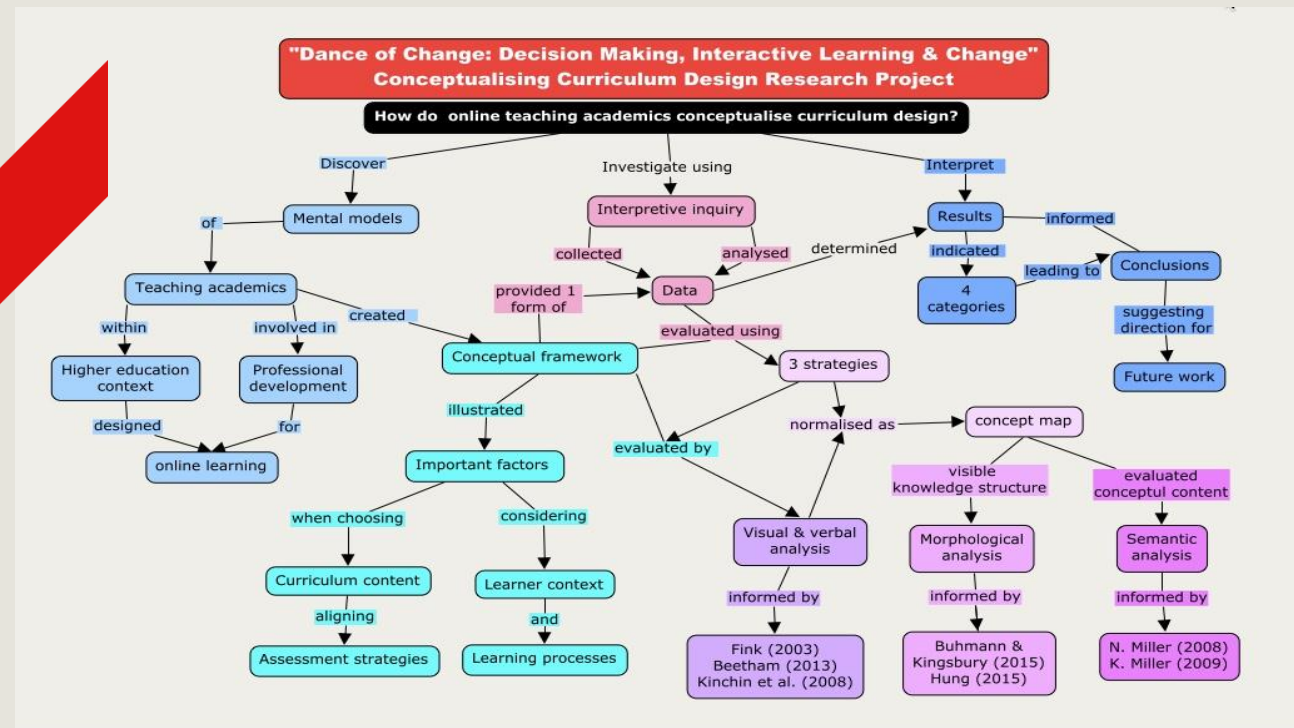


Analysing Curriculum Design Conceptual Frameworks

CHERRY STEWART

19 September 2017



Plan ahead

STAGES OF PRESENTATION



1. Brief presenter profile
2. Outline of research project
3. Data analysis quandary
4. Data analysis strategy
 - a. Thematic analysis
 - b. Normalisation
 - c. Semantic scoring
5. Discussion

Profile

PHD – MACQUARIE UNIVERSITY, AUSTRALIA

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I call Australia home

ARMIDALE NSW 2350



We live the country life



Professional life

CURRENT



1. PhD studies: Macquarie University (Sydney)
<http://www.mq.edu.au/>
2. Sr Learning Advisor: Liberate Higher Ed
<http://liberatehigher.education/>
3. Part-time Lecturer: University of New England, Armidale
<http://www.une.edu.au/>
4. Full profile: <https://www.linkedin.com/in/cherrystewart/>



