Securing field learning using a 21st century Cook's Tour

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Abstract

This paper evaluates the effectiveness of incorporating digital video into a traditional Cook's Tour as part of a 7-day road trip around the east coast of New Zealand's North Island over a four year period. Student-generated video diaries summarised landscape features and processes at fieldsites, empowering students through active learning and small group collaborations. Student response was assessed via pre- and post-fieldtrip questionnaires, focus group, and video diary reflection. Marks were analysed before and after the introduction of on-site student video production. Results of this research indicate the positive influence and statistically significant effects of this approach on student learning.

Key words: fieldwork, digital video, student feedback, active learning, marks analysis

Introduction

Knowledge generation using a 'Cook's Tour' approach (sensu Kent et al., 1997) to student fieldwork has traditionally been associated with teacher-centred learning and minimal student motivation and collaboration (Fuller et al., 2000). This does not align with best-practice (Livingstone et al., 1998), and accordingly this genre of field teaching has been largely dismissed as an empowering learning tool (i.e. a pedagogic method which best facilitates learning), lacking depth in learning and effectiveness in group development (cf. Kent et al., 1997; Livingstone et al., 1998). Fieldwork is perceived to lie at the heart of Geography, and there is now an opportunity with the introduction of new digital technologies to revitalise, update and enhance the traditional Cook's Tour to bring this mode of field teaching back into relevance for this century. Underpinning Sauer's often quoted presidential address to the American Association of Geographers in 1956: 'the principal training of geographers should come, wherever possible, by doing fieldwork' (Sauer 1956, 296), was a slow excursion, punctuated by leisurely halts on vantage points across landscapes (Fuller, 2012). This was the 'Cook's Tour' fieldtrip, so named after the mid-nineteenth century Travel Agent, Thomas Cook, who pioneered tours of extended regions. Thomas Cook was the first to arrange a privately chartered train for a public excursion in 1841 (Thomas Cook,

2014). He was in fact at the forefront of using the new technology of his day and conducted outings for temperance societies and Sunday Schools using rail, the success of which prompted more extended tours in the 1840s to Scotland, and then in the 1850s and 1860s to Europe, then Egypt and the USA.

Developments in field teaching

In their review of 1997, Kent *et al.* identified the Cook's Tour as the simplest and most traditional form of observational fieldwork and suggested that it was the predominant mode of field teaching in the 1950s and 1960s, when Sauer was speaking. It was also quickly recognised as the most boring mode of fieldwork because students become disengaged (Brown, 1969), with students themselves describing this type of activity as boring (Kent *et al.*, 1997). However, there remained a place for such observational fieldtrips (or at least as a component part of a fieldtrip) and in the mid-1990s Kent *et al.* (1997) described a variety of approaches that foster engagement of students on such visits, including critical assessments, map production, worksheets and self-paced guides, essentially meshing together 'look-see' and experiential fieldwork, as implemented by several practitioners (e.g. Keene, 1982; Higgitt DL, 1996; Fuller *et al.*, 2000). These revisions to the straightforward 'Cooks Tour' fieldtrip have fostered student engagement (e.g. Fuller *et al.*, 2000), recognising the importance of the pedagogically established notion that students learn best 'by doing' (Race, 1993) in an active learning setting (Higgitt M, 1996), adopting experiential learning approaches (Kolb, 1984; McEwen, 1996)..

The nature of fieldwork in the modern undergraduate degree continues to change and embrace the pace of modern life, with each hour accounted for, fieldtrips crammed with a plethora of learning activity and action to satisfy consumer-driven 'value for money' demands of today's fee-paying students (Fuller, 2012). This development of Geography's "signature pedagogy" (Hovorka & Wolf, 2009, 99) is essential if fieldwork is to remain a central, fundamental component of modern undergraduate degrees as so many recognise (e.g. Gold *et al.*, 1991; Haigh & Gold, 1993; Kent *et al.*, 1997; Pawson & Teather, 2002; Bracken & Mawdsley, 2004; Stodart & Adams, 2004; Dummer, *et al.* 2008; Maskall & Stokes, 2008; Herrick, 2010). Fieldwork provides demonstrably valuable learning experiences (Kern & Carpenter, 1984; 1986; Fuller *et al.*, 2003; 2006; Scott *et al.* 2006; Boyle *et al.*, 2007; Fuller *et al.* 2010), including opportunities to acquire 'hands-on' subject-knowledge in the real world, and the glue which bonds together a student cohort (e.g. Fuller, 2006). Can there still remain a role for the Cook's Tour, observation-based fieldtrip, particularly when fieldwork is identified as, "a key sphere of learning in which subject-specific and generic skills are developed" (Wall & Speake, 2012, 433)? This paper addresses this question by evaluating the incorporation of digital video assignments into a primarily

