SURVEY METHODS OF EDUCATIONAL RESEARCH

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Introduction

Educational research refers to the systematic collection and analysis of data relating to the field of education. Educators and teachers are increasingly starting to use data from survey methods to benefit and assist their teaching methods. For educators to adopt new practices in teaching methods it may be difficult to access this information in their data reservoir so instead, they can conduct surveys in order to learn of the students desired learning wishes. Educational research was not used in the past however it is now one of the most important research methods of the social sciences.

“social research essential for democracy- government of the people, for the people, by the people requires research about the people...democracy needs research” (Bassey, 1996).

Types of survey

In order to create a survey a lot of time and work has to go into creating the survey which in includes sample selection, survey development, survey administration, data analysis and reporting. Some educators will be able to skip these steps if they want to conduct a survey on a topic that has already been widely surveyed. For some educators, the first hurdle to cross is deciding whom to survey. They will want to try to aim their survey at the group of interest (known as the target population). With regards to creating a survey, there are many prejudices to be avoided such as bias. The activity undertaken in each stage may vary depending on the type of information being collected (Fink, 2013). There are five main steps in conducting a survey.

1. Define the population
2. Specify the sampling procedure
3. Determine the sample size
4. Select the sample
5. Administer the survey

For some educators, the first hurdle to cross is deciding whom to survey (define the population). They will want to aim their survey at the group of interest (known as the target population). When choosing the desired population educators have to be as specific as possible about the desired respondents. Another main objective is to ensure that the target population matches the research questions being addressed. The sample unit must be based on the target population. The sampling unit is the unit or element considered for selection to receive a survey questionnaire. Thus, selecting a target population which differs should be avoided as then everybody in the sample can be referred to as one unit. For example, if a sample includes all physiology 2nd-year students, each student is equal to one unit.

Once step 1 has been completed and the population has been defined, a sampling frame should be completed by the educator. A sampling frame is a list of every sampling unit in the accessible population. Select an appropriate sampling design and procedure. The sample design should suit descriptive research. Descriptive research is pre-planned so that the data collected can be statistically inferred on a population. It is used to better define an opinion, attitude or behaviour held by a group of people on a given subject. For example, multiple choice questions could be used as there are pre-defined categories a respondent must choose from. This is an inexpensive and flexible way of completing a survey. Decide whether to use a probability or nonprobability sampling design. A probability design allows the results to be generalized to the target population, whereas a nonprobability design does not. Probability sampling procedures can include simple random sampling as well as systematic sampling. Non-probability sampling procedures are judgement sampling and convenient sampling. There are various different samples that can be used for educational research. From studies, some of the most valuable samples used for the survey methods include (Pazzaglia et al., 2016).

Procedure 1: Simple Random Sample.

Description 1: This does as the name says and units are selected totally at random with each unit having an equal chance of being chosen for the survey.

Overall consideration 1: This has to be one of the best survey methods as its findings are unbiased. The educator can be confident that the results obtained can be generalised to that of the larger population.

Procedure 2: Systematic Sample

Description 2: Here consecutive numbers are assigned to each unit. A starting number will then be selected with other units randomly selected at regular intervals. For example, every 15 units a new unit will be selected for sampling.

Overall consideration 2: This method requires an entire list of the participants. However, it must not contain an ordered pattern that will bias the sample.

Procedure 3: Cluster Sample

Description3: Units are selected from clusters (for example a class group), either all units within the cluster (all students in the group) are chosen or else a random sample is taken from the cluster for investigation.

Overall consideration 3: This survey is beneficial in terms of being cost-efficient. It is cost efficient as rather than surveying one student from 20 different groups the educator can survey 5 students from 4 different groups (Ross, 2005).

The next step when creating a survey for educational research is to determine how many units need to be surveyed using the chosen procedure selected. All features such as the margin of error, the confidence interval and the anticipated non-response rate should be calculated at this stage of developing the survey. Sample size tables should be used as a general reference for nonprobability samples if the size of the target population is known. Also, the number of units that are accessible or manageable to the educator should be considered. When selecting the sample, a random number generator should be used to select units from the sampling frame. If the sample is different to the population a stratified sampling procedure can be used by emphasising the answers of certain respondents.

