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**The importance of quality  
plumbing training in Australia  
considering the implications  
on global health**

# A life changing trip to the Netherlands



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# Potable water?



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# Sanitation



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# Access to water



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# Access to water



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# Delft



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# Delft



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# UNESCO water University - Delft



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# 2 dumb plumbers



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# Dr Sharma



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# Concrete sand filters



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# Water filtration



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# Life straws



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# UV filtration



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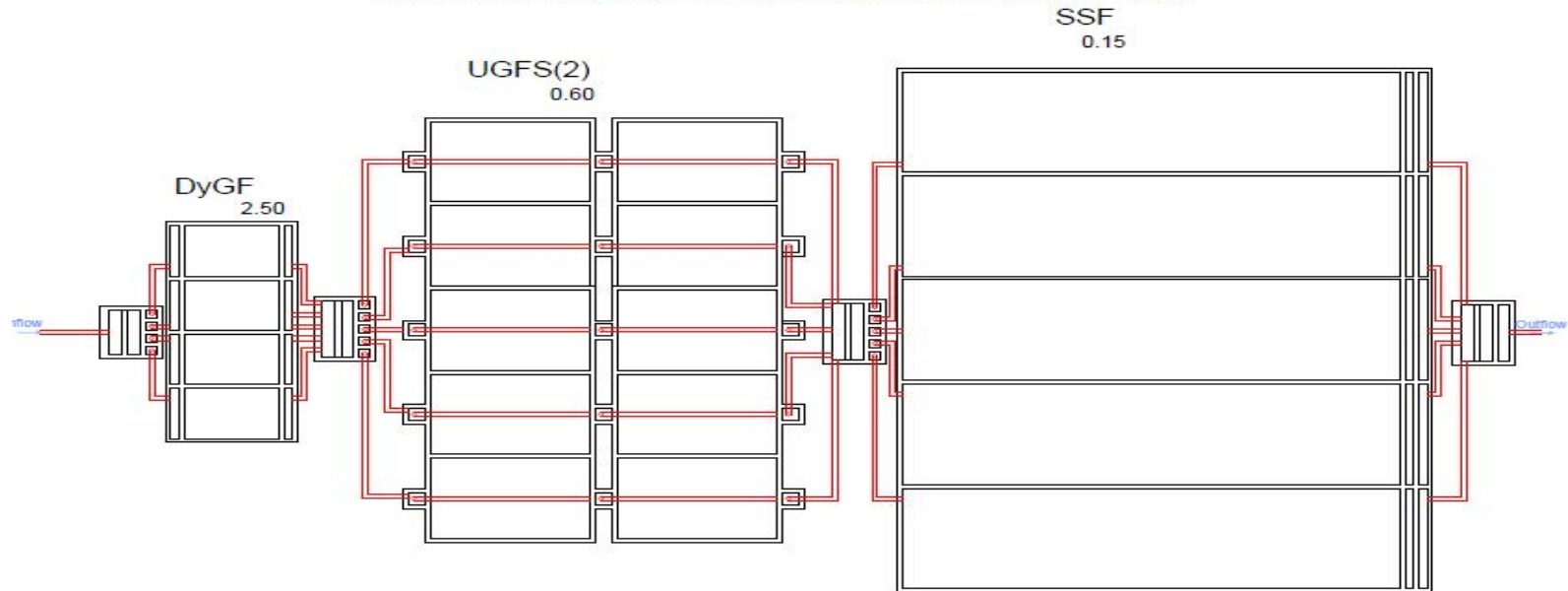
# Polluted waterways



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# Multi stage filtration system

## MULTI-STAGE FILTRATION SYSTEM



### REFERENCES

- PIPES
- CONCRETE



### Group 2

Module 11  
Decentralized Water Supply  
and Sanitation  
July, 2016

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# Multi stage filtration system



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# ISSI reports

International  
Specialised  
Skills  
Institute  
**2016**  
BEYOND 25 YEARS OF SKILLS ENHANCEMENT

State Government  
Victoria  
Department of  
Education & Training



## **‘Closing the loop’: sustainable water supply and sanitation. The role of plumbing education in reaching this goal**

**Richard Hutchinson**

**An International Specialised Skills Fellowship**

Sponsored by Higher Education & Skills Group,  
Department of Education and Training, Victorian Government

