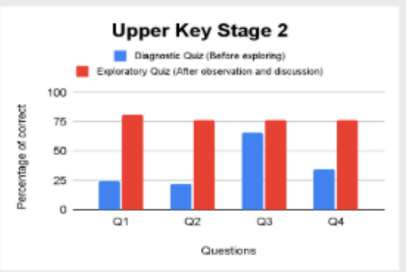
**Active Learning Showcase:** Students shared their learning through discussions, poster creation, and a quiz to assess understanding from exploration and peer interaction.

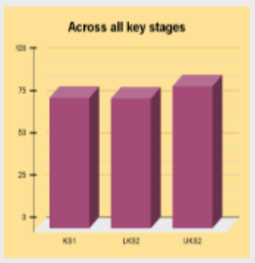
**Independent Research Task :** Students conducted individual research to deepen understanding.

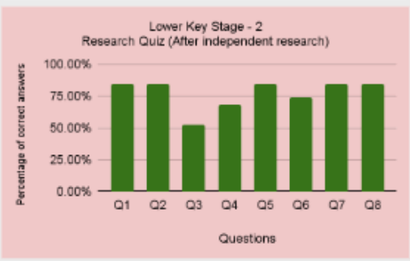
## DATA ANALYSIS

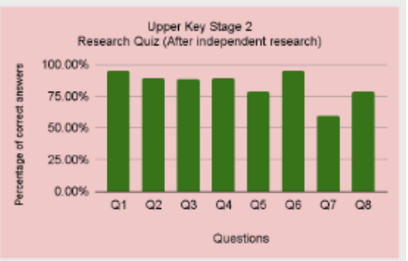



## CONCLUSION

- Outdoor learning improved scientific understanding across all key stages, aligning with Dillon et al. (2006), who found real-world experiences enhance engagement and comprehension.
- Inquiry-based outdoor tasks boosted independence and curiosity, echoing Harlen (2014), who emphasised the link between inquiry and deeper learning.
- Upper KS2 pupils showed the most progress, supporting Beames et al. (2012), who noted older students benefit more from independent outdoor learning.

## LIMITATIONS

- Activities focused on a narrow range of science topics, excluding much of chemistry and physics.
- Limited variety of outdoor tasks may not fully represent the potential of outdoor learning across all disciplines.

## IMPLICATIONS FOR TEACHING AND CURRICULUM DESIGN

- Use outdoor environments to make science learning real, relevant, and hands-on.
- Shift the teacher's role to a facilitator, guiding student-led exploration and inquiry.
- Balance classroom theory with practical experiences to boost independence and curiosity

***"Children are born scientists. Give them the world—and they will explore it."***


***References:***

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**Alsha Sheikh**
**STEAM Teacher**
**Victory Heights Primary School, Dubai, UAE**