CAN’T BEAT IT ON A GOOD DAY:

Investigating student experiences on field trips with different instructors and variable weather

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WELCOME!

BigIdeaZoo

Lori Rock

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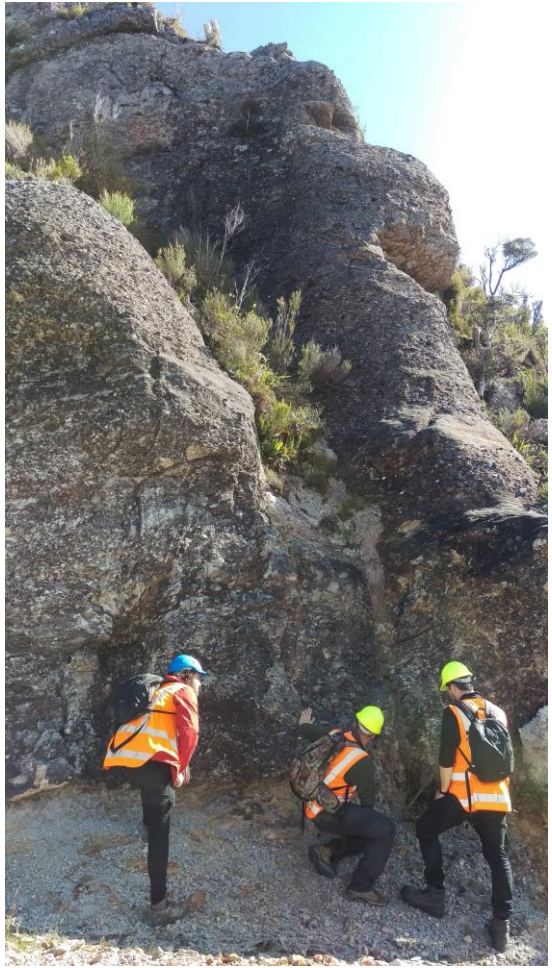
OUTLINE

- Research context and question
- Student experience and sense of place
- Research setting
- Mixed methods design
- Place attachment results
- Student perspectives
- Consistent design characteristics
- Model for place attachment over time
- Future work
- Summary



WHY IS FIELD EDUCATION IMPORTANT?

- Take a minute to think about this – try to sum it up in 1-5 words
- When you're ready, type into the chat window
    - Make sure 'all panelists AND attendees' is selected from the drop down

WHAT DOES THE (GEOSCIENCE) LITERATURE SAY?

- Engage with real world settings
- Develop transferrable skills (e.g., teamwork, communication)
- Career preparation
- Form geoscientific identities
- Social bonding between peers and instructors
- Cognitive (what we learn) AND affective (why we learn) domains

Petcovic et al. (2014)

WHAT DON’T WE KNOW ABOUT FIELD EDUCATION?

- We value the field for many reasons, but there is still much to uncover
- Affective aspects (emotions, attitudes, values) are particularly poorly understood
- Need to investigate the student perspective
- Important for motivation and interest, recruitment and retention[1]

[1]Houlton (2010), Kraft et al. (2011), LaDue and Pacheco (2013)