observation-based, multi-centre fieldtrip run in New Zealand. This 21st century version of the Cook's Tour genre of fieldwork reported here recaptures the pioneering spirit of Thomas Cook, in similarly applying new technology of the day to provide participants with a new experience of learning and opportunities to engage with their surroundings.

Approach to teaching and assessment

The field course, which forms the core component of a semester-long paper (course/module/unit), took the form of a 7-day road trip around the east coast of the North Island of New Zealand (Figure 1), encompassing a range of environments, topics and issues as part of a 3rd year undergraduate paper (course/module/unit) in applied field geomorphology. Taking a week over this fieldtrip enables a broad range of environments, processes and issues to be covered. Each day incorporated several stops at a range of sites selected on the basis of recent and ongoing geomorphic research and its application in landscape management. This provided case study evidence to assess a variety of processes in contrasting geomorphic environments and their associated management issues. The route taken provides a high diversity of landscapes and processes to consider, including active fault traces, coastal erosion in sandy, stony and rocky shoreline contexts, landslide- and gully-prone steepland terrain, rapidly aggrading rivers, tsunami-prone shorelines, hydrothermal hazards and volcanic geomorphology, all of which intersect with infrastructure and people throughout the region. The intention and genre of the trip is observational, rather than hands-on measurement of process, with an emphasis on the relationship between evaluation of process and critical assessment of landscape management approaches within a broad spectrum of geomorphic topics (e.g. landslides, flooding, coastal erosion). Hands-on technical skills are taught elsewhere in the curriculum in this degree, thus an observational approach is entirely appropriate. However, there is a danger that students undertaking such a field course become passive learners (cf. Kent *et al.*, 1997). To help foster engagement, students were required to complete field notebook entries at each site visited, which forms a compulsory form of assessment that is assessed on a daily basis. Notebook entries required students to take at least one field sketch at each site, with some direction from lecturers as to what to sketch and how to approach this, as well as making copious notes about relevant processes and issues based on site presentations and discussion. Students also took ownership of the content of the course by becoming the local expert

at key sites: each student prepares a talk accompanied by illustrative material which is presented at the relevant (their chosen) location in the field course. Their material is informed by recently published material (journal articles and 'grey' literature, i.e. council reports) that they read and digest prior to the fieldtrip. Handouts they prepare are distributed to the group as a whole for reference in the field. In effect, the student becomes the 'knowledgeable expert' *sensu* Coe & Smyth (2010) and their learning becomes more active and student-centred. In addition, students prepare for the fieldtrip by writing an essay discussing the larger-scale (tectonic and climatic) variables conditioning the geomorphology of the region, which they submit for marking and receive feedback on prior to the fieldtrip.

Figure 1

However, there remains a need to foster engagement further and at a deeper level because note-taking and field sketching and listening to others' presentations might still prove somewhat passive, since the students are generally receiving instruction, although some will be actively engaging in discussion. Furthermore, over the course of a 7 day road trip, the novelty of visiting a site, discussing processes and management, and questioning a peer can wear off, as became evident in the first iteration of the field course in 2009. To address this issue a digital video component was introduced. At each site, following discussion led by the appropriate 'knowledgeable expert', students worked in groups of 4-6 to produce a piece to camera that summarised key processes and issues at the site, accordingly, this approach generated a series of knowledgeable experts at each site, feeding off the primary presentation and discussion. Known colloquially as the 'video diary', this was modelled on France & Wakefield's (2011) 'digital story'. Underpinning the educational value of this approach is that to communicate clearly and effectively a succinct piece to camera requires that the students have recognised and understood the processes and issues at each site. For assessment, each group selected 10 video pieces, with at least one from each day, covering the breadth of course content. These were edited together into a coherent whole of 10 minute duration and presented to the class on the final evening of the fieldtrip. Marks were awarded on the basis of clarity of video and audio, as well as content (grasp of subject matter) and overall quality (e.g. use of captions). Inevitably the variability of New Zealand's weather in the last week of August (late Winter / early Spring) renders live video impossible at times, but video diaries could comprise a sequence of stills and / or pan shots with voice-overs. In addition, each group member was to appear in front of camera as the knowledgeable expert at least once in the final assessed sequence. Therefore the final production required students to discuss and negotiate what to include and what to omit, requiring a review of content and assessment of quality. To assist with production and editing,