MACQUARIE
University

Research Project

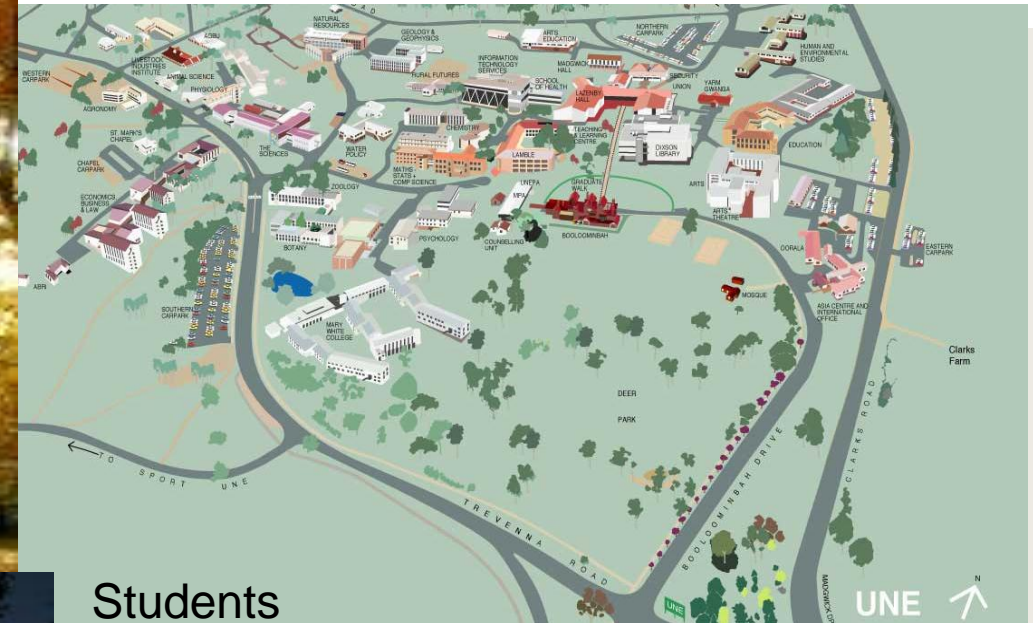
RECONCEPTUALISING LEARNING DESIGN

cherry@onqlearning.com

University of New England Au



RESEARCH SITE



Students

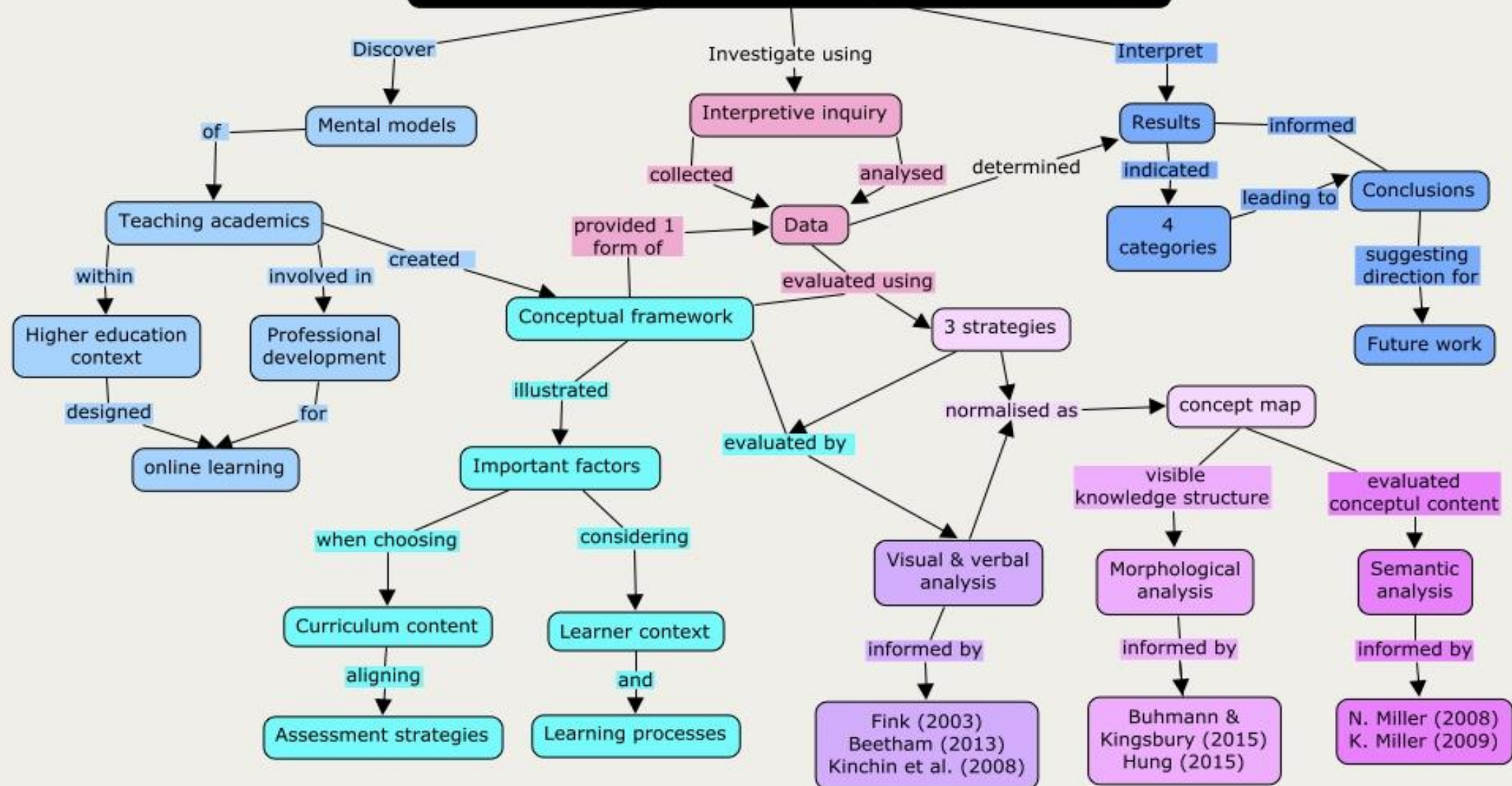
- 15,000 DE students
- 3,000 on-campus (school leavers)
- Median age 34

Staff

- 1200 staff (400 general / 800 Academic)
- 2 Faculties, 10 schools
- More females than males

"Dance of Change: Decision Making, Interactive Learning & Change" Conceptualising Curriculum Design Research Project

How do online teaching academics conceptualise curriculum design?



