

Developing an interactive unit delivery model using Articulate 360™ for distance-learning postgraduate pharmacy professionals

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Study Objective

To develop a model through which distance-learning units could be delivered to improve the learning journey whilst retaining the quality of training, and to evaluate student acceptance of such a model.

Study design

Existing learning material for a single level 7, 15 CAT credit unit was redesigned and presented through an Articulate 360™ platform. The project was evaluated using anonymous student feedback posted on an online comments board.

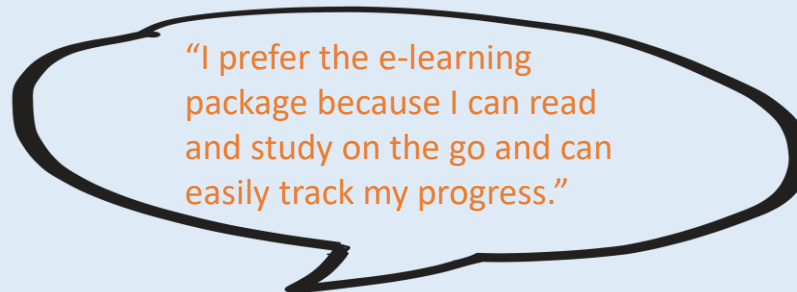
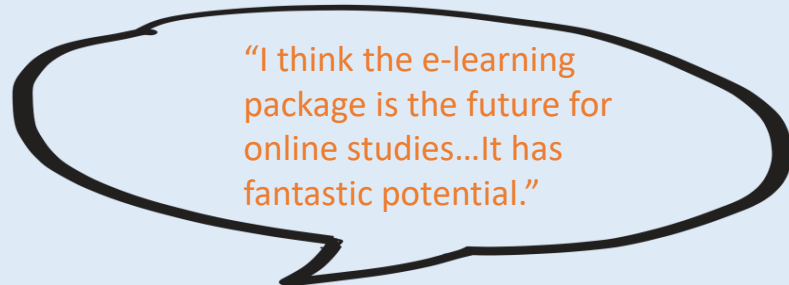
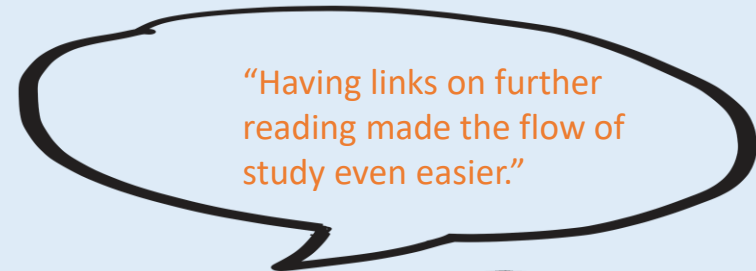
Results

Students accepted the new delivery of content. Themes from feedback included:

- increased accessibility
- enhanced portability
- improved flow
- ability to track progress

Conclusion

This project highlighted the acceptance of an interactive platform to deliver distance-learning teaching for postgraduate pharmacy students. We continue to evaluate this approach through student feedback.



Healing with Words: The 'Oops, Ouch, Woah' Method of Inclusive Pharmacy Education



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Background & Study Objective

“Oops, Ouch, Woah” is a simple and powerful method for inclusive conversations.

To explore the impact of the “Oops, Ouch, Woah” framework in a first-year pharmacy seminar course.

Design

End-of-semester written reflections (n = 17).

Consensual Qualitative Research methodology.

Results



Conclusion

The 'Oops, Ouch, Woah' method...

...was a valuable educational tool.

...contributed to key skill development for future healthcare professionals.

...facilitated personal and social development.

...prepared students for effective communication, and collaboration.

...equipped students for navigating diverse healthcare settings.

A Spanish Language Track: The Use of Patient Appointment Simulations to Support Spanish Language Skills for Student Pharmacists

Ellen Schellhase | Juan Camilo Alvarez Nunez | Gicelle Garcia | Jasmine Gonzalvo | Carlyn Kimiecik | Mitchell Struewing | Juan Diego Viracachá Suárez
Purdue University College of Pharmacy



OBJECTIVE: A Spanish Language Track (SLT) was developed to support Spanish language curriculum and language-concordance

DESIGN: Patient Appointment Simulations (PAS) are part of the SLT
Pre/post surveys & focus groups provided student feedback on SLT

RESULTS: PAS were bi-weekly, small group, & in-person / videoconference
Led by native speaking pharmacists
Qualitative feedback about PAS was favorable