students received briefings from staff, as well as instruction using France and Wakefield (2011). Students are able to refer to their production, as well as the complete set of peer-prepared material in order to inform the final piece of assessment for the course, which comprises a report critically appraising the management of the landscape and processes discussed at a site of their choice visited during the fieldtrip. The complete set of assessment for the paper as a whole is provided in Table 1. Note: the fieldtrip comprises the only formal teaching for the semester-long paper; students work independently to produce an essay prior to the fieldtrip, and a report after the fieldtrip. The paper is taught in Distance (correspondence / extramural) mode, but can be taken by both Distance and Internal students.

Table 1

Methods

The extent to which the introduction of digital video assessment improved understanding and engagement during this field course was assessed using a combination of questionnaires as well as a focus group and ‘video bus’ during the 2011 field course (Table 2) and marks analysis of cohorts both pre- and post- the 2010 introduction of digital video on this fieldtrip. The gender and age balance of the student cohorts involved is indicated in Table 3.

Table 2

Table 3

Marks analysis (2009-2013 only)

Marks analysis is an approach that has been used successfully as a mechanism to assess the extent of improvement in response to intervention into a taught module (e.g. Newnham et al., 1998; Fuller et al., 2000). Here, marks analysis compared student performance in the pre-fieldtrip essay with the post-fieldtrip report, both of which are substantial pieces of critical writing (cf. Table 1), for each cohort from 2009 (Table 4). This provides a proxy for assessing the impact of the intervention of digital video into this fieldtrip

Table 4

Pre-fieldwork information sheet (2011 only)

A short single-page questionnaire comprising four open questions was used to gauge student prior experience and expectations with regard to use of technology. This was considered important because the cohort comprised a diverse range of students, including Distance / Extramural students, some of whom had no previous opportunity to undertake fieldwork.

1. What is your most memorable fieldwork experience prior to this trip and why?
2. What are your anxieties and challenges of this fieldtrip?
3. How comfortable are you with using modern technology on this fieldtrip?
4. Give three words that best describe your expectations of this fieldtrip.

Peri-fieldwork video bus (2011 only)

Students were given the opportunity to record reflective pieces to camera at the end of each day, providing a means of capturing views, perspectives and reflections on the fly. This approach provided opportunity for private student reflection in the confines and seclusion of the rear of a minibus, which gave students their own personal space to work through a series of open questions in their own time, at their own pace, and individually, without involvement of peers, staff or the facilitators of this study. Privacy was effected by students taking it in turns to use the video bus, and not every student took the opportunity every day, with an overall response rate of 60% (Table 2). The open questions used to prompt student reflection into the video camera were:

1. What is your view of the fieldtrip so far?
2. What is your opinion of the use of the video cameras?
3. How are the video diaries progressing?
4. Any other information you wish to share?

Post-fieldwork questionnaire (2010-2013)

Post-fieldwork questionnaire used a five point Likert scale as a means to effectively capture student perceptions in connection with each question posed. This provides for a consistency of data capture

over several years cohorts. Furthermore this approach is simple to administer and provides a means of acquiring rapid feedback from students and as such our intention was to capture as wide a student voice as possible without the need to rely on the commitment of students to attend focus groups, which were not feasible in a non-residential context. The questionnaire design did nevertheless allow for students to provide personal commentary on their perceptions and answers in connection with the closed questions (Table 5).

Focus Group (2011 only)

Students participating in the Focus Group were asked individually to rank and score their responses to statements in the post-fieldwork questionnaire, with the most important response receiving a higher score. These rankings were then contributed to the focus group and accumulated. This allows for a sense of the overall group's response and perceptions to the value (or otherwise) of using digital video in this context. As such this adapts an approach using Nominal Group Technique by Fuller et al. (2003). These results are given in Table 6, placing the responses in ranked order.

