University of Glasgow
Oilthigh Ghlaschu

THE AWARDS 2020 | UNIVERSITY OF THE YEAR

DIGITAL PRACTICE: BLENDING IDEAS FOR A WINNING FORMULA

VICEPHEC 2021 keynote
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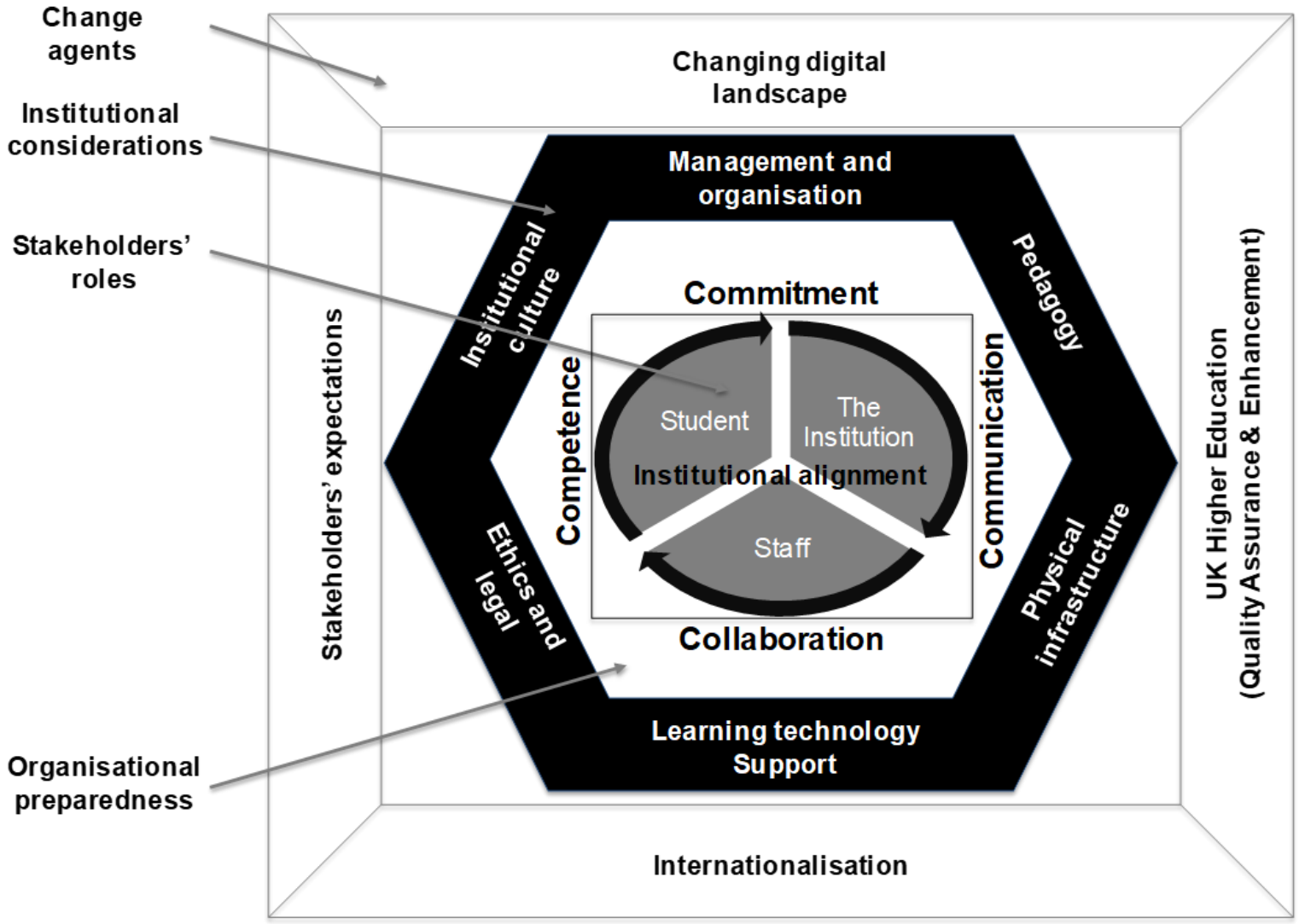
WORLD CHANGING GLASGOW

