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LEARNING *for* CHANGE AND INNOVATION

WORLD CONGRESS

7-9 NOVEMBER 2016 ADELAIDE, SOUTH AUSTRALIA

CONGRESS SUPPORTERS

AUSTRALIAN INSTITUTE *of* BUSINESS
the practical business school

Leeds Trinity University

View of Action Research Based Education and Research Program Development from a Cognitive Science – Developmental Perspective

Associate Professor Juhani Tuovinen

GCWAL/AIB

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How does Action Research connect with Cognitive Science in Education?

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Historical View

Researcher: John Sweller

Problem: Learning and Problem Solving

Context: School learning

Outcome: Cognitive Load Theory (CLT)

Researcher: Selva Abraham

Problem: Organisational learning for change and development

Context: Organisational consultancy/Management development

Outcome: Work-Applied Learning (WAL)

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Conceptual View

Sweller – CLT

Limited Working Memory (WM)

- Need to ensure learning does not overload WM
- Numerous empirically validated learning effects
- Overarching learning perspective (evolutionary perspective)

Abraham – WAL

- Focus: Organisational Learning, Development & Change
- Importance of workplace as key context for learning & change
- Purpose: Enable managers to learn & introduce change via Action Research cycles + Action Learning

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Cognitive Load Effects

Cognitive Load Effect	Key References
Worked-Example	(Renkl, 2005)
Completion	(Paas & van Merriënboer, 1994)
Split-Attention	(Ayres & Sweller, 2005)
Modality	(Low & Sweller, 2005)
Redundancy	(Sweller, 2005)
Expertise reversal	(Kalyuga, 2005)
Guidance fading	(Renkl, 2005)
Goal-Free	(Paas, Camp & Rikers, 2001)
Element interactivity	(Sweller, 1994)
Isolated/interacting elements	(Pollock, Chandler & Sweller, 2002)
Variable Examples	(Paas & Van Merriënboer, 1994)
Imagination	(Leahy & Sweller, 2004)

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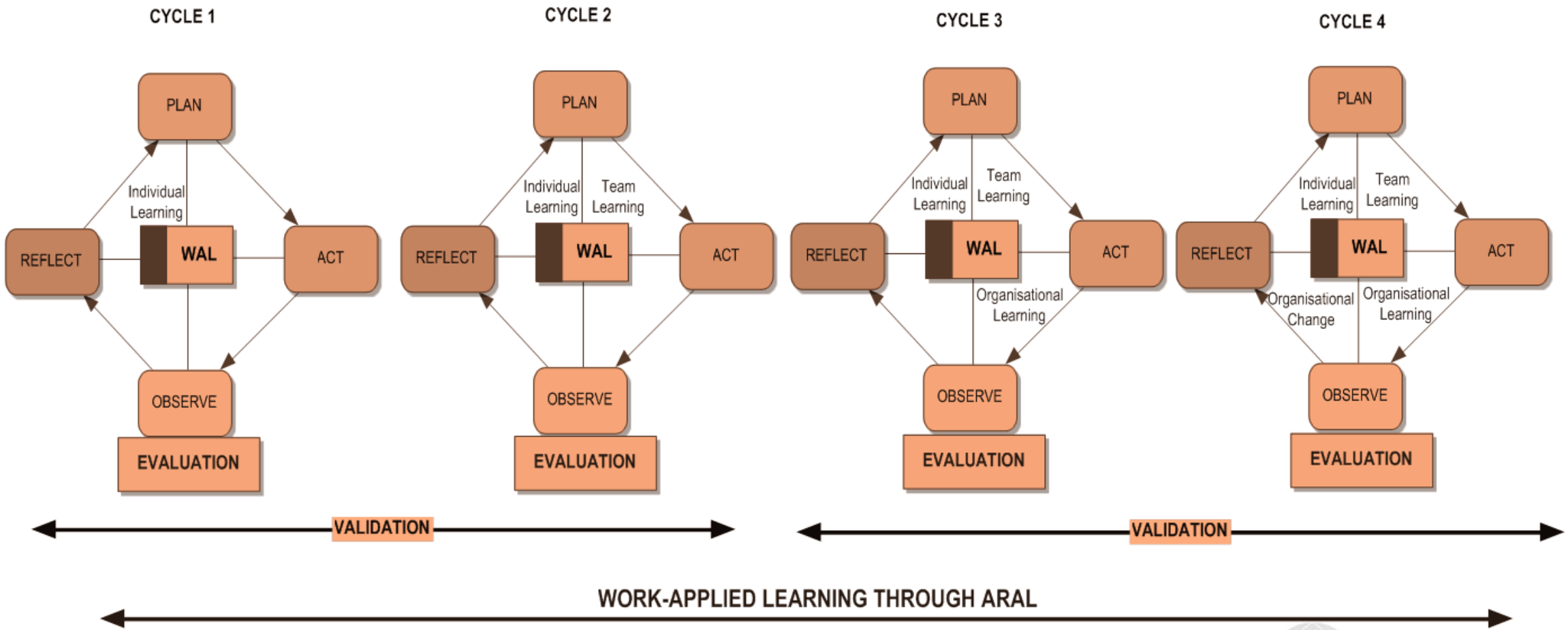
WAL through AR cycles