The focus group and video bus were managed by an independent facilitator who was not involved in course instruction. Teaching staff were not involved in these activities and this research followed the lead author's institutional ethical procedures. Questionnaires were completed entirely voluntarily and in the students' own time. The gender and age balance of the student cohorts contributing their perceptions is indicated in Table 3.

Results

These results seek to triangulate the students' fieldwork experiences derived from marks analysis, questionnaires, focus group and video bus.

Marks analysis (2009-2013 only)

Table 4 shows that the post fieldtrip report received consistently higher marks (B+ category) than the pre-fieldtrip essay (B or B- category). The marking team for both the essay and report was consistent over the five year period and involved staff who were independent of this research for each assessment

in each year. Statistical analysis was performed using a one-tailed, two-sample equal variance Student's *t*-test, to test the following hypotheses:

H₀ There is no significant difference between marks awarded for the pre-fieldtrip essay compared with the post-fieldtrip report.

H₁ There is a significant difference between marks awarded for the pre-fieldtrip essay compared with the post-fieldtrip report.

H₀ was upheld for data in the 2009 and 2012 cohorts, H₁ was upheld for the 2010, 2011, and 2013 cohorts and strongest when analysing amalgamated data 2010-2013, with a *p*-value of 0.0000094.

Table 4

Pre-fieldwork information sheet (2011 only)

Students views at the prospect of working with digital technology to produce a video diary were mixed. Some relished the opportunity, "*I like the challenge*", while others considered themselves, "*backward with technology*", which is perhaps surprising in what is deemed to be the digitally native internet generation (Tapscott, 1998; Prensky, 2001), considered to be digitally literate, thinking in terms of activity which technology enables (Oblinger & Oblinger, 2005). However, these less confident responses originated from the most mature students in the cohort, who are less familiar with the technology.

Peri-fieldwork video-bus (2011 only)

The following comments were typical of those made with reference to the impact video made on student learning during the trip:

"[Video is] more hassle, but more memorable since you can revisit the day"

"Fantastic idea..[video] made a big difference"

"Learnt a new skill"

"Need to be prepared beforehand"

"[Video diary] reinforced my learning"

"[The video] helped me cement what we had learned on-site"

"[The video] brought humour and learning together"

"Able to learn off other students"

Post-fieldwork questionnaire (2010-2013)

The results showing answers to closed questions ranked on a 1-5 Likert scale are given in Table 5. In order to simply gauge the strength of opinion, responses were categorised by the broad level of agreement / disagreement from all students (100%), almost all students (>90%), most students (>75%), and majority of students (>50%). In open questions relating to their learning, student comment indicates a perceived improvement to their understanding:

“Steep learning curve, but good fun and learnt a lot. We will utilise the skills in some form long after the fieldtrip”

“took a little longer, however it made us have a better understanding than we would have had”

“Makes you think about the situation and environment and what you are trying to achieve [before filming]”

As part of the questionnaire, students were asked for three words that best described their experience of the field course. These are displayed using a Wordle (Figure 2), which suggests that this 21st Century Cook’s Tour is certainly not dull and boring and there is a consistent and sustained response from varying and diverse cohorts over a three year period.

Table 5

Figure 2

Focus Group (2011 only)

Students participating in the Focus Group were asked individually to rank and score their responses to statements in the post-fieldwork questionnaire, with the most important response receiving a higher score. These rankings were then contributed to the focus group and accumulated. This allows for a sense of the overall group’s response and perceptions to the value (or otherwise) of using digital video in this context. These results are given in Table 6.

Discussion

The introduction of a digital video assessment component to a primarily observational ‘Cook’s Tour’ field course has proved to be effective in fostering engagement and encouraging participation in this

fieldwork genre. A traditionally dull, stale form of practicing fieldwork (merely transferring the lecture to the field, cf. HMI 1992) has been transformed into an enjoyable, engaging, fun means of learning in the approach adopted here (see Figure 2; Table 2, rank #3). Kemp *et al.* (2012) suggest that a similar approach incorporating podcasting into fieldwork was also enjoyed by students and motivated students in their study. The spin-off to such enjoyable learning is that digital video assessment has improved levels of understanding of the environment. Students learn best when 'doing': production of video diaries engages students in active learning in an otherwise passive knowledge transfer situation. When such active learning is enjoyed and becomes fun, its effectiveness is improved. This is supported by Oblinger & Oblinger (2005) and Prensky (2009), who argue that students prefer technology-led learning.

