Sharing Experiences With Quantitative Research

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Reference Data:
Sponseller, A. C., Sholdt, G., Okada, Y., Rettig-Miki, E., & Wilkins, M. (2017). Sharing experiences with quantitative research. In P. Clements, A. Krause, & H. Brown (Eds.), *Transformation in language education*. Tokyo: JALT.

Language teachers in Japan, particularly those at the tertiary level, are facing increased pressure to conduct research. Research employing quantitative methods may seem out of reach for those who have not studied statistics; initial undertakings with quantitative research in the foreign language classroom can be highly challenging. These challenges can simultaneously serve as learning opportunities for the wider community of would-be quantitative teacher–researchers. The *Sharing Experiences with Quantitative Research* workshop at JALT2016 provided a venue to discuss struggles and successes and get advice for getting started with such research. In this paper, 4 teacher–researchers share their experiences with quantitative research. By engaging in a dialogue with the wider teacher–research community on the research process and their experiences, novice teacher–researchers can improve understandings, explore new ideas, and build confidence to start their next project.

日本の語学教師、とりわけ高等教育機関に従事する教師の間で、研究の必要性が次第に高まりつつある。統計を学んだことのない教師にとって、量的研究を行うことは容易でないかもしれない。こうした状況に置かれて、外国語教育の現場で初めてデータを収集し、量的な手法を用いた研究を実施するのは非常に難しい課題である。これらの課題は、量的研究を試みる教師の多くにとって学びの機会にもなり得る。JALT2016のワークショップ『量的研究の経験の共有』では、量的研究で乗り越えた困難や直面した課題について検討し、これから量的研究に携わる教師に対して助言する場を提供した。本稿では、様々な経験を持つ4人の語学教師が自ら行った量的研究の経験を紹介する。研究者である教師たちとの研究プロセスやその経験に関する意見交換によって、研究初心者は研究に対する理解を深め、新たなアイディアを探究し、さらなる研究に着手する自信を高めると考えられる。

Language teachers at the tertiary level in Japan are increasingly faced with the reality that they must become consistently publishing teacher–researchers if they are to find permanent, full-time work at the university level (McCrostie, 2010). International university ranking schemes are driving this trend, which some argue is an inevitability of globalization of higher education (Altbach, 2012). Quantitative findings seem to be more highly valued, too, even in the social sciences (Mohrman, Ma, & Baker, 2008). There is irony in this new reality wherein *language* teachers are compelled to publish using what often feels like a foreign language to the uninitiated: statistics.

When Abbhul (2012) said that "graduate school is the place where researchers are born" (p. 135), she was mostly correct. Many language teachers hold graduate degrees. Advanced degrees in this field are often practice-focused, however, and heading back to graduate school may not be possible for many working professionals. What graduate school entails, arguably, is a structure built for the express purpose of initiating newcomers (e.g., grad students) to a community of practice in which experienced old-timers (e.g., professors)

introduce the practice of conducting research (Lave & Wenger, 1991). Workplaces and academic organizations like JALT also present natural avenues for creating a community of researchers (Borg, 2010). But can tertiary-level language teachers create research communities of practice for themselves outside of graduate programs? We believe the answer is yes.

Building Community via the Quantitative Research Training Project (QRTP)

Gregory Sholdt recognized that novice teacher–researchers working independently confront challenges associated with research design, execution, and interpretation of quantitative results. Since 2011, he has helped novice teacher–researchers build research communities. At the JALT2011 International Conference, Sholdt, Konomoto, Mineshima, and Stillwell (2012) hosted a session aimed at facilitating the creation of an impromptu research community by sharing their quantitative research backgrounds, challenges faced in such research, and advice for conducting such research successfully. At JALT2013, Sholdt, Stoute, and Mull (2014) reported on lessons learned when conducting a study via the Writing Fluency Project (WFP).