International  
Specialised  
Skills  
Institute  
**2016**  
BEYOND 25 YEARS OF SKILLS ENHANCEMENT

State Government  
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Education & Training




## **Improving Plumbing Training in Australia considering the Implications on Global Health**

**Robert Funston**

**An International Specialised Skills Fellowship**

Sponsored by Higher Education & Skills Group,  
Department of Education and Training, Victorian Government



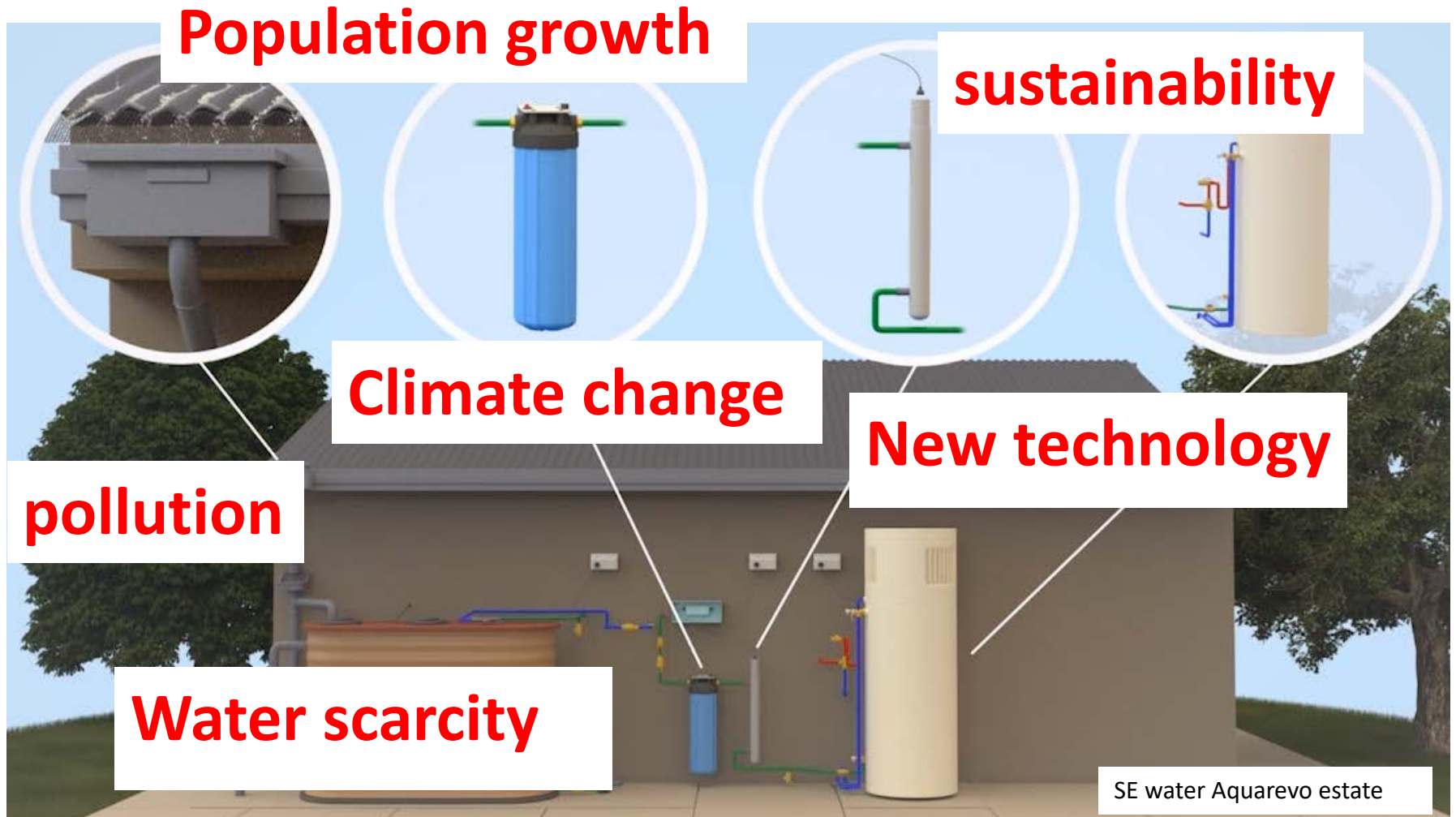
**“...the risks of inadequately trained people doing plumbing works are too great to ever compromise on training”**

World plumbing council's pillar on participation



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# So, how do we teach plumbing for an industry that changes so fast?



