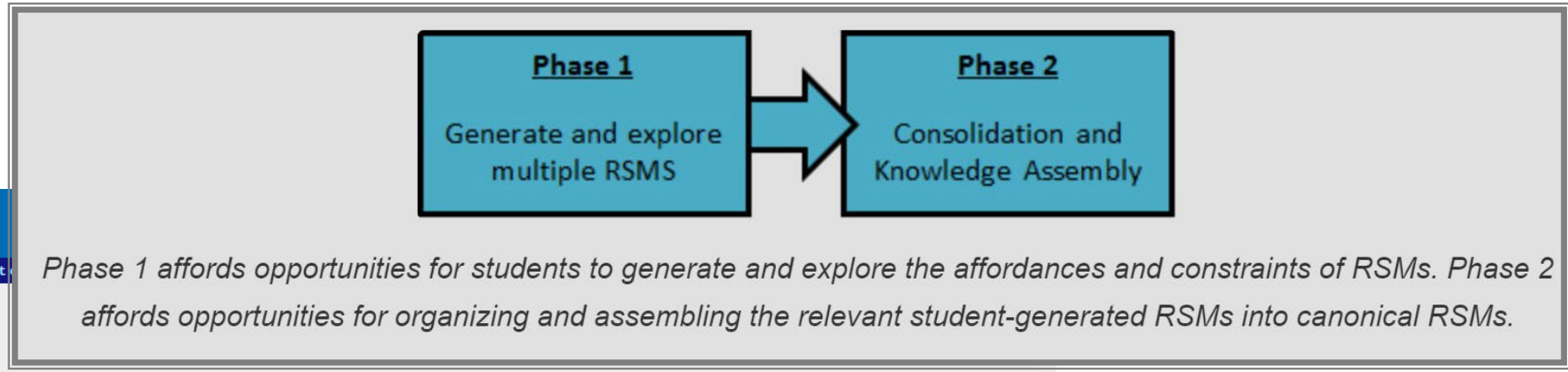
Leveraging Productive Failure for Adult Learning

(Translating principles to action)

