

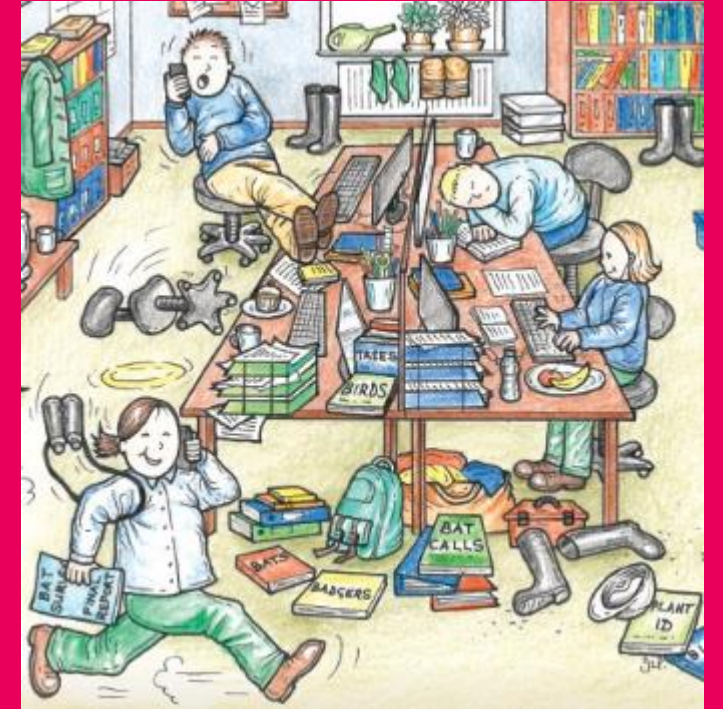
Development of project management skills in students in preparation for graduate work: a case study

John Clarkson & Cassie White



How K'nex cars and a sinking aeroplane help to save the world's wildlife

John Clarkson & Cassie White



Middleton, N (2016) **The Effective Ecologist**. Pelagic: Exeter



Teaching
Excellence
Framework



Overview

Conservation is a 'wicked problem'

The importance of developing “21st Century skills” needs

PM skills in the conservation sector

PM skills required

Recommendations for teaching and learning

How we deliver the Project Management module

An example outcome

Some feedback

Conservation is a 'wicked' problem

(Aslan et al., 2014)

Conservationists are often required to tackle seemingly intractable problems in which traditional approaches (eg creating nature reserves, or establishing a law) fail

The needs of new conservationists:-

- Becoming **inter-disciplinary** (or working with people in the other disciplines in order to gain input or 'training')
- **Pushing the personal boundaries** by operating in new 'environments'
- Embracing risk responsibly; **trying new solutions**
- Trying a process of iterative, adaptive, **reflective learning** by experience.

The importance of assessing and developing “21st Century skills” in conservation students

(Porzeczanski & Bravo, 2018)

They want to work
with:-

Lions

Wolves

Cheetahs

Dormice

Bats, etc.



What they ought to
know of:-

Critical paths

Log frames

Iron triangles

Hammocks & floats

Risk management, etc.

Project management skills in conservationists and the job market (Lucas *et al.*, 2017; Barlow *et al.*, 2015)

98% thought PM skills were needed to be effective

66% self-assessed as having insufficient competency

(250 responses from 141 organisations and 52 countries).

7% of all conservation adverts mentioned PM skills:-

Table 2. The average (SE) percentage of skills mentioned in each conservation job posting ($n = 20$).^a

Skill category	Developing countries		Economically developed countries			
	all sectors	all sectors	academic	government	nonprofit	private
Specific disciplinary	6.8 ^x (0.7)	12.3 ^y (1.1)	7.4 ^{ac} (2.0)	19.6 ^b (2.2)	7.3 ^a (1.0)	17.8 ^{bc} (3.4)
General disciplinary	18.4 (1)	19.3 (1.1)	29.3 ^a (4.7)	20.8 ^{ab} (2.9)	15.6 ^b (0.9)	18.4 ^{ab} (2)
→ Project management	7.8 (0.6)	7.0 (0.6)	1.8 ^a (1.3)	6.9 ^b (1.2)	7.2 ^b (0.8)	10.6 ^b (1.7)
Interpersonal skills	7.1 (0.6)	5.2 (0.4)	3.7 (1.2)	4.2 (0.8)	6.1 (0.6)	5.8 (1.2)
Field experience	1.3 (0.4)	1.1 (0.3)	0.5 (0.5)	1.1 (0.5)	1.1 (0.4)	1.4 (0.7)

Overview of skills needs CIEEM, 2011



**ECOLOGICAL SKILLS
SHAPING THE PROFESSION
FOR THE 21ST CENTURY**

Phase 1 Research Report
prepared by
The Management Standards Consultancy Ltd

July 2011

© IEEM

19% of employers not confident of
PM skills in their applicants:-

Basic	Capable
Demonstrates understanding of the processes and systems needed to manage projects effectively and supports project manager(s) by undertaking supervised tasks.	Complies with organisational project management protocols and uses a range of tools to effectively manage simple projects from concept through to completion.