# How plumbing was taught in the past

Hand out pile of text books for students to read



Processes which will soon be out of date

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# How to teach plumbing for the future

- **Teach the Principles of Plumbing**
- **Employability skills**
- **Evidence based learning**
- **Industry participation/ partnerships**
- **Plumbing teachers to be true “dual professionals”**
- **LL&N**

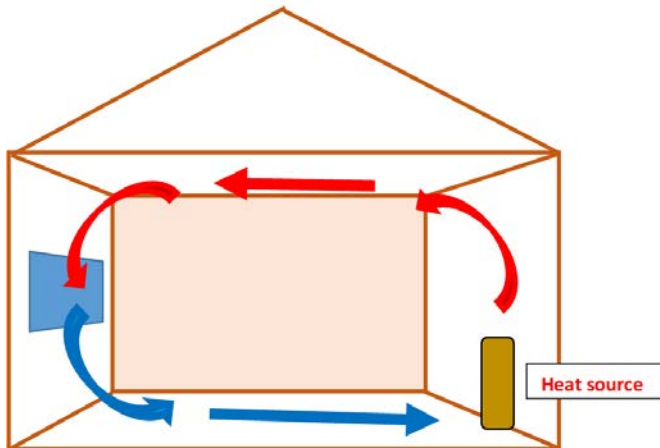
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# Teach the Principles - The Science of Plumbing



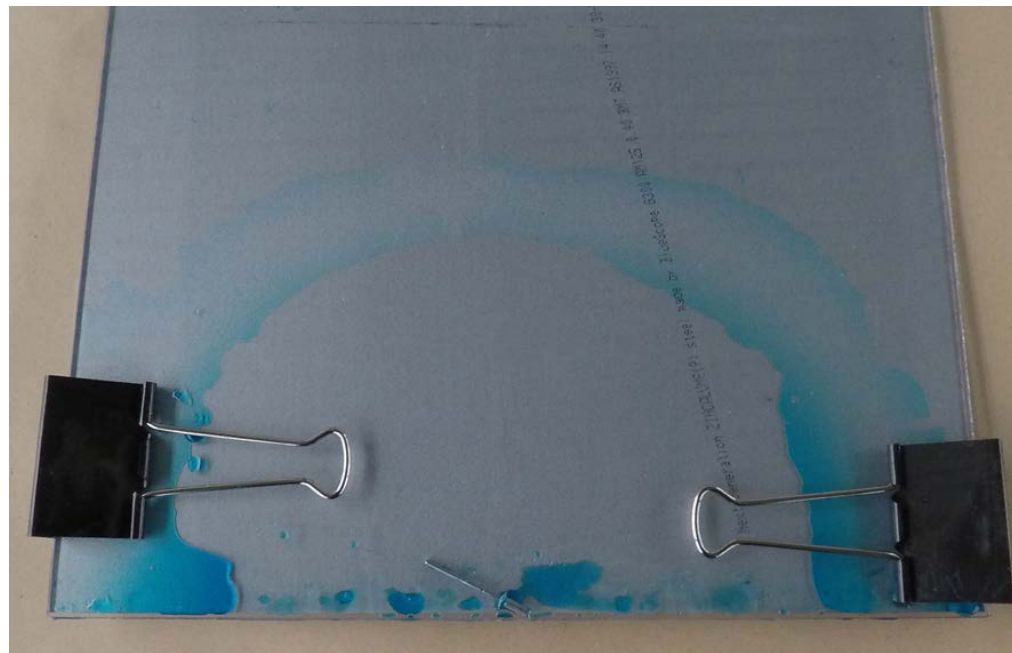
# Principles of Plumbing— Heat transfer



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# Principles of Plumbing– Capillary action



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# Principles of Plumbing— Head Pressure



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# Principles of Plumbing - Siphonage



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# Principles of Plumbing – Expansion/ contraction