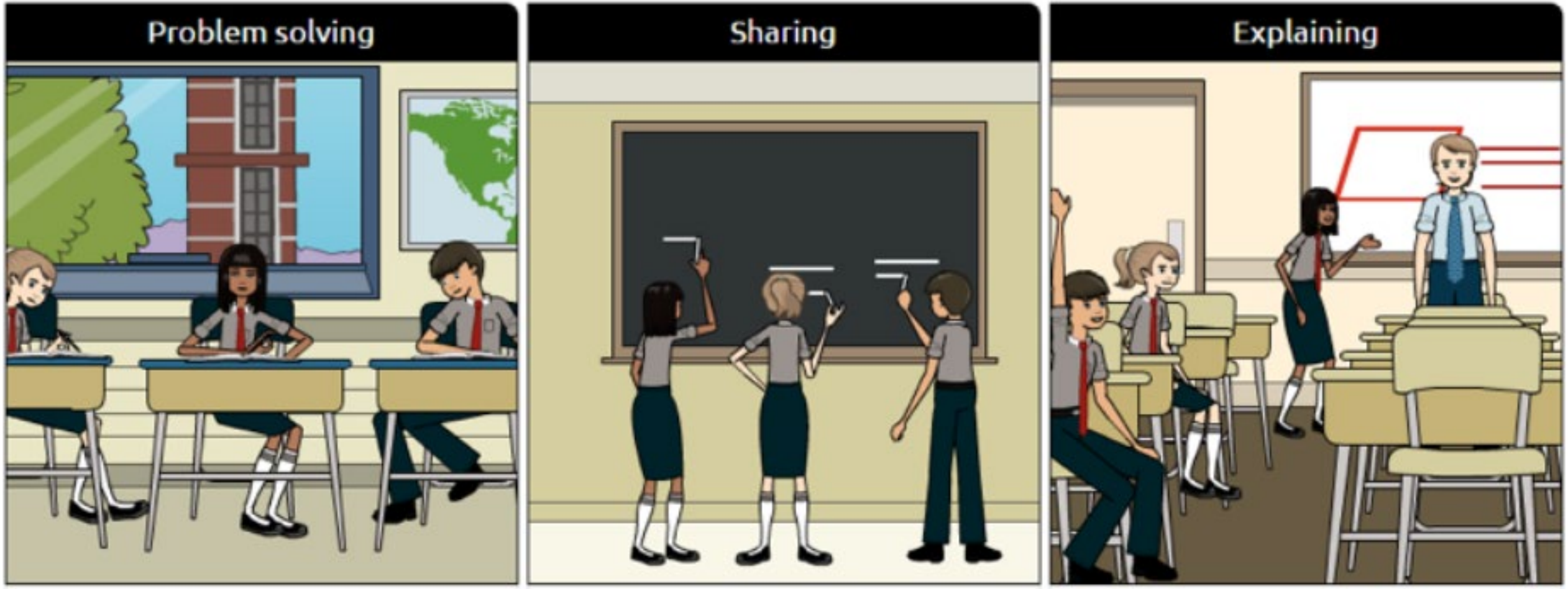
INNOVATION CENTRE

Ver 1

What is Productive Failure?



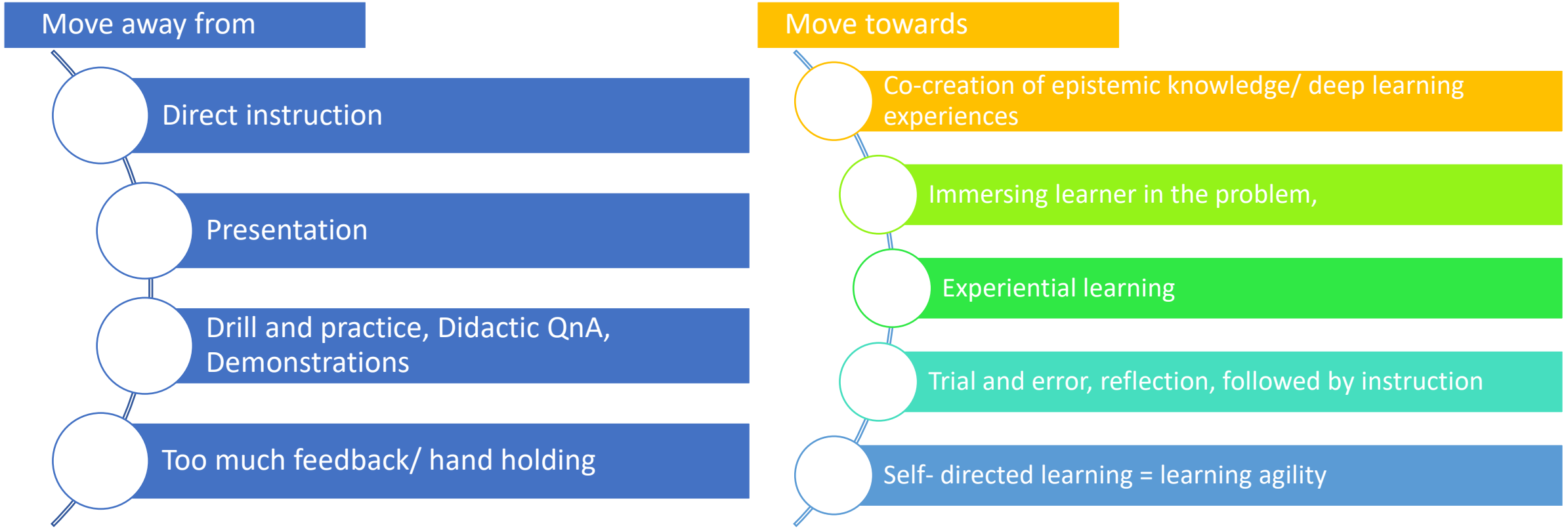
Phase 1 affords opportunities for students to generate and explore the affordances and constraints of RSMs. Phase 2 affords opportunities for organizing and assembling the relevant student-generated RSMs into canonical RSMs.



Mind the hand holding, stretch your learners, lead the consolidation

Reference: https://singteach.nie.edu.sg/2021/04/26/productive-failure/

Adult Learners with Skills and Expertise to build on expert-dominated ways → expert enabled learning designs



PubMed.gov

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Randomized Controlled Trial > Nurse Educ Today. 2021 Jun;101:104871.

doi: 10.1016/j.nedt.2021.104871. Epub 2021 Mar 17.