CONCLUSION:

SLT students demonstrated active engagement while enhancing language skills through immersive experiences

Student cohort connections, SLT leadership, and PAS were key contributors to learning

SLT Components
Bi-Weekly Cohort Meetings
Patient-Appointment Simulations (PAS)
Health-Focused Experiential Learning and Language Immersion Activities
Online Medical Spanish Training – Canopy®
International and Intercultural Learning Opportunities

Blue-Green-Red-Yellow: Understanding Whole Brain® Preferences of Student Pharmacists Participating in International Advanced Pharmacy Practice Experiences



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OBJECTIVE: This activity was designed to create awareness of thought preferences and how to utilize these preferences during International Advanced Pharmacy Practice Experiences (I-APPEs)

DESIGN: I-APPE student pharmacists complete pre-departure coursework

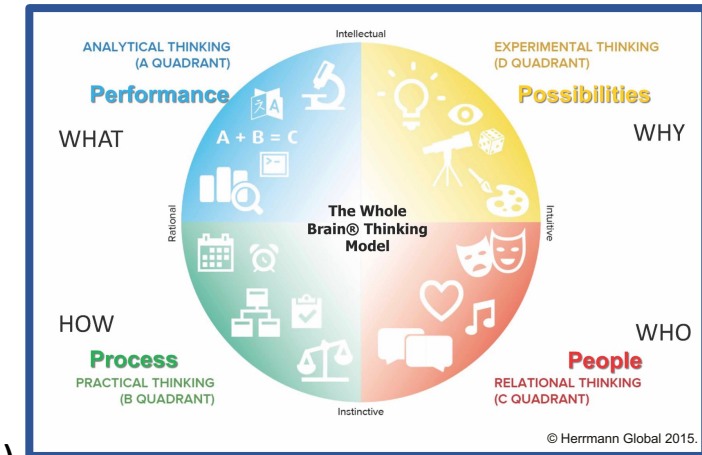
- Complete the Hermann Brain Dominance Inventory® (HBDI)
- Debrief on their HBDI and participate in in-class activities to apply preferences in different I-APPE settings

RESULTS: 107 student pharmacists completed the HBDI

- Most common preference was 1-1-2-2 (Blue – Green / Red – Yellow)
- Preferred thinking: green (n=77) > blue (n=70) > red (n=62) > yellow (n=41)
- Preferences change under stress: green (n=84) > red (n=76) > blue (n=75) > yellow (n=46)

CONCLUSION:

I-APPE students gain self-awareness which can support belonging within their I-APPE site



Shining, happy Pharmacy: The Research, Education & Medicines Use Evaluation (REM) program to promote staff engagement, support professional development and drive departmental outputs



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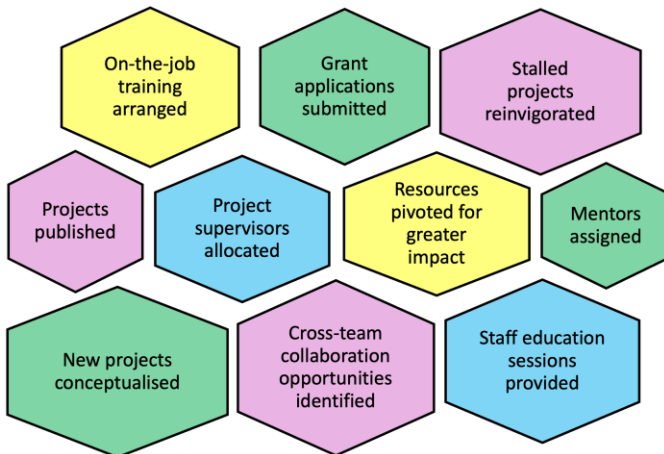
Objective

Develop a cohesive team-based, structured approach for our QUM program to:

- Inspire staff
- Facilitate collective goal-setting
- Drive capability
- Monitor outputs

