

# Performance enhancers: Creating and using mini online modules to improve learning

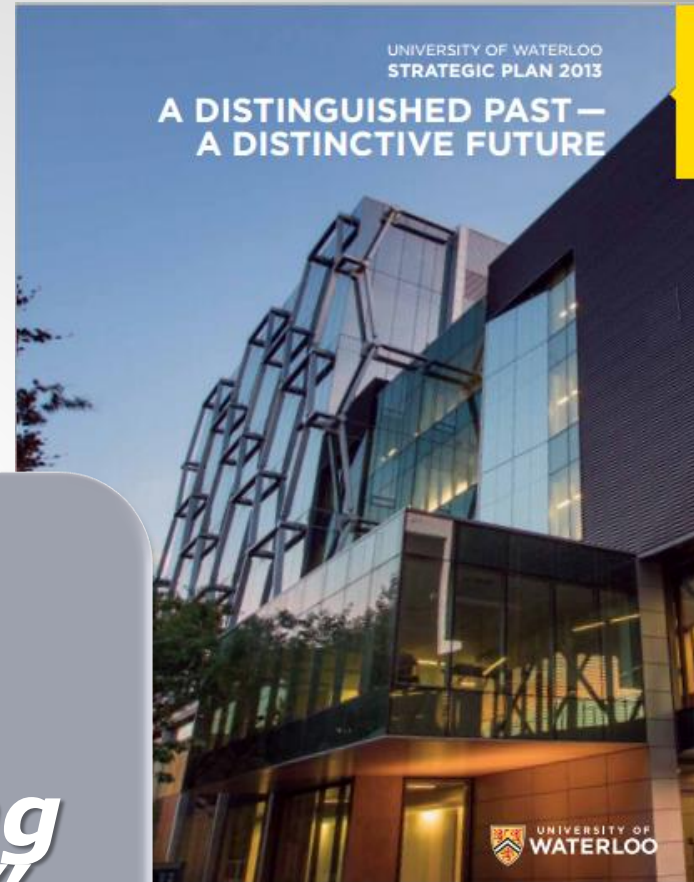
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Kelly Anthony, Applied Health Sciences  
Andrew Laing and Justin Yates, Kinesiology  
Christine Zaza, CTE



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*"be a leading provider of technology enabled learning opportunities."*