OVERVIEW

- Starting point: Transitions to blended learning framework
- Blending ideas – the 9 Cs
- Informing my thinking:
  - Study of teachers' perceptions and characteristics at College of Science and Engineering (CoSE) in the context of Technology Enhanced Learning and Teaching (TELT) innovation
  - The pivot to online (Contributions to a special issue of the Journal of Perspectives in Applied Academic Practice on 'Transitions to remote and blended learning')
  - Examples of good practice from CoSE
- Reflections …

TRANSITIONS TO BLENDED LEARNING FRAMEWORK (ADEKOLA ET AL. 2017)

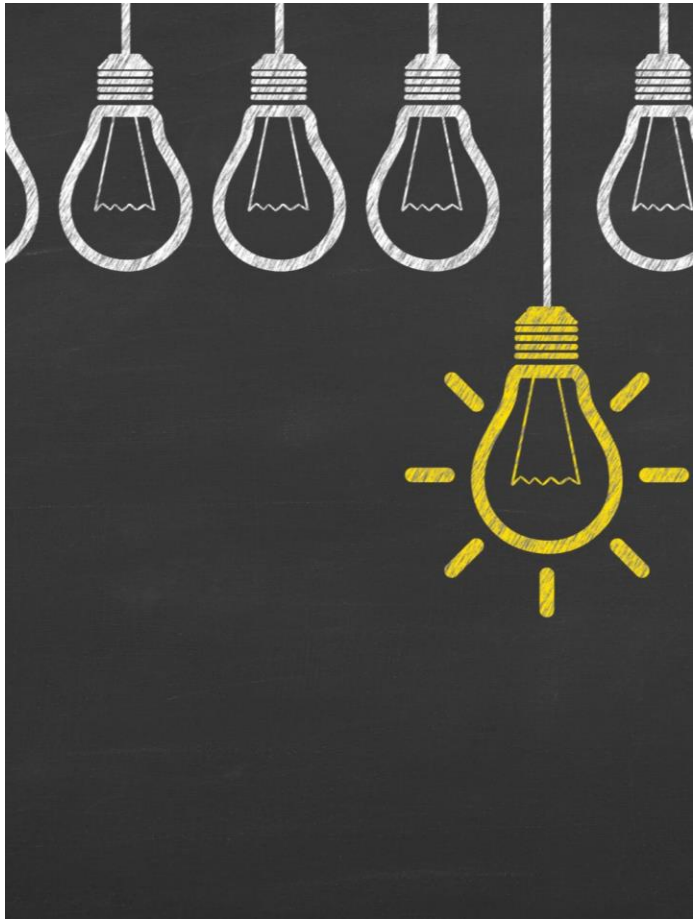


TEACHING INNOVATION IN THE CONTEXT OF TELT

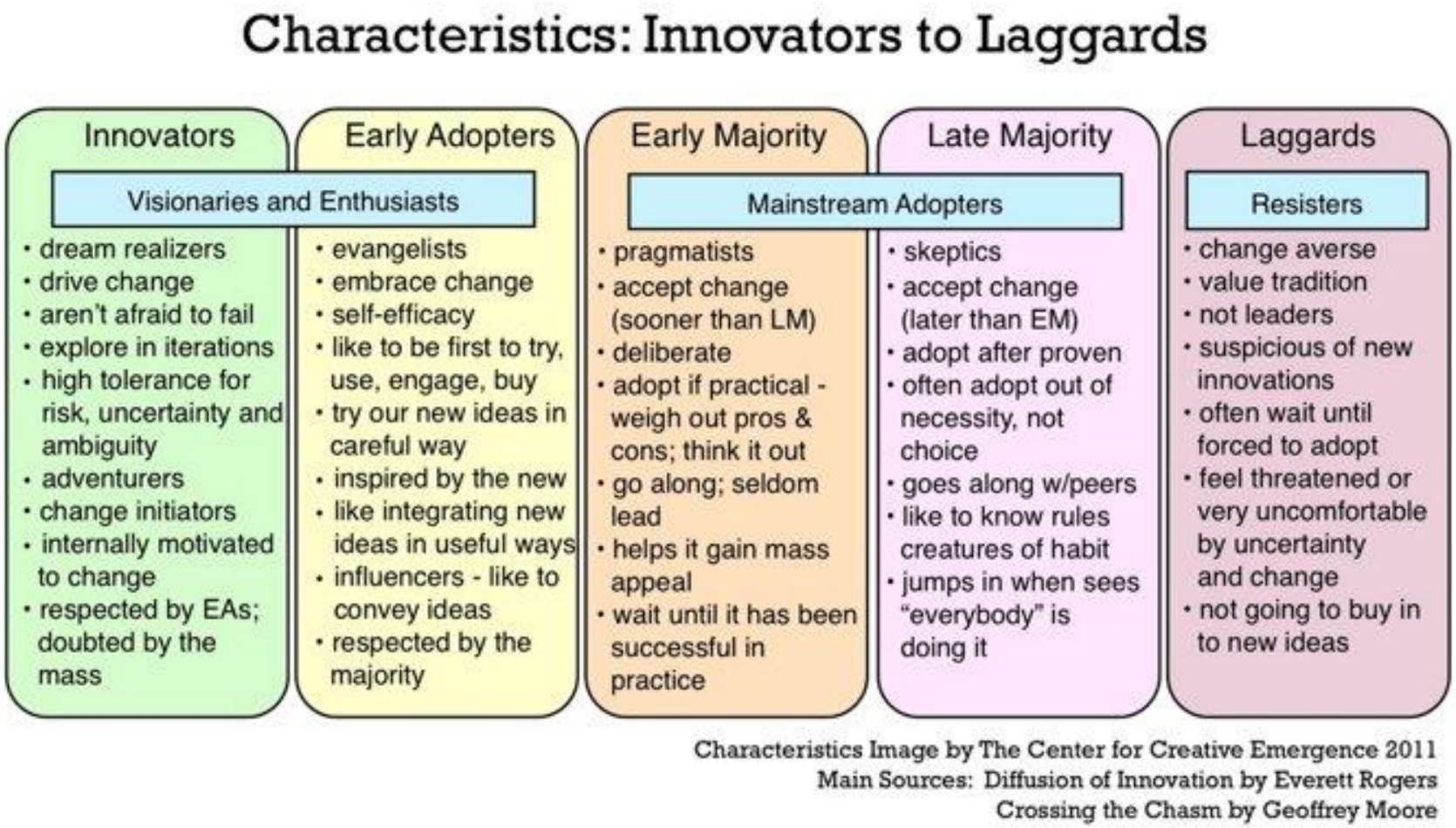
Study of teachers in College of Science and Engineering, 2017-18

- What do teachers understand by the term 'innovation'?
- What characteristics do 'innovators' and 'early adopters' have versus 'mainstream majority'?
- How are these groups influenced by external factors (institutional culture)?
- How can we enhance all teachers' digital practitionership?