Results

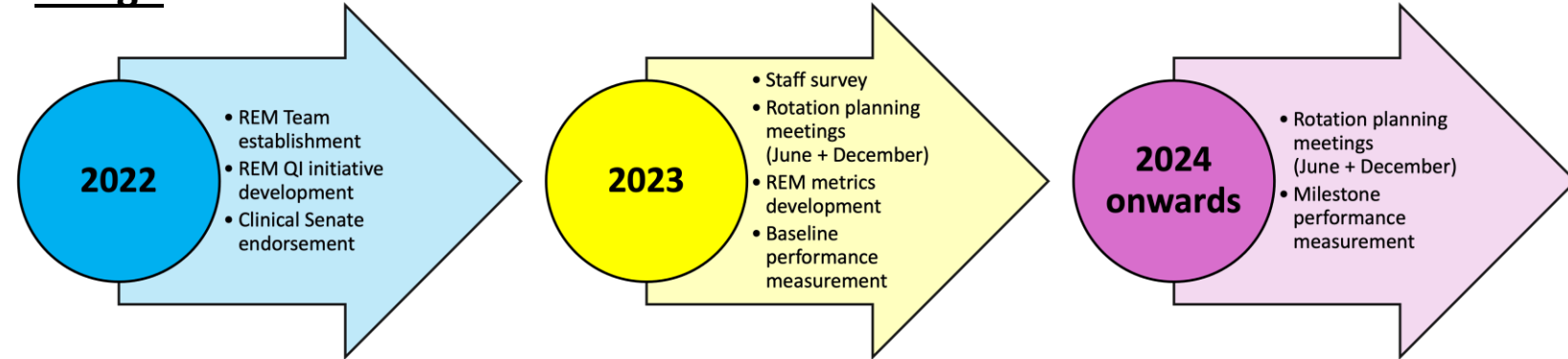
1. Rotation planning meeting outputs:



Conclusion

Program stakeholders were highly engaged & enthusiastic. Specific targets for staff support and development were identified.

Design



2. Staff survey feedback:

“Structured and organised use of time together”

“The chance to brainstorm potential projects.”

“Non-judgmental. Very validating. The panel advice gave focused direction on projects that may be worth prioritising.”

“Good meeting structure”

“An environment to share our team’s vision for research and education plans. The advice given allowed a focus for the work that we wanted to do and prompted us to present at a staff education session on our team.”

“Always love planning!”

“Great way to summarise research and education activities for the team.”

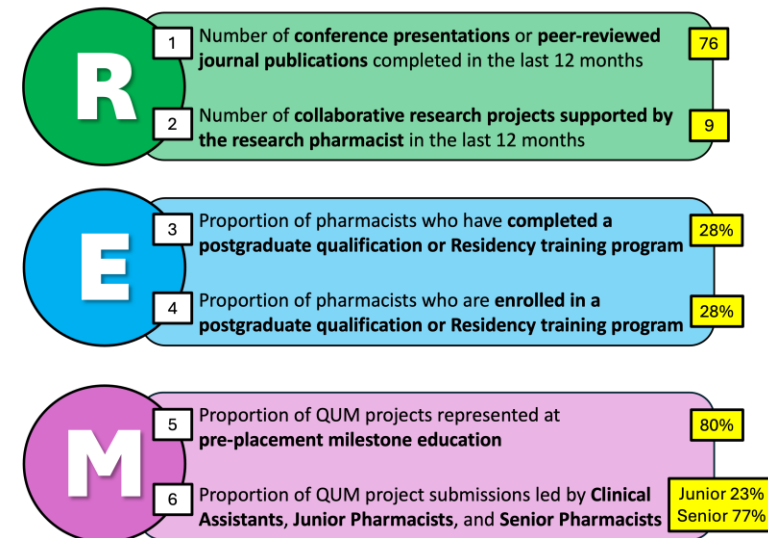
“Everyone’s enthusiasm to help. It was quite inspirational.”

“Opportunity to catch up... I often have ideas but co-ordinating time to catch everyone can be difficult.”

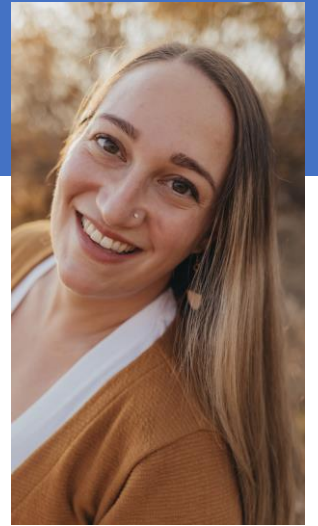
“Was good to be forced to take the time to look ahead.”

“Discussing ideas with experienced and well respected peers to ensure the goals of the team align with the goals of the department.”

