



WHY GBL?

Biology students in HK are generally **not interested in plant science** due to unfamiliarity to plants. Their **performance** in plant science is also **not satisfactory**. Traditional direct teaching further disengages students in studying plant science.

Students in HK lack opportunity to get in touch with **nature** either indoor or outdoor throughout their entire school life. Being confined in the urban area, students seem disconnected from nature. Not just plant science, environmental attitude has to be enhanced.

In HK, little attention has been casted on **Environmental Education** (EE). Besides, little local gardening program or resource is available to teachers in HK. An effective GBL tool may help to promote EE as well as plant science



RESEARCH QUESTIONS:

- How will GBL impact on **student's academic achievement** in terms of plant literacy?
- 2. How will GBL impact on student's attitudes in learning plants?
- How will GBL impact on student's environmental attitudes?

THE EFFECT OF GARDEN-BASED LEARNING (GBL) ON PLANT SCIENCE AND ENVIRONMENTAL EDUCATION

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TREATMENTS



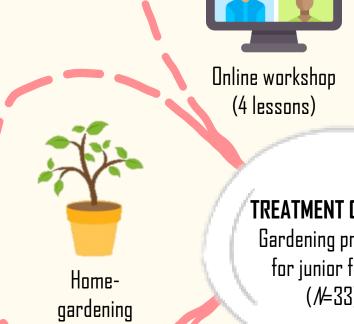
direct teaching (6 lessons)

CONTROL GROUP : Plant science unit in Grade 7

Observing plant samples

















Pre- and Post-test

Pre- and Post-survey

Student's interview

& reflective journals

DATA COLLECTION Research question 1: Research question 2: **Academic** achievement Attitude to learning plant science (Plant literacy)





Student's interview



Student's reflective journals & Teacher field notes



Research question 3:

Environmental Attitude



Student's interview



Student's reflective journals & Teacher field notes

RESULTS



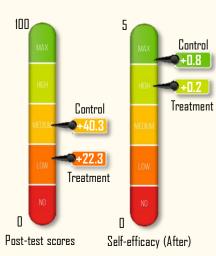








ACADEMIC ACHIEVEMENT (PLANT LITERACY)



<mark>iprovement</mark> in test scores and self-efficacy in the treatmen roup was **NOT as high as** that of the control group

Online workshop hindered learning as students found difficulties in staying focus Trimming the content may make learning easier to manage

Benefits of GBL to academic achievement: Cater to wider spectrum of learning styles and intelligence Emotionally engage learners

Increase motivation Enhance recalling of facts and mastery of knowledge Especially helpful to lower achievers

When I see any problems on my plant, I start thinking about what I can do in a biological way rather than a ndom method from the 5-minute craft.

ATTITUDE IN LEARNING PLANT SCIENCE

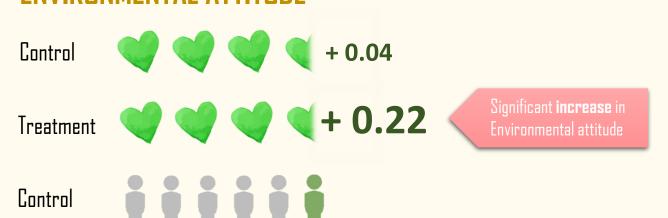


component Knowledge Gardening experience

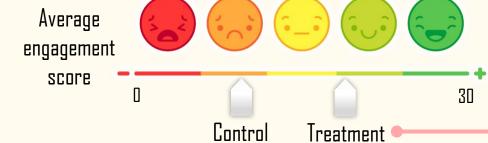
Benefits of GBL to attitude in learning plant science:

- Increase interest and engagement
- Gain achievement in planting Develop a greater sense of ownership
- oserving my plant growth day by day nakes me feel more interested now. It was also fun to walk around in the garden and see more kinds of plants.

ENVIRONMENTAL ATTITUDE







Educate about, in and for the environment Develop deeper feeling and stronger connection to nature

I felt concerned when I knew that how we plant creates a different amount of carbon footprints and they harm the environment. I began to worry for

With planting, I became closer to plants and nature. At least they don't seem to be "none of my

keep plants alive, and I admire

their vitality.

CONCLUSION

- More modifications of the gardening program will be needed if it is intended to improve academic performance. Yet, it was observed that GBL promoted the learning of plant science in different ways.
- The gardening experience was a crucial contributing factor to engage and motivate students in learning plant science as they gained achievement, interest, and a sense of responsibility during gardening.
- GBL was proved to be an effective tool to cause a positive impact on the Environmental attitude and behavioural changes. Hands-on and real-life experience in gardening formed a deeper feeling and stronger connection with the environment.