In 2014, Sholdt initiated the Quantitative Research Training Project (QRTP). The QRTP engaged approximately 35 English teachers from around Japan in a replication of Joshua Bonzo's (2008) study on the impact of topic selection on fluency in student freewriting. Over the course of a year, these novice teacher–researchers engaged in online instructional sessions where they were introduced to basic statistical concepts and measures necessary to conduct the replication study. They formed subgroups of five to six members and, using the QRTP Moodle site, they actively discussed the project, asked questions, sought one another's advice, and eventually provided one another feedback on drafts of their manuscripts. Each of the authors of this report not only participated in the QRTP but also published their respective replication studies. Moreover, at least two of the authors (Sponseller and Wilkins) have continued to collaborate on subsequent research projects. Our experience with the QRTP has led us to believe that such collaboration can be profoundly helpful for novice teacher–researchers just getting familiar with research design and quantitative analyses.

Sharing Experiences With Quantitative Research at JALT2016

The collective experience of the authors is shared here with the desire that our "wisdom" will add another layer of support to those newcomers in the field of language teaching research. The rest of this report is organized as follows. First, Sholdt describes his background with quantitative research methods, how he came to realize the need among novice teacher–researchers for projects like the QRTP, and some strategies for those new to the "quantitative arts." In the following three sections, Rettig-Miki, Wilkins, and Okada discuss their backgrounds and various issues encountered in their research, recommend solutions to those issues, and briefly comment on how joining the QRTP research community benefited them as teacher–researchers. Rettig-Miki shares some of the challenges common to first studies she experienced during the QRTP replication: timing, data usability, and concerns over the pedagogical relevance of the task. Wilkins discusses lessons learned during the QRTP concerned with handling large volumes of data and then makes a case for collecting qualitative data in order to facilitate the writing of more compelling final manuscripts. Okada explains how she has overcome issues related to lack of confidence in statistics and small sample sizes in research.

Hitting the Books: How to Study Quantitative Research Methods

Gregory Sholdt

Background

During my last year at university, a senior internship with an educational researcher inspired me to pursue graduate training in educational psychology. Although I worked on a large-scale qualitative study throughout my internship, my graduate program happened to emphasize quantitative methods. I had generally done well in math and science classes throughout my schooling but graduate school was the first time that I intensively studied the quantitative arts. I found the coursework challenging but enjoyable and ended up filling my schedule with as many stats courses as I could. Later, I was given the opportunity to teach the introductory statistics course offered by my department for graduate students in nursing, social work, and education, most of whom were not excited by this particular required class. Cognizant of their apprehension, I put a lot of effort into creating a supportive learning environment while pushing forward to reach curricular goals. I felt quite rewarded by the sense of accomplishment and enhanced confidence the group exhibited by the end of the course.

The Origins of the Quantitative Research Training Project (QRTP)

After relocating to Japan, I eventually found JALT and later gave my first chapter presentation on a small-scale quantitative study. In order to flesh out the presentation,

I included some discussion on the concepts underlying the statistical analysis. The positive feedback I received motivated me to do full workshops on building knowledge in statistics. After giving one of these workshops, I often had teachers coming to me and expressing interest in more extensive training opportunities. This ultimately led to the development of the QRTP, a project that was aimed at complementing traditional instruction with practical experience but also included a community-building component that connects language teachers for collaboration, support, and encouragement. At the time of writing, two full cycles of the QRTP, involving over 70 language teachers across Japan, have been run and preparation is underway for a third.

Issues Encountered

The approach that guides the activities of the QRTP was born from my own experiences studying quantitative research methods. As a student, I had countless frustrations, missteps, and struggles as I gradually gained knowledge and experience. In high school and college, studying mathematics mostly centered on learning rules and completing increasingly complicated exercises in textbooks. In my graduate coursework in quantitative methods, this learning strategy had a role, but I had to devote much more energy to the difficult task of building an understanding of underlying concepts through reading and lecture. Textbooks felt like they were written in a foreign language with unknown terminology, awkward sentence construction, and unfamiliar organization. I often reread the same paragraph a half-dozen times and still failed to comprehend the ideas being expressed. Likewise, those evening 3-hour lecture classes often felt like a form of mental torture devised by some secretive government agency. Even when things would finally click, it would only take a few minutes away from the text or classroom before my delicately arranged understanding would start to fall apart. Nothing came easy in those classes: not one lecture, not one chapter, not one exercise. It was a battle every step of the way, but I developed insight and strategies along the way that I think can benefit others starting down the same road.