Measuring the impact of productive failure on nursing students' learning in healthcare simulation: A quasi-experimental study

Evelyn Palominos [1], Tracy Levett-Jones [2], Tamara Power [2], Nadine Alco
Roberto Martinez-Maldonado [3]

Affiliations + expand

PMID: 33773221 DOI: 10.1016/j.nedt.2021.104871

Abstract

Background: Previous research suggests that making errors in a non-threatening simulated environment can facilitate learning. Productive failure, which combines problem-solving tasks followed by instruction, enables students to learn from making mistakes. This teaching approach has demonstrated improved learning outcomes such as explanatory knowledge and transfer of knowledge compared to a direct instruction approach where students receive instruction prior to problem-solving tasks. However, no previous studies have examined the impact of productive failure on nursing students' learning in manikin-based simulation.

Objective: To measure the impact of productive failure on nursing students' declarative knowledge, explanatory knowledge, and transfer of knowledge compared to a direct instruction approach in a paediatric closed head injury simulation.

Methods: Second year undergraduate nursing students (n = 349) from one Australian university were

Productive Failure in Higher education and Doctorate programs

SpringerLink

Published: 14 May 2019

Productive failure as an instructional approach to promote future learning

Naomi Steenhof, Nicole N. Woods, Pascal W. M. Van Gerven & Maria Mylopoulos

Advances in Health Sciences Education **24**, 739–749 (2019) | Cite this article

1937 Accesses | **12** Citations | **15** Altmetric | Metrics

ructional approach that requires learners to struggle as they s to problems before, rather than after, receiving direct ncept. Studies demonstrate that productive failure prepares students for later learning of new, related knowledge. Our study explored the effectiveness of productive failure as an instructional intervention in health professions education with respect to (a) acquisition and application of a novel concept, and (b) learners' preparation for future learning of new, related content. Forty year-one students enrolled in the Doctor of Pharmacy program at the University of Toronto were randomly assigned to a productive failure (i.e. attempt to generate solutions before receiving instruction) or direct instruction only learning condition. After a practice phase, participants completed a series of tests designed to measure knowledge acquisition, knowledge application, and preparation for future learning (new learning is required for successful problem solving). As expected, no difference in performance was seen between participants on the acquisition and application tests. However, participants in the productive failure condition outperformed those in the

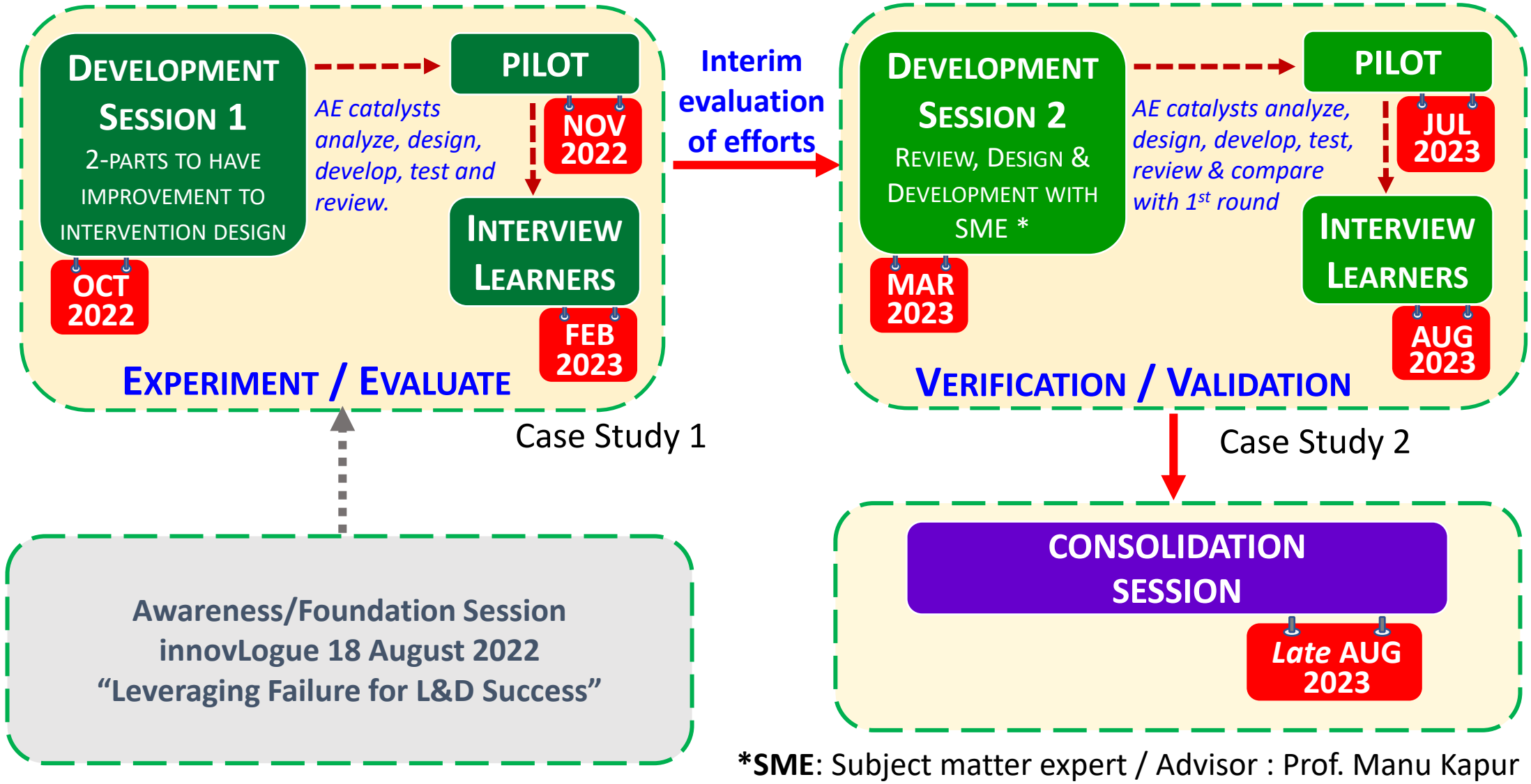
Who's involved?

