A PEER-MOTIVATED UNDERGRADUATE COURSE DESIGN IN SURVEY OPERATIONS: LESSONS FROM THE PHILIPPINES

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ABSTRACT

The paper presents a novel design in the approach of teaching survey operations to undergraduate students in an urban locale where environment and culture are clear and present challenges in conducting surveys. In a curriculum where survey operations is deemed "too easy" or "too boring" for students, the proposed design brings in a fresh view on making learning enjoyable and doing surveys a joint ownership and responsibility among learners. The core of the design is student-centered. A larger view of a full suite of activities from definition of survey topic, planning, administration, analysis and presentation of survey results are covered. A geographic information system using digitized maps supplement definition of sampling frames, design and evaluation of projects are peer-motivated. Extra-statistical issues are discussed including the psychological dimensions of non-response, administrative matters in the community and planning a budget. Peer motivation developed an affective transformation among students in terms of work ethic and class involvement.

Keywords: student-centered, affective transformation, class involvement

BACKGROUND

The University of the Philippines School of Statistics (UPSS, formerly *The Statistical Center*) was established in 1953 under a bilateral agreement between the Philippine Government and the United Nations. It is the first to offer an undergraduate degree program in Statistics in the Philippines. It is now the only Center of Excellence in Statistics education in the country. As such, it continually seeks improvement to attain excellence in teaching Statistics. The innovation presented in this work is a result of a challenge posed by the UPSS curriculum committee before the author to implement a more student-centered course design in survey operations.

THE COURSE DESIGN

The gist of the innovation is to introduce peer motivation on the following objectives of the course: defining the objectives of a survey, identifying data needed to analyze objectives, drafting questionnaires that will gather such data, understanding challenges, possible options and tradeoffs involved in data collection, organizing survey response data, and appropriately interpreting survey response data. All students enrolled in the course for the term launch one survey operation based on a chosen topic. All activities leading to this operation and the analysis of the survey response are developed with facilitation from the instructor who gives a partial grade. Complementing the instructor's marks is a peer evaluation component which leads to a final grade for the semester. There is no peer evaluation for individual outputs such as preliminary proposals and narratives, and attendance in lectures and colloquia.

Course Content

The lecture part of the course covers eight main topics. These are (1) the survey research process, (2) validity and reliability of measurement scales, (3) sampling techniques in surveys, (4) non-sampling errors, (5) principles of questionnaire design, (6) entering the field, (7) data coding, encoding and quality control and (8) presentation of research findings. All these topics are integrated into four major activities.

Activity 1: Defining the Objectives of the Survey and Data Identification

As first requirement, each student shall submit a proposed topic for the survey (i.e. preliminary proposal). The proposal must contain an appropriately worded title, a set of objectives, description of proposed survey locale, unit of analysis and timelines (Bailey, 1994). No budget is presented at this time. After the instructor marks the individual submissions, a short-list of ten proposals is scheduled for presentation to the class by the respective proponents. The class votes to select the strongest two. The survey topic is chosen by the class in a final vote. The class is then divided into groups of approximately seven members for the second requirement. The task is to draft a formal proposal based on the chosen topic. The proposal must contain a background, a set of objectives, hypotheses, a specific survey locale which is a *barangay* (the smallest political unit in the Philippines) and unit of analysis. It must also contain a considerable review of literature, a conceptual framework and a list of metrics which identifies the data needed to address the objectives. The students are guided by Bailey (1994), Onate (1990), and Grosh, et.al. (2000) as basic references. Finally, the groups must propose a realistic budget and timeline. The group outputs are presented in a forum for partial grading by the instructor. Intra-group peer evaluation is immediately performed to complement each student's mark in this activity.

Activity 2: Forming the survey operations committees and initializing survey preparations

In preparation for the survey operations, students are divided into four committees. The first committee is the ***External & Field Operations Committee (ExFO)*** which is tasked to draft an endorsement letter to be signed by the Dean and forwarded to Office of the *Barangay* Captain (or if necessary, Office of the Mayor), obtain necessary permits from the Office of the *Barangay* Captain and assistance from local *Barangay Tanod (local security force),* obtain a digitized map of the *barangay* and geo-reference key points and landmarks, perform ocular inspection of survey site, determine the sampling strategy for the main survey day, supervise the pretest, and procure group insurance. The second committee is the ***Finance & Logistics Committee (FinLog)*** whose tasks are to determine budget and collect fees, prepare an articulate financial plan, procure logistical requirements for the survey operations (photocopying of questionnaires, creation of showcards, preparation of survey kits, tokens, etc.), distribute necessary permits and identification cards to each member of survey team, collect all completed questionnaires and balance and close the financial book of the project. The third committee is the ***Data Encoding and Processing Committee (DEPC)***, who shall prepare the codebook of the questionnaire, edit and validate the accomplished questionnaires, prepare the template for data encoding, line edit the encoded survey response database, and consolidate all spreadsheet and system files in one comprehensive archive. Fourth is the Documentation Committee who is finalize the form of the survey questionnaire, collate all information and processes related to the project and translate them into narrative form, draft the part of the final report corresponding to rationale, methodology, challenges and limitations and to consolidate the Final Report. The instructor marks a committee according to their assigned output. However, substantial weight is given to peer evaluation within each committee and the marks given by their internal clients. All tasks in Activity 2 generally span 75% of the semester.