**UW Strategic Mandate**



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# Blended learning

- integrate face-to-face and online learning
- challenges
- proven benefits



**Blended Learning**

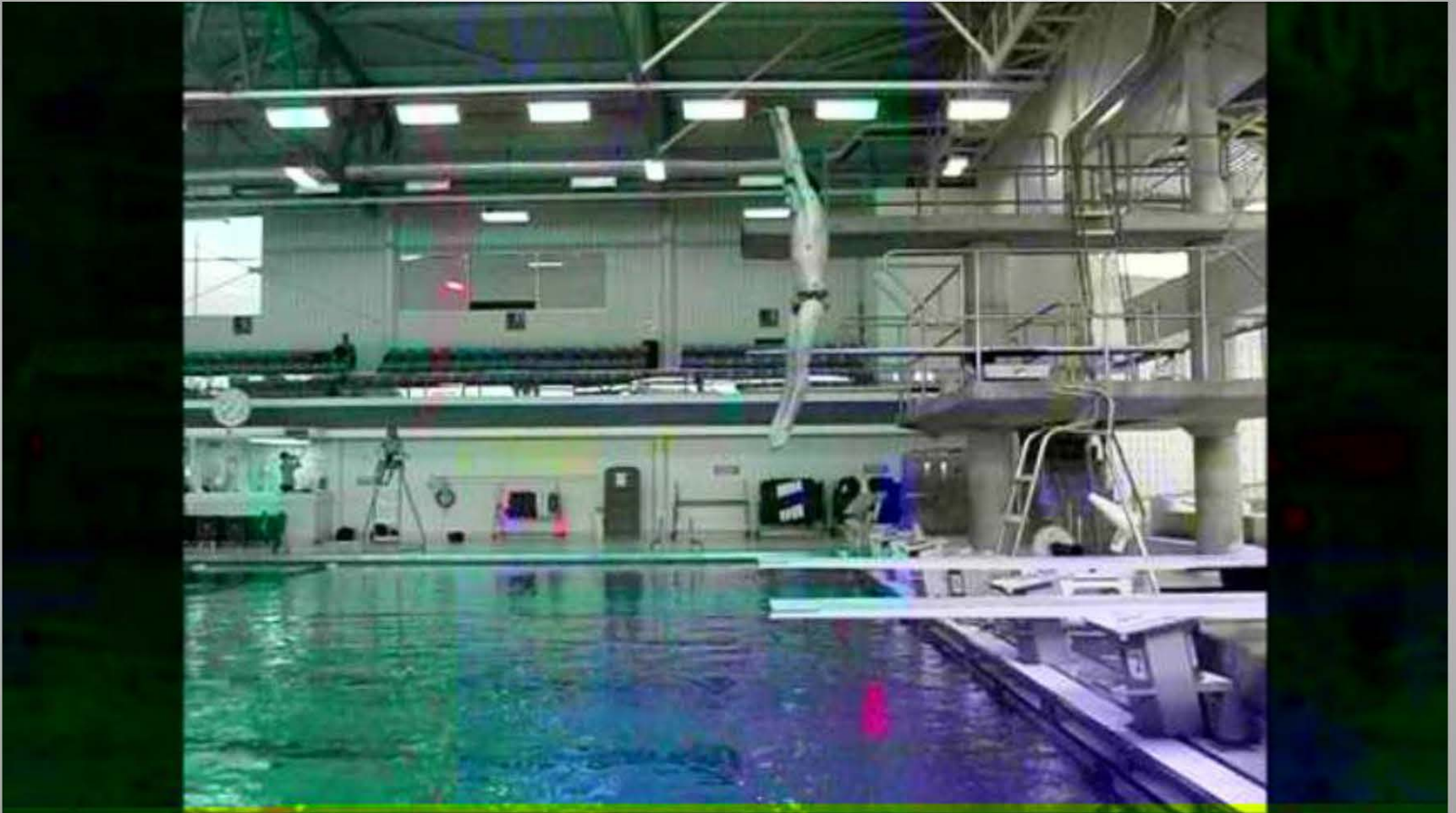


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“Biomechanics is cool.”

“Some really neat applications in diving”



# Project Genesis



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LITE Seed Grant, Winter 2014

“Blended Learning: Development and Evaluation of E-modules to Enhance Undergraduate Learning in Biomechanics”

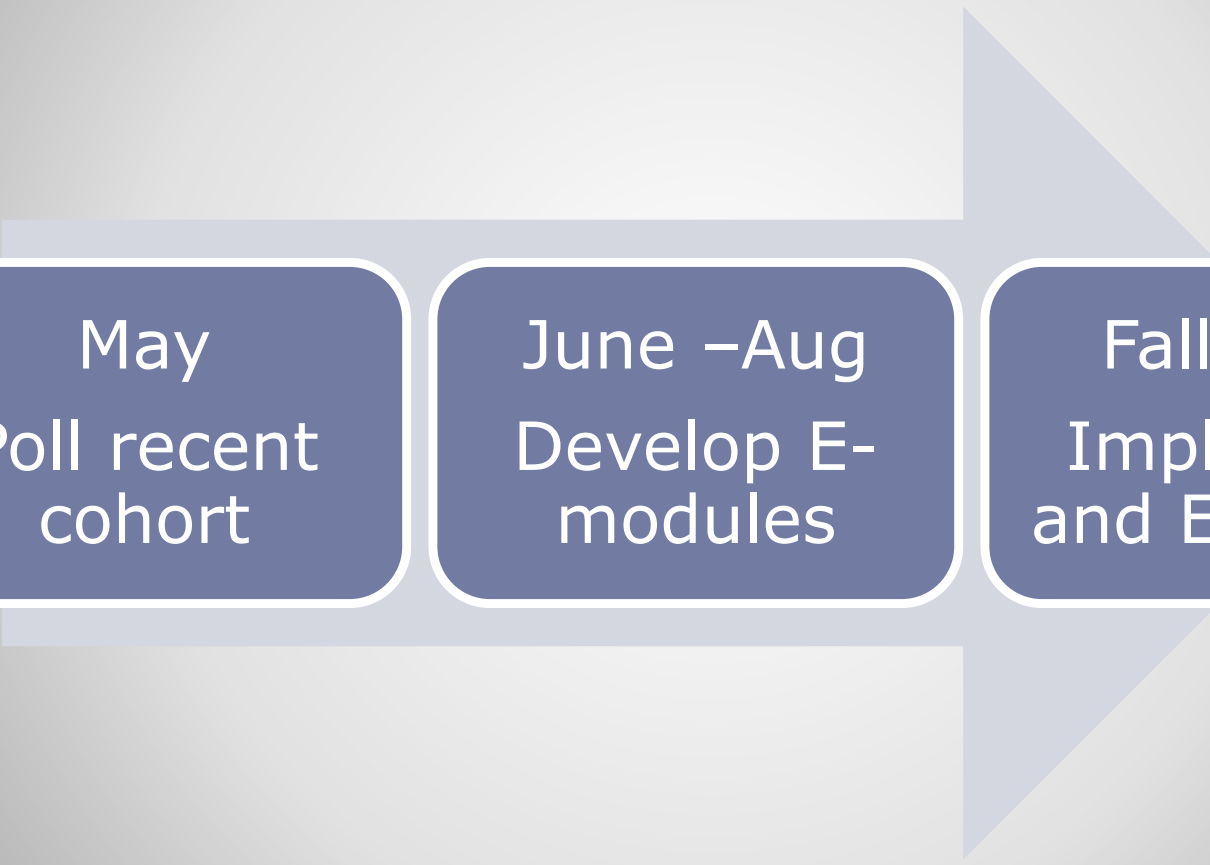
Andrew Laing, Justin Yates, Kelly Anthony, Brett Beston (Christine Zaza)

## Purpose:

“To develop, implement and evaluate the effectiveness of E-Learning Modules within an introductory Biomechanics course.”

