

vision for the future

TRAINING & STUDENT ENGAGEMENT 1

Cognitive Load Theory:
Principles for application
in the classroom and
virtual environment

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NATIONAL VET CONFERENCE
GOLD COAST 2021
#2021NVC

Cognitive Load Theory:
Principles for application in classrooms and
virtual environments.




Exercise

WS UIAB EL N MVS T AG

Write down the letters
as they appeared

WS UIAB EL N MVS T AG

How did you do?

One more time...

NSW IBM AUS VET AGL

Write down the letters
as they appeared

NSW IBM AUS VET AGL

How did you do?

NSW IBM AUS VET AGL



Most people find the second sequence easier, why?

There are two key reasons.

Cognitive Limit

7 ± 2

Mental Schemas

Existing mental models stored in the long-term memory.

1. What is Cognitive Load Theory (CLT)?
2. CLT principles and how to apply them.



What is CLT?



Cognitive Load

Working memory resources being used at any one time.

Cognitive Limit

Amount of information a person **can process** in working memory **at any one time**.

Very limited.



One of the central roles of educators and designers is to facilitate the movement of new knowledge from working memory to the long term memory.



3



Extraneous

Intrinsic

Germane

Extraneous

CL related to poor learning design or training delivery.



Intrinsic

CL associated with the task itself.



Germane

CL associated with integrating new information with previous learning.



Principles for application



Reducing **extraneous** cognitive load.



Q:



You are delivering training using MS PowerPoint; which of the following will best reduce unnecessary cognitive load:

- a) Presenting primarily images (none or minimal text) and speaking about the content.
- b) Presenting images with related text and narrating the text to the group.
- c) There is no difference in the cognitive load associated with the above options.

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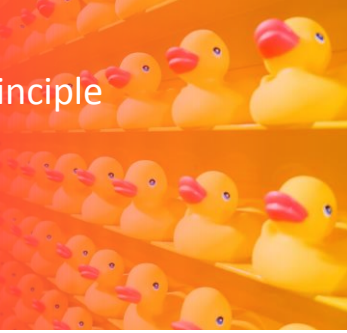
1.

Redundancy Principle



People learn better from **images and narration** than from images, narration and on-screen text.

2. Coherence Principle



Header

Too much text. Too much text. Too much text:

- Too much text.
- Too much text.
- Too much text.
- Too much text.
- Too much text.

Too much text.



9 August 2019

Unnecessary footer

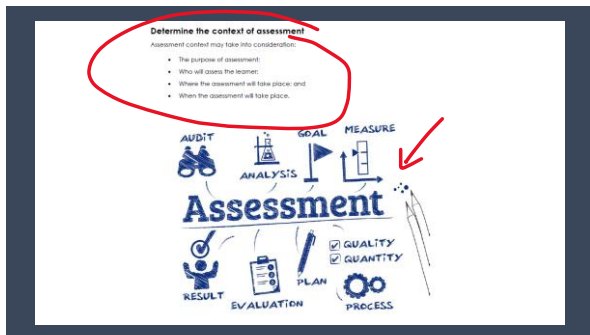
23 of 72

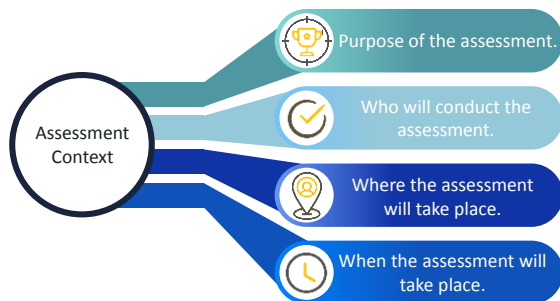
TYPES OF FORMAL NETWORKS

Formal networks are structured meetings or processes that are agreed on by the agency such as:

- When you refer customers to another service (ensuring that the customers meet the entry criteria for the agency and ensure the agency can meet the customer's needs).
- When you receive referrals from a worker from another service.
- When you attend interagency meetings (where workers from different services share information about their services and issues affecting the target group).
- When you are requesting information from other service providers.
- When you research recent policy initiatives concerning an issue affecting the target group.
- When you liaise with interest or industry groups who are focused on a particular issue or target group.
- When you seek information from a peak body or professional association.









Q:



Cognitive load is reduced when:

- a) Printed words explaining graphics are placed within or alongside the graphic.
- b) Printed words explaining graphics are placed underneath the graphic.
- c) Printed words explaining graphics are provided in a separate document or in an Appendix.
- d) All three are relatively equal in reducing cognitive load.