Solutions and Recommendations

Through my own work as a student, experience teaching statistics, and time working with language teachers here in Japan, I have identified several strategies for studying quantitative methods that should be helpful to those looking to get started in quantitative research.

1. *Build a strong foundation*: While teaching the introductory statistics course, I noticed that the concepts I covered are critical components of the most advanced topics and that a solid understanding of the fundamental concepts is essential for later success. Topics covered in introductory statistics books such as variance, probability, and the normal curve may seem disjointed from doing actual research and not worth spending time on, but they are all pieces of a larger puzzle. Even something as common as the mean can be deceptively simple and extremely worthwhile to explore in depth. When studying, make sure you understand every term, concept, and principle as it is presented. Don't push forward when struggling. Instead, go back to a well-understood place and work forward again, carefully dissecting each sentence trying to identify the cause of the confusion. Make use of any illustrations, formulas, and exercises provided by the author. They are often critical to grasping an idea not easily explained with text. These fundamental concepts are numerous and still challenging to comprehend but their mastery represents an achievable and important learning goal.
2. *Complement your learning with practical experience*: Instead of trying to just work through a stats textbook, connect your reading with a small-scale study conducted in your own classroom. Design a simple study on your own or try a partial replication of a published study that centers on a single, basic statistical procedure such as a *t* test or a correlation. Do reading during the planning stage and try to thoroughly understand every step of process. Complete all of your data collection within a month or two and focus your energy on building knowledge with your data as a real-world example. Finally, aim for a publication in a departmental journal or a presentation at JALT to have a tangible outcome.
3. *Enjoy the challenge*: No one should be confused about the fact that building knowledge and skills in quantitative research methods requires hard work. However, it is my sincere belief that dedicated effort coupled with a sensible approach to study can yield satisfying, meaningful results. For some, this is best done as a solo venture, but for many, joining a community of researchers or at least having a partner to collaborate with significantly increases the probability of success. Be confident, stay patient, make note of your progress, and find enthusiasm for what you are doing.

Gaining Confidence and Addressing Problems as a Novice Researcher

Ellen Rettig-Miki

Background

Before starting to teach full-time at a Japanese national university in 2014, I had spent 19 years teaching English for occupational purposes for both domestic and multinational companies in Japan. While focusing on my teaching in a corporate environment for many years, I did not conduct research in the nearly two decades after earning my MA in TESOL. However, when I began teaching at a Japanese university, it quickly became apparent that undertaking research and publishing papers is a primary expectation of tertiary educators in Japan.

Even during my MA program, my work with research was mostly doing qualitative studies. I had since forgotten much of what I had learned about research methodology. I also realized that I needed to build my knowledge of how to conduct quantitative research, collect and analyze data appropriately, and present the results in a publishable manuscript. The QRTP offered instruction in study design, basic methods of statistical analysis, and an organized community of fellow participants sharing experiences through all phases of the project, from formation of research questions through the publishing phase.

Issues Encountered

My QRTP replication study examined not only the effects of varying topic selection methods (i.e., student selected vs. teacher selected) on writing fluency, but also student attitudes towards the different topic selection methods and the freewriting activity overall. My participants were drawn from four university classes focused on reading and/or writing in a selective program for students who aspired to study abroad. Students generated eight separate 10-minute timed writing samples and completed postactivity questionnaires and an end-of-study questionnaire. Although the study generally went smoothly, I faced some problems with timing, data usability, and task relevance.

Time was a key issue. Although the actual timed writing only took 10 minutes, distributing the writing sheets, opening the data files, clarifying groups and topics for each sample, and filling out and collecting the postactivity questionnaires took a minimum of around 30 minutes. That was a full third of each 90-minute class. This became particularly problematic when the timed writing activity was on a test day.