Research context

CURRICULUM DESIGN FOR TERTIARY EDUCATION (CDTE)

Research Participants

- 19 University educators
 - Limited online design experience
 - No training in concept mapping
 - Completed as assignment activity

Research Task

Prepare a concept map which identifies the important factors for a unit of your choice, support your choice of curriculum content and assessment strategies through detailed consideration of the context of your learners, the learning environment and your contribution to the learning process based on your discussion with peers and background reading.

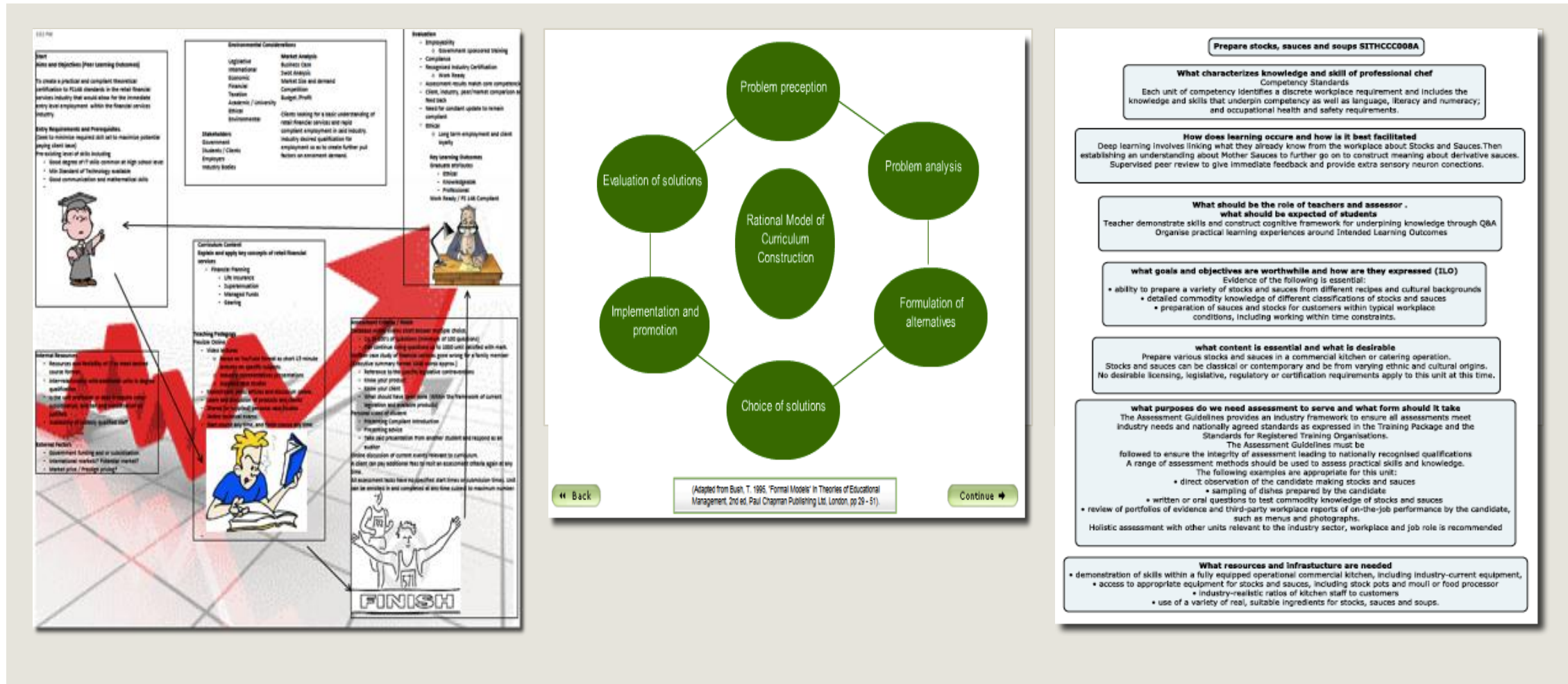
CDTE-Unit handbook

Data analysis quandary

7 NOT CONCEPT MAPS



MACQUARIE
University



Data analysis

ITERATIVE & INTERPRETIVE



1. Thematic analysis

- a. Visual representation
- b. Structure
- c. Orientation
- d. Propositions
- e. Colour coding

2. Normalisation

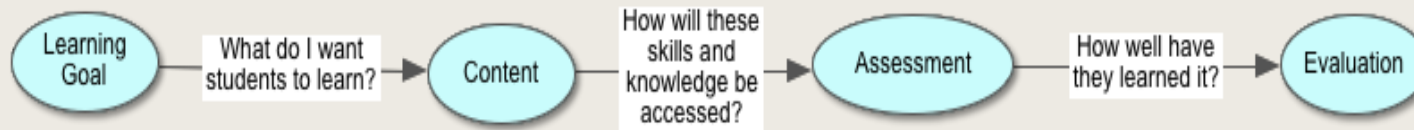
Buhmann, S. Y., & Kingsbury, M. (2015). A standardised, holistic framework for concept-map analysis combining topological attributes and global morphologies. *Knowledge Management & E-Learning*, 7(1), 20-35.

