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Recording in the wilds: A reflection on research-technology needs on an expedition.

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Abstract

Expedition resilient data-collection technology is an often-overlooked hurdle facing outdoor education researchers. How can interviews and observations be captured in remote areas? This reflection piece traces the challenges and solutions discovered in preparing and conducting research on a 10-day wilderness expedition. Issues of recording capacity, green power, and instrument protection are addressed. The digital recording of both interview data through an mp3 player and observational fieldnotes on a lightweight keypad are discussed.

Many qualitative research textbooks, if they even deal with recording technology, plausibly assume that a controlled environment is available, that electricity is accessible, and that transportation of the recording device poses no risk of damage. Yet, these are the trials facing expeditionary data collection. The motivation for this piece comes largely from the enthusiastic interest expressed by fellow researchers towards the field-technology used during my research. While I expect some of this is mere 'boys and their toys,' I do think expeditionary travel presents particular challenges to research data collection.

My research might best be called applied philosophy. Specifically, I'm looking to see what can be made of character development on a wilderness expedition when viewed through a virtue ethical lens (Aristotle, trans. 1999). I have attempted to bridge theory and practice through participant observation. Field-based interviews and observations, taken over a 10-day expedition, allowed me to experience phenomena in its natural context as it unfolded; how I captured these data is the substance of this paper.

Interviews

> As a good hammer is essential to fine carpentry, a good tape recorder is indispensable to fine fieldwork. (Patton, 2002, p. 380)

My search for appropriate technology began with an assessment of the recording environment. The expedition was to take place in the boreal forest of the Adirondack Mountains of New York State. The weather was expected to be conducive to interviewing with temperatures in the mid to upper-20s Celsius, a predominance of sunshine interspersed with mild showers and occasional thunderstorms. The interviews, all individual, would take place during daylight hours (6am-10pm). If rain or bugs proved menacing, and my co-instructor was available to be a visual witness (research ethics), the interviews could retreat into in a tent.

The setting now framed, my first dilemma was whether to record in analog (tape) or digitally? I decided to digitally record my interviews for several reasons:

1) Most significantly, since my data analysis would utilize Computer Aided Qualitative Data Analysis Software (CAQDAS), I wanted my interviews captured digitally to allow for 'coding on the WAV.' That is, coding directly onto the recorded sound wave (extension .WAV) file. The CAQDAS program, Atlas Ti™, allows the digitally recorded WAV file to be uploaded into the program and coding performed along the duration of the audio file;

2) Digital sound quality appears to be consistently better. One university's professional transcribers estimated that 20% of the taped interviews given to them were at least partially incoherent (Patton, 2002, p. 381);

3) Lastly, digital recording has a functional convenience: instantaneous rewinding/fast-forwarding; ease of data storage and security; interviews can be listened to on computer, mp3-player, or a CD-player.

Having decided that a digital recorder would be advantageous, I now needed one that would withstand the journey. While the attributes germane to something passing as 'expedition-grade technology' are as limitless as their users, the rubric I used was: cost-effective, durable, light, and small. These qualities were sought against the following requirements:

capacity (enough space to record for up to 25 hours), power (a means of field-powering the instrument for two weeks), and protection (from impact and water).

Since an 80-minute 'CD quality' WAV file equals 700MB, 25 hours would equal over 13GB. Although possible to capture this large volume, it would potentially bog down any CAQDAS program attempting to manipulate the recorded files. Either a compressed format (e.g., mp3) or a sub-CD quality WAV recording was needed. I pursued several hand-held models, but found cost and my unfamiliarity with their recording formats prohibitive. I decided to use an iPod™, which I already owned, with an iTalk™, a small accoutrement that plugs into the top of the iPod™ costing $80 AUD. No new software was required because iPods™ come ready to record once the iPod™ recording accessory is plugged in. The iPod™/iTalk™ combination records as a reduced-quality WAV file, at roughly 1MB/minute. At 1.5GB for 25 hours, the size was right, but what about the sound quality?

While I make no pretense to be an audiophile, there appears to be at least five significant considerations when choosing a recording device: sampling rate, mono or stereo channel, uni-direction or multi-directional microphone, bit-depth, and recording level. Any product purchased should have these data readily available.