## Hypotheses:

- 1) students would enjoy the E-modules
- 2) accessing them would be associated with improved grades
- 3) a dose-response would exist.



May  
Poll recent  
cohort

June –Aug  
Develop E-  
modules

Fall term  
Implement  
and Evaluate

# Framework



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## Most Challenging Concepts

Rigid Link Modelling  
Projectile Motion  
Moment of Inertia  
Angular Momentum



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## **Computing Help & Information Place (CHIP)**

East Campus 2 (EC2 Foyer)

**helpdesk@uwaterloo.ca**

ext. 44357



# Software



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# Angular Momentum snippet (1:29-2:30)



**Module Example**



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**It's go time**



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# Implement

Four E-modules

Learn access

Not flipped

Tracked access

Fall term

**Implement**  
and Evaluate



# Evaluate

## Post Survey in Class

Links with Grades

- Final
- Content-specific exam questions

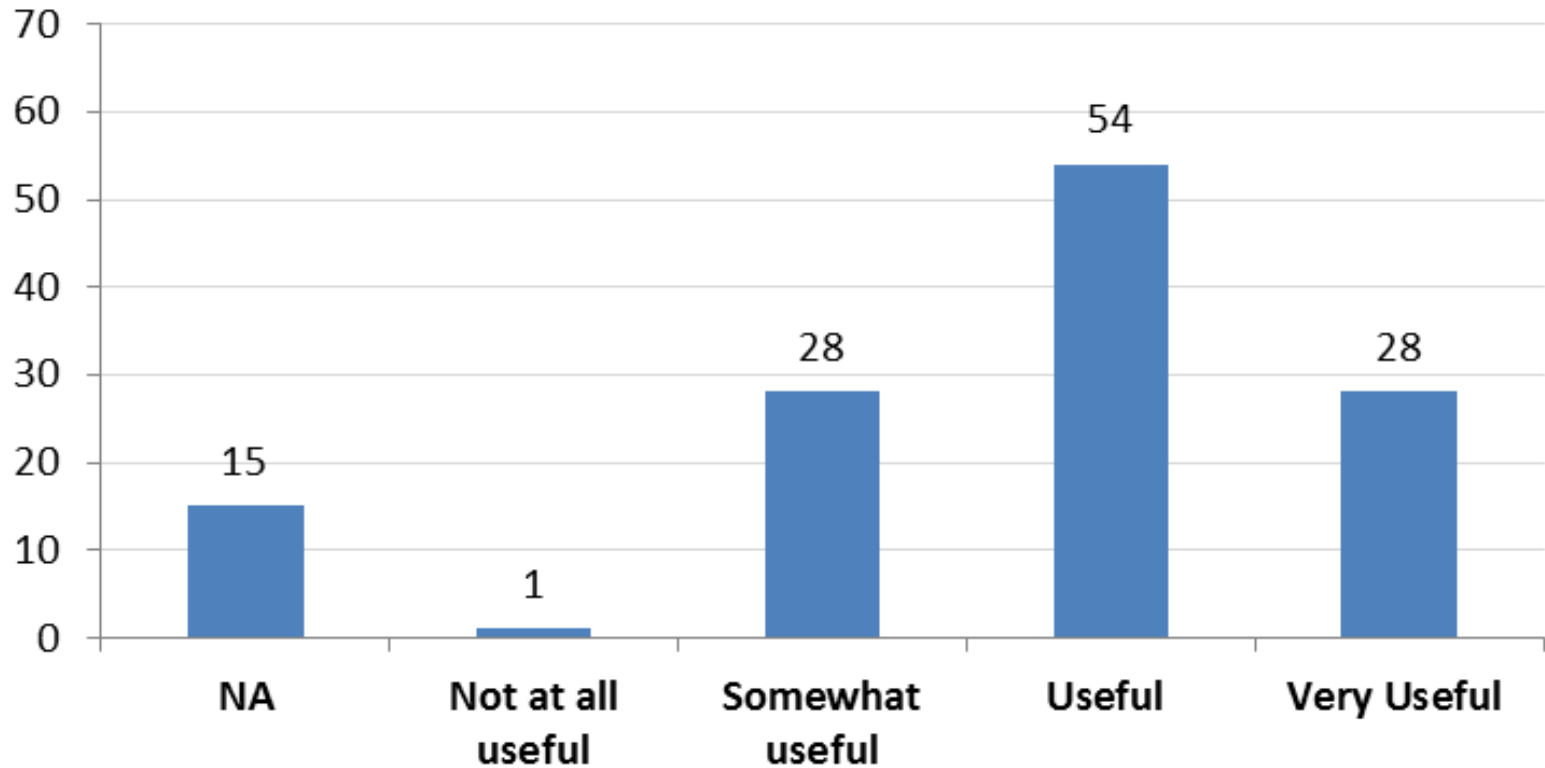
Fall term  
Implement  
and **Evaluate**