Marks analysis (Table 4) suggests that there is a tangible effect in student performance among some cohorts. In 2009, pre video, there was a slight (but not significant) increase in marks between the pre-field course essay and the post-trip report. Such an increase is reasonable, since following time spent in the field, students' understanding of processes and the environment ought to be enhanced. The improvement appears to be more marked in both 2010 and 2011, and statistically significant for these cohorts (Table 4). However, this improvement was not repeated in 2012. The 2012 cohort appears to be stronger than the two preceding years, remarkably similar to 2009 in fact. The greatest improvement was seen most recently in 2013 and the difference between the marks for the essay and the report is statistically significant (Table 4). This suggests that engaging students using digital video has the greatest impact among weaker students, with less impact among stronger students. This is intuitive, since stronger students tend to be more engaged with the learning process (which is why they are stronger), while the weaker students are in need of greater help and encouragement. As such, the approach adopted here could be argued as a powerful learning tool, facilitating engagement and learning of less able students in particular. It is of interest to note that student perceptions (Table 5, response 4) actually suggest the majority of students do not see the link between the video diary and final report, probably because the link is not necessarily explicit or tangible, and this subtlety might preclude detection by the students for whom video is most beneficial. However, it should also be recognised that some improvement in grade performance may simply be a product of the development of student understanding of the material in the paper per se, since student work at the outset of a paper may typically be weaker than that produced at the end of a course of study, when students have (at least in theory) engaged rigorously with course content and material. Nevertheless, the extent and degree of improvement especially among weaker cohorts does suggest to some degree that a positive contribution has been made to student learning by incorporation of digital video.

In order to move away from the cohort effect, the marks for each assessment (pre- and post-fieldtrip) in 2010 to 2013 were combined (n=92). The resulting *t*-test was strongly significant with a *p*-value of 0.0000094, thus H_1 was upheld: the marks for the post fieldtrip reports between 2010 and 2013 were significantly higher than the pre-fieldtrip essay. Variability in cohort size (16-30) appears to have no obvious affect on grade performance assessment (Table 4): variability does not increase consistently with cohort size.

Digital video strategically incorporated into fieldwork, or any other method of teaching and learning, ought to enrich the learning space and enhance the student learning experience. Stokes *et al.* (2011) have recently affirmed findings that show active participation in fieldwork promotes retention and recall of subject-specific information, which thereby, and perhaps subtly, has improved certain cohort performances in the final assessment in this course. More recently, Dando & Chadwick (2014) have advocated that learning happens, even when student videos were not perfect and that the addition of such a creative component greatly facilitated students' learning. 'Digital stories' (sensu Wakefield & France, 2010; France & Wakefield, 2011) have been used with large first year cohorts on fieldwork with geography students as a mechanism to increase levels of engagement and understanding of key concepts learnt in the field. Similarly, digital technology in the form of podcasts (e.g. Kemp *et al.*, 2012), has been deemed to be successful in engaging students at a more advanced level in physical geography fieldwork. Jarvis & Dickie (2010) and Kemp *et al.* (2012) review a range of uses for similar podcasts in student learning, among which is the suggestion that they provoke reflective thought (Fisher & Baird, 2006), which in turn fosters deeper levels of learning and engagement (Jarvis & Dickie, 2010; Kemp *et al.*, 2012). Mavroudi & Jöns (2011) also recognised similar benefits of incorporating video documentaries into their assessment of human geography fieldwork and concluded that "video documentary works extremely well to stimulate students' interest and critical thinking" p.18. Overall, the learning opportunities offered by video and the additional skill set development can be best summarised by Dando & Chadwick (2014, p.83) who noted that "Students gain enhanced geographic knowledge as they apply concepts they have learned and practice communicating them to others.... Both geographic education and media literacy lead to enhanced critical thinking skills."