3. REM metrics + baseline measurement:



GAME ON: UNLOCKING THE POWER OF PLAY IN PHARMACY EDUCATION



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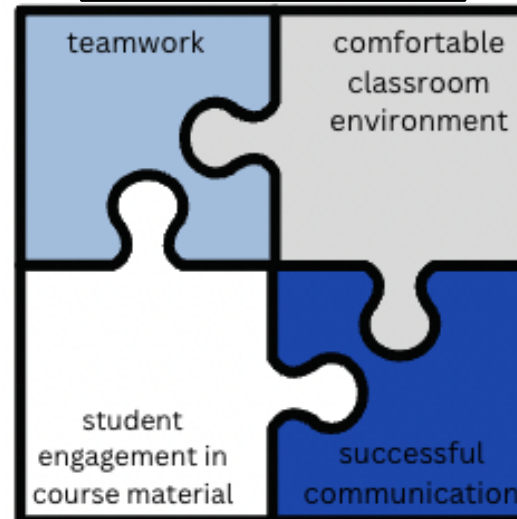
BACKGROUND

As educators, we are compelled to adjust our pedagogy to address changing learner needs. We must strive to create environments that feel inviting and offer connection. This study aimed to explore students' perceptions of game-based learning approaches in a seminar-style first-year pharmacy student course [1].

OBJECTIVE

To identify key themes related to the use of games in class and their impact on student learning, engagement, and connection [2].

RESULTS



DESIGN

Consensual
Qualitative Research
(CQR) n=17

CONCLUSION

Themes as identified through CQR, suggest that game-based learning can be an effective pedagogical tool in pharmacy education. These findings provide a foundation for further research and development of game-based learning strategies in pharmacy and other healthcare-related education fields.

1 Fuller M, Schadler A, Cain J. An Investigation of Prevalence and Predictors of Disengagement and Exhaustion in Pharmacy Students. Am J Pharm Educ. 2020 Oct;84(10):ajpe7945.

2 Oestreich JH, Guy JW. Game-Based Learning in Pharmacy Education. Pharmacy (Basel). 2022 Jan 6;10(1):11.



WORKING ON THE SYSTEM RATHER THAN IN THE SYSTEM: DEVELOPING ELECTRONIC MEDICAL RECORD PRESCRIBING ALERTS FOR LIVE VACCINES



Deepali Verma

The Royal Children's Hospital Melbourne, Australia

Background

- Live vaccines are generally contraindicated for severely immunocompromised individuals due to the risk of vaccine-related disease.
- The Electronic Medical Record (EMR) system at The Royal Children's Hospital (RCH) lacks functionality to alert clinical staff about the potential harms of charting live vaccines.
- Following an incident of inadvertent administration of a live vaccine to a contraindicated patient, a novel 'Live Vaccine Alert' was created within EMR.

Methods

- Implemented in February 2022, the 'Live Vaccine Alert' pulls data from EMR, including charted and historical medications and diagnoses from the patients' 'problem list'.
- The alert is triggered when live vaccines are ordered for patients with certain medical contraindications, such as recent corticosteroid therapy or immunoglobulin/blood product administration.
- EMR alerts appear in:
 - Order tab for clinicians
 - Verification tab for pharmacists and
 - Medication administration tab for nurses

Results

- The 'Live Vaccine Alert' has been successfully implemented at RCH. No further errors of inadvertent live vaccine administration to contraindicated inpatients since February 2022.
- The alert provides a visual warning for live vaccine ordering, prompting further investigation and discussion with the Immunisation team.

Conclusion

- The 'Live Vaccine Alert' notifies clinical staff of contraindicated live vaccines, ensuring medication safety through prompt clinical review.
- This model could be adapted for other immunisation software programs, making it applicable to other immunisation providers.

Patient Safety (1)

WARNING:
The use of Live Vaccines may be CONTRAINDICATED in this patient due to a past or existing condition or treatment that can result in fatal outcomes.

Live Vaccines are contraindicated in:

- severe combined immunodeficiency (SCID)
- congenital immunodeficiency
- intussusception (specific for Rotavirus vaccine (Rotarix) only)
- active leukemia or lymphoma
- generalised malignancy
- chemotherapy or radiotherapy
- HIV
- solid organ transplant or haemopoietic stem cell transplant
- graft versus host disease
- immunosuppressant medications
- aplastic anaemia
- pregnancy

Please review patient history carefully before proceeding.

Remove the following orders?

rotavirus monovalent (ROTARIX) oral vaccine 1.5mL
1.5mL (0.425 mL/kg), Oral, During hospitalisation, Immunisation, Starting today at 15:15, For 1 ...

Acknowledge Reason

Fig 1: Live Vaccine alert
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Collaborative Online International Learning (COIL): An inclusive method to develop intercultural and transcultural competency in pharmacy students

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University of Wyoming School of Pharmacy, Laramie, USA¹ and Cardiff University School of Pharmacy, Cardiff, Wales²



Background

Developing intercultural competency is a goal of pharmacy programs.