First, the 'sampling rate' is the number of samples taken per second (Hertz or Hz) from a constant signal. Obviously, the larger the number of samples, the higher the quality of the recording – but at the cost of memory space. Although 16 kHz (1kHz = 1000 Hz) is often recommended for spoken word (Stockdale, 2002, p. 2), I found the 8 kHz, used by the iTalk™, more than adequate. However, when using transcription-software (Express Scribe, n.d.) enabling playback at 50% of the original speed, the sound quality was significantly compromised.

Second, by recording in mono rather than stereo, the memory-space required is automatically halved. Recording in mono-channel records data from just one signal path. Recording in stereo records data from two (or more) signal paths. Mono recording is adequate for most spoken voice situations.

Third, a uni-directional microphone is suitable for most stationary interviewing situations. Multi-directional microphones are useful when trying to capture sound from many angles. At the risk of complication, a multi-directional microphone, or a multiple number of microphones can still be mixed together and recorded as one single mono signal. I tried something like this by plugging a splitter into the external microphone jack on the iTalk™ and running one lapel microphone to the participant and the other to myself, all the while recording in mono. In the end, I found the unidirectional microphone on the iTalk™ more than satisfactory.

Fourth, bit-depth, put simply, is the amplitude value assigned for every sample of audio. The greater the number of possible values to be assigned, the higher the sound quality will be. A majority of recorders will encode at either 8 or 16-bits. While 8 bits is sufficient, 16 bits is preferred (Stockdale, 2002, p. 3).

Fifth, most cheap (iTalk™ included) recording instruments set the recording level (amplification of the microphone signal) automatically. This simplifies the recording process at the risk of too strong a signal (distortion) or too weak a signal (faintness). I found the automatic recording level calibrated in the iTalk™ to work well in my context.

Pilot tests revealed that my iPod™ battery would only record for six hours before depletion. I looked for an environmentally sustainable solution and found the Solio™, a solar iPod™ charger, which I strapped to my backpack. The Solio™, measuring 11.94 x 3.30 x 6.35 cm and costing roughly $150 AUD, can be charged from a mains or the sun. It typically took 8-14 hours to charge depending on the intensity of sunlight. Once fully charged, it held about two iPod™ charges, with a charge taking about two hours. This was more than sufficient for my research needs.

The last technical problem to solve was how to protect the iPod™ and Solio™. I used Navy Seal-grade element-proof reusable plastic bags made by Watchful Eye Designs™. They come in a variety of shapes and are puncture resistant and submersible to a depth of 60 metres). After bagging all the components individually, a Mountain Equipment™ dry bag with an inflating valve provided pneumatic protection against a fall.

Observations

Since trustworthiness requires a researcher to keep detailed records of "incontestable description" (Stake, 1995, p. 62). I thought it best to find a keyboard-based medium upon which I could nightly type a day's observations. A keyboard, as compared to the (my) pen, enhances accuracy and legibility, increasing the speed of transmission, facilitates editing and saves later digital transcription (Emerson, Fretz, & Shaw, 1995, p. 41).

The Alphasmart Neo™, a relatively inexpensive ($500 AUD) full-sized digital keypad, allows little more than text entry, which can be seen on its 14.6cm x 3.8 cm screen (two-six lines of text depending on font size chosen). Its strengths are its simplicity and durability. More than 200 pages of single-spaced text can be quickly transferred to a computer via the provided cable. No backlight enables an extraordinary battery-

life of 700 hours on three AA batteries. Measuring 31.5 x 4.5 x 24.7 cm and weighing in at less than a kilogram, it is significantly lighter than most laptops. Protection, although nearly unwarranted because of the tough exoskeleton was secured with a large Watchful Eye Designs™ bag and a home-sewn neoprene sleeve.

Closing remarks

I have described a series of technological solutions that worked well for my expeditionary research. The needs of other researchers will obviously be different (e.g. multi-directional microphones for group interviews, larger keyboard memory for ethnographic studies etc.). Piloting under like conditions troubleshoots problems that may not be anticipated, refines techniques and simplifies further use allowing the researcher to focus on the content, not the tool.

That expeditionary field-research technology has received little attention is understandable given the discipline's desire to escape technology in the wilds. However, the conundrum of research-technology in the wilderness remains a difficulty for researchers.

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