RESEARCH QUESTION AND AIMS

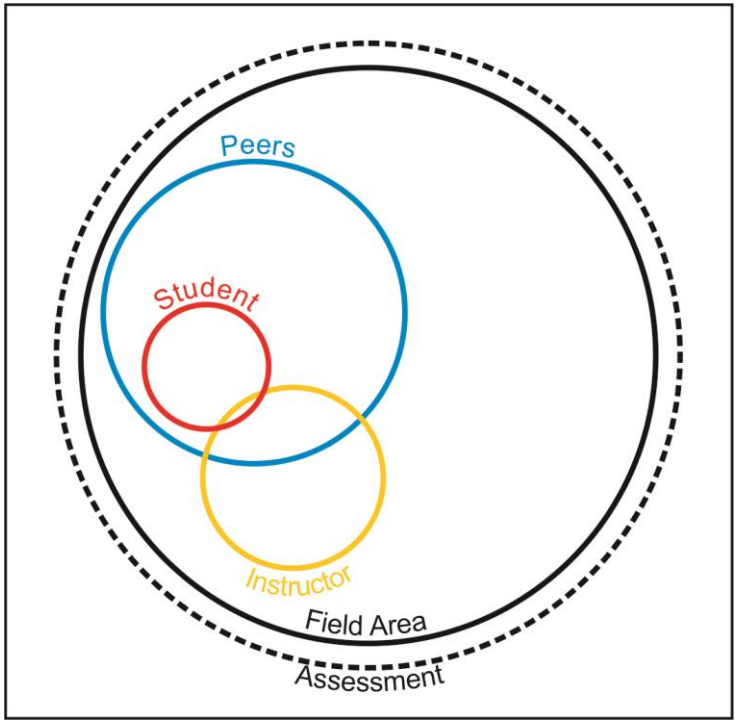
- More broadly[1]:
  - Uncover the nature of the development of sense of place in undergraduate geoscience students in the field
  - Illustrate how sense of place is impacted by differences in field trips or students
  - Understand how sense of place relates to motivation and environmental attitudes
- **This study:**
  - **What effects do different instructors and variable weather conditions have on the student <u>field experience</u> and <u>sense of place</u>?**

- Field trips should be robust in changing conditions
- Location often constant, building pedagogical content knowledge (PCK), location contacts and resource repositories[2]

[1]Jolley et al. (2018a, 2018b, 2018c); [2]Gold et al. (1991)

THE STUDENT FIELD EXPERIENCE

- ‘Essence’ of the field[1]
- Internal and interactive
- Model for geology field trips based on previous findings from ‘situated’ (mapping-type) trips[2]
    - Student embedded within a peer group (+/- instructor) within field area
    - Student-centred
    - Students perceived learning objectives
    - Assessment connected region

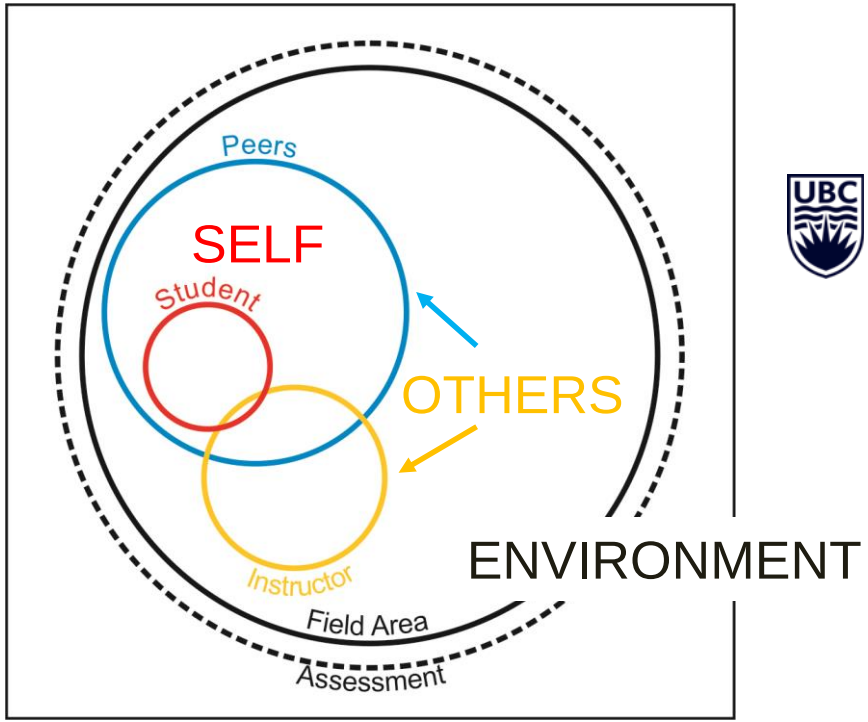


Jolley et al. (2018a)

[1]Feig (2010), [2]Jolley et al. (2018a)