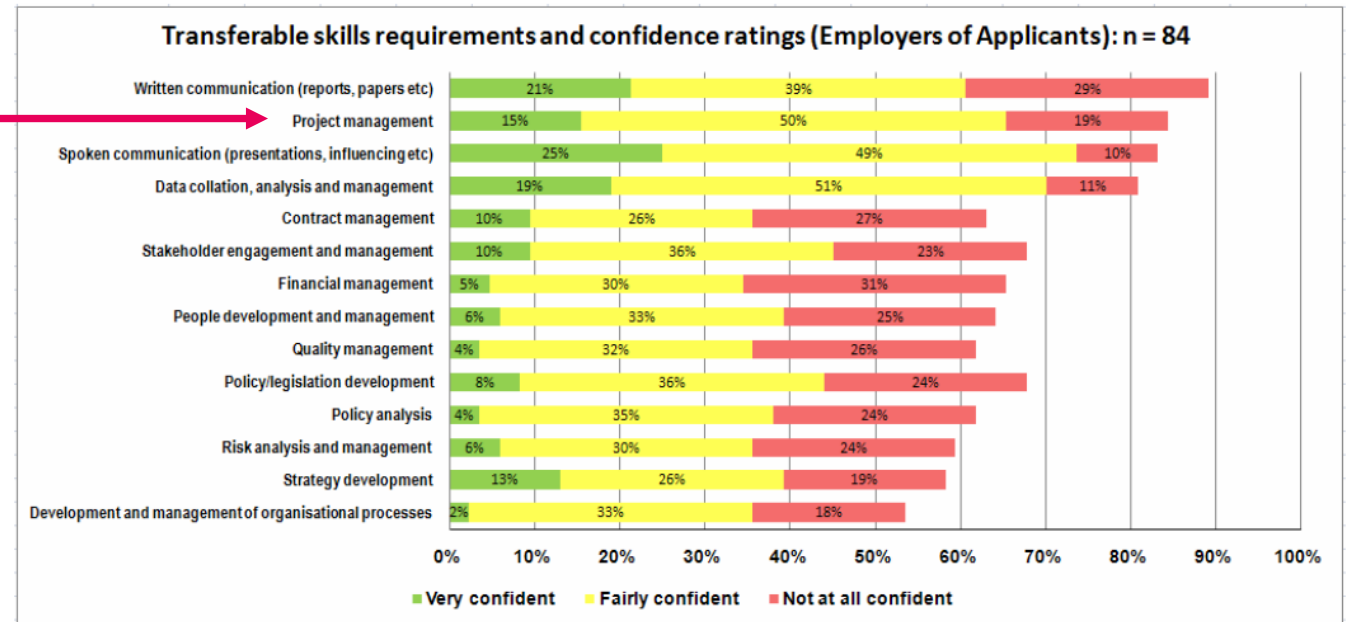


Fig 17. Transferable Requirements and Confidence: Employers

What are the recommendations and requirements?

'Immersive professional learning opportunities' combined with reflective analysis (Elliott *et al.*, 2018; White *et al.*, 2015; Martinich *et al.*, 2006)

Team building, collaboration, self-management, listening and communication, and strategic thinking (Blickley *et al.*, 2013; Manolis *et al.*, 2009)

Authentic, transformational, interpersonal, transactional, collaborative, distributive, architectural leadership (Englefield *et al.*, 2019; Imperial *et al.*, 2016; Ardoin *et al.*, 2015)

Project Management - how we deliver

Skills diagnostic **self-assessment**

Site-based stakeholder & task introduction

Belbin analysis & team formation

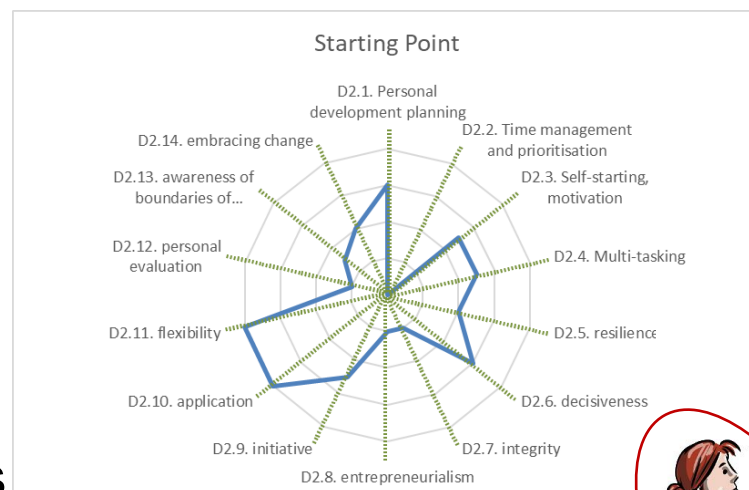
Sub-arctic survival exercise in team dynamics

