

# One-to-one Computing: Considerations and issues for the Higher Education Sector

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# Outline

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- ▶ The Context
- ▶ Definition: one-to-one computing
- ▶ Literature: The benefits to student learning
- ▶ The challenges of one-to-one
- ▶ The Study
  - ▶ Methodology
  - ▶ Results and discussion
- ▶ Conclusion



## *Introduction*

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- ▶ The Australian government has recently invested \$2.4 billion in the Digital Education Revolution (DER)
- ▶ Many of the school leavers soon to enter the Higher Education sector will be accustomed to a one-to-one student laptop learning environment.



## *One-to-one computing defined*

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► The one-to-one computing model is an

“Instructional technology application in which all users have their own mobile multimedia digital devices that possess the capability of connecting to the Internet, such as a laptop, as opposed to the one to many computing model, in which one desktop computer is stationed in a lab and shared by many students.”

(Di Gangi et al., 2007, p. 367)



# Aims of this study

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- ▶ What determines institutional readiness for a successful one-to-one computing initiative?
- ▶ How are teachers and students using the technology in their classrooms (both within Australia and internationally)?
- ▶ What is considered recommended practice, and does this translate to the Australian Higher Education Sector?
- ▶ What challenges have been identified in the previous studies that may be relevant to the Australian Higher Education sector?
- ▶ What pedagogical issues have been raised?
- ▶ What are the classroom management issues, if any? and
- ▶ What are the benefits of the one-to-one environment for both teachers and students



## *Literature: Benefits of one-to-one*

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- ▶ Suhr, Hernandez, Grimes and Warshauer (2010) reported an increase in achievement in the areas of literacy and analysis in writing strategies, of students in the one-to-one environment over the non-laptop students.
- ▶ Bebell & Kay (2010) also reported unprecedented improvement in Maths, English and Science results.



## *Literature: Challenges of one-to-one*

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### ▶ Institutional Readiness

- ▶ addresses factors such as reliable technical connectivity and support, along with other considerations such as the transformation of pedagogy to include more project and inquiry-based learning and effective classroom management strategies.

### ▶ Classroom Management in the One-to-one Classroom

### ▶ Pedagogical issues?



## *Our approach*

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- ▶ Model one-to-one pedagogy
- ▶ Prepare pre-service teachers to deal with the challenges
- ▶ Greater engagement
- ▶ Greater collaboration
- ▶ Broadened personal learning networks





# Methodology

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- ▶ **Methodology**

- ▶ Action research approach

- ▶ **Aims**

- ▶ Analysis of the impact of one-to-one on three key outcomes:
    1. pedagogical issues
    2. the challenges
    3. the benefits

- ▶ **Data collection**

- 1. Student questionnaire before semester
  2. Student evaluation via questionnaires post semester
  3. Lecturer observation



# The study

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## ▶ Year and Degree

- ▶ 3<sup>rd</sup> year, Bachelor of Teaching/Bachelor of Arts

## ▶ Participants

- ▶ 51 undergraduate students and 4 postgraduate students
- ▶ 1 lecturer

## ▶ Unit and duration

- ▶ ICT Curriculum and Teaching
- ▶ On campus mode
- ▶ 12 weeks
- ▶ 3 hours per week (1hr lecture, 2hr tutorial)
- ▶ During the previous semester students have day-a-week schools visits and a three week observation and teaching block

## ▶ Technology

- ▶ Student supplied (BYOD)