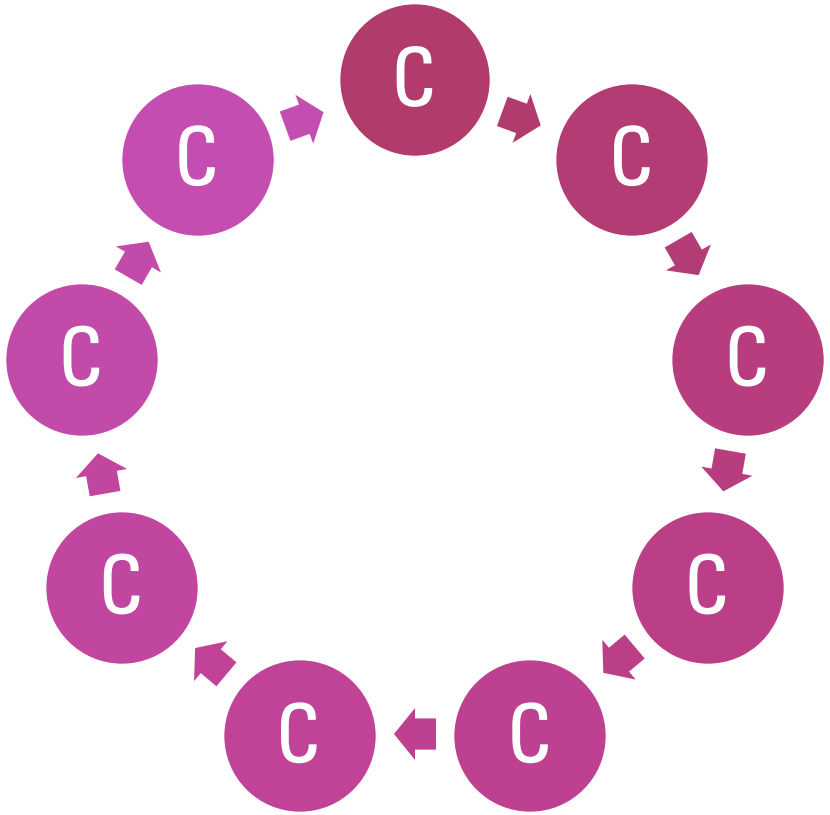
(Dale, McEwan and Bohan, 2021)



EARLY ADOPTERS VS. 'RELUCTANT' MAJORITY



9 CS; THE WINNING FORMULA



1. CHANGE

On the response to Covid-19:

- "Despite over two decades of development/discussion across United Kingdom higher education (UK HE) about digital futures (Weller, 2020), **the sector was largely unprepared for this move and had to demonstrate "extraordinary flexibility and speed of action"** (QAA, 2020, p.1) … As recently as 2020, the Jisc Digital Insights Survey suggested that, despite the growth of digital, significant gaps remained in provision, support and willingness to adopt digital teaching practices (Killen & Langer-Crame, 2020), and **many academics lacked belief that digital technology could enhance their teaching**."

(Specht et al., 2021)

2. CONFIDENCE

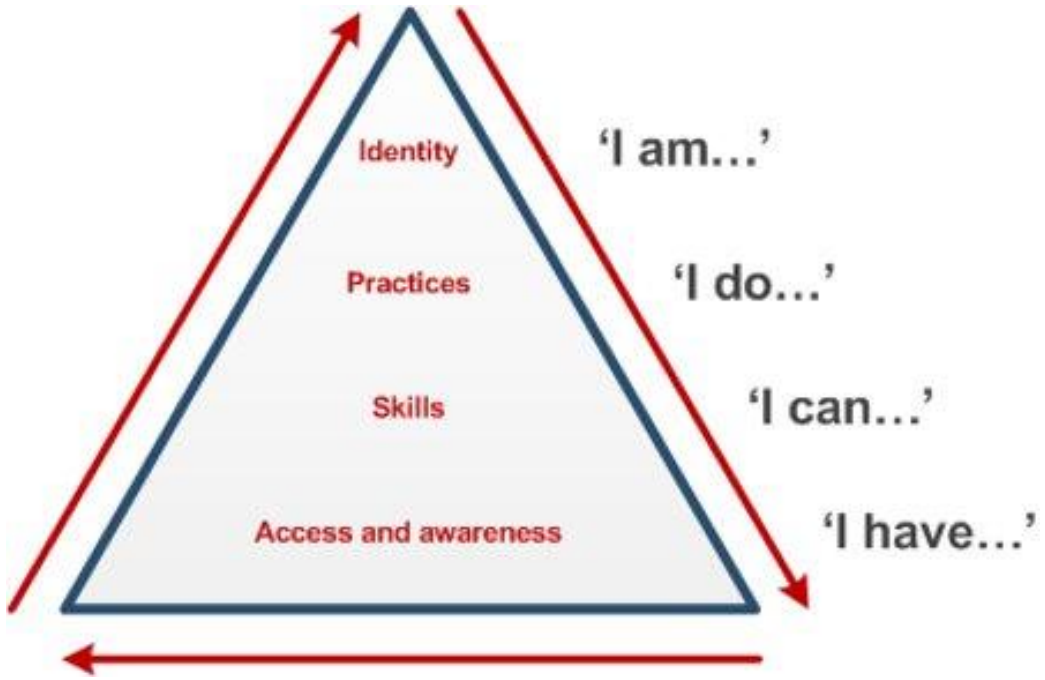
Confidence (self-efficacy, especially in technology use) is important for teaching innovation (e.g. Ertmer and Ottenbreit-Leftwich, 2010)