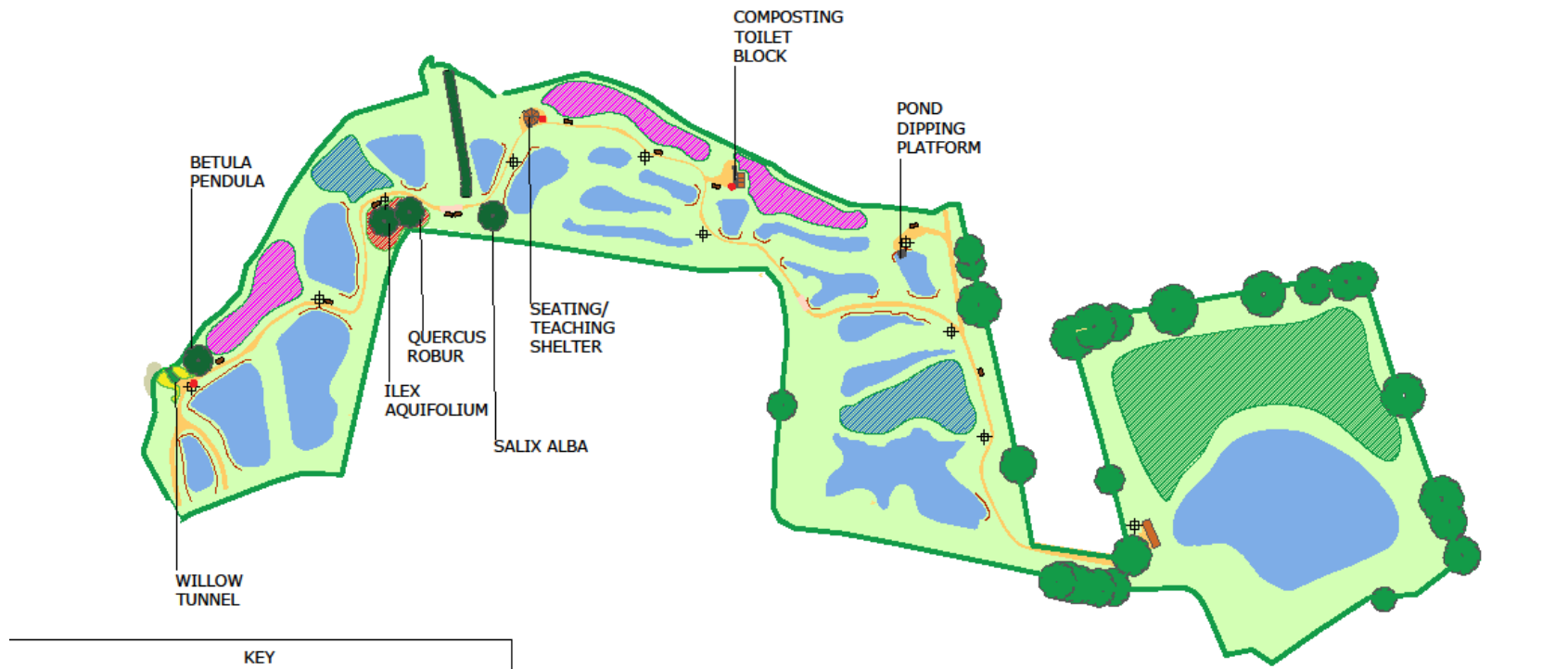
PM-tools:- Terms of Reference, MS Project, Risk & Success measures

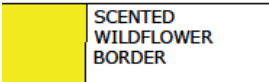

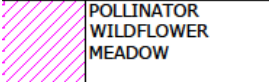

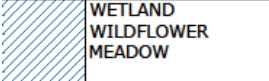



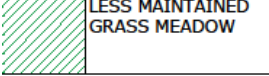

Weekly news, project failures & 'Follower's Logs'

K'nex cars – *pulling it all together*

Project proposal presentations and self-evaluation





KEY		
	SCENTED WILDFLOWER BORDER	 KNEE RAIL FENCE
	POLLINATOR WILDFLOWER MEADOW	 BOUNDARY HEDGE
	WETLAND WILDFLOWER MEADOW	 BENCH
	SHADE WILDFLOWER MEADOW	 BIN
	LESS MAINTAINED GRASS MEADOW	 INFORMATION/ACTIVITY BOARD



Student feedback

I like that there is a 'real-world' activity which we are involved with

It has been a chance to work with people that we haven't known up until now and is improving how I act in meetings and with new people.



I valued the independence we have as a group, to carry out the project.

I really enjoyed the lecture where we made water bottle transportation vehicles - it not only got the group mixing and having fun together, but also taught us some valuable lessons about some of the small implications that can have a rather hefty effect on the critical path to project completion and overall product satisfaction.

Feedback from an alumnus

I have found Project management skills are key to industry and have been relevant in my progression. My experience whilst working in Health Safety and Environment since graduation from NTU have endorsed the valuable learning gained from the project management module. Planning, taking into account timescales, budgets, manpower, and stakeholder pressures all need to be balanced to meet organisational aims and objectives. If you can do these well, then you will succeed. There's no doubt that these are fundamental skills no matter whether you want to be an ecologist, ranger, reserve manager, environmental consultant or anything else for that matter.

These skills have now aided my development further. They have given me the confidence and stepping stones to reach my aspirations of working for the Environment Agency