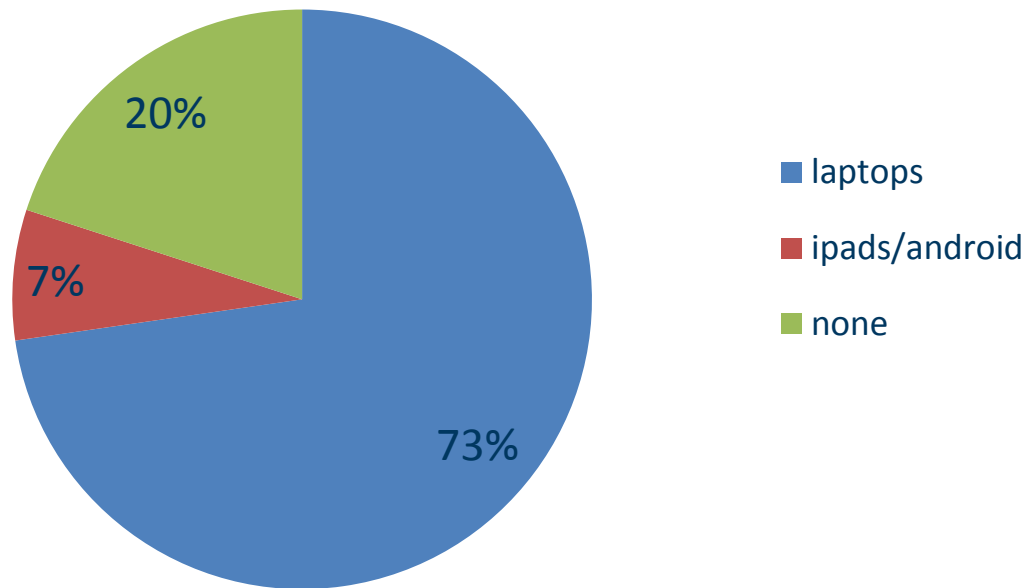


# Results

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- ▶ Student survey data, collected at the beginning of semester:

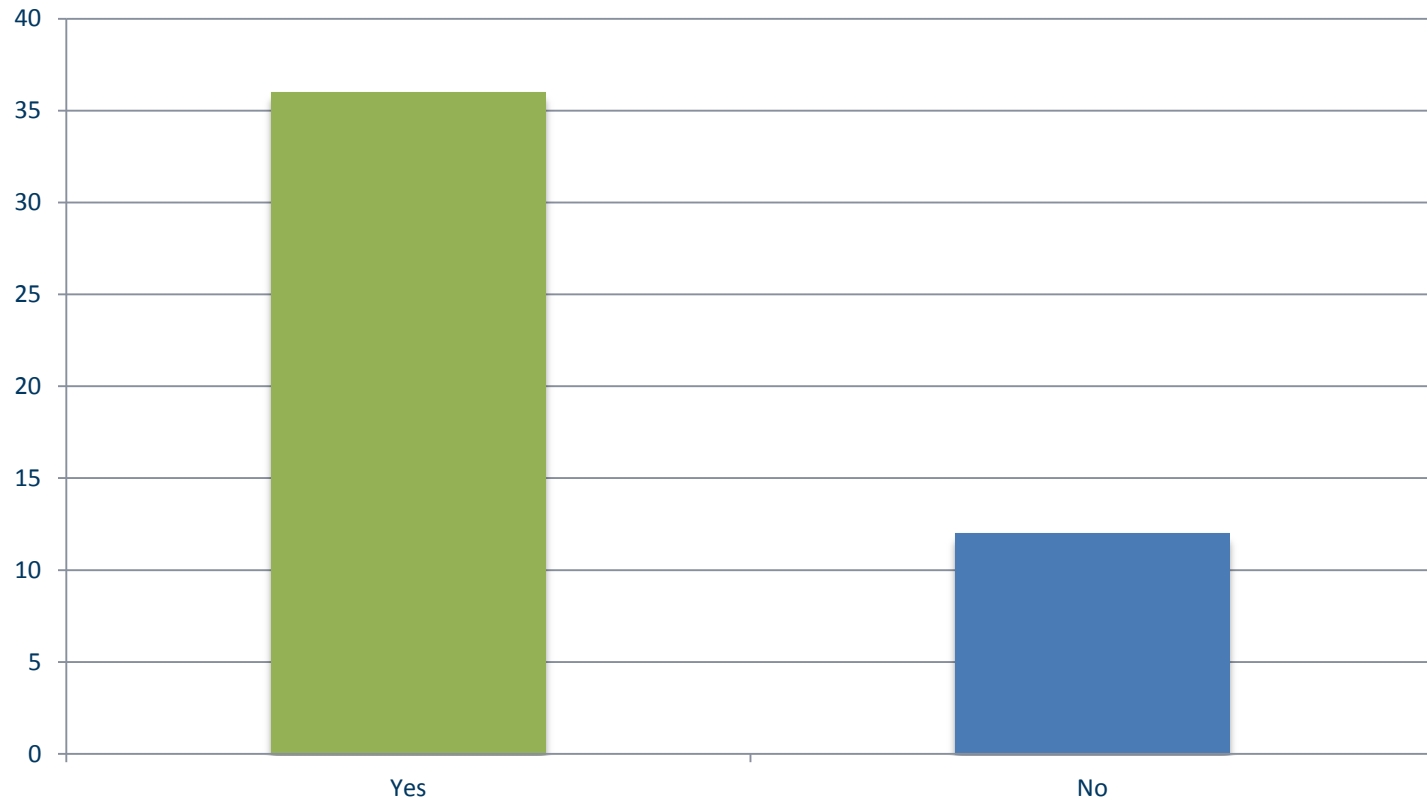
## Technology ownership



## *One-to-one experience (post semester survey data)*

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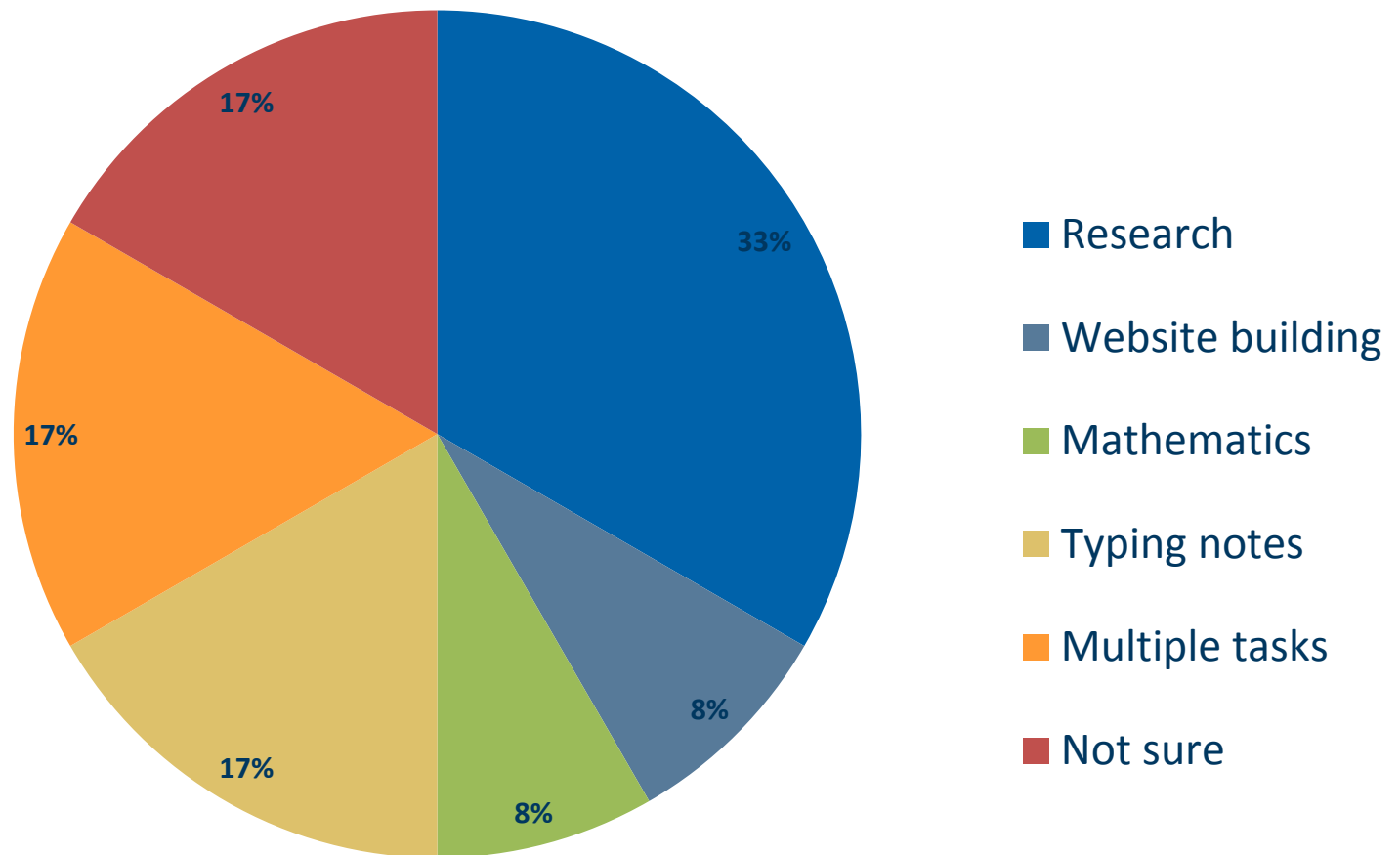
Students who observed their co-operating teachers utilising one-to-one learning environments, during practicum.