International exposure through studying abroad can achieve this goal, but barriers exist for many students.

Study Objective

Conduct a pilot study to assess COIL as an internationalization method to develop intercultural competence in students

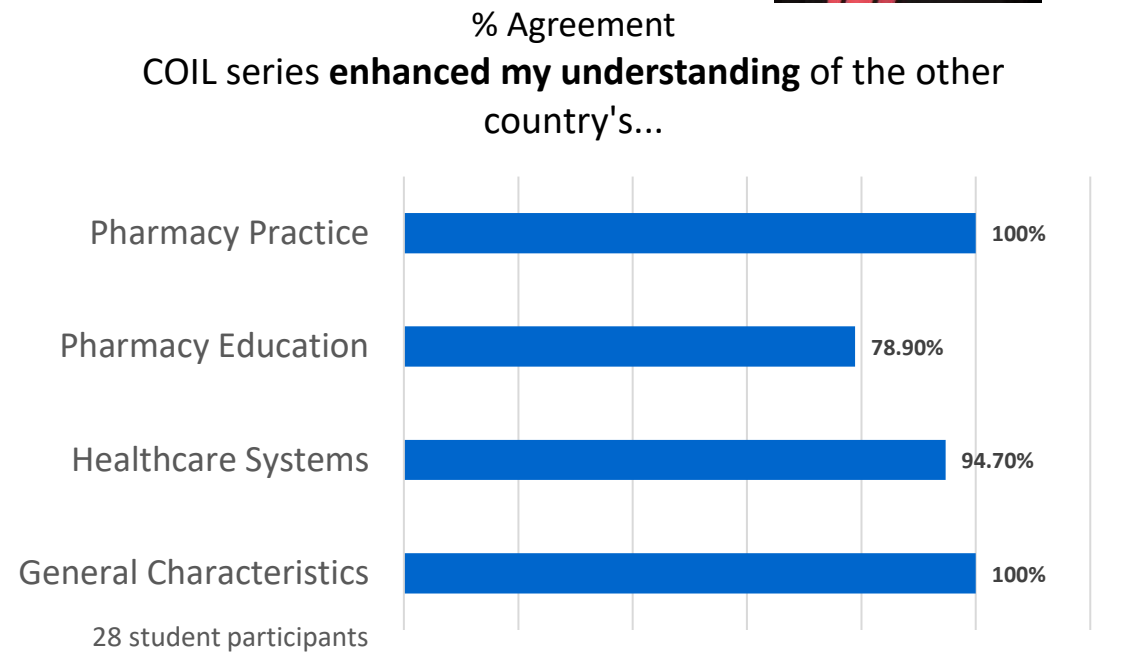
Design

- Partnership between schools in Wyoming (US) and Cardiff (Wales)
- Developed six COIL modules for synchronous and asynchronous student collaboration over 2 months
- Evaluation via student survey

Conclusion

“These are opportunities many students may never have a chance to participate in otherwise. Some students have studied or vacationed abroad, but many have not, and probably never will have those chances. After this activity, I would love to participate in COIL again next year to keep building upon my skills.” [Student Quote from Program Evaluation]

Program Evaluation Results



Development of a curriculum for practice-oriented education at the University of Pécs Hungary

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- **Aim:** The **renewal of pharmacy curricular program and training** is a recurring task for universities and inhibited by their **historical traditions** and inflexible **legal regulations**.
- **Methods:** In order to better align pharmacist training and professional competence development with labor market needs, a 7-member **Curriculum Reform Working Group (CRWG)** was organized with the involvement of three external experts from the pharmaceutical industry, community- and hospital pharmacy, which conducted a review of pharmacy education, **labor market needs and national, international peer-faculty best practices**.
- **Results:** Intervention points included reviewing and harmonizing the content of the curricula by facilitating a **guided self-evaluation of course descriptions** by course directors (n=40), reviewing the **number of teaching hours and credits** for each obligatory course, and examining the interplay between knowledge acquisition and skill development.
- **Conclusion:** As a result of the action plan for training reform defined by the CRWG and the parallel introduction of the **Learning Outcomes Based (TEA) curriculum**, pharmacy students will have up-to-date and internationally competitive knowledge and skills. Our research can give a **valuable tool to other universities** to reimagine and optimize their pharmacy training curricula.