From the Jisc Digital Insights teachers HE survey (Langer-Crame and Killen, 2020):

- 72% either very or quite confident at trying our new technologies
- 50% used digital tools/platforms confidently in the classroom

Does this chime with your experiences and/or your colleagues?

3. CAPABILITY



- Bennett (2014) derived a digital practitionership framework of digital capability from Beetham and Sharpe's (2010) digital literacies model

https://www.jisc.ac.uk/guides/developing-digital-literacies

CAPABILITY - ACCESS

			% SD	% D	% N	% A	% SA	p=
Access	I have access to necessary hardware for engagement in TEL	I/EA				●		.074
		EM				●		
		LM			●			
	I have access to necessary software for engagement in TEL	I/EA				●		.090
		EM				●		
		LM			●			
	I have reliable access to wi-fi	I/EA				●		.207
		EM				●		
		LM				●		
	I have access to learning technology professionals who can support me in using TEL	I/EA			●			.857
		EM			●			
		LM			●			

	0%		25%		50%		75%		100%

CAPABILITY - SKILLS

			% SD	% D	% N	% A	% SA	p=
Skills	I can manage the blurring of boundaries between private and work time	I/EA			●			.569
		EM			●			
		LM			●			
	I can teach myself to use new software (e.g. apps)	I/EA				●	●	.008**
		EM				●		
		LM				●		
	I can teach myself to use new hardware (e.g. devices)	I/EA				●		.056
		EM				●		
		LM				●		
	I can evaluate the suitability of digital content for my students	I/EA				●		.416
		EM				●		
		LM				●		

	0%		25%		50%		75%		100%

CAPABILITY - PRACTICES

			% SD	% D	% N	% A	% SA	p=
Practices	I design TEL activities to suit my students' learning needs	I/EA				●		<.001
		EM			●	●		
		LM			●			
	I explore the capabilities of a technology for learning	I/EA				●		<.001
		EM				●		
		LM		●				
	I evaluate my digital academic practice	I/EA				●		<.001
		EM				●		
		LM		●				
	I reflect on innovations within my teaching practice	I/EA				●		<.001
		EM				●		
		LM		●	●			

	0%		25%		50%		75%		100%

CAPABILITY - IDENTITY

			% SD	% D	% N	% A	% SA	p=
Attributes	I am confident in my attitude to TEL	I/EA				●		<.001
		EM				●		
		LM		●				
	I am willing to invest time in exploring and evaluating TEL	I/EA				●		<.001
		EM				●		
		LM			●			
	I am able to balance the risk of innovation with its potential for learning	I/EA				●		.003**
		EM				●		
		LM			●			
	I am convinced of the potential of technology to enhance and transform learning	I/EA				●		.003**
		EM			●	●		
		LM			●			