+ ratings related to improved learning

### Q3 - improve your understanding?



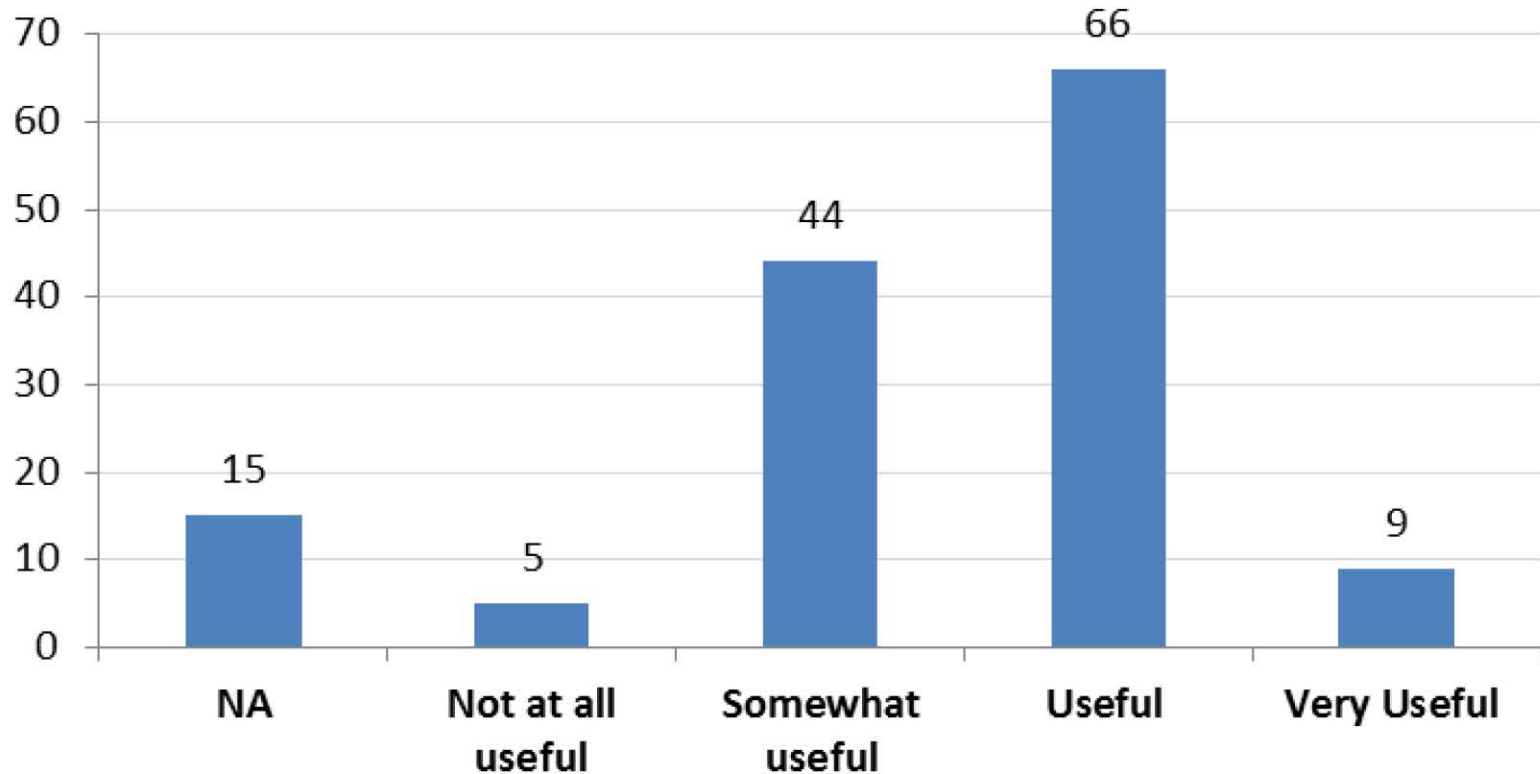
# Survey Results



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+ ratings related to improved learning

