

# Case-based Learning in Plant Tissue Culture

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## Overview:

Plant tissue culture is a collection of techniques used to maintain or grow plant cells, tissues or organs under sterile conditions on a nutrient culture medium of known composition. Plant tissue culture is widely used to produce clones of a plant in a method known as micropropagation. Different techniques in plant tissue culture may offer certain advantages over traditional methods of propagation [1].

For learning in plant tissue culture techniques, students have to do some experiment in explant culture. The physiology and anatomy changes of explant during culture will make clear understanding in related theory. So case-based learning could provide students with a relevant opportunity to see theory in practice, besides it could develop analytic, communicative and collaborative skills along with content knowledge [2].

## Aims and objectives:

- To develop students creativity
- To enhance student's learning through experiment

## Activity:

- Individual student has to create a topic of plant tissue culture by selecting the interesting plant and culture method.
- Before doing the experiment, students have to summarize their experiment design and make a group discussion with other students and teacher.
- During the class, each week, students have to report their ongoing experimental results.
- At the end of the class, students have to present their result. Teacher will give suggestion and reflection individually.

## Outcome:

- When students design the experiment by themselves, it could improve their creativity and critical thinking skills, especially the experimental design and planning.
- Students could understand and apply the plant tissue culture theory from previous class with their experiment correctly.
- Students understood how to prepare and present their experimental results.

## Impact:

- Since students did experiment with plant they were interested in, they would be more focus in learning than doing the prepared experiment by teacher.
- Weekly group discussion could improve understanding of students.
- Reflection after the class from teacher could point out the outstanding and also the lack of knowledge of each student. It would enhance the skills of each student.

## Future development of project:

- Due to the limited study period of only 12 weeks, students should create experimental topic that could be fit in study time. Pre-course study may solve this problem, students should create topic before the beginning of the class.

## References:

- [1] Plant tissue culture. from: [https://en.wikipedia.org/wiki/Plant\\_tissue\\_culture](https://en.wikipedia.org/wiki/Plant_tissue_culture). cited on May 3<sup>rd</sup>, 2019.
- [2] Why Use Case-Based Learning? from: <https://www.queensu.ca/ctl/teaching-support/instructional-strategies/case-based-learning>. cited on May 3<sup>rd</sup>, 2019.