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G1-OP-11**An illustration of using investigative learning approach to enrich teaching and learning**

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ABSTRACT:

Renzulli advocated the use of investigative learning approach to enrich the learning and teaching experience to generate enjoyment, engagement and enthusiasm (3E) in students' learning, and proposed that the investigative learning model has four components: (1) personalization of interest; (2) use of authentic investigative methodology; (3) producing a product, performance, or presentation that is designed to have an impact on a targeted audience other than (or at least in addition to) the teacher; (4) does not have a single, predetermined correct answer or single way of approaching the investigation (Renzulli, 2015). The present study aims to explore how these components of investigative learning can be integrated into a Grade 5 General Studies lesson for students to experience 3E in learning. The school taking part in the study is one of the Project Schools of the **Jockey Club "Giftedness Into Flourishing Talents" Project** (Project GIFT) which is funded by The Hong Kong Jockey Club Charities Trust to promote school-based talent development and gifted education in Hong Kong.

An investigative learning approach was adopted as the whole-class gifted enrichment in learning the topic "Sound" in the General Studies curriculum, which was a course aimed to let students understand the scientific concept of "Sound" and investigate the effects of soundproofing materials. Firstly, students were introduced to the real-life situation confronted by road repairing workers who worked in a very noisy environment. Through class discussion, students realized the need to protect the workers from being damaged by the noise and came up with ideas and interests (Component 1 of investigative learning: personalization of interest) to make a soundproof earmuff for them (Component 3). Then, students were guided by teachers to discuss two important questions: What materials are useful for soundproofing? And how to design a test to investigate or evaluate the effectiveness of various materials in terms of soundproofing? (Component 2) Finally, students were grouped heterogeneously and required to design and produce a soundproof earmuff in their own way (Component 4). Teacher provided guidance to the students and made observations throughout the whole process.

Teachers' observation showed that: (1) the reactions of students, particularly the highly-able/gifted, demonstrated their enjoyment, engagement, and enthusiasm in learning with the investigative learning approach. Though students were sometimes stuck in problems and struggled in reaching consensus on the solutions, they experienced enjoyable learning most of the time and it was easy to see smiling faces during the lesson. (2) They were highly motivated throughout the whole process. For example, they learnt to use the decibel meter very quickly. Under the guidance of teacher, they were eager to discuss and able to come up with a scientific method to test the soundproofing function of the materials prepared by themselves, i.e., conducting a test to collect three sets of data to calculate the average score with the help of their groupmates. (3) Collaborative learning was a useful strategy to engage all students in a heterogeneous group into the learning tasks by allowing them to take different responsibilities based on their characteristics and strengths. Some students who had short attention span in regular lessons committed themselves to the group work to a large extent. Some of them even manifested strong leadership in the group and were active in trying out various ideas. Students who used to be passive or with lower ability were encouraged by their group members to engage in the group work.

When students designed and made the earmuff, they were able to assign roles and organize their work independently. They cooperated well and finished the tasks effectively. (4) Students' critical thinking and creativity were observed throughout the learning process. Students were able to analyze the properties of soundproofing materials and provided logical reasons to support their analyses that were quite close to the scientific explanation. They could also point out the necessity of conducting the decibel test scientifically and proposed reasonable suggestions on methods of testing. Creativity was displayed in various designs of earmuff by the students, which were made of different materials in different groups and satisfied all the criteria of the task.

To conclude, investigative learning not only enables students of different abilities and characters to experience enjoyment, engagement, and enthusiasm in the learning process; it also provides chances for students to exercise their critical thinking skills and unlock their creativity. It is suggested that teachers could make good use of investigative learning to increase students' learning motivation and learning performance.

KEYWORDS:

Enrichment; Hong Kong; investigative learning; Jockey Club "Giftedness Into Flourishing Talents" Project; school-based whole-class gifted education



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