	0%		25%		50%		75%		100%

4. COMMUNITY / CPD

			% Never used	% Not at all useful	% Not very useful	% Somewhat useful	% Useful	% Extremely useful	p=
Self-directed, informal learning	Reading relevant journal articles and book chapters	I/EA				●			.007
		EM				●	●		
		LM			●				
	Undertaking Massive Open Online Courses (MOOCs) on blended/online/innovative learning and teaching	I/EA			●				.059
		EM	●	●					
		LM	●						
	Learning informally from and with colleagues	I/EA					●		.392
		EM					●		
		LM					●		

	0%		25%		50%		75%		100%

"…it's very informal, but the colleagues that I sort of associate with have mutual interests … it's kind of informal and just kind of like bumping into p eople and something comes up and not necessarily when you're expecting it. So I find a lot of my ideas and so on come from just happenstance." (early adopter)

On learning from different disciplines versus own/cognate disciplines:

- *"… you'd be surprised that a First Year Course Coordinator in Physics has as much in common with a First Year Course Coordinator in Theatre Studies. But it's exactly the same problems with very different kind of bent and direction. The problems we had, everybody could identify with, and so there was that kind of common thread." (early adopter)*

- *"I quite like some of the [central] CPD events that […] run at lunchtime. I've been to some of them … especially if it's something at your own college it would be more relevant to you and you're going to learn some things that they're doing …" (early majority)*

5. CREATION ('INNOVATION')

CoSE staff survey definitions

- Using new technologies or tools
- Enhancing student learning
- Using new teaching methods/approaches/techniques
- Using existing technologies in new ways

CoSE staff focus group quotes

- *"…anything which enhances the student learning. Even if it's a small … increase in their interest, if you can use technology to do that, I mean, that would be…to me, that would be an innovation." (early adopter)*
- *"As head of first year in [my subject] … I'm interested from that viewpoint, you know, how we can use technology to provide better support to students." (early majority)*

6. COLLABORATION (STUDENT-STUDENT)

		% Use	p=
To provide easy access to course materials and administrative information	I/EA		.397
	EM		
	LM		
To provide up-to-date, additional learning resources at point of need	I/EA		.943
	EM		
	LM		
To provide a space for student questions and staff announcements	I/EA		.240
	EM		
	LM		
To engage students in deep thinking through online discussions	I/EA		.040
	EM		
	LM		
To provide an online space for building knowledge	I/EA		.350
	EM		
	LM		

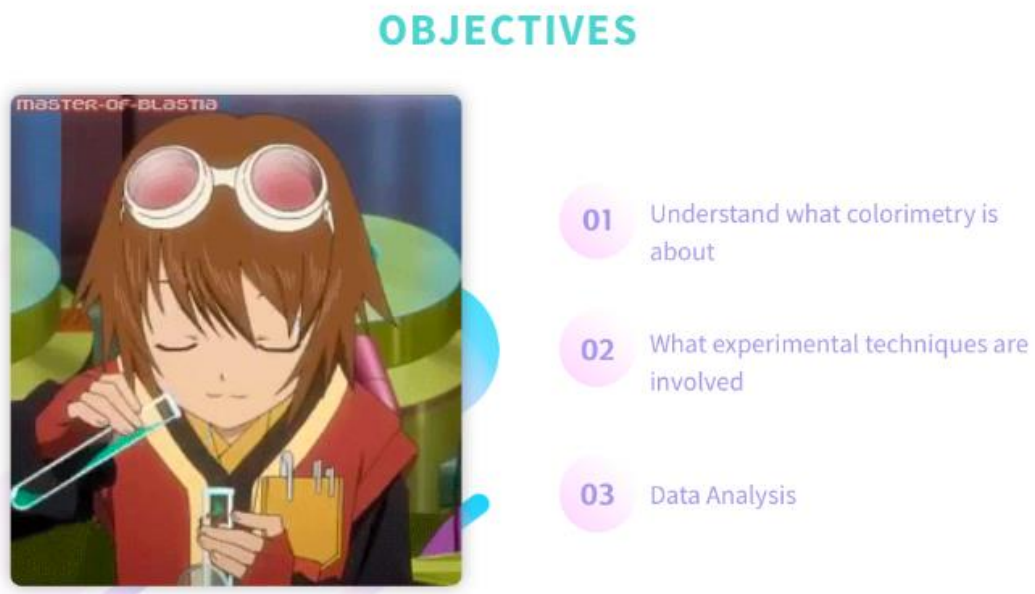
	0%		25%		50%		75%		100%

COLLABORATION (STAFF-STUDENT)

