



# THE EFFECTIVENESS OF DIGITAL TECHNOLOGIES IN HIGHER

## Education Lectures

Dr. Kerry Greer & the IDEALS Research Group

Presented by: Deirdre Ryan, Aoife McLoughlin and Michelle Glasheen

### Investigating Digitised Education And Learning Systems

Dr. Kerry Greer (group leader)

Deirdre Ryan  
Dr. Elaine Vaughan  
Donie Kelly  
Lorraine Whisker  
Dr. Marek McGann  
Aoife McLoughlin  
Michelle Glasheen

Mary Immaculate College

University of Limerick

## INTRODUCTION

There is increased pressure on University Lecturers to incorporate audio/visual digital technologies (e.g. podcasts) into their teaching. The existing small, but growing body of published research in Higher Education (McGarr (2009); Baker (2008); Lazzari (2009)) is predominantly focused on:

- Studies of perceived value
- Usage of the technology
- Podcasts as supplementary teaching material

Baker et al., (2008) "a significant volume" of material exists that both praise and regret the inclusion of podcasts into university curricula.

Critics claim that podcasts **reduce**:

- Students active participation
- Students' comprehension of subject material
- Student attendance
- Student time management skills

Supporters claim that podcasts **could**:

- Replace large lectures
- Supplement course material
- Enhance students' time management skills

**Motivation for current research:** to add to the body of knowledge in empirical studies evaluating the benefits or detriments attributed to educational applications of podcasting.

**Aim:** to evaluate the **academic effectiveness** of lecture delivery in both:

- Live lecture
- Streamed lecture (group & individual podcasts)

**Academic Effectiveness** was operationally defined as the performance on tests designed to explore the degree of academic comprehension/retention of lecture material.

## METHOD

157 first year Social Psychology students were randomly assigned to one of three conditions of lecture delivery. The three methods of delivery were:

- **live lecture** (n=65)
- **screened lecture in lecture theatre** (n=69)
- **lecture delivered to individual work stations** (n=23)

The lecture was of **30 minutes** duration, the topic chosen was **Illusory Correlations** which was unlikely to be familiar to the students and deemed to be conceptually difficult.



Figure 1. Screened lecture: Image courtesy of MediaSite Software

Academic performance was tested using an MCQ test, administered following the lecture delivery. There were 5 questions:

- factual (3)
- conceptual (2)

Student experience of the lecture was extracted from a **Learning Experience Feedback Questionnaire (LEFQ)**.

## RESULTS

**MCQ Results:** A Kruskal Wallis test indicated **significant differences in academic performance** across the three delivery methods ( $\chi^2(2, N=157) = 22.14, p < .001$ ).

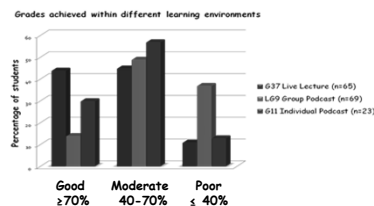


Figure 2. Difference between GOOD and POOR performance for the Group Podcast and the other two conditions (Live Lecture and Individual Podcast).

Examination of the descriptive statistics suggested that those students at the screened lecture had poorer results on the MCQ test than those in the other lecture delivery conditions.

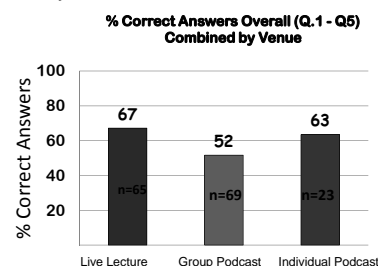


Figure 3. Correct answers overall

## Learning Experience Feedback Questionnaire (LEFQ) Content Analysis

**Q. Where could improvements be made in today's lecture?**

Features most frequently mentioned:

- Interaction with lecturer (questions)
- Speed of delivery (slow down slides)

**Q. What do you feel were the best features of today's lecture?**

Features most frequently mentioned:

- Slides
- Examples used to illustrate the concepts
- Lecturer
- PowerPoint Presentation

## CONCLUSIONS

**The results of the study indicate that type of delivery may impact on academic effectiveness.**

**Future Studies:** Factors to be controlled and/or manipulated include:

- Slide perspectives (size, acuity etc.)
- One/two way interaction with students
- Student lecture strategies e.g.
  - Multitasking
  - Designated note taker
- Lecture content (e.g. 'rabble rousing' vs. complex)
- Age and maturity of students
- Duration of digitised instruction
- Gender of lecturer
- Repeat exposure

## REFERENCES

Baker, R., Harrison, J., Thornton, B., & Yates, R. (2008). An Analysis Of The Effectiveness Of Podcasting As A Supplemental Instruction Tool: A Pilot Study. *College Teaching: Methods & Styles Journal*, 4, 49-54.

Lazzari, M. (2009). Creative use of podcasting in higher education and its effect on competitive agency. *Computers & Education*, 52, 27-34.

McGarr, O. (2009). The development of ICT across the curriculum in Irish schools: a historical perspective. *British Journal of Educational technology*, 40, 1094-1105.