### Q4 - helped improve marks?



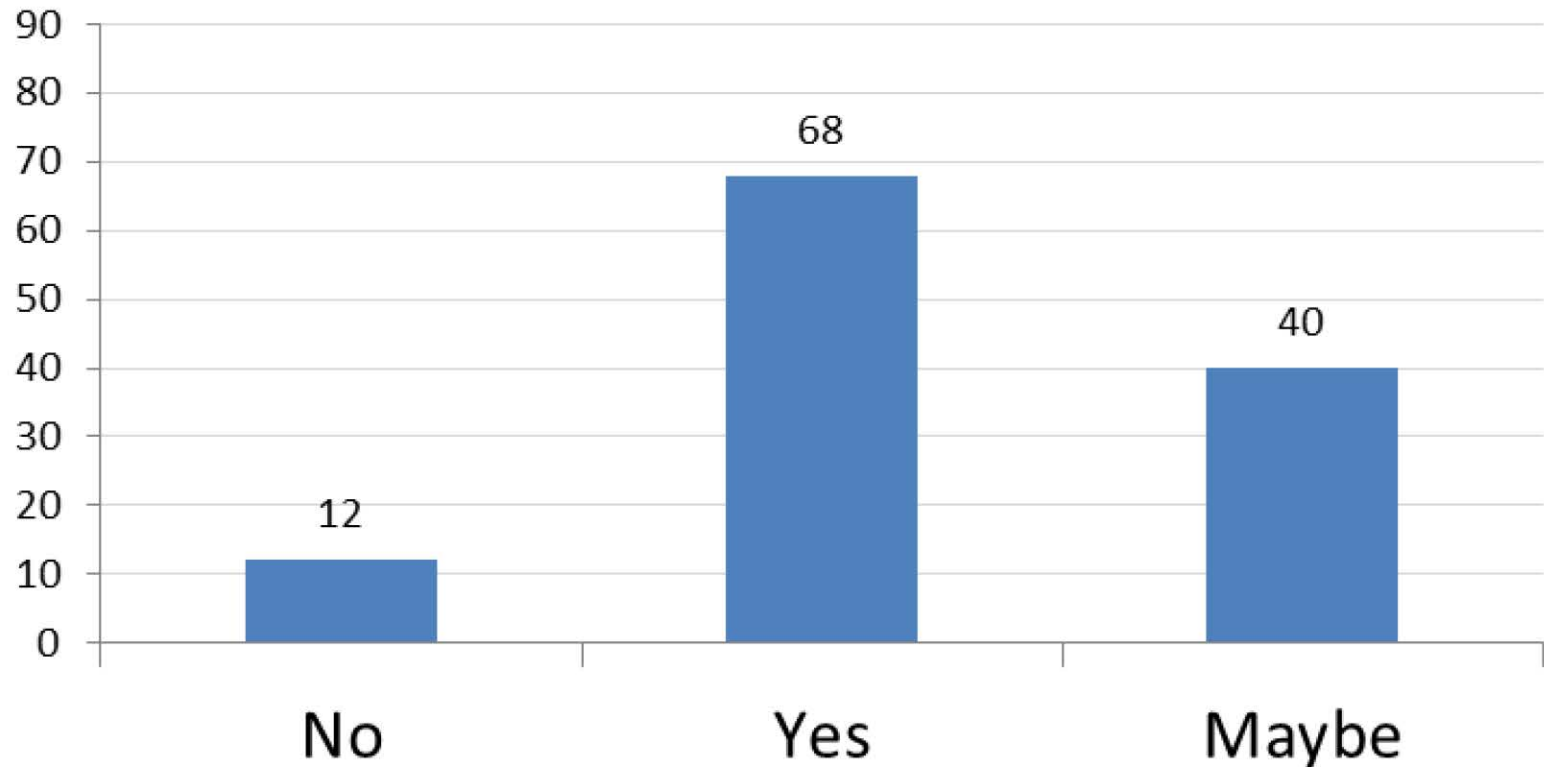
# Survey Results



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# Students would like more E-modules