Data usability was a second problematic area, with three specific snags. The study design required a full eight writing samples and eight postactivity questionnaires from each participant. The design required a counter-balance of having half the group do teacher-selected topics the first 4 weeks and student-selected topics the second 4 weeks while the other half of the class did the opposite. Each student had to write on the topics in the predetermined order. The first problem was that if a student was absent and lacked one or more of the samples, their data became unusable. The second problem was some students did not write about the topic assigned, thus invalidating the counter-balance and again rendering their data unusable. These issues reduced the overall sample size, limiting the ability to generalize my findings to larger populations.

Task relevance was a third concern. Having heard students complain about professors using students for research projects apparently unrelated to the stated content of a course, I wanted to make sure that students felt the actual task of timed writing was beneficial to increasing their writing skills.

Solutions and Recommendations

It is important to consider timing very carefully. Of course, it is important to have an overall schedule of when data will be collected, analyzed, and written up in manuscript form. If the research participants are university students, it is important to analyze how the research agenda coincides with the course schedule. Class curriculum may necessitate not collecting data some weeks, for example during exams or when students are supposed to give presentations. Considering this, it is possible to build in some cushion. For example, in my study, to keep the two halves of the counter-balanced groups in sync, it would have been a good idea to have scheduled a break week between the switch of topic-selection type. Had I done so, I could have offered a catch-up week affording students who had been absent a chance to make up a missed writing. This would have resulted in usable data from more students.

To address the data usability problems, I should have monitored the samples collected very carefully as they came in and built flexibility into the schedule to correct collection problems while the study was still ongoing. This would have allowed me to gather missing samples from students who had been absent in a given class or have students redo a writing sample if they had written on an incorrect topic. I did not catch some of these problems until my study was over, and by then it was too late to fix.

Finally, it is essential that any study design is ultimately compatible with the course aims. Students need to understand why the activity they are spending time doing is beneficial to them and in line with the stated goals of the class. In my study, I took time to talk

about the benefits of timed writing in building fluency; this seemed to increase students' enthusiasm for doing the activity. In the final questionnaire after the study, students were very positive about the benefits of the writing activity as a whole.

How the QRTP Research Community Helped

Because of my lack of experience in doing quantitative research before joining the QRTP, I had felt overwhelmed at the prospect of diving in and doing a research project without really knowing where to start. The QRTP community and the structure of the project—having a study already chosen for replication, clear instruction on how to handle both the data-collection and statistical analyses, and guidelines on how to put the results together into a paper—was extremely helpful.

Advice for Beginning Quantitative Researchers

Michael Wilkins

Background

I arrived in Japan in 2000 and have worked in almost every conceivable English teaching environment: in an *eikaiwa* (language school), as an ALT, in business English training companies and vocational schools. I enrolled in Temple University's MA TESOL program and began my university teaching career. One expectation at the tertiary level is that instructors are also researchers, so I have actively sought out research opportunities. Four studies I have been involved with included a quantitative component: the QRTP replication of Bonzo's (2008) study on topic selection and writing fluency, a study on student perceptions of specific activities used for language learning on Facebook (Gamble & Wilkins, 2014), a study on student perceptions of their capacity to be autonomous learners, and a study on student perceptions of communicative language teaching. In these studies I have made numerous mistakes that prompted me to further expand my knowledge of research methodology and statistics.

Issues Encountered

Two specific problems I had were managing the large volume of documents data collection can produce and not collecting the types of qualitative data that enable the writing of more interesting discussion sections. First, managing large amounts of data is a common issue researchers face. For the Bonzo replication study, I had to collect six writing samples, six corresponding postwriting questionnaires, the participant consent form, a background information questionnaire, and a poststudy questionnaire. The collecting and organizing of hard copies of these 15 separate documents for each participant over a 6-week period and in six busy classes of around 35 students each in an organized way made data management challenging. Moreover, if any of these documents was missing, that participant's data could not be used.