SENSE OF PLACE

- Collection of meanings and attachments built from engaging with and learning about places[1]
- Previous work shows place attachment (triangulated with interview findings) to be sensitive to different field trips and students[2]
- Sense of place -> connections between self, others and environment[3]
    - Student, peers/instructor, field area (+ assessment)
- This study: instructors (part of others) and weather conditions (part of environment)

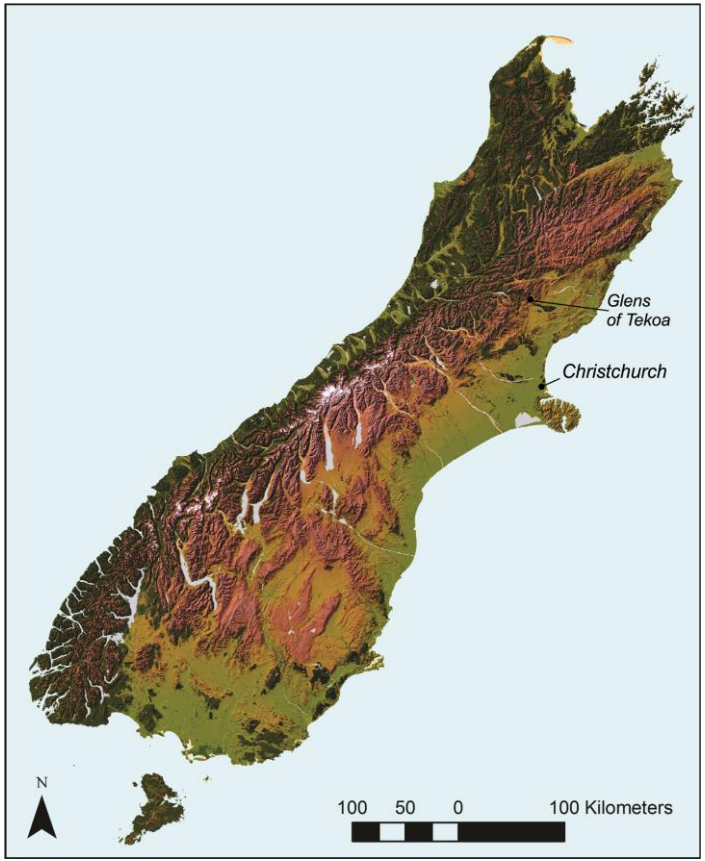


Jolley et al. (2018a)

[1]Tuan (1977), Williams and Stewart (1998), Massey (2005), Semken and Butler Freeman (2008), Halpenny (2010); [2]Jolley et al. (2018a, 2018b); [3]Gustafson (2001)

RESEARCH SETTING

- 3 x six-day, introductory geological mapping trips
  - Accommodation limited to 23 students
  - Multiple consecutive field trip sections
  - Each has different instructor(s)
- Second-year geology majors
- First overnight field trip
- Work in self-selected groups of 2-4
- 90-minute drive to/from field area, no additional driving required



Jolley et al. (2018c)

STUDENT POPULATION

		Trip 1 (n=17)		Trip 2 (n=18)		Trip 3 (n=15)	
Gender	Male	10	59%	11	61%	4	27%
	Female	6	35%	6	33%	7	47%
	Declined to Answer	1	6%	1	6%	4	27%
Age	18-19	6	35%	11	61%	6	40%
	20-21	5	29%	6	33%	3	20%
	22+	5	29%	1	6%	2	13%
	Declined to Answer	1	6%	0	0%	4	27%
Ethnicity	Pākehā/NZ European	13	76%	13	72%	9	60%
	Other European	2	12%	4	22%	2	13%
	Asian	1	6%	0	0%	0	0%
	Māori	1	6%	0	0%	0	0%
	Middle Eastern	1	6%	0	0%	0	0%
	Declined to Answer	1	6%	0	0%	4	27%