## Q8 - Like more 121 modules?



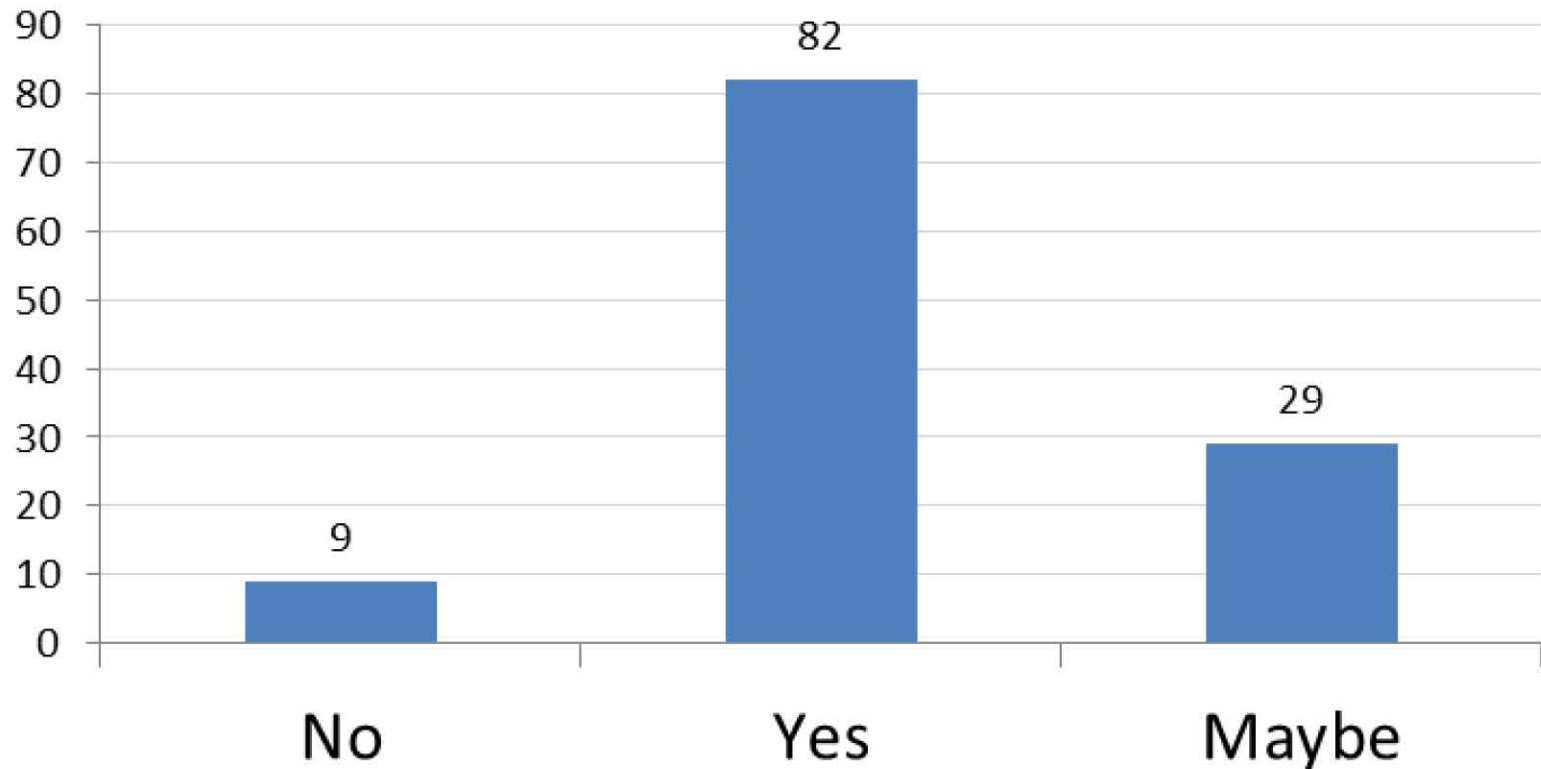
# Survey Results



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# Students would like more E-modules

## Q9 - Sim mods in other courses?



**Survey Results**



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# Evaluate

Post Survey in Class

**Links with Grades**

- Final
- Content-specific exam questions

Fall term  
Implement  
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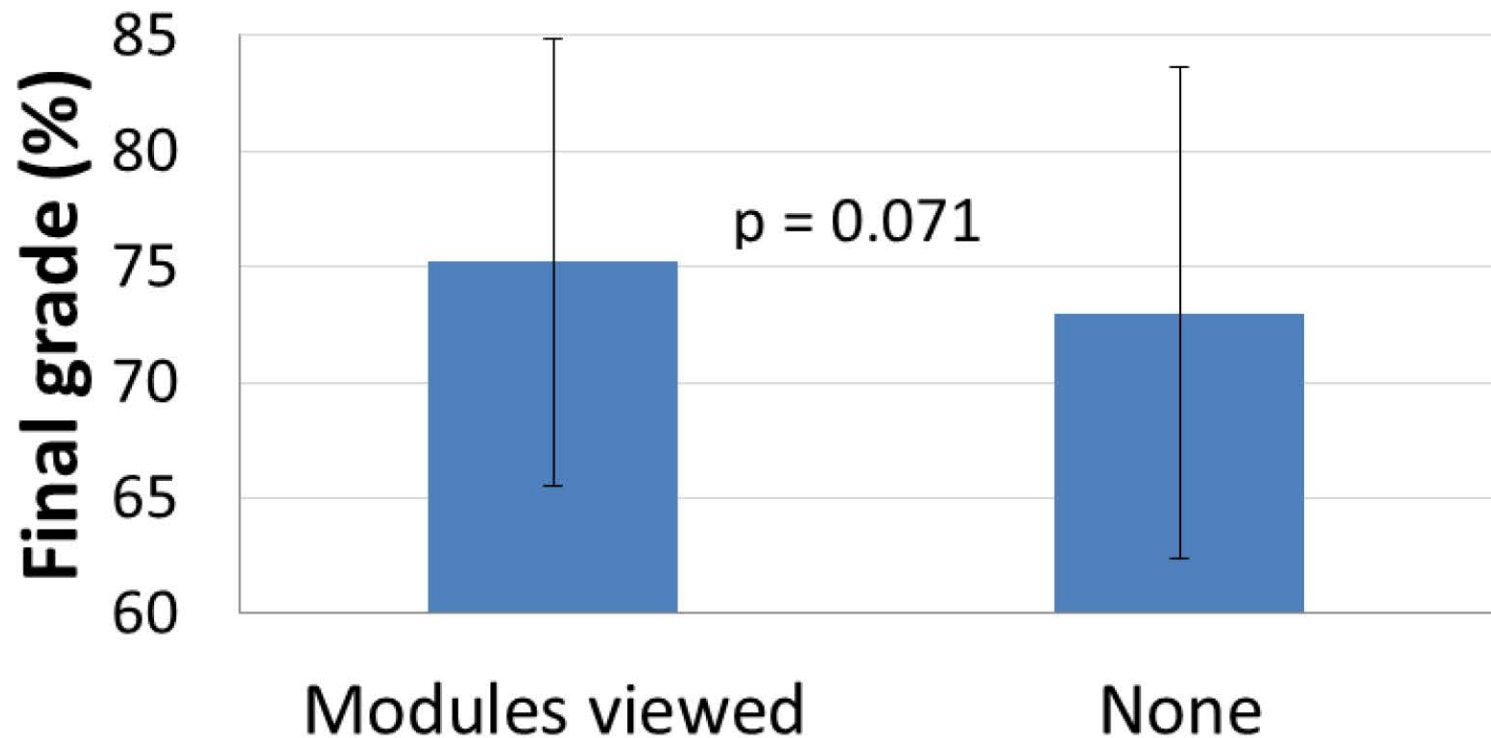


