Transpiration

To find out how the leaf surface area affects the transpiration rate of seedlings

An investigative practical work
Assessment areas:
■ Area A: Practical skills
  □ Investigation
  □ With full instruction
■ Area B: Report writing

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Growing period: 3-4 weeks to obtain 5 leaves per seedling
**Preparation – 4 weeks before**

- **Best condition:**
  - Grow in wet soil / water
  - near window side with 3 hours sunlight each day
  - best growing rate is in warm weather (e.g. May, September)
  - transparent plastic cylinder to provide support
Growing of seedlings
Preparation – 4 weeks before
Proposed Schedule

Full instruction given – assessing Area A

veins stained red
Cut the roots under water
Smear the leaves with vaseline
Wait!
The assistance of the laboratory technician in preparing and helping students to perform the practical is necessary.

Training for sectioning skill is needed.

Time consuming for finding the unstained section.

Performing practical work is essential for students – both in learning practical skills and promoting interest.

Collaborative learning among students.
Difficulties encountered

- Teaching & Assessing at the same time
- Sharing of work among group members should be by independent variables (i.e. no. of leaves) not by different steps (smearing vaseline, cutting sections etc.)
- Insufficient provision of apparatus affects the division of work among group members
- Acquisition of skills prior to performing the practical – arrange the steps, sectioning technique, use of microscope, finding the unstained section.
- Dominant student Vs student unwilling to participate
- Difficulty in assessing performance of individual student
Solving the problems

- Assessing half of the class and the technician help in taking care the other half
- Training the skills first
- Time for teacher to assess individual practical skill is short, assessing by questioning, observing the products (e.g. the cut sections), asking the student to repeat a particular step
- Assessing the skills other than those suggested in the checklist
- Assessing the whole group, fine tune the mark for individual (if necessary)
- Showing students’ slides to the whole class to motivate other students
- Setting of benches to ensure that the students can be seen without obstruction
- Increasing the amount of practical work