3. Semantic scoring

Miller, N. L., & Cañas, A. J. (2008). *A semantic scoring rubric for concept maps: design and reliability*. Paper presented at the Concept Mapping: Connecting Education Tallinn, Estonia & Helsinki, Finland

Two learning design models

TEACHER/CONTENT ← → LEARNING/ACTIVITY

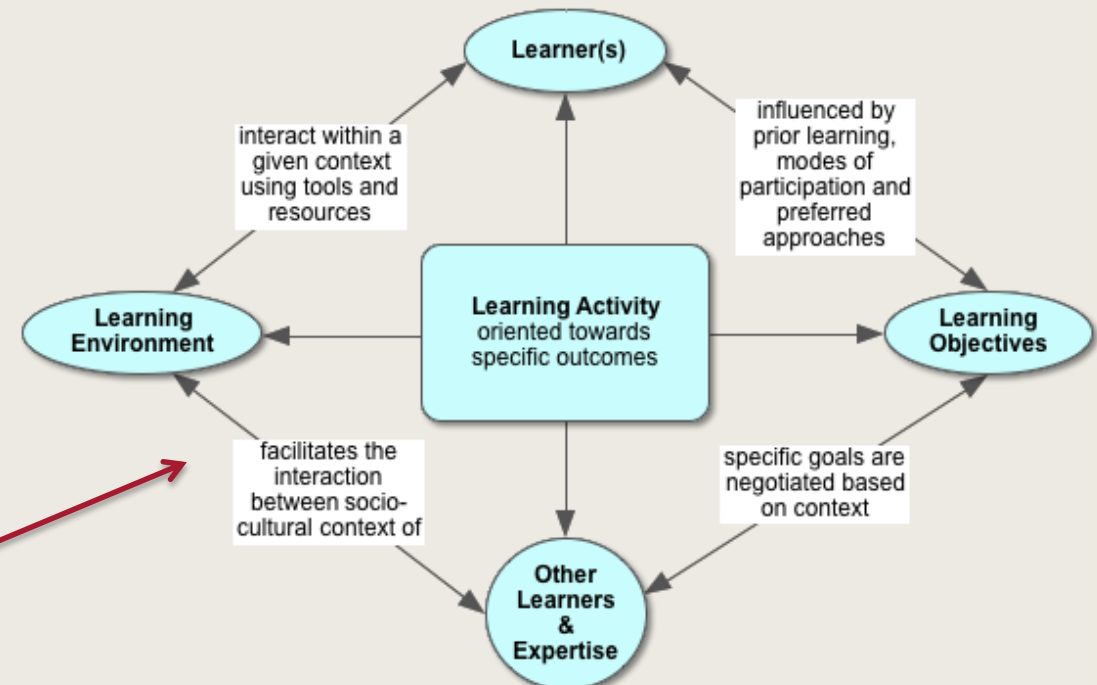


The teacher looks at the subject, creates a list of eight to twelve topics on it, and then proceeds to work up lectures on each topic. With the addition of a midterm exam or two plus a final, the course is ready to go.

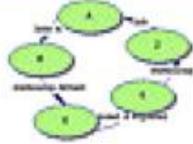
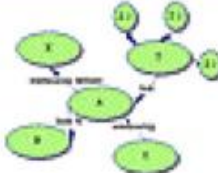
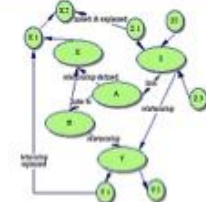
Fink, 2003 p. 61

What matters is what the learner *does* – physically, mentally and emotionally

Goodyear & Carvalho, 2013, p. 55



Thematic analysis

	Cyclic chain	Spoke	Network
Visual representation			
Structure Construction of nodes and links creating defined propositions	<ul style="list-style-type: none"> • Linked in linear formation • Defined hierarchy • Goal orientation • Resistant to development restricting restructuring thought 	<ul style="list-style-type: none"> • Main concept as hub • Additional concepts emanating from centre • Resistant to change without collapse • Indicative of surface or rote learning 	<ul style="list-style-type: none"> • Complex interconnected sets • Hierarchy integrated • Knowledge integration • Flexibility, creativity an ability to learn
Orientation Connection of nodes and link direction	<ul style="list-style-type: none"> • Single-level hierarchy sequentially linked with each concept a continuation of preceding concept • If new concepts are to be added the cycle may be broken at any point 	<ul style="list-style-type: none"> • Hierarchical: may be single level or repeated spoke at several levels • No indication of cross-linking 	<ul style="list-style-type: none"> • Non-hierarchical; several justified levels • Multi-directional cross-linking suggesting complex structure • Inclusive of iterative cycles
Propositions Link describes the relationships between nodes; (logical semantics)	<ul style="list-style-type: none"> • Technical knowledge • Implied causality • Static relationships • Hidden assumptions 	<ul style="list-style-type: none"> • Simple linkages perhaps unlabelled • Knowledge frameworks isolated • Dynamic or static relationships 	<ul style="list-style-type: none"> • Multiple cross-linked propositions • Rich and complex relationships expressed