## *One-to-one experience (post semester survey data)*

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Common use of the laptops, as observed during practicum



## TUTORIAL 5

## Discussion: Pedagogical

Blackboard Learning System

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Build Teach Student View

Course Tools

Course Content

Announcements

Assessments

Assignments

Mail

(H) = Hidden

Designer Tools

Manage Course

File Manager

Grading Forms

Selective Release

Your location: Home Page

Add File Create Folder Add Content Link

EDST442

ICT Curriculum and Teaching

Visual Ranking Tool: Analyzing and Evaluating Information

Compare your team with:

Class Average

There is a strong positive correlation of 0.68

Printing press

Immunizations

Automobile

Light bulb

Refrigerator

Telephone

Television

Clock (mechanical)

Personal computer

Airplane

Automobile

Light bulb

Printing press

Immunizations

Telephone

Personal computer

Television

Airplane

Refrigerator

Clock (mechanical)

(Tie)

YouTube

Google Search Stories



## AIM

- to investigate content of the *Stage 6 Information Processes and Technology syllabus*
- to investigate in greater depth the 'Social and ethical issues' and 'Project Management' topic
- to participate in a range of various teaching strategies
- to familiarise students with the Interactive Whiteboard (IWB)



## READINGS

- [Board of Studies \(2000\). Information Processes and Technology \(Stage 6\) Syllabus. Sydney, NSW: Board of Studies.](#)
- [Resources](#)
- [The Interactive Whiteboard Revolution](#)



## OUTCOMES



on particular syllabus outcomes

to meet a range of student learning

7. use a range of more sophisticated ICT for resource development and for teaching and

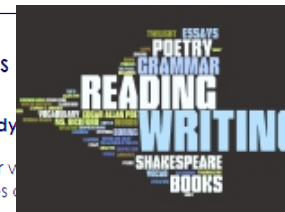


tion and communication technology to  
ling second language learners (14 and P3)



## VITIES

Study



ercises employing a diverse range of teaching

Activity 1: What problems can technology solve? ([Click here for visual instructions](#))  
 > <http://www.intel.com/about/corporateresponsibility/education/k12/tools.htm>

- Visual Ranking Tool
- Student sign-in
  - TeacherID - miriam.tanti@acu.edu.au
  - Student login and password - TeamXX (e.g. Team01, Team02 ... Team05)

- Activity 2: [Project Management](#)
- Activity 2: [Trading Exercise](#)

Week 7: Interactive Whiteboard Software will be required (Smart Notebook can be downloaded from the shared S: drive - edst442\_Tanti)

# *Challenges*

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- ▶ **Institutional readiness**

- ▶ Wireless connectivity
- ▶ Adequate power
- ▶ IT support
- ▶ Online storage facility
- ▶ iPad compatibility
- ▶ Staff training
- ▶ University culture

- ▶ **Classroom management**



## *Conclusion*

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- ▶ The one-to-one pilot has been successful in providing greater insight into the considerations and issues for higher education, in terms of:
  1. pedagogical issues
  2. the challenges
  3. the benefits
  
- ▶ Phase 2 of this research involves a focus on pedagogy through the identification and observation of exemplar pedagogical practice in the one-to-one environment in schools.





# References

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