Before conducting the survey, the educator has some decisions to make regarding timing and other such variables. These include how to deal with non-responders, how long to collect the data and how to encourage participation. When reading through various articles regarding feedback to the survey one common theme that I saw throughout the passages was the difficulty educators were having with regards to non-responders to their surveys. I felt an obvious solution to this problem is if the surveys were made mandatory and were incorporated into part of the student's course. For example, it could go towards a small amount of the student's final grade to add extra incentive for completion. With educational surveys, if the response rate is less than 85% the survey may give a false representation of the target population (U.S. Department of Education, 2012). The most important part of the research for the educator is to get the sample population to complete the survey. As this is so important and is the target of the whole investigations a lot of research has been done by educators in order to try and maximize the completion rates. Some of the results are as follows (Pazzaglia et al., 2016):

- Anonymous responses should be used to increase participants will to disclose information.
- Advance letters should be sent to key personnel in the survey.
- Awareness of the survey should be built among the participants. This can be done by posters and newsletters. As almost everybody is computer literate a lot of this can also be done online via email etc.
- Time should be carefully selected when the survey is being administered. This should avoid busy times of the year such as exam periods and holidays. Also, the participants should be given an adequate amount of time to complete the survey. The ideal response rate time regarding educational surveys is said to be 6-8 weeks.
- An invitation email should be sent to all participants in the survey including a brief description as to what the survey is about, why it is being administered and how and how not the responses will be used. A sample invitation letter is provided below (Pazzaglia et al., 2016).

"Dear Principal,

You are invited to participate in a survey regarding online course use in your school. This study is being conducted by [INSERT ORGANIZATION] with the support of [INSERT COLLABORATING ORGANIZATIONS]. The results of the study will help us better understand how online courses are being used in [INSERT STATE] schools.

Below is the link to the survey, which should be completed by the staff person in your school who is most familiar with your online learning program. While several staff may need to be consulted in order to ensure accurate responses, we ask that only one representative from your school submit the survey. Please have the following information before you begin the survey:

- The number of online courses taken by students in your school in 2012/13.
- The number of students in your school who were enrolled in online courses in 2012/13.
- The number of enrollments in online courses for your school in 2012/13, both overall and by academic subject.
- The reasons that online courses were used.
- How your school supported students who took online courses.

[INSERT ORGANIZATIONS] will neither penalize nor reward you or your school based on your responses to the survey. The survey will take approximately 15 minutes to complete. Your school's participation is voluntary.

Click the link below to access the survey.

[INSERT SURVEY LINK]

Please complete the survey by [INSERT DATE].

Sincerely yours,

[INSERT SIGNATURE AND AFFILIATION]"

Figure 1. *(above)An invitation letter sent to all principles of a school in hope of a maximum completion of the desired survey.*

Use of educational research

In conjunction with learning of the surveys carried out we also studied a result of a study which was that of the flipped classroom method. In the century we are in, rapidly developing technologies affect education training fields as they do in all fields. In parallel to the speed of development in technology, education conditions develop as well and different learning demands come out(Celen, Celik,& Seferoglu,2011.)As changing in knowledge and technology is so fast, education also keeps up with it and continues its development with innovative learning approaches (Akdemir, Bicer& Parmaksiz, 2015; Ugras & Cil, 2014; Schaal, 2010). This changing and transformation in education training field takes out the existence of the new strategy that is Flipped Classroom system in education (Toto & Nguyen 2009). The Flipped Classroom is currently being presented as a new teaching innovation, it has been in use for well over a decade. There have been educators as far back as the late 1990s who flipped their classes (Baker, 2000).

However, the amount of literature that pertains to the Flipped Classroom is limited. There are many definitions regarding the Flipped Classroom in this literature. Toto and Nguyen (2009) expressed that Flipped Classroom is an approach that increases active learning activities and gives an opportunity for the student to use their knowledge in class with the guidance of the teacher. This approach firstly attracted the attention of educators in 2007 with chemistry teachers Jonathon Bergmann and Arron Sams from Woodland High Park School recordings of live lessons and broadcasting them online for the students that missed those lessons (Bergmann & Sams, 2014). Flipped Classroom is an approach that transfers learning responsibility from teacher to the student (Bergmann et al., 2011).

Flipped Classroom Approach.

Flipped Classroom has four different elements, in order for teachers to achieve this approach they have to take these four elements into consideration. Chen, et al. (2014). They are explained by using the word FLIP.

F: Flexible Environment.

Flipped learning allows for a variety of learning modes: educators sometimes physically rearrange their learning spaces to accommodate a lesson or unit, to support either group work or independent study. They create flexible spaces in which students choose when and where to learn. Furthermore, educators who flip their classes are flexible in their expectations of students timelines for learning and in their assessment of student learning.

L: Learning Culture.

In the traditional teacher-centred model, the teacher is the primary source of information. By contrast, the flipped learning model shifts instruction to a learner-centred approach, wherein time class is dedicated to exploring topics in greater depth and creating rich learning opportunities. As a result, students are actively involved in knowledge construction as they participate in and evaluate their learnings in a manner that is personally meaningful.