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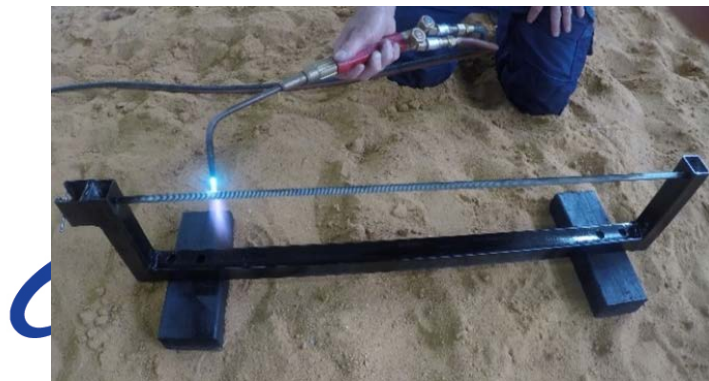


As to methods there may be a million and then some, but principles are few. The person who grasps principles can successfully select his own methods. The person who tries methods, ignoring principles, is sure to have trouble.

Harrington Emerson 1912



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# How to teach plumbing for the future

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# Employability skills

## Top 10 skills

### in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility



### in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



Source: Future of Jobs Report, World Economic Forum





# How to teach plumbing for the future

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# Evidence based learning

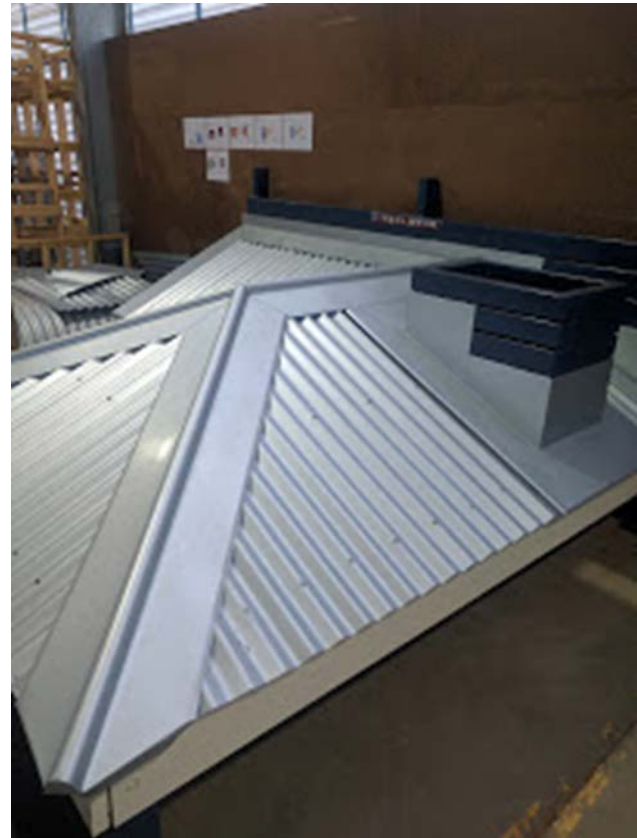
**Questioning**



**Multiple exposures**

**Metacognitive strategies**

**Show what success looks like**



# Evidence based learning

**Collaborative  
learning**



**Setting goals**



**Feedback**

**Explicit  
instruction**

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# How to teach plumbing for the future

- Teach the Principles of Plumbing
- Employability skills
- Evidence based learning
- **Industry participation/ partnerships**
- Plumbing teachers to be true “dual professionals”
- LL&N assistance

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# Industry partnerships



Reece plumbing supplies



Rheem hot water

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# Plumbing teaches as true “dual professionals”

Classroom strategies

Proper teacher training

Teacher Mentoring

Theory lessons “chunked”  
in small portions

Continual Professional  
development

Encouraging classroom  
dialogue, not monologue

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# Plumbing teachers as true “dual professionals”

I do



We do



You do



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# How to teach plumbing for the future

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# LL&N (language literature and numeracy)