# 72% viewed at least 1 E-Module

# of E-Modules Accessed	# of students
0	61
1	22
2	18
3	37
4	78
<b>total</b>	<b>216</b>

Module viewers had 2.2% higher final grades

### Final course grade for those who did vs. did not view E-modules

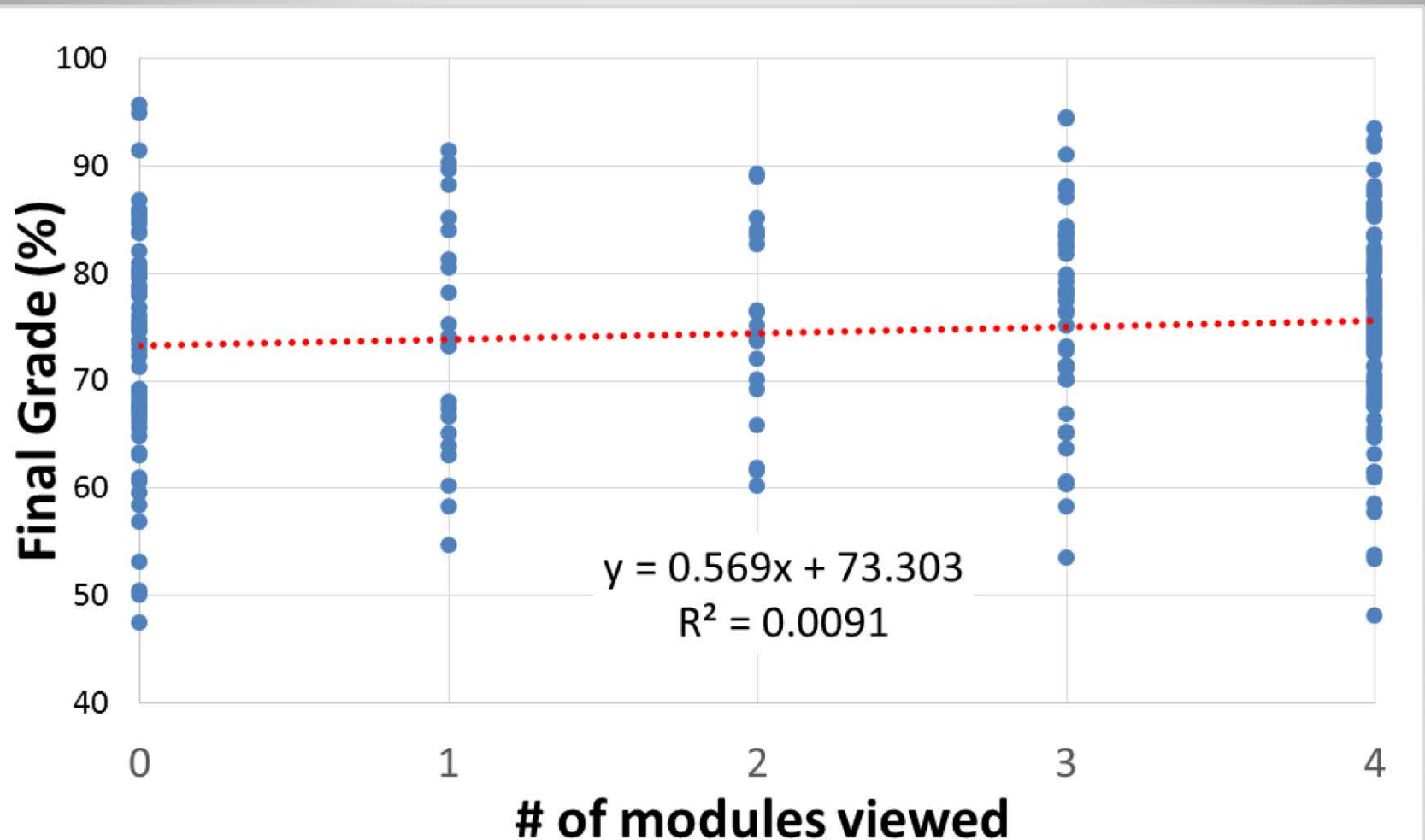


# Grade Results



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# 0.6% increase for each module viewed