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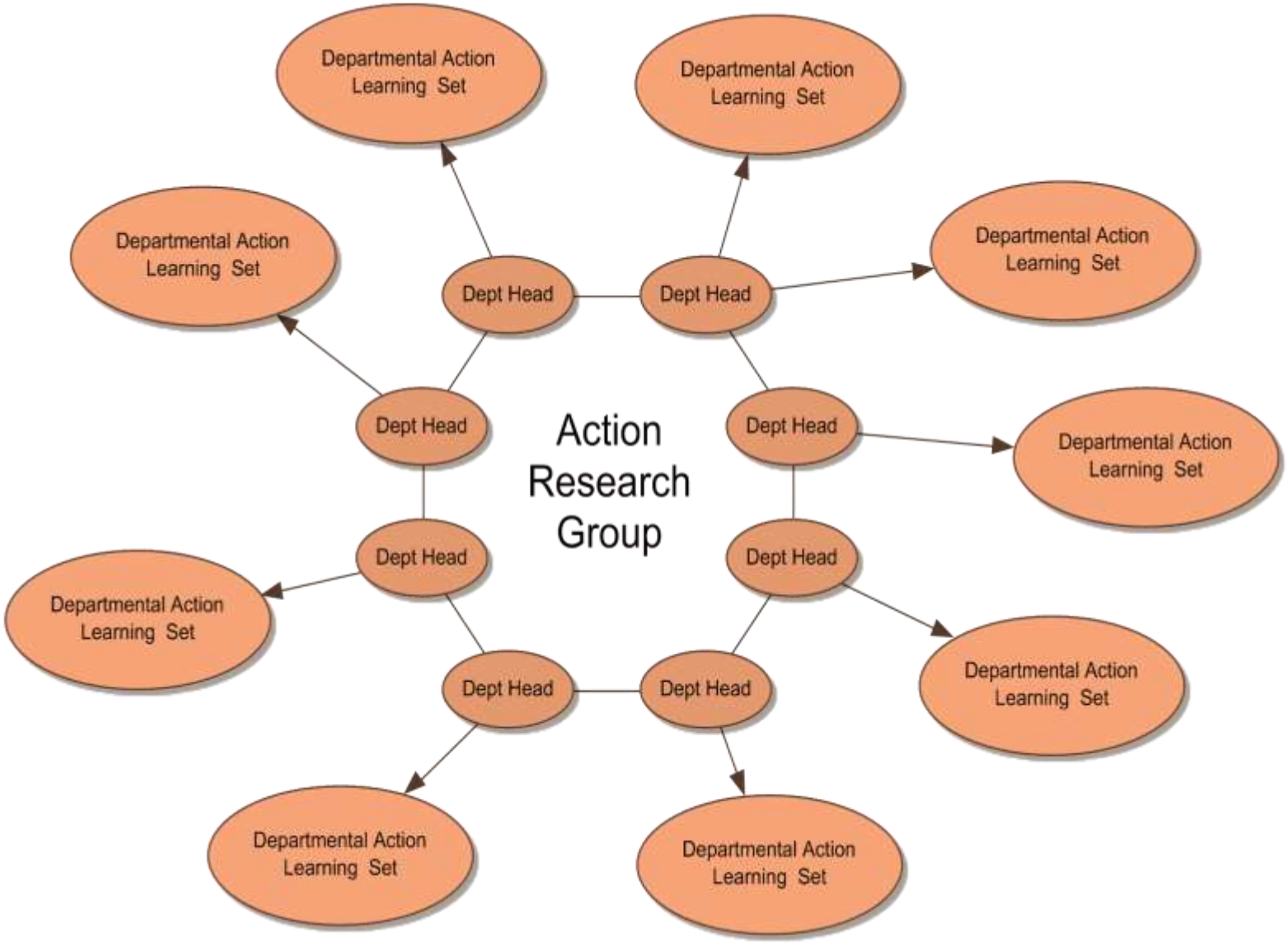
AR groups – AL Sets