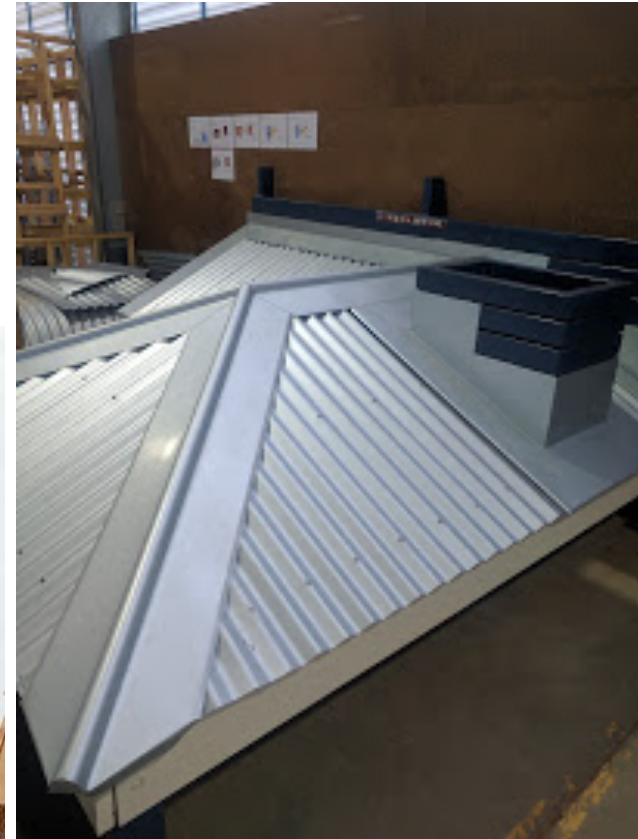


**Only covering  
maths where  
relevant.**

**Calculating Fall  
goes with drains**

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# High fidelity activities.





# Student Feedback Data

Old course student feedback...67% satisfaction

Survey Items	
	2017
Trainers encouraged learners to ask questions	74.5
Trainers made the subject interesting as possible	66.8
Trainers had an excellent knowledge of the subject content	78.8
Trainers explained things clearly	69.4
Assessments had clear objectives and based on realistic activities	70.3
The course was well designed, delivered and organised	55.6
The learning resources were of a high quality	61.4
Appropriate support for my learning was available when I needed it	65.3
Facilities and equipment were sufficient, in good condition, and available when needed	57.9
The training will improve my capacity to get a job	74.5
Overall, I am satisfied with the training	64.0
I would recommend the training to others	66.7
I would recommend the training organisation to others	65.4
All Survey Items	67.0
Responses	107



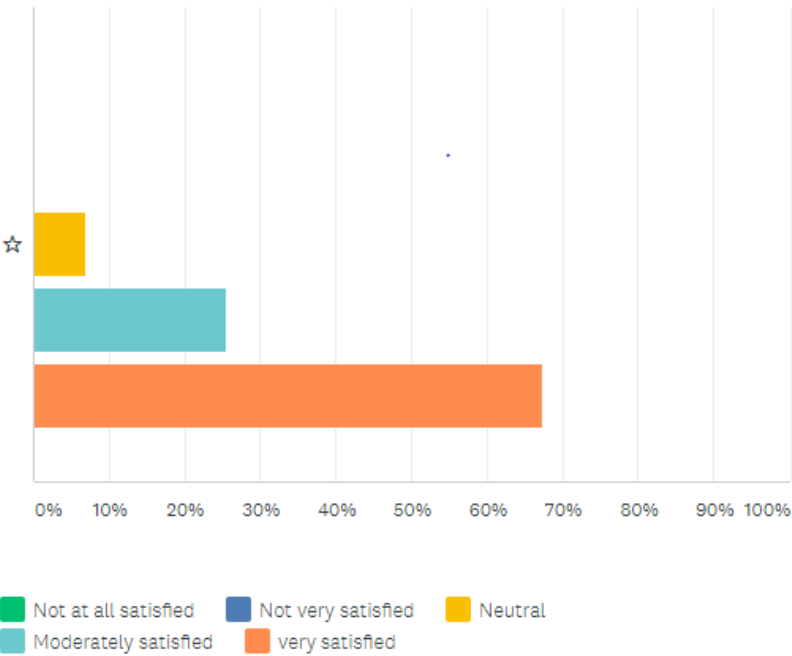


# Student Feedback Data

## New course student feedback ...92% satisfaction

Overall how satisfied were you with this weeks learning/

Answered: 43   Skipped: 1



	NOT AT ALL SATISFIED	NOT VERY SATISFIED	NEUTRAL	MODERATELY SATISFIED	VERY SATISFIED	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	6.98% 3	25.58% 11	67.44% 29	43	4.60

# Questions?



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