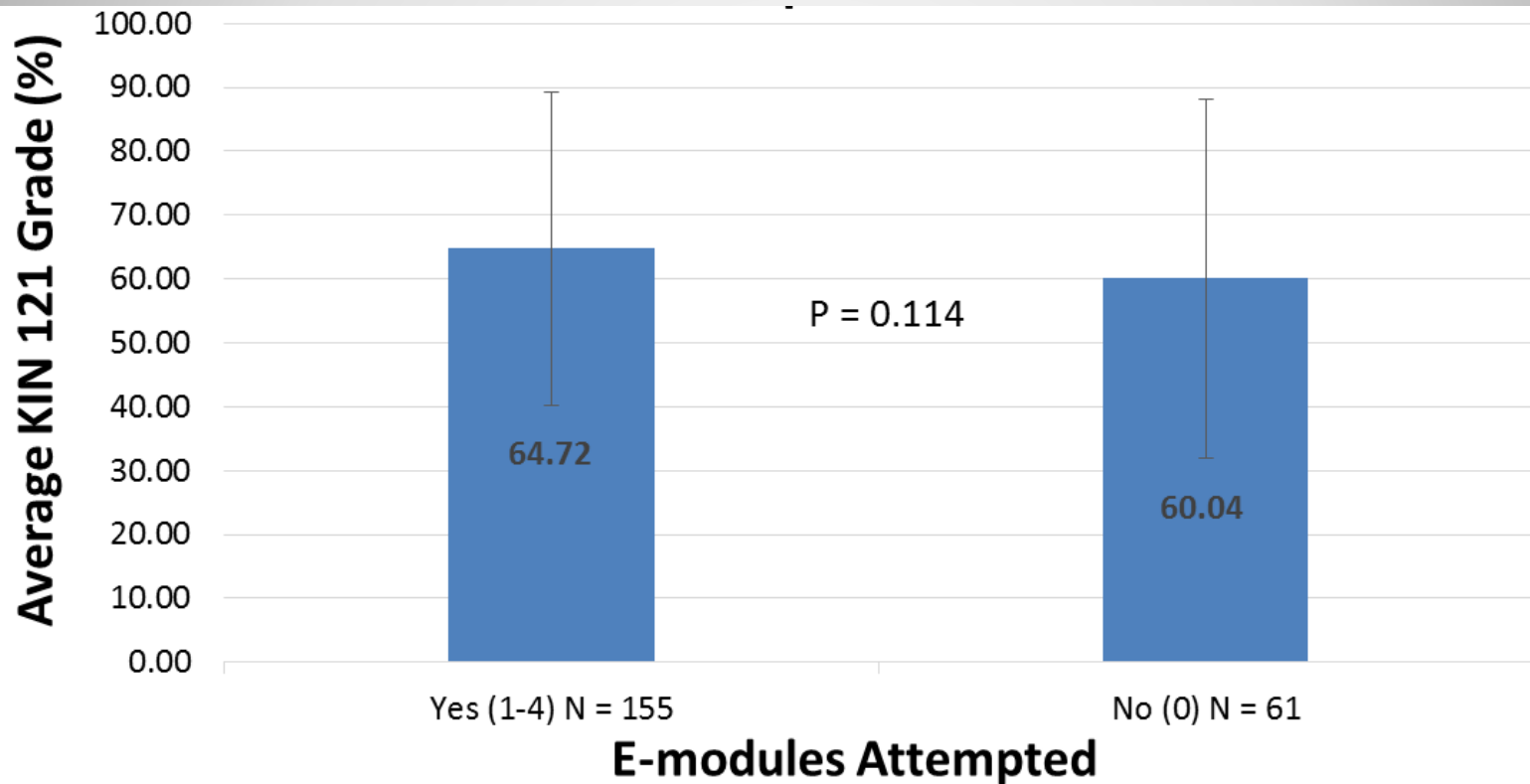
## Grade Results



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# Effects larger for targeted exam questions e.g. MT#2 overview question



# Lessons Learned

- Provide online technical support
- Scope of project – define and stick to plan (ethics)
- Large variability in dose-response
- Module quiz data – analysis issues
- Capstone Module – how to make an E-module

<https://youtu.be/G48YI4CY40g>



# Summary

- This study supports the effectiveness of blended learning through E-modules
- Students perceived them to enhance their understanding and grades
- Students wanted more modules
  - In this specific course, and in other courses
- Grades generally increased for those who viewed the modules



# Next Steps:

- Department of Kinesiology committed to E-Learning initiatives
  - Video modules in several courses
- Online learning repository
  - Resources accessible throughout student career
- New LITE Seed grant
  - AHS Teaching Champions, identifying facilitators/barriers to innovative teaching



# Acknowledgements:

- Centre for Teaching Excellence (CTE)
- Learning Innovation and Teaching Enhancement (LITE) grants
- Department of Kinesiology, Faculty of AHS