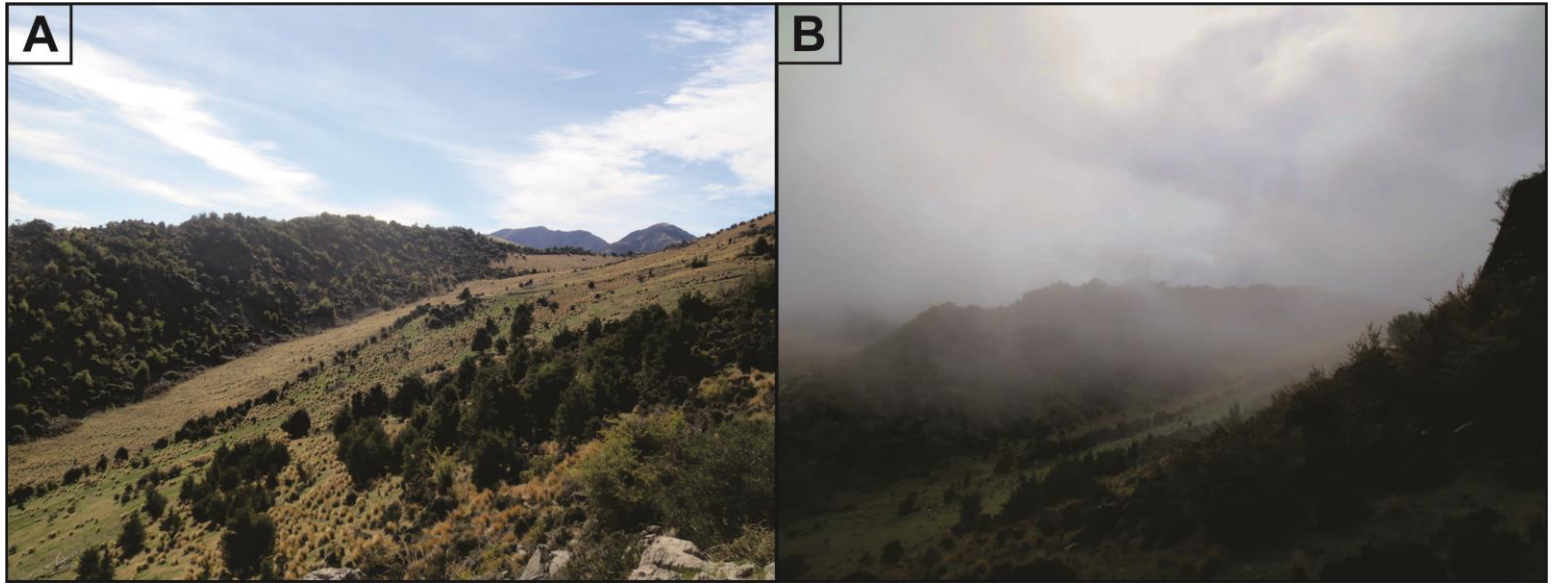
FIELD ACCOMMODATION

- Cottages used to house seasonal farm workers
- Instructors share the same accommodation

Jolley et al. (2018c)

WEATHER CONDITIONS

- Important for morale and access
- Trip 1: rain, sleet, snow; two days cut short due to worsening conditions
- Trip 2 (A): dry, mostly warm and sunny
- Trip 3 (B): mixed; grey, misty days and partly cloudy days



Jolley et al. (2018c)

MIXED METHODS

- Quantitative data to characterize place attachment across the population
  - Place Attachment Inventory[1]
  - n=17, 18, 15 on Trips 1, 2 and 3
- Qualitative data to uncover richness and complexity in the lived experiences of students and instructors
  - Semi-structured interviews with students (n=3/trip), deliberately selected
  - Semi-structured interviews with all instructors
  - Coded for emergent themes relating to perceptions of field education, intended and perceived learning outcomes, field area
  - In-field observations to characterize setting and contextualize findings

[1]Williams and Vaske (2003), named by Semken and Butler Freeman (2008)

PLACE ATTACHMENT PREDICTIONS

- How do you think student place attachment compared on the different field trip sections?
    A. Higher on the fair weather sections, lower on the poor weather section
    B. Higher on the poor weather section, lower on the fair weather sections
    C. Same on all sections, regardless of weather and instructor
    D. Different on all sections, with no apparent relationship to weather or instructor

