Advancing Science and Engineering through Laboratory Learning (ASELL) for Schools

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Organisers

IVANHOE GRAMMAR SCHOOL
courageous and kind

Andrew Hoogenraad

ASELL SCHOOLS
Advancing Science & Engineering through Laboratory Learning

DEAKIN UNIVERSITY AUSTRALIA Worldly

Kieran Lim

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Ian Bentley

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ASELL for Schools

Focus on

- ❑Experiments/practical work
- ❑Investigations
- ❑ Science Inquiry Skills

Aim

- ❑… engaging students with stimulating investigations inside and outside the classroom

Look at

- ❑Ways and tools for engaging
- ❑Years 7 to 10

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What we will do today

In your booklet

ASELL for Schools Hosted by Ivanhoe Grammar School *Thursday 1 March 2018*		
8:45–9:00	**Arrival/Registration** The Founders' Centre	
9:00–9:15	**Welcome and Introduction** with Peta White • Introductions (of ASELL for School team and Students and Teachers) • Outline ASELL for Schools • Outcomes for the day • How to use the booklet The Founders' Centre	
9:15–9:25	Introduction to Laboratory Learning Activity	
9.25 –10:25	***Laboratory Learning Activity 1 – "Honeycomb Structures"*** *Kieran Lim* and *John Long* Rooms R205 and R206	
10:25–10:50	**Morning Tea**	
10.50–11.10	**Teachers: Inquiry Skills in Science** with Peta White • How can we incorporate more science inquiry and inquiry skills into science? • Introduction to the inquiry scaffold tool • Discussion and feedback on Laboratory Learning Activity Room R205	**Students:** Discussion and feedback on Laboratory Learning Activity Room R206
11.10–11.20		**Students:** Introduction to Laboratory Learning Activity
11:20 –12:20		***Laboratory Learning Activity 2 – Materials Testing: Plastics*** *Kieran Lim* and *John Long* Room R206
12:20 –12:30	**Teachers:** Introduction to Laboratory Learning Activity	
12:30–1:15	**Lunch**	
1.15– 1:35	***Laboratory Learning Activity 2 – Materials Testing: Plastics*** *Kieran Lim* and *John Long* Room R205	**Students:** Discussion and feedback on Laboratory Learning Activity Room R206
1:35-2:05		**Students:** Overall debrief and Evaluation for the day
2:05-2:15		**Students:** 2:05 dismissal for school sport at 2:10
2:15 – 2:35	**Teachers:** Discussion and feedback on Laboratory Learning Activity	
2:35 – 3:05	**Teachers:** Overall debrief and Evaluation for the day	

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What you will do in the Lab Activities

Laboratory Learning Activities (LLAs)

- ❑ Often designed to be a double period or more

Workshop Activities

- ❑ Often shortened to an hour or less
- ❑ Not assessed
- ❑ Need to get "taste" of activity
- ❑ Judge:
  - ➢ Is it **useful**?
  - ➢ Which parts are **good**?
  - ➢ Which parts **need improvement**?

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How we will improve practicals

1. Do the practical (allocated groups)

2. Discuss the practical
   - ❑ Good?
   - ❑ Needs improvement?
   - ❑ How to systematically improve the practical?

3. Feedback and comments (individual)
   - ❑ Need your permission to share feedback and comments

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Key issues/questions

Q1: **Data** interpretation skills
Q2: Developing laboratory **skills**
Q3: **Interest**
Q4: Clear **assessment**
Q5: Clear **learning objectives**
Q6: Increased **understanding** of science
Q7: Sufficient/appropriate **background**
Q8: Effective **supervision and guidance**
Q9: **Procedure** clearly explained
Q10: **Relevance** to science studies
Q11: Developing **teamwork**
Q12: **Responsibility** for own learning

Correlation:
Overall
learning
Experience?

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Key issues/questions

Statement Investigations are a ***good learning experience***, if	Yes TICK 4 ONLY	No TICK 4 ONLY
1. they help me to develop my data interpretation skills.		
2. they help me to develop my laboratory skills.	✓	
3. they are interesting.		✓
4. it is clear to me how the investigations are being assessed (graded).		
5. it is clear to me what I am expected to learn from completing the investigations.		✓
6. completing the investigations increases my understanding of science.		
7. I have sufficient background information, at the right level, before I do investigations.	✓	
8. my teacher offers effective supervision and guidance during the investigations.		
9. the procedures for the investigations are clearly explained in the notes or by the teacher.		✓
10. I can see the relevance of investigations to my science studies.		✓
11. I am working in a team.		
12. they provide me with the opportunity to take responsibility for my own learning.	✓	

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