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All ENGG105 materials are adapted versions from originals of Dr. Justine Calleja, Dr. Brad Stappenbelt, Dr. David Hastie, Dr. Faisal Hai, Dr. Jeff Moscrop, Dr. Neaz Sheikh, Dr. Tom Goldfinch, Dr. Vinod Jayan Sylaja,

ENGG105

Engineering Design

for Sustainability



Why are you here?

What a BE Honours is:

- A structured pathway to becoming a qualified engineer.
- An opportunity for support, guidance, and help.
- Certification of your knowledge, skills and ability to apply knowledge and skills.

What a BE Honours is NOT:

- Everything you need to know to be an engineer.
- A cost effective source of facts and figures.
- A collection of information to be handed over.

Think of it as a gym. You've paid your membership to access the equipment and support, but YOU have to do the work to get the results!



Why are you here?

What ENGG105 is:

- A structured pathway to developing engineering design skills.
- An opportunity for support, guidance, and help to develop design skills.
- Certification of your ability to apply knowledge and skills to a complex problem.

What a ENGG105 is NOT:

- Content!
- Correct or incorrect, black and white answers.
- A traditional, textbook subject.

What you get out is what you put in. The more effort you invest, the greater the return.



Explain innovation in design and demonstrate creativity in the development of context-appropriate engineered solutions

(subject learning outcome iv)



Creativity is seeing what everyone sees and thinking what no one else has thought before

Invention is transforming those new thoughts into tangible ideas

Innovation goes even further, involving preparedness to mix with the commercial world to turn novel ideas into products

(Engineers Australia Innovation Taskforce (2012). “Innovation in Engineering”. Engineers Australia, Barton ACT.)



Innovation

“Innovation involves:

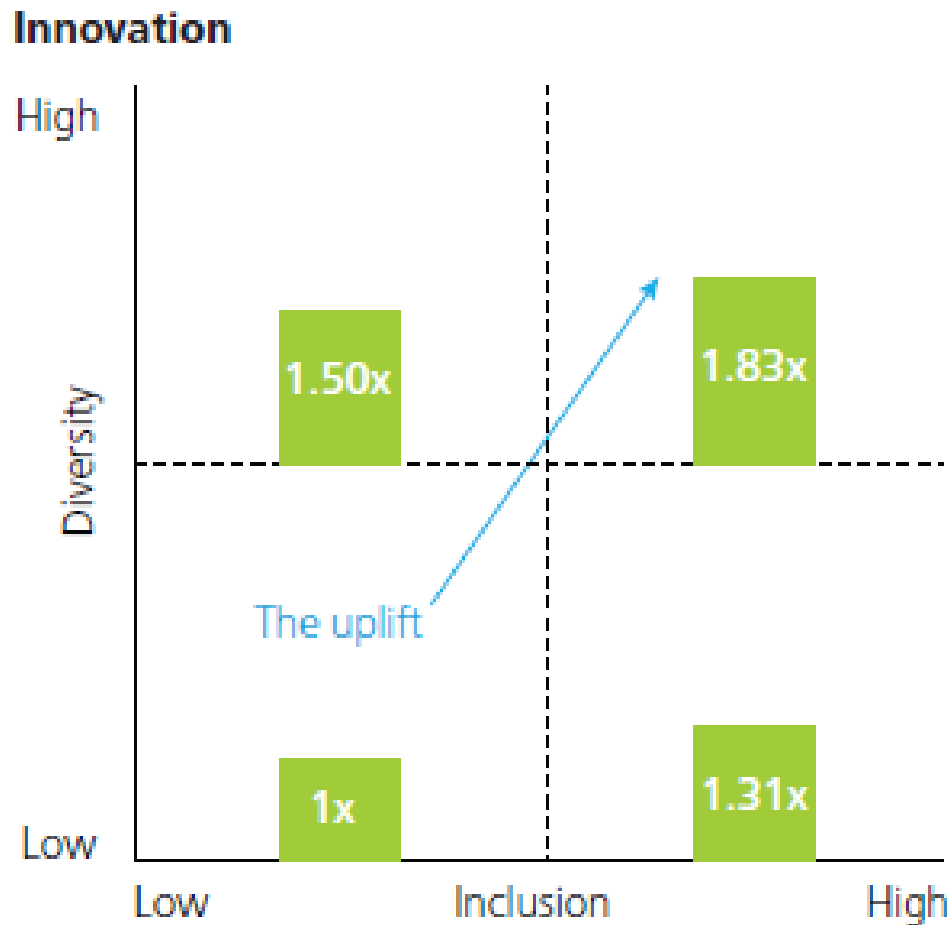
- creating or generating new activities, products, processes and services
- seeing things from a different perspective
- moving outside the existing paradigms
- improving existing processes and functions
- disseminating new activities or ideas
- adopting things that have been successfully tried elsewhere”

(Engineers Australia Innovation Taskforce (2012). “Innovation in Engineering”. Engineers Australia, Barton ACT.)

Innovation entails more than just making new ‘stuff’



Innovation



Source: Deloitte (2013). “Waiter, is that inclusion in my soup? A new recipe to improve business performance”. Sydney, NSW.