Obligatory	250 (intervention)
Thesis	10
Optional	15
Elective	25 (intervention)
	300

knowledge and skills in **natural and social sciences module: 58**
knowledge and skills in **medical and health sciences module: 58**
theoretical and practical knowledge and skills in **pharmaceutical science and pharmacy module: 110**
Professional practice: 24

Evaluating a simulated patient interaction using an artificial intelligence (AI) prototype



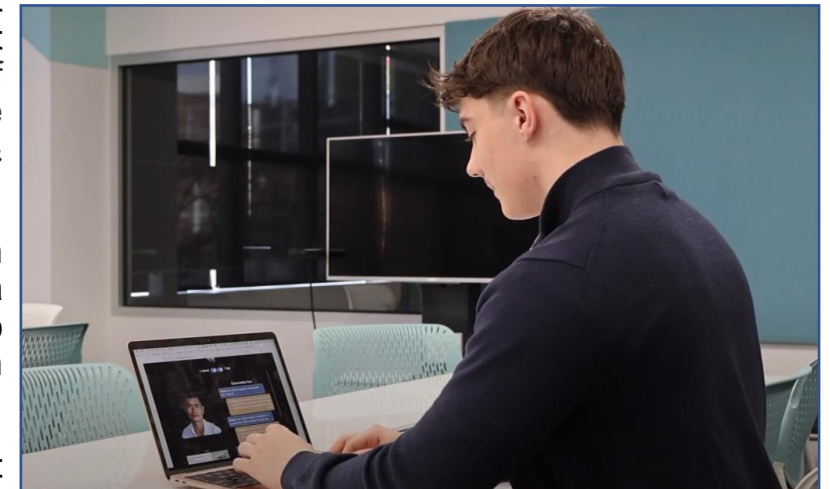
Emily Stokes, Angelina Lim, Joel Moore, Ethan Kreutzer & Yeap Li-Ling, Monash University.

Objective: To investigate the impact of an artificial intelligence (AI) prototype, Authentic Teaching & Learning Applications Simulation (ATLAS) platform on pharmacy students in their preparation for Objective Structured Clinical Examinations (OSCE's) by interacting with a simulated patient avatar.

Design: A quasi-experimental study was conducted across two pharmacy units at Monash University, Parkville, whereby students were invited to use an AI prototype (ATLAS) that utilises and controls open generative AI using a large language model. We used ATLAS to engineer patient avatars to simulate a range of pharmacist-patient interactions in a community pharmacy environment. The software facilitated real-time engagement with the patient avatars and allowed for repeated practice and personalised feedback after each attempt. The software integrated use of a video camera which created the opportunity for feedback on communication skills in addition to feedback on the clinical knowledge required for the case. Evaluation of the impact was assessed by user attempts, OSCE scores (pre & post ATLAS use) and student perceptions.

Results: Out of 328 students who participated, 263 elected to use ATLAS. Median OSCE scores improved with increased ATLAS practice from 0.80 with no attempts to 0.90 after six attempts. Regression analysis showed a significant impact of ATLAS usage on OSCE marks ($p=0.01$), with an estimated increase of 0.09 in scores from zero to six conversations. Survey feedback indicated students valued the simulations for OSCE preparation noting an appreciation for personalised feedback after each attempt, allowing for opportunities to improve on successive attempts.

Conclusion: ATLAS platform's contribution to OSCE preparation was positively received with students indicating that these simulations were realistic. The tool proved to be effective as students obtained an improvement in their clinical and communication skills. This highlights ATLAS's value as a supplementary educational tool, fostering AI feedback mechanisms to support student learning.



MAPPING THE CORE CONCEPTS OF PHARMACOLOGY IN INTEGRATED PHARMACY CURRICULA

Tina Hinton^{1,2}, Brent McParland¹, Nial Wheate¹, Paul Groundwater¹, Thomas Balle¹ and Fanfan Zhou¹ Sydney Pharmacy School, The University of Sydney¹, Camperdown, NSW, Australia; Charles Perkins Centre, The University of Sydney², Camperdown, NSW, Australia.



Objectives: To map the core concepts of pharmacology¹ within foundational units of study in the BPharm and MPharm at The University of Sydney.

Design: Lecture learning outcomes and slides/notes were reviewed for foundational pharmacology units of study in the BPharm (PHAR1922; 12 credit points) and MPharm (PHAR5713 and PHAR5715; 6 credit points each). Key words, phrases and images were coded according to the published core concepts and frequencies were tabulated.