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WAL Process Components

- Action Research group meetings
- Knowledge workshops
- Work-Based activities
- Collaborative planning
- Acting
- Observation
- Reflection
- Monitoring
- Evaluation
- Validation

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Ideas Development

Sweller – CLT

- Problem solving – poor way of learning
- Alternative methods developed e.g. use of worked-examples, goal-free problem solving method, etc
- New theory for empirically-founded learning – **Cognitive Load Theory (CLT)**

Abraham – WAL

- Ineffective textbook-based organisational development
- Alternative methods found, e.g. Work-Based Learning (WBL), Action Research (AR), Action Learning (AL)
- Development of a new theory – **Work-Applied Learning (WAL)**

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Struggles

Sweller – CLT

- Minimal support from research community
- Minimal support from university
- Struggle against accepted wisdom
- Activities needing research funding had to be found from outside own institution

Abraham – WAL

- No university context or funding for development
- Private higher education development of organisational development program
- Accreditation of private provider program/organisation at undergraduate & postgraduate levels

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Triumphs

Sweller – CLT

- International acceptance of CLT
- International research network developed
- International conferences

Abraham – WAL

- Strong management development program established
- Accredited degree programs – using WAL principles
- Private HE institution developed
- Largest MBA program in Australia

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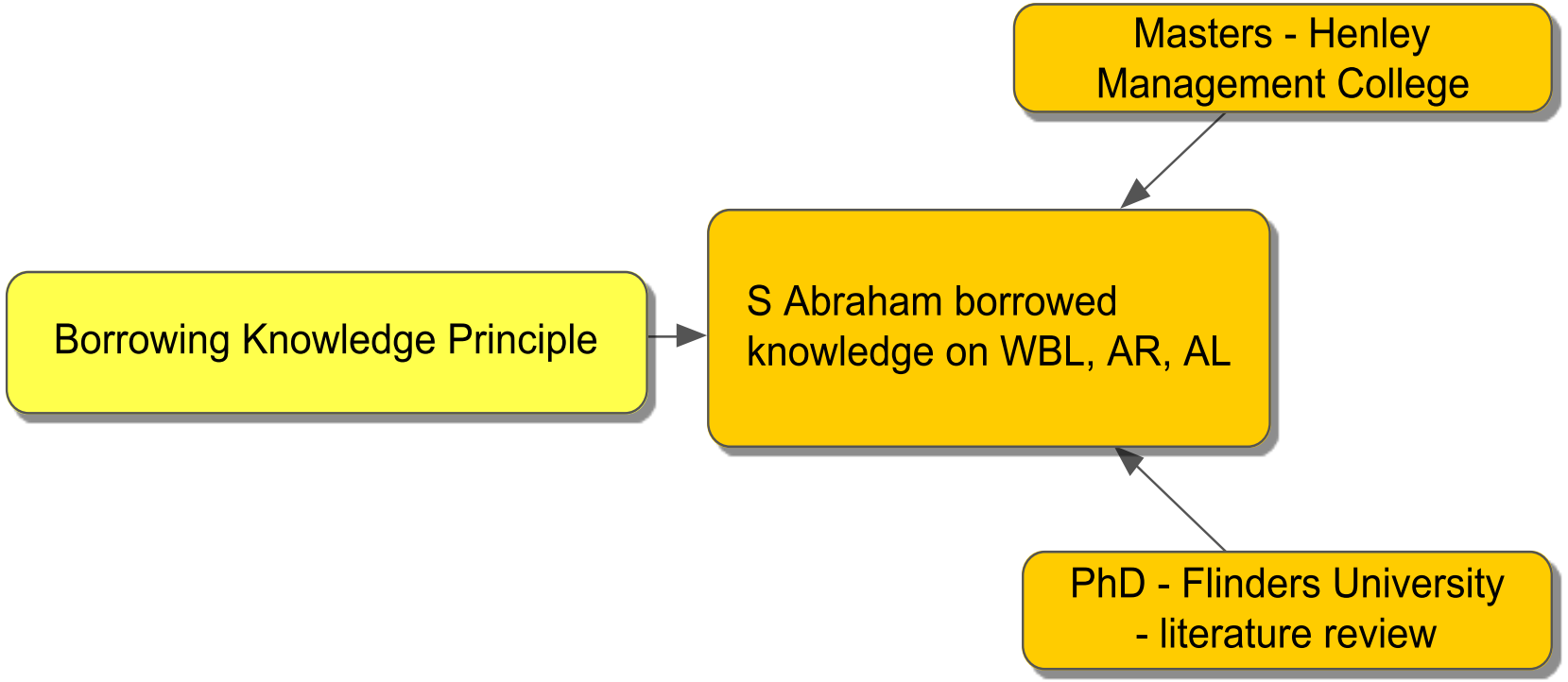
Connections #1

Sweller – CLT

Abraham – WAL



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Connections #2

Sweller – CLT

Reorganisation of Knowledge Principle

Abraham – WAL

S Abraham's knowledge of WBL, AR, AL was reorganised when

- Employed WBL, AR, AL knowledge in organisational consultancies
- Indigenous Community Manager Development

Early Model of WAL

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Connections #3

Sweller – CLT

Random Generate and Test Principle