Colour-coding

STAGE 1



Categories

Purpose (cream)	Goal / Aim; Learning objectives/ outcomes; Graduate attributes
Stakeholders (orange)	Students; Staff; Professional; Community; University; Government
Learning context (pink)	Content; Resources; Personnel; Mode;
Online (green)	Digital tools; Online pedagogies; Online interactivity
Assessment (yellow)	Assignments; Feedback
Administrative (brown)	Development process; Course / Teacher evaluation
Pedagogy	Epistemology; Teaching techniques; Learning strategies



Conceptual framework

Unit design
considerations
(Neil)

Knowledge characteristics
Competency standards

Learning strategies
Link to what already know

Teacher / Assessor role
Demonstrate and construct cognitive framework

Goals
Demonstrate all competencies within time and
workplace conditions

Content
Stocks and sauce preparation and service

Assessment
Registered standards: Direct observation, Sampling,
Written & oral, Portfolio

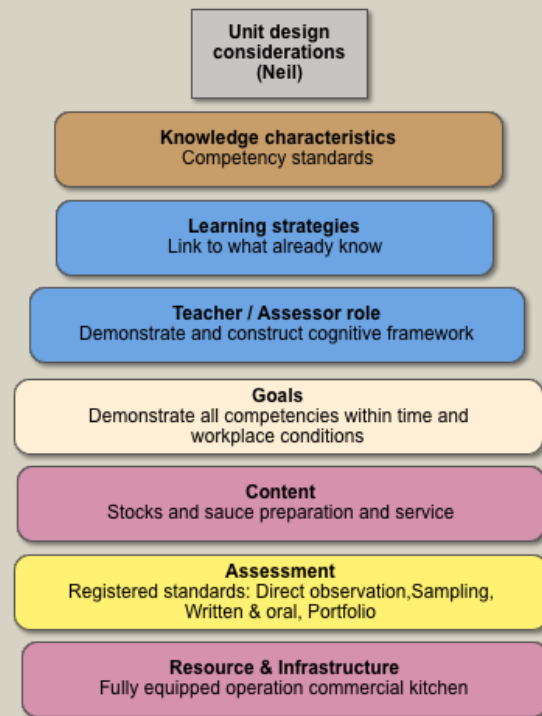
Resource & Infrastructure
Fully equipped operation commercial kitchen

Normalising

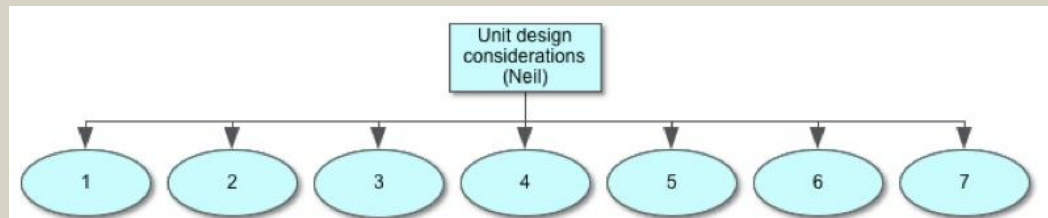
STEP 1 — BUHMANN AND KINGSBURY (2015)