PLACE ATTACHMENT RESULTS

- How do you think student place attachment compared on the different field trip sections?
  A. Higher on the fair weather sections, lower on the poor weather section
  B. Higher on the poor weather section, lower on the fair weather section
  C. Same on all sections, regardless of weather and instructor
  D. Different on all sections, with no apparent relationship to weather or instructor

PLACE ATTACHMENT RESULTS

	Trip 1 (n=17)	Trip 2 (n=18)	Trip 3 (n=15)	Significant?**
Student Average, Pre (Standard Deviation)	24 (7)	23 (8)	27 (6)	No, p=0.26
Student Average, Post (Standard Deviation)	32 (10)	33 (9)	33 (9)	No, p=0.94
Student Average, Shift (Standard Deviation)	8 (12)* ★	10 (9)# ★	6 (6)^ ★	No, p=0.53

Note: results of paired sample t-test between pre and post: *p<0.05; ^p<0.01; #p<0.001.

**results of one-way ANOVA; null hypothesis rejected?

STUDENT PERSPECTIVES: THE FIELD EXPERIENCE

- Highlight opportunity to put data together and build knowledge from ground up
- Built skills in:
    - Rock description/observations
    - Note-taking
    - Getting good quality data
    - Identifying imperfect rocks
    - Making interpretations

- *"Just getting us to try and get information from the field. Then coming back and trying to put it together…We got back and I put it all down, and then I linked it all up and it made sense." – Trip 2 Student*

STUDENT PERSPECTIVES: SENSE OF PLACE

- Recognized the importance of the geological variety available
- Appropriate for their academic level
- Did not want to revisit the area, as they felt they had gotten to know it well enough
- Learning about geology enhanced appreciation for the landscape

CONSISTENT DESIGN FEATURES: INTENDED LEARNING OUTCOMES

- Similarities in each instructor's intended curricula
- Broad perceptions of field education:
    - Connect classroom to real world examples
    - Develop sense of ownership and independent problem solving ability in students
- On this field trip:
    - Core field skills
    - Thinking creatively
    - Making assumptions (to generate geological interpretations)
- Students became increasingly autonomous as instructors reduced the amount of direct guidance given to them
- Students perceived many of these intended learning outcomes

CONSISTENT DESIGN FEATURES: FIELD AREA APPRECIATION

- Instructors did not all have the same level of attachment, but noted important educational features:
  - Variety and complexity of geology, appropriate for academic level
  - Small field area
  - Small and unique accommodation located within the field area
- Students noted the geological features

CONSISTENT DESIGN FEATURES: CONSISTENT, ALIGNED AND CONNECTED ASSESSMENT

- Assessment consistent between all trips
- Aligned with intended curriculum stated by instructors (and perceived by students)
- Assessment encompassed field area and was directly connected to the landscape
    - Ownership and exploration within the field area[1]
    - Shared experience and peer relationships

[1]Jolley et al. (2018a)