Not only do the findings of this study indicate that digital video assessments both actively engage students in fieldwork and enhance their learning, but they also develop new communication and presentation skills in their own right. These are key transferable skills, which students recognise as having lasting value. In addition, the primary value of producing a digital video diary was perceived by

the group as a whole to be in fostering group work (Table 6, ranked #1). All students agreed that producing a digital video fostered group identity (Table 5, statement 3)). The exercise required group negotiation, discussion, compromise and to be effective, team working was required, which is a valuable transferable skill to learn and develop. This agrees with Fisher & Baird's (2006) assertion that collaborative learning is fostered using podcasting. Accordingly the approach adopted here ensures this updated version of a Cook's Tour provides a key sphere of learning by developing both subject specific (learning about the landscape) and generic skills (Wall & Speake, 2012).

Limitations and lessons to learn

Inevitably, not all students appreciated the opportunity for participation and learning facilitated by the introduction of video diaries into this field course. A very small minority (<10%) expressed this in terms of hating using the video camera and perceived it as a waste of time (cf. Table 5). To be fair, this might be true of the best students, who probably benefit least from its use, because they are already engaged and stimulated to learn. Nevertheless, the overwhelming majority believed that producing a digital video was a valuable and helpful exercise. Interestingly, students did not recognise the links between their video production and the post-fieldtrip assessment (Table 5, statement 4). This may reflect the timing of the questionnaire, which was completed at the end of the fieldtrip, before proper time had been given (perhaps) to the final assessment for the paper. However, it may also reflect the need for clearer instruction and communication of the linkages between assessments by staff. Links between various components in a course cannot be assumed and need to be clear: Stokes *et al.* (2011, p.138) suggest that, "to be an effective learning environment, the purpose of a fieldwork event must be made explicit to students". The relationship between video diaries and final assessment is also less overt and may not be recognised by the student as being tangible, although given the enhancement to the learning experience, we would contend that contrary to student perceptions in Table 5, preparation for the final assessment was helped by the level of engagement in the field fostered by video production, which is in agreement with Stokes *et al.*'s (2011) suggestion that active participation promotes information retention and recall.

Mature, Distance / Extramural students ought not to be neglected in their need for being brought up to speed with technology that may be new to them. Indeed, as whole, there ought to be adequate time allowed for students to experiment with the equipment when presented with "challenging new

experiences". This would ensure learning is not compromised by any unfamiliarity with technology. Accordingly, some staff technical ability is essential to troubleshoot technical difficulties that inevitably arise, and no student should be disadvantaged.

It is worth noting that the effectiveness of the approach adopted here applies to a relatively small to medium-sized class (16-30 students), which is straightforward to deliver and manage by lecturing staff and fosters group sizes of 4-6 students. However, successful incorporation of digital video on a much larger 1st year field course has been reported by France and Wakefield (2011). Key to the success of using digital video in this type of field context is having students work in small-groups, which facilitates greater engagement and enhances the learning environment as students are required to work together to understand concepts and issues discussed and learn from one another as they produce their video diary / digital story. This provides a clear example of peer-to-peer learning in a mode of fieldwork that has traditionally relied on teacher-student information dissemination (lectures on a bus or in the field). Nevertheless, much larger cohorts in the context of this fieldwork would be more demanding of staff time in assessing field notebooks, and logistically challenging in terms of fitting more student presentations into the 7 day tour. Furthermore, the optimum group size for video production is probably 4-6 students, as larger groups may begin to fragment and find some students tending to disengage when it is not 'their turn' to make a contribution to the video.

Conclusion

Digital video production on a Cook's Tour style of fieldtrip has enhanced and secured the learning experience for students on this field course over several years. Engagement and enjoyment fosters deeper levels of learning that improve student performances in assessment for weaker students in particular. Video production fostered understanding of the environment, group co-operation and made the fieldtrip enjoyable. Strategic incorporation of video diaries as described here can enrich the learning space and enhance the learning experience. Videos used in this Cook's Tour provided a means to both actively engage students in a range of fieldwork environments and develop new and transferable communication and presentation skills. Learning was empowered on this 21st Century Cook's Tour through active learning and small group collaboration, which have been enhanced by incorporation of digital video.

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Table 1 Assessment components for Applied Field Geomorphology. The field course runs in the final week of August.