Abraham – WAL

S Abraham utilised Random Generate and Test process

- Identified & defined **characteristics of AR** applicable to organisational development & change
- Developed organisational development **educational programs** using WAL model
- Created international research & consultancy centre - **Global Centre for Work-Applied Learning**
- Established an international refereed journal the **Journal of Work-Applied Management**

Mature Model of WAL

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Conceptual Educational Insights #1

BORROWING KNOWLEDGE PRINCIPLE

- In conducting AR/WAL we need to borrow from more expert people, or via literature from distant experts, knowledge
  - about how to conduct AR/WAL effectively, and
  - obtain information via the AR/WAL process from other people.

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Conceptual Educational Insights #2

REORGANISATION OF KNOWLEDGE PRINCIPLE

- An important part of AR/WAL is **reflective practice**, which enables us to **reorganise our knowledge** about AR/WAL and knowledge obtained via AR/WAL.
- Our understanding of AR/WAL and knowledge obtained via AR/WAL needs to be held in humility, always seeking to understand it better by reflective practice, and via AR/WAL seek to understand situation better as well as act on situations to improve them.

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Conceptual Educational Insights #3

RANDOM GENERATE AND TEST PRINCIPLE

- The importance of the **random generate and test** principle, which may be seen as a form of **creative thinking**, but described more precisely in these terms, is the realisation that as we go beyond the existing knowledge, we do not know precisely how the creative ideas (**randomly generated moves**) will work our in practice until they are tried out (**tested**), but without making these 'random' moves nothing new, or worthwhile will be achieved.
- This is where AR/WAL fits the process so well, as in AR/WAL the situation is analysed, plans are developed (without a certain outcome, i.e. **random generation**), then they are implemented the effects are observed and we reflect on the observed outcomes (**testing stage**).

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