Results: As shown in Table 1, some core concepts of pharmacology are taught in greater depth than others in foundational BPharm and MPharm units. Drug targets, drug-target interactions, structure-activity relationships and mechanism of drug action are substantially reinforced across both programs. Drug metabolism, elimination and clearance are reinforced in the MPharm. On the other hand, drug tolerance, therapeutic index and steady state concentration are treated minimally in lectures in these foundational units.

Conclusion: This mapping task has identified strengths and gaps in the teaching of pharmacology core concepts in pharmacy curricula at The University of Sydney. The ways in which these core concepts are extended in other units of study warrants investigation.

Table 1: Frequencies of pharmacology core concepts in foundational units of study in the BPharm and MPharm, represented as a heat map.

Core Concept	BPHARM	MPHARM	
	PHAR1922	PHAR5713	PHAR5715
CC1. Drug targets	5	9	2
CC2. Drug–target interaction	5	7	2
CC3. Structure–activity relationship	10	7	
CC4. Mechanism of drug action	6	3	
CC5. Dose/concentration–response relationship	2	1	2
CC6. Drug affinity	3	1	
CC7. Drug efficacy	2	2	
CC8. Drug potency	2		1
CC9. Drug selectivity	2	1	
CC10. Drug absorption	3		3
CC11. Drug bioavailability	3		3
CC12. Drug distribution	2		3
CC13. Volume of distribution	3		4
CC14. Drug metabolism	2		5
CC15. First- and zero-order kinetics	1		3
CC16. Drug elimination	3		5
CC17. Drug elimination half-life (t _{1/2})	1		4
CC18. Drug clearance	2		6
CC19. Steady-state concentration			1
CC20. Drug tolerance			1
CC21. Adverse drug reaction and adverse drug event	3		2
CC22. Therapeutic index	2		
CC23. Drug interaction	1		4
CC24. Individual variation	2		4

¹ Guilding et al., 2024. *Brit. J. Pharmacol.*, 181 (3), 375-392. doi: 10.1111/bph.16222

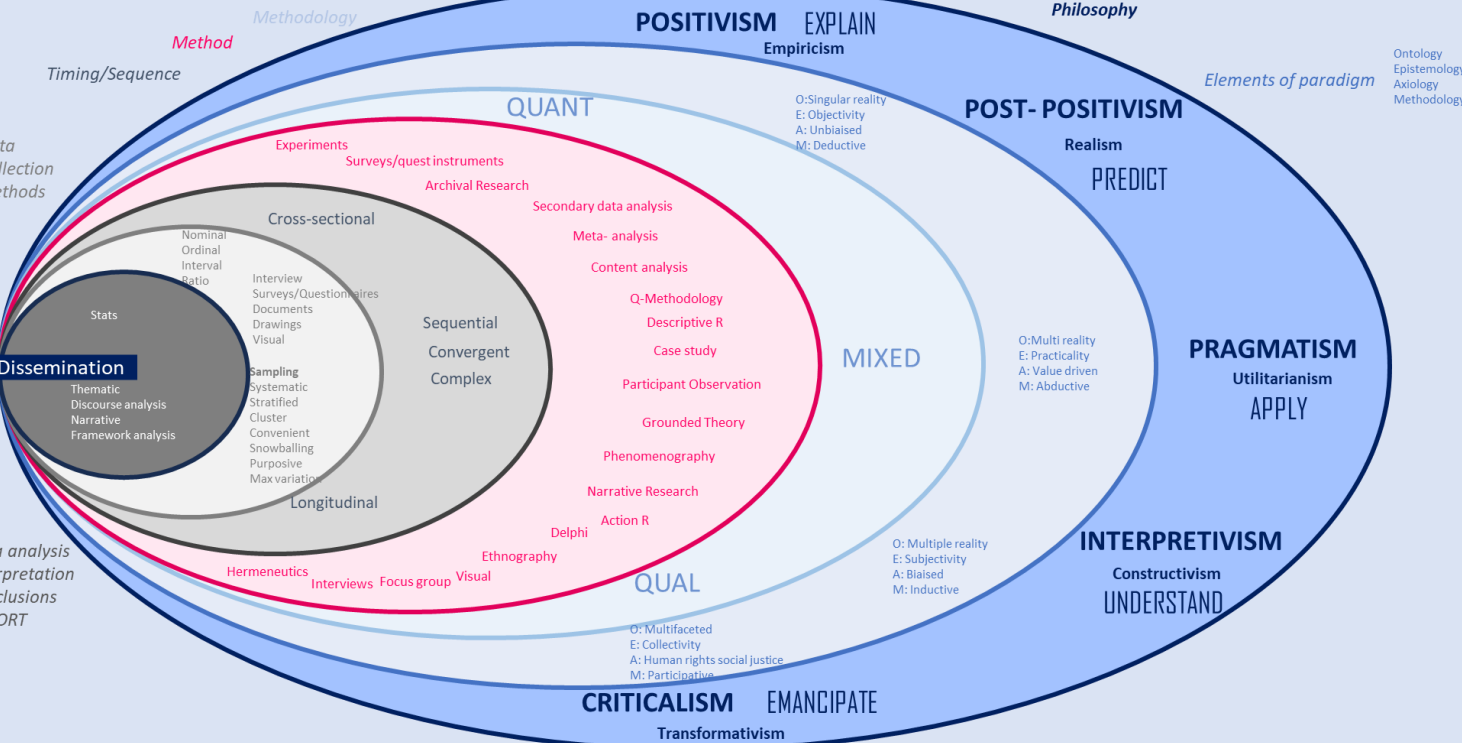
Bridging the Gap: Developing an AI-guided Tool to Enhance Methodological Understanding in Education Research