CONCEPTUAL FRAMEWORK



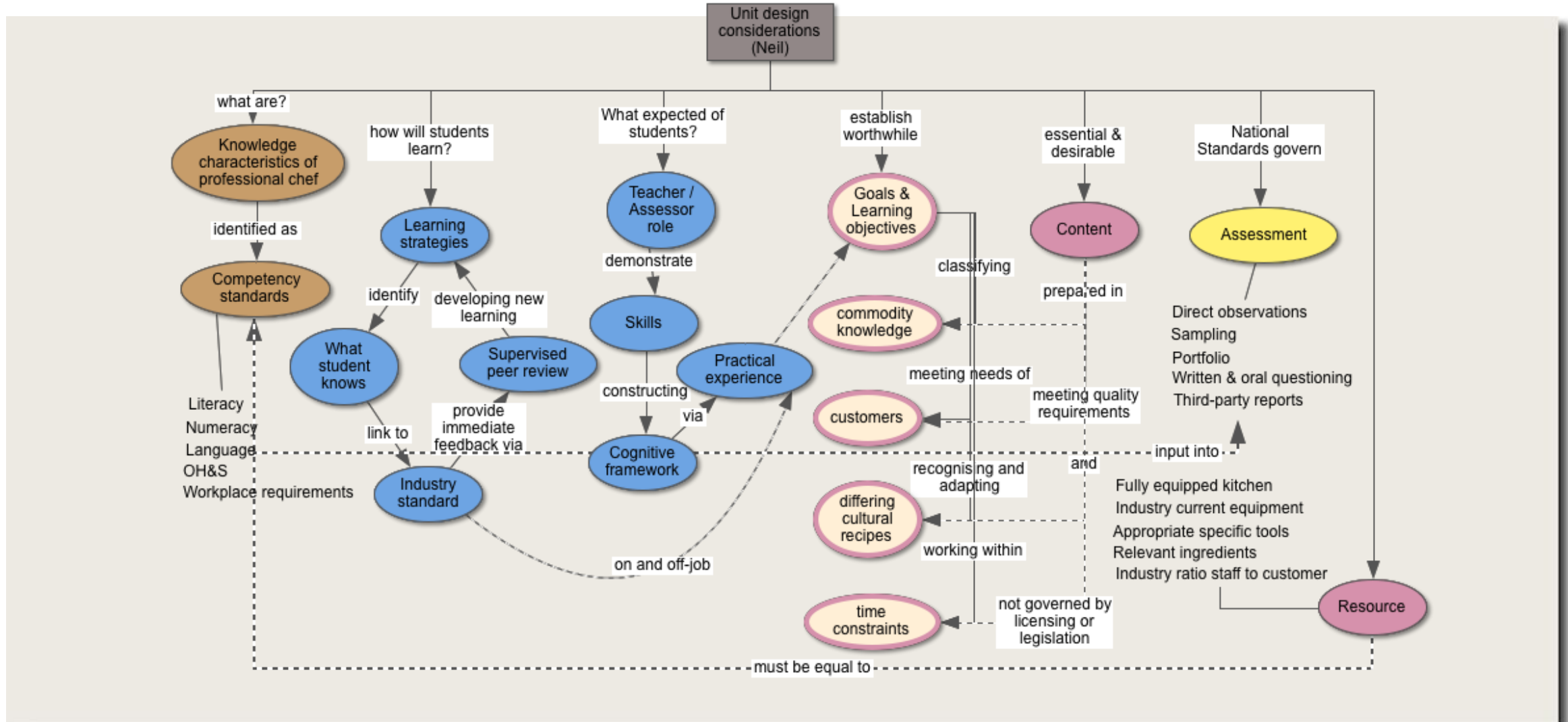
ORIGINAL NORMALISED



Concepts = 7
Links = 8
Longest chain = 1
Shortest chain = 1
Diameter = 2
Cross linkages = $1/8 = 13\%$
Dimension = $7/3 = 2.33$
Balance = $1/1 = 100\%$