UofG chemistry staff-student projects – Dr Linnea Soler

- Lab pivot: A project to create two interactive on-line lab experiments for Quant-1 lab (using Genially) (co-supervised with Smita Odedra)
- Lab pivot: A project to create two e-learning resources to replace two Synth-2 lab experiments (using Moodle H5P & Moodle Quiz) (co-supervised with Ciorsdaidh Watts)

Screenshots of some of Genially resources made:



Positive student feedback:

Just wanted to send a quick email to say how much I love Valerio's labs ☺

Being completely honest with you, Chemistry is not one of my favourite subjects but he has somehow managed to make me actually enjoy the labs 😂

They always make me laugh and I feel I actually learn more as a result.

Impact of Online Synthesis-2 Lab Experiments on the Student Learning Experience:

a pedagogy-led resource development in response to COVID-19 pandemic restrictions

Dr C Watts & Dr L Soler
School of Chemistry
University of Glasgow

Lewis Sym
BSc Project (20-21)
University of Glasgow

Introduction

Due to the COVID-19 pandemic, laboratories must be delivered to students **remotely.** This project converts two Synthesis-2 lab experiments into an online format with **three main research goals**:

- **Investigate effectiveness of the online labs**
- **Compare effectiveness to in-person labs**
- **Postulate potential future uses of the resources**

Background

A key theory underpinning the design of the produced resources is **Cognitive Load Theory (CLT).** CLT states that the sum of intrinsic, extraneous, and germane cognitive load must not exceed working memory for **effective learning** to occur[1]. To produce effective online learning resources you must **manage cognitive load, increase engagement, and promote active learning**[2] – e.g. by the inclusion of **quizzes**[3]**.**

Method

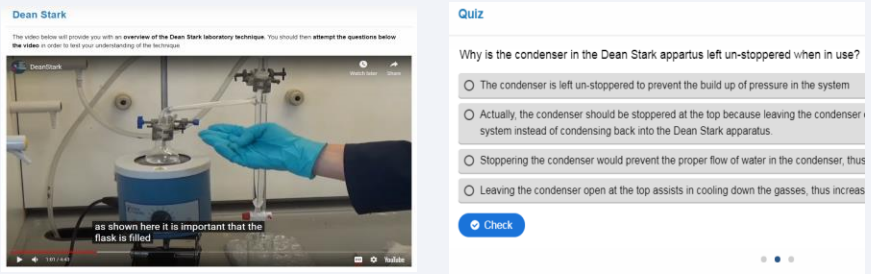


Figure 1-2: Video (Commentated/ interactive subtitles) and Quiz (Interactive/ instant feedback) compiled into an Interactive Book on Moodle

Over 85% of students stated that they would be confident performing the lab in-person after engaging with the resources

Results

Figure 3-4: Select results from feedback form completed by students who engaged

"… theory and lab technique videos were delivered very well, with appropriate visuals and clear narration."