Activity 3: Questionnaire Design

A different set of groups composed of about seven members are formed for this activity. At this time, the instructor has marked the comprehensive proposals in Activity 1. Also, the instructor and the Documentation Committee have consolidated these proposals to form the research design and conceptual framework for the survey topic. The output for this activity is a comprehensive questionnaire that has the title of the survey, salutation, brief statement of the survey objectives, metadata, items which reflect the elements of the conceptual framework, identification and creative conceptualization of showcards, and transitory sentences from one section of the questionnaire to the next. Students are enjoined to be creative in formulating items since surveys in the country are preferred to be in the native language and should be intelligible across social classes. Basic references are Bailey (1994), Dijkstra & Van der Zouwen [eds.] (1982), Grosh & Glewwe [eds.] (2000), Lessler & Kalsbeek (1992) and Onate & Bader (1990). Again, peer evaluation is part of the mark for this activity.

Activity 4: Pretest and Main Survey

The site of the pretest and main surveys are chosen by the students upon a vote. Choice is based on proximity to the campus (consideration for callbacks), mix of social class and security concerns. Since there is a high level of apprehension among students on how to conduct the interviews, mock interviews are performed on campus, then practiced further in the pretest site. Students with high level of anxiety are partnered with peers both during the pretest and main surveys. Reflections on the survey experiences are required to be written in narratives for submission to the instructor. De-stressing activities like post-survey debriefing is conducted by a peer facilitator at the end of the survey day.

Activity 5: Analysis of Survey Response

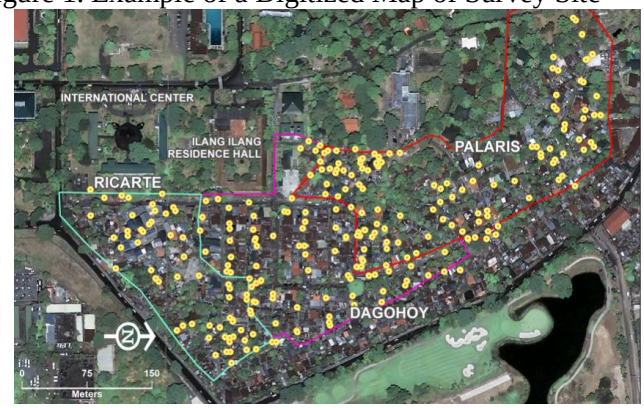
Accomplished questionnaires are forwarded to the DEPC for editing, coding and encoding. Meanwhile, another set of group assignments are placed based on the number of sections in the questionnaire. Each group analyzes a section but this does not preclude using variables from other sections. Analyses shall revolve around the specific objectives and hypotheses earlier formulated. Parallel to the writing of the analyses, students undergo a three-hour lecture on statistical report-writing which touches not only interpretation of statistics but on the handling numeric information. The analyses are graded by the instructor using a specific Rubric. Participation in group work is peer-evaluated. Graded analyses are revised, consolidated and edited by the Documentation committee as the Final Report is prepared.

LESSONS

The main feedback from students who have undergone this course design is that they were able to experience a wider spectrum of activities relevant to survey operations which earlier classes have not. There is also an epiphany of empathy towards field interviewers and survey technicians who experience diverse reception from target respondents. With respect to the different activities performed in class, the following became evident:

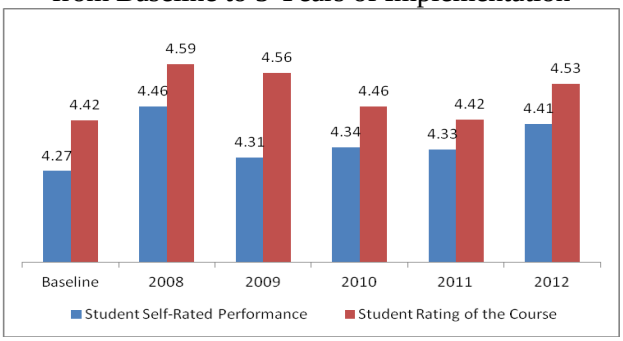
1. While creativity is encouraged and ideas are respected, there is discomfort among some students who find certain survey topics as taboo. This being a reality in our conservative society, the instructor must be circumspect on balancing the freedom of ideas and the operational considerations and comfort level of participants in a specific project.
2. Discussing and understanding the psychological dimension of response behavior with students is an important component of effective handling of non-response.
3. Value-added topics which involve new technology never fail to trigger excitement. For this course design. Students are taught to use satellite images of target survey sites, geo-reference them, overlay ground truth data like landmarks and street systems, and use the enhanced image to visualize the sampling strategy. An example of such map is shown in Figure 1.

Figure 1. Example of a Digitized Map of Survey Site



4. For students who plan careers in survey research, preparation of an articulate financial plan becomes an advantage. This is validated by employer feedback.
5. Peer motivation is a catalyst for better class performance and course appreciation. This is evidenced by an evaluation of the course among students prior to the implementation of the design (baseline) and in years 2008 to 2018 (Figure 2). For the self-rated performance of students, scores in Figure 1 are composites of items (scale of 1 to 5, 5 is highest) involving level of participation, interaction, receptiveness to new ideas, level of effort to meet requirements, met expectations, attendance and punctuality. The course ratings are composites of indicators such as being stimulating to students, able to develop a greater sense of responsibility, inspires conscientious effort, worthwhile undertaking even if not a required course in the undergraduate curriculum, course handling by instructor, inspires creative thinking and develops critical thinking.

Figure 2. Evaluation of Course Design
from Baseline to 5 Years of Implementation



CONCLUSION

Peer motivation developed an affective transformation among students in terms of work ethic and class involvement. They do not only learn the technical aspects of surveys, they also imbibe a culture of joint ownership and responsibility in a project through peer motivation. Moreover the course design was made more student-centered resulting to better course performance.

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