The second issue I encountered was the difficulty of writing engaging discussion sections of quantitative research papers with no qualitative data to assist in understanding the results. For example, on the first iteration of the Facebook study we only collected quantitative data. When we discussed the data we found it difficult to write a good discussion section. We could, for example, say a majority of students preferred to communicate through Facebook over their university email accounts but we could not say why. We had to speculate using words like *might*, *may*, and *possibly*.

Solutions and Recommendations

Regarding the first issue of managing data collection, in my experience some research studies by busy teacher researchers get bogged down in this phase and are never completed. In the QRTP replication study we lost a lot of data due to a missing a single document from participants who had participated diligently. Two fellow QRTP colleagues found answers to this problem. The first solution was to create a booklet with all required documents for each participant that the teacher would hand out at each data collection session. This method allows the researchers to easily ensure each component is completed, streamlines the process to save time, and appears more professional to participants. The second solution is to use online data collection. This may have the drawback of introducing the potential for technical difficulties, but like the booklet idea allows for systematic collection of data with the added bonus that transcription of written samples is unnecessary.

On the second issue of writing engaging discussion sections for quantitative research papers, I encourage including some qualitative component in the data collection. In the previously mentioned Facebook study, when we redid and expanded the study we included a qualitative section. Open-ended written responses for each section of the quantitative survey provided lots of supporting data. If possible, a few follow-up interviews can really help researchers understand participants' written comments. This allowed us to supplement the quantitative data and produced a much more insightful discussion in the final manuscript. In both the initial study (quantitative data only) and the follow-up study (quantitative and qualitative data together), the data showed students clearly preferred to communicate using Facebook as opposed to the university email system.

In the follow-up study we were able include actual student comments regarding their preferences, for example, "I can communicate with classmates out of the class through Facebook" and "I think advantage of using Facebook is we can check this wherever we are." By coding and organizing this qualitative data we could discuss the variety of student opinions, their most frequent answers, and the most distinctive comments. This allowed for a much more accurate and interesting discussion section. Quantitative data alone can only get you so far in some studies; adding qualitative data really helps explain some of the numbers.

How the QRTP Research Community Helped

After making research design mistakes that detracted from several research projects, I was feeling negative about doing research and decided I needed to learn more about research methods and statistics before doing any more research. As the old Buddhist saying goes, "When the student is ready, the teacher will appear," and there was the 2014 QRTP starting up just when I needed it. I gained knowledge from the project meetings and materials, but more importantly I gained several enthusiastic research partners capable of helping me and pushing me to do more and better research. These partners are a resource to fall back on when I feel my research ideas have stalled and I need some advice and inspiration.

Getting Into Quantitative Research: Overcoming Difficulties of Classroom-Based Study

Yasuko Okada

Background

My career as a language teacher started in 1998 at an American university to teach Japanese. Since I returned to Japan in 2001, I have been teaching English to Japanese university students in urban Tokyo. For the past 5 years, my research has focused on examining the effects of using video recordings of student presentations as part of reflective and observational learning.

Because most of the classes I taught were relevant to developing students' English speaking, writing, or reading skills, I thought that it would be advantageous for students to develop both English skills and presentation techniques. Since then, students' performances have been video recorded and self evaluated or peer evaluated when I teach them presentation skills. These video- recorded presentations have also been used as models for students to imitate the speakers' behaviors or find their weaknesses so that they could improve in their subsequent presentations (Okada, Sawaumi, & Ito, 2014). At the same time, I collected self-evaluation and peer-evaluation scores and analyzed them statistically as well as other open-ended qualitative data; both quantitative and qualitative data serve to conduct mixed methods research in the classroom.

Issues Encountered

There were a couple of issues I had faced while conducting quantitative research. First, though I had taken a statistics course as a graduate student and read some statistics books on my own, I lacked confidence in executing and interpreting ANOVAs and text-mining procedures. I really felt it necessary to collaborate with others who were skilled in these areas.