I: Intentional Content.

Flipped learning educators continually think about how they can use the Flipped Learning model to help students develop conceptual understanding, as well as procedural fluency. They determine what they need to teach and what materials students should explore on their own. Educators use intentional content to maximise classroom time in order to adopt methods of student-centred active learning strategies, depending on grade level and subject matter.

P: Professional Educator:

The role of a Professional Educator is even more important, and often more demanding, in a Flipped Classroom than in a traditional one. During class time they continually observe their students providing them with feedback relevant to the moment and assessing their work. Professional Educators are reflective in their practice, connect with each other to improve instruction accept constructive criticism, and tolerate controlled chaos in their classrooms. While professional Educators take on less visible prominent roles in the flipped classroom, they remain the essential ingredient that enables flipped learning to occur.

Research in relation to benefits to Flipped classroom work

Research has been published with evidence that flipping the classroom can produce significant learning gains (Deslaruries et al.,2011). Toto and Nguyer (2009) examined results and feedback of the flipped classroom in an industrial engineering course. The purpose of the study was to investigate student perceptions of the Flipped Classroom. Wieman and colleagues compared two sections of a large enrolled physics class. The classes were both thoughts via interactive lecture methods for the majority of the semester and showed no significant differences prior to the experiment. During the twelfth week of the semester, one section was “flipped” with the first exposure to new material occurring prior to class via reading assignments and quizzes and class time devoted to small discussion of clicker questions and questions that required written responses. Although the class discussion was supported by targeted instructor feedback, no formal lecture was included in the experimental group. The control section was encouraged to read the same assignments prior to class and answered most of the same clicker questions for summative assessments but was not intentionally engaged in active learning exercise during class.

Findings

During the experiment, student engagement increased in the experiment section (45+/-5% to 85+/-5% as assessed by four trained observers) but did not change in the control section. At the end of the experimental week, students completed a multiple-choice test, resulting in an average score of 41+/-1% in the control classroom and 74+/-1% in the “flipped “classroom, with an effect size of 2.5 standard deviations. Although the authors did not address the retention of gains over time, this dramatic increase in student learning supports the use of the flipped classroom. By providing an opportunity for students to use their new factual knowledge while they have access to immediate feedback from peers and the instructor, the flipped classroom helps students learn to correct misconceptions and organize their new knowledge such that it is more accessible for future use.

Furthermore, the immediate feedback that occurs in the flipped classroom can help students learn to take control of their own learning by defining goals and monitoring their progress in achieving them.

Toto and Nguyer (2009) examined results and feedback of the flipped classroom in an industrial engineering course. The purpose of the study was to investigate student perceptions of the flipped classroom. The researcher wanted to know if students found that flipped instructional supported their understanding of the course content and if it should be continued. Surveys revealed a number of interesting results. Here we can see how the use of a survey was a quick and easy way for the educator to obtain results. Students felt that 30-minute videos were the optimal amount of time for a video lecture. Students also noted that they felt it was easy to be distracted while watching the video lecture. Overall, the results of the study indicated that students value traditional face –to – face lectures but they like the benefits the flipped classroom offers by having additional classroom time for problem-solving and hands-on activities. A suggestion made by the students was that video lectures “be used to deliver theory-based course material, examples problem solutions, and supplemental course material such as content from guest speakers”. Toto and Nguyen found that students thought the flipped classroom was an effective teaching strategy that could be implemented in class at least 25% of the time. From my research I concluded that educators considering the flipped classroom should not be concerned with the content area or the age of their students, instead should consider if classes will benefit from being “flipped”. We see this from the paragraphs above that there is evidence to suggest that benefits were achieved are recorded.

Conclusion

There are many issues facing educators regarding their findings. An educator will always be worried about the “trustworthiness” of his knowledge from his/her survey. It has been estimated that up to £70 million pounds have been spent on educational research per annum, up to 90% of which is government funded (Hargreaves1996a1997). Another problem with some survey methods in educational research is the partisan present throughout some surveys. Also, in some surveys, there is a lack of reporting of sample size as well as the methods of sample selection. However, I felt from then studies that I encountered the use of surveys in a quest to find the best educational resources had more of a positive impact than a negative on the educational system. From the finding in research papers that were viewed in order to compile this essay, it is evident that there are limitations as well as many advantages shown in the surveys conducted into educational research. Facilitators and participants must have a willingness to change and take on board the findings. As education is evolving rapidly and students are presenting with diverse needs educators must experiment with strategies to meet their curricular needs.

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