Assignment	Due Date	Word Limit	Weighting
1. Review Essay	Early-August	2000	30%
2a. Field presentation: summary handout material	Mid-August	1 page A4	10%
2b. Field presentation: oral	During fieldtrip	15 minutes (oral)	10%
3. Field Notebook	During fieldtrip	N/A	Pass/Fail
4. Field Video Diary	During fieldtrip	N/A	10%
5. Management Report	Mid-October	3000	40%

Table 2 Methods of evaluation

Evaluation method	Response rates (%)			
	2010	2011	2012	2013
Pre-fieldwork information sheet		97		
On-fieldwork 'video bus'		60		
Post-fieldwork questionnaire	50	80	92	100
Focus group discussion		67		
Marks analysis completed 2009 - 2013				

Table 3 Gender and Age representation of fieldtrips

Year	Number	Male	Female	Age >40	Age 30-40	Age <30	Campus	Distance
2009	21	12	9	3	3	15	14	7
2010	16	8	8	2	4	10	12	4
2011	30	18	12	2	2	26	24	6
2012	25	10	15	0	1	24	24	1
2013	21	12	9	5	4	12	14	7

Table 4 Marks analysis (significant differences shaded), with the standard deviation given for mean marks in square brackets

	n	Mean mark (grade) [st dev]		p-value
		Essay	Report	
2009	21	69 (B) [8.4]	72 (B+) [10.3]	0.185
2010	16	65 (B) [9.2]	72 (B+) [10.2]	0.024
2011	30	62 (B-) [10.2]	70 (B+) [7.3]	0.001
2012	25	69 (B) [7.6]	72 (B+) [10.1]	0.183
2013	21	62 (B-) [9.9]	72 (B+) [12.6]	0.006
2010-2013	92	65 (B) [9.5]	71 (B+) [10.0]	0.000

Table 5 Student responses to closed questions in post-fieldwork questionnaire using a 5 point Likert scale (strongly agree, agree, neither agree / disagree, disagree, strongly disagree)

Statement	Response
1. Producing a digital video helped me understand the landforms and processes we studied in the field	most students agreed
2. Producing a digital video helped me become familiar with the environment	most students agreed
3. Producing a digital video helped me work together with my group	all students agreed
4. Producing a digital video helped me prepare for the report	majority of students disagreed
5. Producing a digital video was technically challenging	majority of students disagreed
6. Producing a digital video was enjoyable	most students agreed
7. Producing a digital video was a waste of time	almost all students disagreed
8. Producing a digital video hindered my study	almost all students disagreed

All: 100%, almost all: >90%, most: >75%, majority: >50%

Table 6 Focus group accumulated responses

Producing a video diary...	Score
Helped me work together with my group	69
Helped me become familiar with the environment we were working in	67
Was enjoyable	51
Helped me understand the landforms and processes we studied in the field	46
Is something I want to do more often	18
Was very time consuming	15
Was technically challenging	13
Was a waste of time	11
Helped me prepare my management report	7
Hindered my study	3

Figure 1. Fieldtrip route and itinerary summary. The nature of the geomorphology focus at each site is given in brackets. *Up to ten sites within the Waipaoa were visited, providing a more intensive focus on fluvial and slope geomorphology on this day.

ID	Day	Location (accommodation bold)
A	1	Massey
B	1	Otaki (coastal)
C	1	Raumati (coastal)
D	1	Paekakariki (slope)
E	1	Turakirae Head (tectonic)
F	1	Masterton (tectonic)
G	2	Saddle Rd (slope)
H	2	SE Ruahines (fluvial)
I	2	Haumoana & Clifton (coastal)
J	2	Ahuriri (coastal)
K	2	Tutira (slope)
L	2-3	Gisborne
M	3	Waipaoa* (fluvial & slope)
L	3-4	Gisborne
N	4	Tapuaeroa & Waiapu (fluvial)
O	4	Weraamaia (fluvial)
P	4-5	Hicks Bay
Q	5	Ohiwa & Ohope (coastal)
R	5	Rangitaiki (fluvial, coastal & volcanic)
S	5	Matata (fluvial & slope)
T	5-6	Matakana & Papamoa (coastal & slope)
U	6	Rotorua (hydrothermal)
V	6	Huka Falls / Taupo (volcanic & fluvial)
W	6-7	Turangi
X	7	Whakapapa (volcanic)
Y	7	Tangiwai (volcanic)

(a)