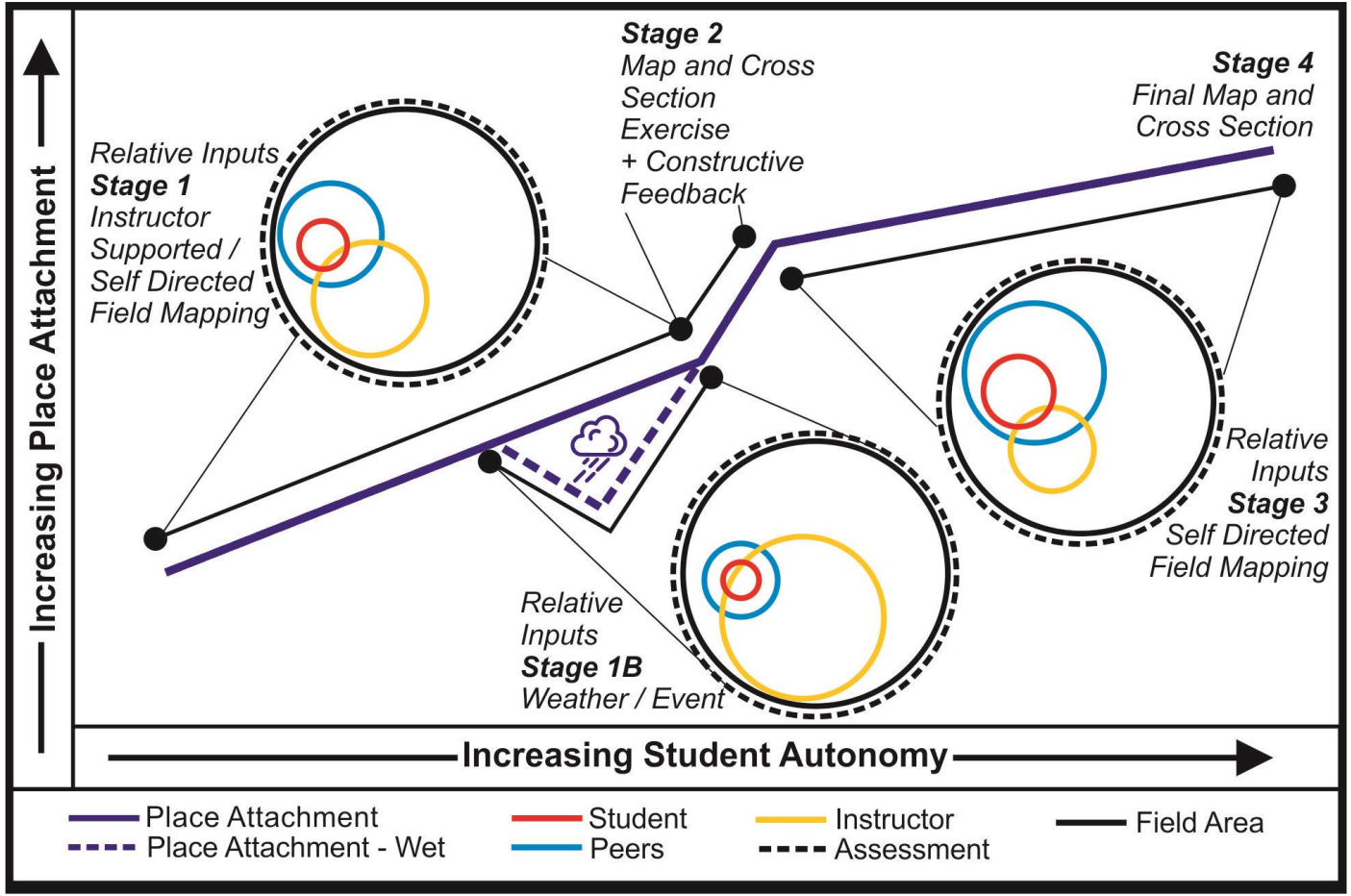
CONSISTENT DESIGN FEATURES: FLEXIBILITY TO WEATHER

- Inbuilt flexibility and instructor willingness to adjust expectations and pedagogy to mediate adverse conditions
- Students remain within field area

THOUGHTS ON CONSISTENT DESIGN FEATURES

- Of the four consistent design features we identified, which do you think is the most important?
    A. Intended learning outcomes
    B. Appreciation for the field area
    C. Aligned and connected assessment
    D. Flexibility of assessment to weather

MODEL FOR PLACE ATTACHMENT OVER TIME



Jolley et al. (2018c)

FUTURE WORK

- Testing of this model in other settings
- Characterise place attachment as it progresses throughout the trip
    - Identify other turning points
- Understand more about how instructors select field areas
    - What features are important?
    - Are they valued? Why or why not?

SUMMARY

- Used connections between self, others and environment to investigate impacts of instructors and weather conditions on student field experiences
- Measured with place attachment surveys, in-field observations and student/instructor interviews
- Similar place attachment and experiences on all field trip sections
- Identified several contributing factors:
    - Intended learning outcomes consistent between instructors and perceived by students
    - Field area that is valued by instructors with features apparent to students
    - Assessment consistent between sections, aligned with intended learning outcomes and connected to field area
    - Flexibility in assessment and instructor implementation to adapt to adverse weather conditions

CHECKING IN

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Thank you for joining! Any questions?

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