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Research Skill Development (RSD)-Integrated Online Report for Critical Thinking Skills
RESEARCH SKILL DEVELOPMENT (RSD)-INTEGRATED ONLINE REPORT FOR CRITICAL THINKING SKILLS

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INTRODUCTION

- Critical thinking of students
- RSD Framework
  The six facets:
  1. Embark & Clarify,
  2. Find & Generate,
  3. Organise & Manage,
  4. Analyse & Synthesise,
  5. Communicate & Apply,
  6. Evaluate & Reflect
- The association with ICT
RESEARCH QUESTIONS

- How do the students in a developing nation perceive the use of a Research Skill Development (RSD)-integrated online report in developing their critical thinking skills in a Plant Physiology Course?
- How do the tutors perceive the use of an RSD-integrated online report in developing students’ critical thinking skills?
METHODOLOGY

- Indonesian context
- Participants: 39 second year undergraduate students studying Plant Physiology course and 2 tutors of the lab activity
- Initiating the RSD-integrated online report
- Methods
  - Students (attitudes)
    - Questionnaires: “-3” to “+3” Likert scale
    - Open field questions: Thematic coding
  - Tutors (performances and effectiveness)
    - Interview: Thematic coding
THE ONLINE REPORT AND THE RUBRIC

A. LANDASAN TEORI


Perkecambahan adalah proses ketika bagian dari embrio, biasanya radikula, memasuki kulit biji dan mungkin berproses dengan air dan O2 dan pada temperatur yang stabil. Dornan didefinisikan sebagai keadaan dari biji dimana tidak dan mengjinjkkan permintaan akan perkecambahan sering agak berbeda dari yang keadaan yang menguntungkan untuk tumbuh atau bertahan hidup dari tingkah kehidupan autotropik dari tanaman (Lambers, 2008).

Inhibitor adalah zat yang menghambat pertumbuhan pada tanaman, sering didapat pada proses perkecambahan, pertumbuhan pucuk atau dalam dornansi. Di dalam tanaman, inhibitor mungkin disebut organ tubuh tanaman tergantung dari jenis

Screen capture from the Plant Physiology online report (Wordpress)
RESULTS
Student Open-field Answers

1. What do you think critical thinking in Biology involves?
   - Communicating and asking questions, doing a lab activity, applying the theory in a concrete situation (25/39)

2. Up to now, what has helped you to develop your critical thinking skills?
   - Communicating and asking questions, doing a lab activity, applying the theory in a concrete situation (20/39)

3. Up to now, what has been a barrier to developing your critical thinking skills?
   - Lack of facilities, technology, peer learning, determination to innovate and time management (17/39)
RESULTS

- **Likert-scale questions**
  25.64% agreement given by the students about the initiative use for developing their skills in organising and managing

- **Open field questions**
  Organise & Manage (lack of facilities, technology, peer learning, determination to innovate and time management)

- **Likert-scale questions**
  >40% agreement given by the students about the initiative use for developing their skills in communicating and applying

- **Open field questions**
  Communicate & Apply (communicating and asking questions, doing a lab activity, applying the theory in a concrete situation)

- Possibility of impression to change 9
RESULTS

Interview with the two tutors
- The efficacy and efficiency of the online lab report
- The effectiveness of the RSD rubric
- Time management issues
- Training session for the implementation
- Guidebooks for the implementation
DISCUSSION

- The efficacy and efficiency of the online lab report
  - Students’ higher level of cognitive skill, motivation and self confidence

- The effectiveness of the RSD rubric
  - Students’ involvement in self-reflection, decision-making and knowledge-making practice

- Time management issues
  - The failure to address learning needs might lead to disappointing learning experience

- Training session for the implementation
  - The need of clear articulation as a significant learning support

- Guidebooks for the implementation
  - The need of clear articulation as a significant learning support
DISCUSSION

• **Tutors**
  - Time management issues
  - Guidebooks and trainings are required

• **Students**
  - Lack of facilities, technology, peer learning, determination to innovate and time management
  - The non-existence of student perception about clear articulation to structure the initiative implementation
CONCLUSION

• The students and tutors actively approve of the use of the RSD-integrated online reports as having contributed to the students’ critical thinking skills in spite of issues that emerged during the initiative implementation.

• Certain organisational and management issues (lack of facilities, technology, peer learning, determination to innovate and time management) occurred during the implementation that resulted in the lack quality of some online reports.
SIGNIFICANCE

- The RSD-integrated online report may encourage students to think more critically.
- The RSD-integrated online report may promote the way teachers employ technology in a learning process.
REFERENCES