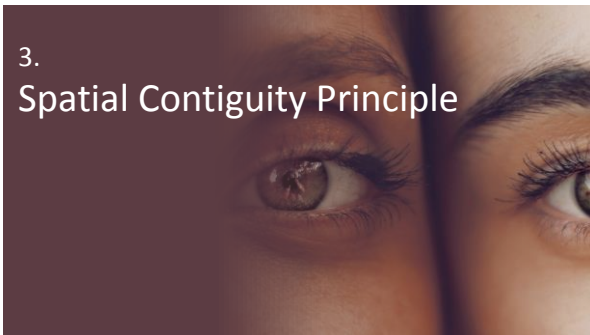
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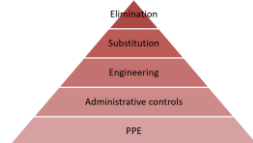
3. Spatial Contiguity Principle







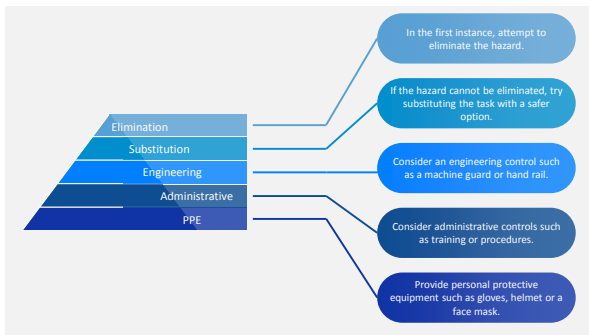
The model regulations specify that options should be considered in relation to the hierarchy of risk control, as follows:

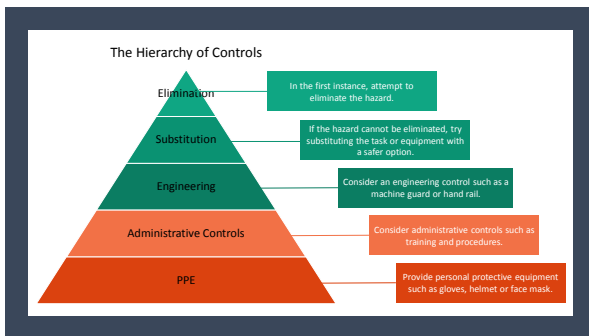


Eliminating the hazard
This is, for obvious reasons, the most effective way of dealing with a hazard, although it is not always the most realistic.

Substituting the hazard with a lesser risk
While substituting a hazard with a lesser risk may seem odd, it is essentially an exercise in damage control. Although there will still be a hazard present, the overall potential harm of that hazard will be reduced, leading to greater well-being for employees.

Isolating the hazard
This involves limiting and controlling access to the hazard itself and is an effective way of drastically reducing the harmful risks to employees.





Design,
not decoration.



Reducing **intrinsic**
cognitive load.

4. Segmenting Principle

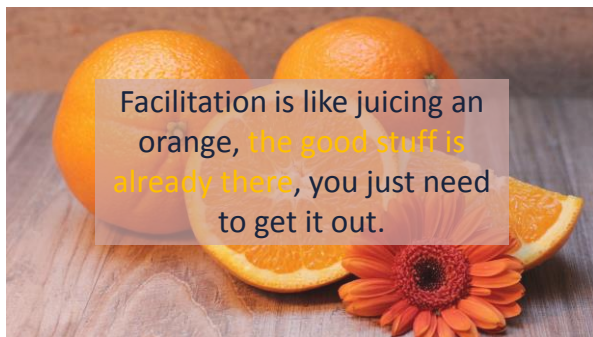


TAEASS502
Design and Develop
Assessment Tools



5. Multimedia Principle





Facilitation is like juicing an orange, the good stuff is already there, you just need to get it out.

6. Pre-Training Principle



People learn better when they have had pre-training in the **names** and **characteristics** of the main concepts.



Enhancing **germane** cognitive load.



Q:

You are learning to write assessment tools/instruments. Your learning will be more effective if you first:

- Have a go at writing the assessment tool using the method you have been taught and then receive feedback on areas for improvement.
- Review a worked example and identify errors and/or strengths of the example and, using the method you have been taught, explain why they are errors/strengths and receive feedback on your analysis.
- Complete the assessment tool piece by piece receiving feedback as you go.

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7.

Worked Example Principle



People learn better when provided with worked examples at the **beginning** of their learning.

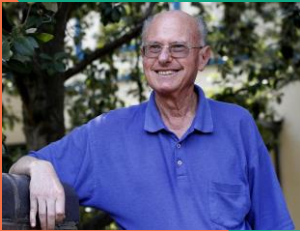
8. Self Explaining Principle



People learn better when they attempt to **self explain** concepts and **integrate** them into existing schema.

What was of most value for you?





'... any instructional design that flouts or merely ignores working memory limitations inevitably is deficient'.

John Sweller



We create engaging learning experiences.

COMING UP NEXT:
3.30 - 5.00PM



vision for the future

VET IN SCHOOLS

Trainer & Assessor
Compliance and
Effective Industry
Engagement
Melanie Alexandra

**TRAINING & STUDENT
ENGAGEMENT**

Permission to Play
Jason Ash

MANAGEMENT

Building a Kick Ass
Strategy for the New
Decade
Jason Blinman

EXPLORATION

Tips and Tricks for
DIY Digital Learning
Resources
Kerri Buttery

DEEP DIVE

Compliance:
The annual
approach
Angela McGregor