“Context-Appropriate”

Context -

“the set of circumstances or facts that surround a particular event, situation, etc.” — dictionary.com

“early 15c., from Latin contextus “a joining together,” — etymonline.com

Appropriate -

“suitable or fitting for a particular purpose, person, occasion, etc.” — dictionary.com

“early 15c., from Latin appropriatus, past participle of appropriare ‘make one's own’” — etymonline.com



Examining Design Context

Client Brief

- A briefing on works to be undertaken
- Details client's interests, goals, priorities
- A summary of the design context and objective

Design Brief

- Derived from the client brief
- Elaborates technical detail relating to the client's interests, goals, priorities
- Refines a technical design focus



Developing your design brief

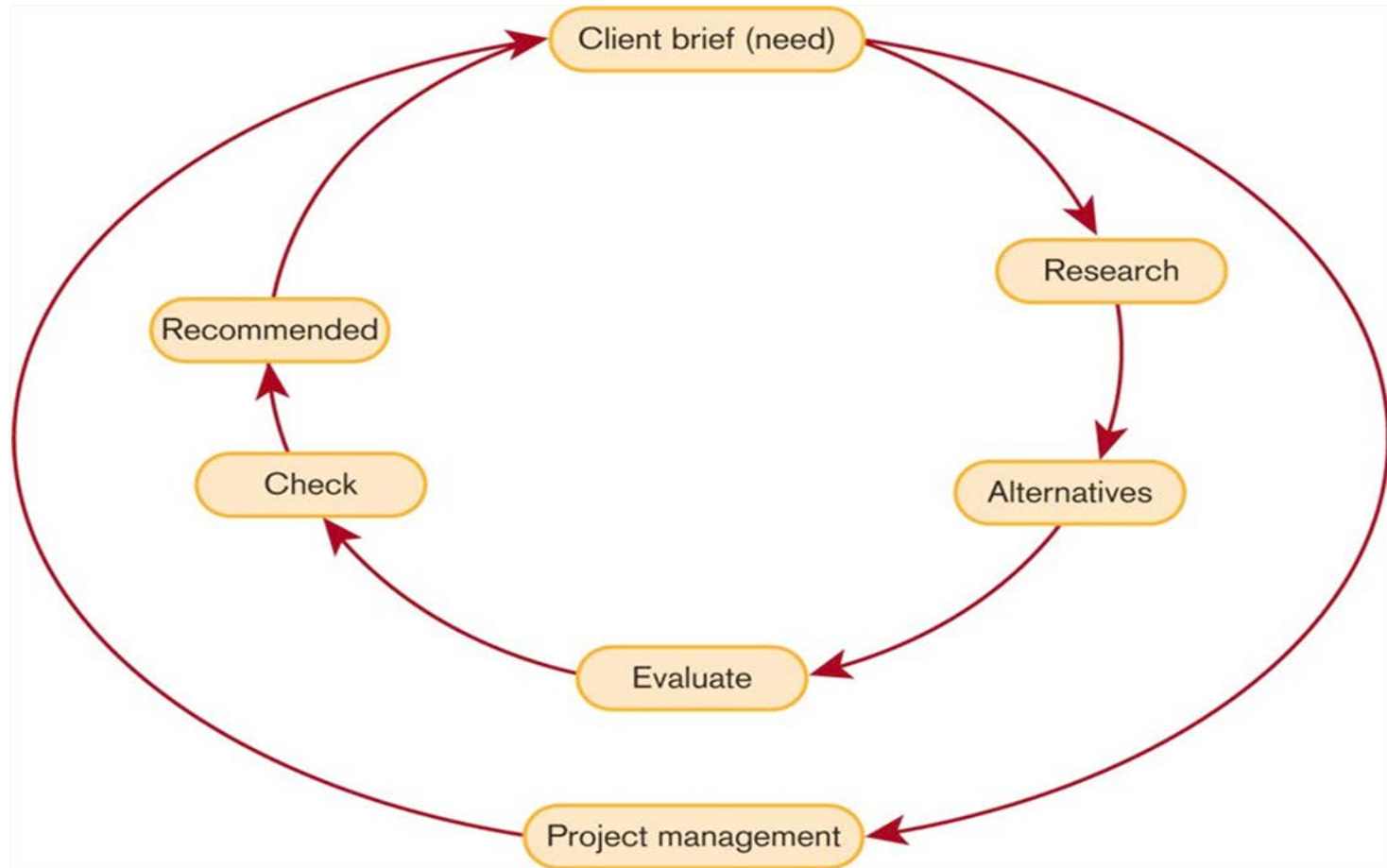


Figure 2.1 The engineering method and its relationship to the project management process (Dowling, Carew, Hadgraft (2013), pp 56)

Three phases of design



Conceptual Design

- Identifying a suitable solution to a problem
- Week 4



Preliminary Design

- Specifying major subsystems in the conceptual design
- Week 6



Detailed Design

- Detailing all of the components in the preliminary design so they are ready for implementation
- Week 11



Meet the client!!!