NORMALISE

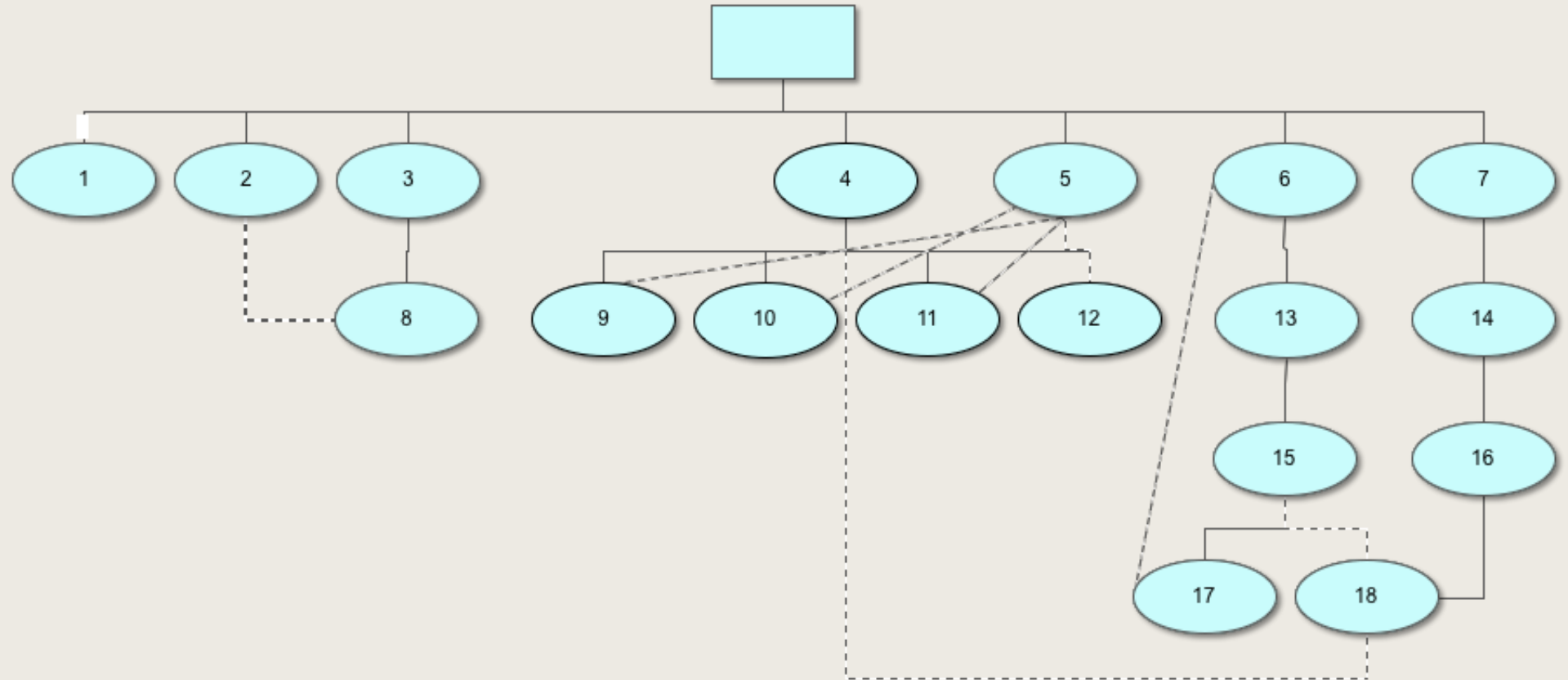
STEP 2 - REDRAW



Normalised redraw


STEP 3 — REMOVE IDENTIFIERS

Text

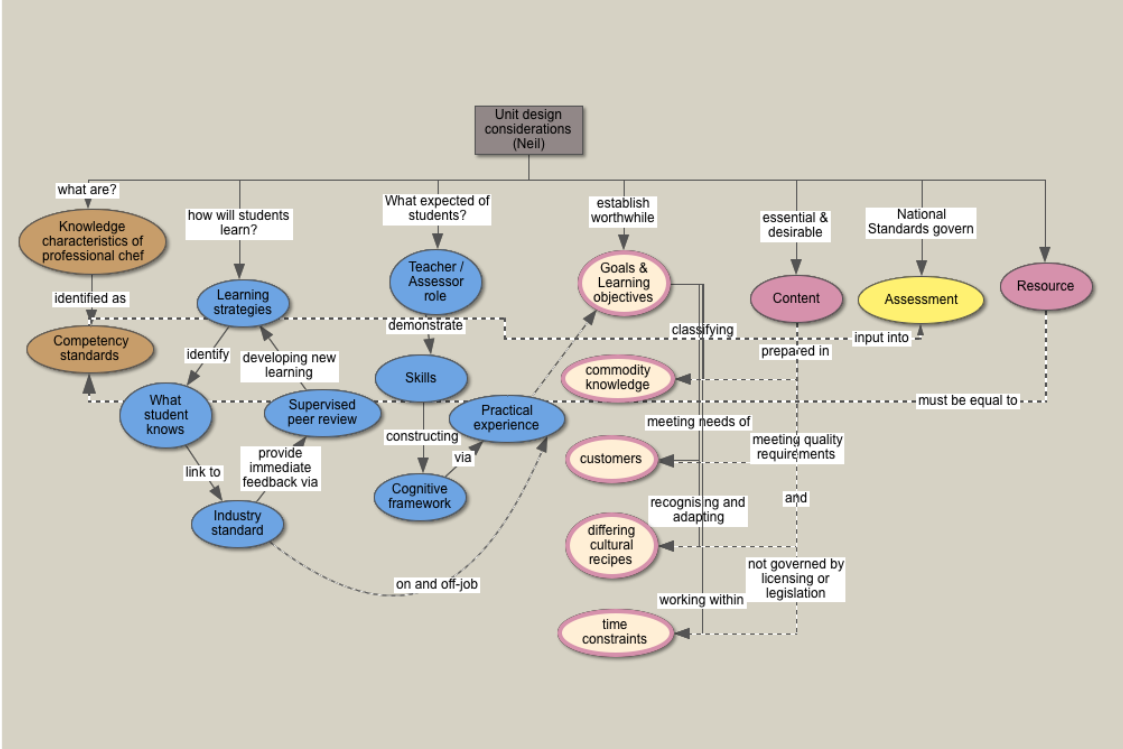



Semantic scoring (redraw)

MILLER & CAÑAS (2008)