Laurence Orlando, Mahbub Sarkar, Betty Exintaris, Nilushi Karunaratne, Joaquin Sanchis, Alastair Pearl, Jae Pyun, Monash University
Daniel Czech University of Melbourne



Laurence Orlando

THE "GET TO THE POINT" TOOL



Study objective: This research aims to develop a comprehensive AI-powered tool to guide novice researchers coming from a STEM discipline in selecting appropriate theoretical frameworks, methodologies, and methods for their studies. By integrating Saunders' research onion model into a streamlined process, the tool ensures consistency between the grand theory, methodology, and available methods, simplifying these critical decisions

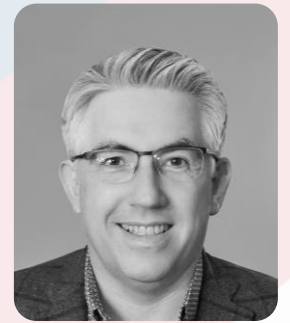
Design: This study adopts an exploratory sequential mixed-method design. In the initial qualitative phase, an interpretivism paradigm is adopted to conduct interviews and surveys with experienced HER professionals. This phase explores their lived experiences through the lens of the research onion model layers, providing an in-depth understanding of their learning journeys. Simultaneously, interviews and surveys with novice researchers identify their challenges and support needs. The qualitative insights will inform the pragmatic stage, where the AI tool will be developed based on the research onion framework. Quantitative surveys will evaluate the tool's usability and effectiveness, followed by refinements guided by additional qualitative feedback, adhering to an action research methodology of iterative cycles.

Results and conclusion: Preliminary findings from the qualitative phase reveal insights into the experiences and challenges faced by both experienced and novice researchers in education. These findings will inform the development of the tool, ensuring its relevance and effectiveness in addressing the needs of its intended users. The quantitative survey will provide further insights into the usability and effectiveness of the tool, guiding refinements for its final iteration.

Saunders, M., Lewis, P., & Thornhill, A. (2016). Research methods for business students (7th ed.). Pearson Education Limited.



Answer the question: first user feedback on a novel Very Short Answer question assessment system



Maurice Hall, Dan Corbett, Ciara Campbell, Dariusz Halasa and Lezley-Anne Hanna
School of Pharmacy, Queen's University Belfast, 97 Lisburn Road, BT9 7BL

Objective: to collect student feedback on a novel Very Short Answer (VSA) question assessment system developed in the School of Pharmacy, Queen's University Belfast

Design: Pharmacy undergraduate students in their final year were invited to test the VSA assessment system and complete an online questionnaire. Questions related to user experience and how the VSA question type compared with other commonly used multiple-choice question (MCQ) formats.

Results: The VSA system was well received by the 32 students who completed the user testing and questionnaire (118 invited; RR = 27%). Scores were on a 7-point scale, with navigation, functionality and layout all averaging scores >6. Compared with single-best answer and negatively-marked MCQs respectively, VSA questions were viewed as a truer reflection of the student's ability (5.59 vs 5.38 vs 2.38), fairer (5.59 vs 5.38 vs 2.41) and easier to understand (5.91 vs 5.28 vs 3.81).

Conclusion: The VSA questions from this system can add greater validity and authenticity to assessments while avoiding cueing effects, permitting automated marking and having high levels of user acceptance.

