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A TLC e-Learning Case Study:
Design, Development, Deployment and Impact

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Introduction & Aims

- It is important in higher education to teach **analytical chemistry** effectively which requires good learning resources
- Thin Layer Chromatography (**TLC**) as an analytical tool was chosen for this **case study**
- Aims include **pedagogy-led** design of FOUR short linked accessible e-learning resources
- Resource **evaluation** to assess the **impact** of different approaches used

Figure 1: H5P Moodle Book showing Parts 1 to 4

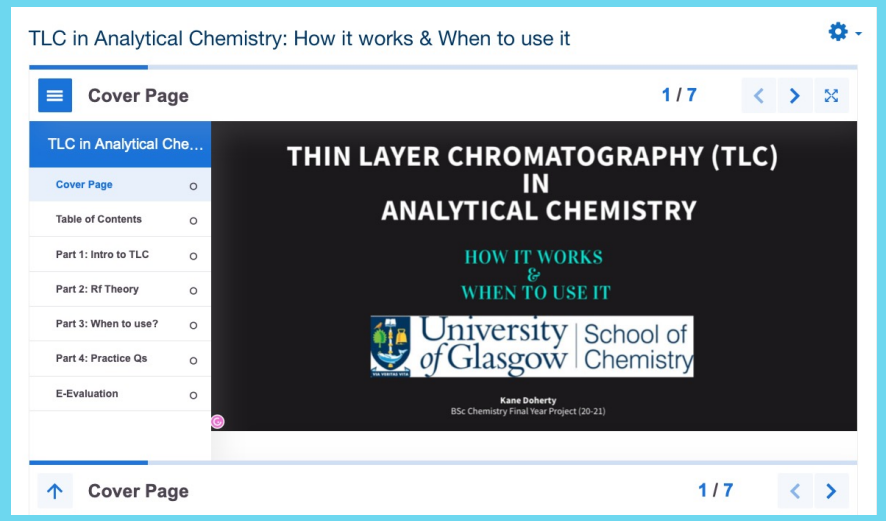
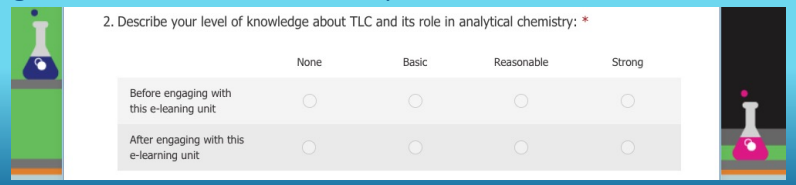


Figure 2: Section of MS FORM survey



Methodology

- The e-units were created using **Genial.ly**
- A **Moodle H5P book** was used to present the e-learning resource (**Fig. 1**)
- Students (**final year**) were invited to **trial** and to **evaluate**
- Anonymous evaluation data collected using **MS Forms** (**Fig. 2**)
- Current respondents (n = 6) (**Figs. 3-5**)

Figure 3: Q2. Describe your level of knowledge about TLC and its role in analytical chemistry:

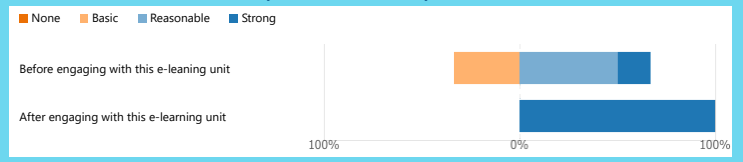


Figure 4: Q4. Compared to the traditional format of learning an analytical technique (in this case TLC) by reading about it in a lab manual, this e-learning approach

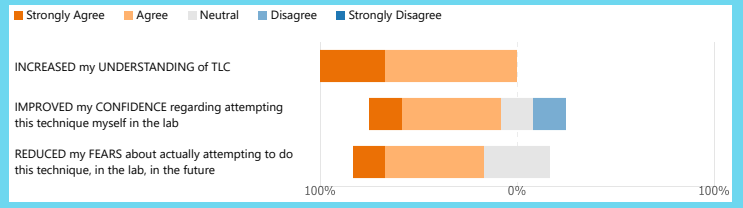
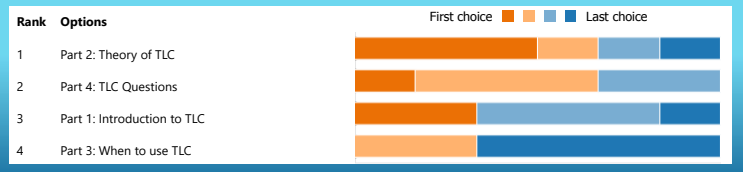


Figure 5: Q9. Rank Units 1-4 of the e-resources in terms of improving your technical understanding



Discussion

Survey data indicate that this e-learning resource **effective** at **improving** student **understanding** of the theory of TLC, and **increasing confidence** in using the technique correctly. (**Fig. 3&4**)

"This is a very clear and helpful resource for understanding how to use TLC and why you would use it." (Student respondent)

- Students ranked the **interactive questions** section of e-resource (Part 4) highly (**Fig.5**), demonstrating the importance of fostering **engagement** in effective learning

"I really liked the question and answer part. It got me thinking about what I had learned" (Student respondent)

- Students ranked Part 3 of the resource lowest (**Fig. 5**), with open answers showing this was due to slides being text dense. This highlights potential to **disengage** students through **information overload**

Conclusions & Future Work

- Students have **engaged positively** with the e-resource
- Data shows **increased understanding** and **confidence**
- Support for use as **Pre-Lab resource**

"Good pre-lab activity for a lab requiring TLC." (Student respondent)

- Suggested target cohorts: **Chem-1** and **Chem-2**

"This e-resource could be helpful for Chem-1 and Chem-2 students who would be using TLC for the first time." (Student respondent)

- Plan to **expand** current resources material
- Plan to **apply** case-study approach to other analytical techniques

References: Low, R. and Sweller, J., **2014**, *The Modality Principle in Multimedia Learning*, Cambridge University Press, pp.227-228; Chandler, P. and Sweller, J. , **1991**, *Cognitive Load Theory and the Format of Instruction*, Cognition and Instruction, **8** , 4, pp.293-332.