REMOVE LISTS









SCORE

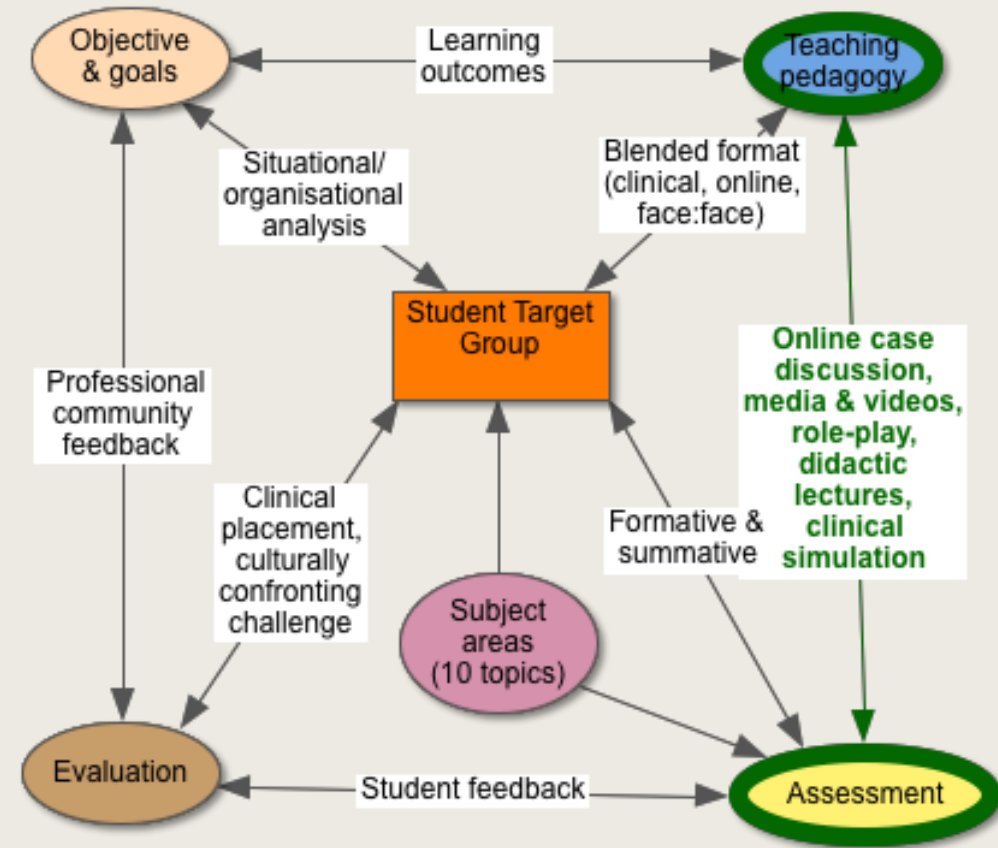
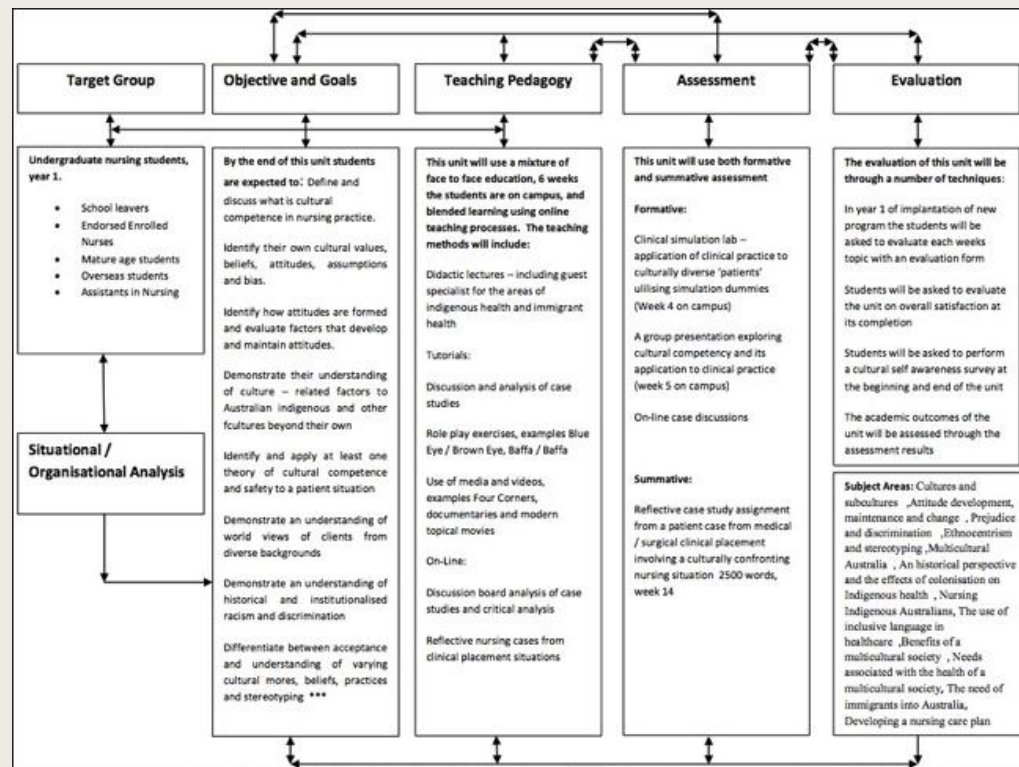
Criterion	Quality scored as	Score
1: Concept relevance and completeness	All concepts are relevant and well-defined;	3
2: Proposition as 'semantic units'	The author does not understand how to construct propositions.	0
3: Erroneous propositions	The map contains no erroneous propositions. (Lists removed)	2
4: Dynamic propositions	The map contains more than 2 causative dynamic propositions	3
5: Quantitiy and quality of cross-links	The map contains more than 2 coss-links establishing true relationship.	4
6: Presence of cycles	The map contains at least complete cycle.	1
Total semantic score		15

Results

USE WHEN TWO OR MORE COLUMNS ARE REQUIRED

 Poor	 Developing	 Competent	 Advanced
<ul style="list-style-type: none">• No or inconsequential reference to goal or objectives• No or few pedagogical nodes• No or few digital nodes• No or few propositions• All stative propositions• Erroneous connections• Disconnected factors• Shallow connections• No grouping of themes• Visually represented as chain or spoke	<ul style="list-style-type: none">• Clarity of objectives• Imbalanced focus• Shallow/broad network• Spoke formation with few crosslinks• Disconnected factors• Components are lists of considerations.• Technology as a passive delivery tool• Propositional language tended to be instructional• Representation similar to Fink (2003)• Influencing factors identified• Appropriate propositional syntax	<ul style="list-style-type: none">• Interconnected, deep propositional statements• Goal/objectives prominent• Networked presentation (some spokes)• Dynamic propositions• Themes balanced and demonstrate connectivity• Interconnectivity of objective, assessment and content• Propositional terminology and syntax appropriately describe learning design	<ul style="list-style-type: none">• Balance and integrated perspective of pedagogical and technological considerations where content supports goal/outcome achievement• Incorporate propositions demonstrating a dynamic relationship between nodes• Stative propositions highly relevant ('why' components)• Deep structure with iterative cycles joining several factors• Representation similar to Beetham (2013)

Learning/activity conceptual framework



Discussion

WHAT MIGHT BE CONSIDERED IN FUTURE

How does this strategy relate to other methodologies?

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