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# Data Collection Methods and Writing Pedagogy: An *etic* approach to science writing in the ALESS classroom

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**Abstract**
This paper describes the experiences of social science and humanities instructors in scientific writing classrooms at the University of Tokyo. In order to explain these experiences, I develop an analogy between the experience of the participant observer in anthropological field research and the foreign—in terms of disciplinary and cultural background—instructor in the classroom. Borrowing theory from anthropology, I argue that the role of the instructor as an *etic* observer can benefit student clarity as well as contextualization of experiment findings. The employment of humanities and social sciences professors to teach experimental design and science writing may challenge some models of English for Special Purposes, but the benefits of the outsider perspective outweigh any disadvantages.

*Key words:* academic writing, pedagogy, teacher identity, anthropology

## I. Introduction

The instructors in the ALESS program range from natural scientists, applied linguists, social scientists, and faculty from the humanities. In this paper, I describe the experiences of social scientists and humanities scholars teaching in the ALESS program as a kind of cross-cultural (or cross-disciplinary) experience, a contact point between qualitative and quantitative research. Qualitative social scientists and humanities faculty can contribute to science writing education by taking the role of an expert outsider in relation to the process of experimentation[1]. They can use their own expertise and strengths to improve student communication by: (1) challenging students to clearly communicate scientific theories and (2) helping them link their findings to wider social, economic or environmental problems.

In order to explain this, I would like to use some dated, but still useful terms of art that describe the relationship between researchers and informants in qualitative research settings. The linguist Kenneth Pike borrowed the suffixes emic, from phonemic, and etic, from phonetic, to describe the relationships between observers and cultural actors (Pike 1967, Harris 1976)[2]. In more nuanced usage, these terms do not refer as much to a true or universal outsider knowledge, but different perspectives on some kind of cultural behavior or belief. I find this a useful framework to understand the challenges and strengths of qualitative faculty in the quantitative writing classroom. This framework is a nascent interdisciplinary approach to what Garnet and Verlinden (2011) term "reflexive pedagogy": the use of discipline-specific analytic frameworks to enhance teaching methods in the classroom. It also supports Watson-Gageo's (1988) call to use ethnography

[1] Sitton (1980) discusses the ethnographer as teacher in American schools. This role, he suggests, is a *de facto* position for faculty members. They informally study the culture of children.

[2] Zhu and Bargiela-Chiappini (2013) apply the *emic/etic* distinction to management studies. They define the *etic* as a cultural universal, such as the implementation of so-called universal management strategies. I think this moves away from more fluid definitions of the terms, or perhaps indicates that the terms are used mainly for instructional purposes in anthropology.

in and for classroom education to better understand the multiple and shifting roles between instructors and students [3].

For this paper I will draw primarily on my own experiences, but also those of my colleagues. Dr. Nozawa and I conducted a short survey of fellow ALESS faculty as a starting point to discuss the challenges they faced as experts from non-experimental social sciences and the humanities. The survey asked about their limitations as ALESS faculty, and how they used their own research background in pedagogy. Instructors often felt that that their expertise did not cover all of the topics in the ALESS program, especially when starting the job. Several faculty struggled to evaluate discussions of scientific concepts. They perceived, as non-experts in experimental design, that they could not adequately judge student ability in this regard. These feelings reflected my own experiences, as I found myself using examples from physics, such as the Doppler Effect, genetics, and other unfamiliar subjects.

Qualitative faculty approach the class as experts in academic writing, but with less knowledge of the natural sciences. In many ways, our experiences mirror those of our students, who were likely taking a science communications course in English for the first time. So I began to consider what strengths qualitative researchers bring to a quantitative writing course. My own sense of ignorance reminded me of my training as an anthropologist, a "professional stranger"—as Agar (1996) describes the role of the ethnographer—and I began to consider the value of being the outsider/instructor.

## II. The *Etic* Instructor

The ethnographer, or professional stranger, attempts to understand a phenomenon as it is occurring in its natural habitat. In the social world, this might be the cognitive and linguistic processes evident in a courtroom (Goodwin 1994) navy ship (Hutchins 1995), or it could be the social interaction between boys and girls in primary school (Goodwin 1990). In all cases of ethnographic, or even ecological research in the natural sciences, the sheer complexity of cause and effect makes it impossible to use the scientific method. The presence of the researcher, for example, changes behavior. The research also interprets data through his or her own disciplinary, psychological, and linguistic framework. But the sheer presence of difference, can be an important tool for understanding another society, culture, or practice. We can interview informants, study the behaviors, and otherwise attempt to understand them in their own terms. Ignorance in anthropological research becomes an advantage.