"Practical lab work allows for a better experience"

"All of the aspects of this learning unit could help a lot in future laboratories"

Figure 5: Select student responses from feedback form open questions

Discussion

Student feedback from the forms was **relatively positive** – showing support for many of the online lab features (**theory video**, **technique videos**, **quizzes**). Though, as shown in **Figure 4/5,** some students voiced their **concerns** on not being able to physically handle equipment and that, although well-made, **videos could not replace this experience.**

Conclusion

Answering the main research questions of this project, analysis of student feedback suggests that the online labs are:

- **Effective in delivering the lab material**
- **Whilst a good solution, unable to replace physical experience of in-person labs**
- **Desirable as pre-lab resources in the future**

References

[1] - Paas, F., Renkl, A. & Sweller, J. Cognitive Load Theory and Instructional Design: Recent Developments. Educational Psychologist **38**, 1–4 (2003).
[2] - Brame, C. J. Effective Educational Videos: Principles and Guidelines for Maximizing Student Learning from Video Content. LSE **15**, es6 (2016).
[3] - Dobson, J. L. The use of formative online quizzes to enhance class preparation and scores on summative exams. Advances in Physiology Education **32**, 297–302 (2008).

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COLLABORATION (STAFF-STAFF)

"Togetherness: The central tenet of an effective institutional online pilot" (Bellamy et al., 2021)

- developing exemplar specifications for model courses
- trialling early adoption of new technology platforms
- mediating central messaging to each teaching unit
- sharing good practice within and between teaching units
- developing remote labs
- incorporating student experience in a dynamic feedback loop
- supporting student wellbeing

7. CULTURE

Contextual factors		% SB	% B	% N	% E	% SE	p=
Level of support from head of school or management re: engaging with TEL	I/EA				●		.017*
	EM			●			
	LM			●			
Level to which TEL is seen as an institutional priority	I/EA			●			.313
	EM			●			
	LM			●			
Colleagues attitude to, and support for, use of TEL	I/EA			●			.085
	EM			●			
	LM			●			
Presence of a community of practice of educators using TEL	I/EA			●			.008**
	EM			●			
	LM			●			
Recognition and reward for engaging in TEL	I/EA			●			.079
	EM			●			
	LM		●				

SB = Significant barrier
B = Barrier
N = Neither
E = Enabler
SE = Significant enabler

	0%		25%		50%		75%		100%

"**A supportive *institutional culture* is recognised as essential for successful educational change** (Garrison & Kanuka, 2004, Kezar & Eckel, 2002) ...

Management and organisation is seen as pivotal in:

- **providing institutional commitment and leadership** (Garrison & Vaughan, 2013);
- **providing strategic seed funding** (Garrison & Kanuka, 2004, Porter *et al.*, 2014);
- **incentivising staff through recognition and reward** (Moskal *et al.*, 2013, Porter *et al.*, 2014);
- **providing time for blended learning in the workload model** (Garrison & Vaughan, 2013, Porter *et al.*, 2014); and
- **continuing to evaluate the benefits of blended learning** (Garrison & Kanuka, 2004, Moskal *et al.*, 2013, Porter *et al.*, 2014)."

(Adekola et al., 2017, p.12)

8. CARE

On the emergency pivot to online:

- "we are not building online courses or converting your face to face courses to online learning […] **we are trying to extend a sense of care to our students and trying to build a community that's going to be able to work together to get through the learning challenges**" (Robin DeRosa, quoted by Kamenetz, 2020)

Issues around suitable study space, sense of isolation and digital equity issues (Griffiths et al., 2021)

9. CONTEMPLATION (REFLECTION)

- What have we learned from the pivot to online?
- How do we keep progressing blended learning, rather than regressing to traditional education?
- Importance of early adopters in driving change; is there still a 'reluctant majority?'
- How can we continue to develop ourselves as caring, competent educators?

THE WINNING FORMULA

1. Change – how do we harness this?
2. Confidence – in using learning technologies
3. Capability – digital practitionership (practice and identity)
4. Community (-ies of practice) / CPD
5. Creation – innovation, using TELT to enhance student learning
6. Collaboration – active learning, staff-student partnership working, inter-disciplinary staff working
7. Culture – needs to be enabling, tolerant of (responsible) risk-taking
8. Care – for learners, ourselves, and our colleagues
9. Contemplation – opportunity to stop and reflect. Where next?

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ANY QUESTIONS?
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