Second, in my studies, there were not enough participants to generalize the results of the study. Because students had to deliver presentations and their oral performance had to be video recorded during the class time, I mostly chose classes in which there were around 20 students to conduct my study in. However, students did not always agree to participate in the study, as some were often only taking the course to fulfill the requirement for graduation. In my study, students were asked for permission to use three different types of data: (a) written data, such as self- and peer evaluation scores and open-ended qualitative questionnaires; (b) video data for educational purposes (e.g., show the videos as models to other students); and (c) video data for research purposes (e.g., show the videos to other researchers at conferences). It was particularly important for me to obtain permission to use written data from students. In the spring of 2016, 19 students were enrolled in the course, and all the students filled in the consent form without anyone disagreeing. In the subsequent semester, however, of the same number of 19 students enrolled in the course, only 12 students participated in the study. I had expected to have as many participants in the second class as in the first class, but it was unfortunately not possible to do so.

Solutions and Recommendations

This is my first tip to conducting quantitative research: Researchers should have a well-organized research design before starting, which makes identifying the appropriate statistical measures easier. When research is well planned, the risk of failing to collect necessary data from students is lowered considerably. Successful outcomes depend upon understanding what kind of data is needed for the final analysis in advance.

It is also worthwhile to consider collaborating with others with expertise in quantitative research. In my case, I have been working with two psychologists, one a statistician and the other a text-mining specialist. Each of us contributes a unique set of knowledge to our research endeavors. This has been essential to our conducting quantitative research successfully.

Finally, to make up for the number of participants, try to replicate a quantitative study with the same methods and different subjects. It is not easy to repeat the same methods multiple times, but it would be effective to have more participants in order to generalize the results of the research. The results from several replication studies could be further used to conduct meta-analysis research.

How the QRTP Research Community Helped

Participating in the QRTP community was a meaningful experience for me. We shared our knowledge in order to bridge the gap(s) between what we knew and what we did not know. Like students who learn a foreign language in the classroom, teacher–researchers can improve their quantitative research skills in such a community.

Getting Started With Quantitative Research

It is incumbent upon individuals to take the initiative when beginning their research. As the authors above have repeatedly suggested, establishing a research community can be an incredibly helpful first step to consider taking. Graduate school and academic societies like JALT are natural avenues to joining such a community. However, as the contributing authors of this article have attested, teachers can form these communities independently through projects like the QRTP. Understanding the statistical concepts necessary for carrying out a line of research is also absolutely paramount. Once again, belonging to a community of teacher–researchers can play a critical role in helping novice researchers get up and running. Finally, teacher–researchers should share their research through conference presentations and publishing manuscripts. This stage is critically important not only for career advancement but also in further building and strengthening a community of supportive peers.

Bio Data

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Greg Sholdt studied educational psychology at the University of Hawaii and currently teaches in the School of Languages and Communication at Kobe University. His interests include professional development for teachers, classroom-based research methods, English for academic purposes, and fluency instruction. He has been exploring innovative approaches to professional development through collaborative classroom research. He currently serves as the chair of the JALT Research Grants Committee and as a consulting editor for the *JALT Journal*. <gsholdt@gmail.com>

Yasuko Okada holds an MA in Asian languages and literature from the University of Washington, Seattle. She currently teaches at Seisen University, Nihon University, and Saitama Women's Junior College. Her research interests include the application of new technologies to foreign language education, mixed methods research, and language assessment.

Ellen Rettig-Miki holds an MA in TESL/TEFL from the University of Arizona. She spent 19 years as a trainer and coordinator/program manager in the field of teaching English for occupational purposes (EOP) for various Japanese domestic and multinational companies in Japan. Since 2014, she has taught full-time at Kobe University, working mainly with their Global English Course. Her academic and research interests are varied, including pragmatics, conversational analysis, ESP/EOP, and testing and evaluation.

Michael Wilkins has been teaching in Japan for almost 20 years. He holds a master's degree from Temple University Japan. He currently works at Kwansei Gakuin University in Nishinomiya. He is the current program chair for the Kobe JALT chapter. His research interests include learner autonomy, CALL, and CEFR.

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