Adult Educators

Prof. Dr. Manu Kapur

- Chair of Learning Sciences & Higher Education, ETH Zurich
- Director, The Future Learning Initiative
- Founding Chair, The ETH Zurich-EPFL Joint Doctoral Program in the Learning Sciences
- www.manukapur.com

Project plan for Leveraging Productive Failure for Adult Learning



***SME**: Subject matter expert / Advisor : Prof. Manu Kapur

What are we looking for?

Eight diverse case studies to yield rich insights

Diversity to be based on:

1. Spaces for learning, e.g., classroom, online, workplace and hybrid/blended.
2. Nature and types of learning outcomes.
3. Learner profile / segment, e.g., older workers/learners, career switchers, upgraders.
4. Types of learning contents (e.g., generic skills; hard skills; technical skills);
5. Types of industry where the learning takes place; and
6. Any other info / details deemed pertinent.

Who are we looking for?

Experienced Adult Educators with sound foundation in learning and teaching…

1. At least 5 years of experience in designing, developing***, and*** delivering curriculum, lessons as well as assessment for adult teaching and learning.
2. Currently active in adult learning design, curriculum development, delivery and/or assessment with corresponding qualifications and credentials.
3. ***Have on-going classes*** *(preferably outside of IAL)* where learning interventions can be introduced and trialled for the duration of the project.
4. You would be at an advantage if you actively, explore learning innovation, adapt innovative and learning sciences informed pedagogical practices in your teaching and learning.

Adventurous Adult Educators who are not afraid to try and fail… and want to talk about it

- **Design learning experiments** using PF principles for one of their classes
- Produce case studies on their learning experiments which include **documenting learning journey,** iterations of PF interventions, learner artefacts and reflections
- **Co-develop** the new andragogical approach
- **Time, commitment** and resources to the project. And **its duration.**
- Analyse, write and produce case studies on the **learning interventions** that he/she has developed and trialled, regardless of the outcomes of the trials, which would include **documenting the learning journey**, iterations of PF interventions, learner artefacts and reflections- based on the case study template, provided.

Which classes to choose/ avoid.. Some guidelines… *(no hard and fast rule)*

1. Avoid WSQ courses
2. Avoid milestone classes, like a capstone class
3. Avoid those with summative assessments and regulatory compliance requirements
4. Avoid classes that involve licensing from other agencies & many different governing bodies- choose straighter courses
5. Feel free to propose tech enabled, blended classes, workplace learning, skills based (technical or soft skills)

Program Timeline- refer to webpage for the most updated one

innovLogue

LEVERAGING 'FAILURE' FOR L&D SUCCESS

18 AUG
3:00 - 5:00PM

HYBRID SESSION

Lifelong Learning Institute #05-03 S408601
or online via Zoom

Professor Manu Kapur
ETH Zürich

Professor Michael Jacobson
University of Sydney

Dr Parveen Sandhu
Surge Consulting

MODERATOR

Dr Michael Choy
Tech Tree

References

https://docs.google.com/document/d/1sTdrRKughFOl03e1OCaynhYSD-e3kUxz5hxnHuWQxJ0/edit?usp=sharing

- Thank You