The first task of the *etic* observer is to understand culturally-based knowledge. Second, the researcher can draw on his or her own academic background to analyze behavior. The researcher must explain *how* and *why* people act the way they do, without resorting to culturally bound explanations. These explanations, because they usually are only a snapshot of human behavior, must be linked to wider social phenomena, through previous studies and numerous examples. An analysis of naturally occurring conversation in, for example, a college dormitory could be analyzed at different levels (gesture, gaze) or for different kinds of content (socioeconomic identity, gender identity, etc.). The researcher must show how these micro-interactions link to wider sociological categories and processes. Taking on the identity of the *etic* observer in the science writing classroom may improve communication clarity and contextualization.

## III. Teaching in the ALESS Classroom

The classes in the ALESS program may be different in terms of theme (what kind of experiments the students can conduct) and the ways in which they teach each subsection: experimental design, background research, methodology, and so on. In each class, the students must complete a small experiment as an individual or in a group. Then the students write about the paper in IMRaD format. Evaluation of the

[3] Garnet and Verlinden (2011) argue that blending scholarly research with teaching can enhance student learning in the classroom. The notion that an outside expert could bring his or her approach to a dramatically different classroom setting is a variant of their argument, which emphasizes the role of an outside expert. This may also fit in with Rowland's (2006) call to further integrate research and teaching. They are also interested in how researchers learn to teach within different disciplines, or have different models of learning. Participant observation within anthropology is a model for learning. See also Warren (2011) for an instructor-centric model.

students is based upon the clarity, argumentation, and explanation of the research findings in written and presentation format. They are not evaluated on scientific expertise.

So let me make some etic observations about data collection and authorship in the ALESS program. I have little evidence for this, but I suspect that students often study processes that they learned about in high school, or in rare cases, have an independent interest in. The topics are usually quite basic due to limits in time, money, and resources (e.g. "how cold changes the sugar content of potatoes"). The paper is a reporting of cause and effect, and where students struggle is in the explanation of the cause and effect. The process under analysis is often not explained, or it is taken for granted that the reader understands what the author is trying to state. Either way, such an approach may leave the instructor frustrated at what appears to be an ill-defined scientific explanation.

In this situation, it may be useful for the instructor to shift the traditional roles of teacher and student. Tell the student that you do not understand the scientific theory explaining the cause and effect, and that they must write with further clarity. Frankly telling the students what you do not understand flips the role of the teacher and student, mimicking the role of the informant and the researcher in qualitative field research. Informants and students must teach you. This can be an effective method for teaching writing through active learning (Meyers and Jones 1993). If the student needs to better explain the relationship between osmosis and temperature, they must go back to the literature, and explain again to the instructor what that relationship is, and how it is usefully for explanation in their paper. We can pinpoint when the explanation fails to convince a reasonably educated reader and then encourage them to self-educate on the topic, to read another article, or to consult the ALESS lab TA's. This not only increases the student's knowledge of the science, but if the reading is done in English, it encourages them to further increase vocabulary. One effective way to do this is a modified domain analysis used in anthropological research. In this approach, the researcher asks informants to list terms and arrange them according to various domains. Asking students to make a vocabulary list of the vital terms necessary to understand a particularly domain, such as their research question or a scientific theory. Then have them define the terms and use them in explanations to the instructor and classmates. It may also be useful to train your class to take up the *etic* role as well. I know several faculty who use peer review, or student interviews, as a means to elicit explanations of cause and effect. The instructor can create a classroom of anthropologists ready to query their classmates about the sources and reasons for their explanations.

Teachers with qualitative backgrounds have another strength: extensive training in contextualizing research in wider social, economic, and environmental problems. One ALESS faculty member has students initially focus on what problem they would like to solve, and then work down to an experiment idea, instead of having the students first research other experiments. Sometimes this requires creativity. One group of students wanted to research gluten intolerance. Medical experiments, of course, are not appropriate for a short science writing course for many reasons, but by beginning with the problem, students were able to conduct research on food mixtures that contained gluten-free ingredients, testing elasticity and taste.

## IV. Conclusion

This paper is an initial discussion of identity among ALESS instructors, and how this identity can be reflexively used as a strength (cf. Garrnet and Vanderlinden 2011). I should note that identity is not fixed, it changes over time. The qualitative instructor will have a different perspective after several months on the job. But there is a benefit to reflexively accepting and maintaining the *etic* perspective. Continually questioning theory improves clarity, and our expertise working with broad social problems can be used to improve the application of researcher results. This approach to teaching is not owned by instructors from qualitative backgrounds, a biologist evaluating a paper on physics might have a similar experience. Furthermore, differences in pedagogical practice vary more between individuals than any categorical differences between qualitative and quantitative researchers.

Employing qualitative researchers to teach writing for quantitative science students challenges the framework of English for special purposes as discipline-specific. But the emphasis in the ALESS program is on training students to be competent communicators of sciences, and this must include the ability to write with clarity to a wider audience. Qualitative researchers do face certain difficulties when teaching

experiment-based writing courses, but that they should embrace their identities as outsiders in order to improve the quality of student communication.

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