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How to Select Participants in My Research Study?:Sampling in Quasi-Experiment Research

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ABSTRACT
Samplingmethod selection is very important in a research study to answer the research questionsand to generalize the results to target population. This article presents the steps of selecting participants in my research study in investigating the effect of contextual teaching and learning on reading motivation and reading comprehension at state Islamic intitute of Kerinci. The cluster sampling is usedas a method of selecting the participants of the study. In this article, the basic elements related to the sampling of the participants of the research study is discussed, including sample frame, sampling, type of sampling, sampling method according to the type of study methodology, and data analysis of my research study in selecting participants. Therefore, the purpose of this article is to provide an overview of the importance of adequate sampling method in a research, especially in English education research and to provide the readers with useful tips and resources for selecting a representative sample.

Key Words:Cluster Sampling, Quasi-Experiment.

1. INTRODUCTION
An adequate sampling method is a must in a research study. The researchers can draw their conclusion of the population with a confidence level when the samples represent the target population.In selecting the participantsof a study, the researchers should consider whether the participants represent the target population or not. One of the major reasons that a thesis proposals are rejected by advisors at the university is due to a nonrepresentative sample or inadequate sample size. A poor sampling method cannot represent the target population of the study. Therefore, cluster sampling was chosen as the technique in selecting the participants of my study on the effect of contextual teaching and learning on reading motivation and reading comprehension. This sampling methodis mostly used for a quasi-experiment research.

In quasi-experiment for social research like English, most researchers tend to use cluster sampling as the method of selecting the participants of the study. This sampling method is simplerthan individual random sampling that is usually used in true experiment research.The researchersjust randomize the classes as the target population in a study. Therefore, the purpose of this article is to provide an overview of the importance of appropriate sampling methodin social research, especially in English education research and to provide the readers with useful tips and resources for selecting a representative sample.

Quasi-experimental research design is the same as experimental design that tests causal hypotheses (White &Sabarwal, 2014). It attempts to replicate the condition in true experiment by controlling the variables involved in the research (Dimsdale&Kutner, 2004). This research methodology aims to investigate relation between independent variable to the outcome of the dependent variable in experimental class and control class after getting treatment of the research (Meganingtya, Winarni, &Murwaningsih, 2018). The independent variable is the effect of change of dependent variables. Experiment and control groups are involved in quasi-experimental research. The experiment group receives a treatment, but the control group does not (Gay &Airasian). Moreover, Johnson and Christensen (2014) argued that the manipulation is actively given to experiment grouponly to prove the existence of cause-and-effect relationships. Different service or instructions to both of the groups are as the ethical issues of the quasi-experimental research. The researcher provides a new method to

stimulate the students of some kinds such as interest, motivation, vocabulary mastery, etc. in theresearch conducted.

The rationale for choosing quasi-experimental research as the method of the study is because it does not need to include the entire feature of true experimental research. Quasi-experimental does not carry out naturally form of true experimental research (Veldman, 2016). Therefore, this research type is considerably appropriate to determine the effect of contextual teaching and learning as method of teaching reading in this study, because this type quantitative research design is simpler than true experimental research that selects the samples randomly.Stuart and Rubin (2007) argued that matching the samples is possible to identify sub-samples of the treatment and control groups balance, but not a must. Similarly, the samples is selected from targeted population to form intervention group, however the class must be convenience in the term of background. The samplesare from similar locations with similar profiles (James, Garbut, &Simister, 2017).Individuals of comparison groups identical with the same characteristics i.e.education, religion, occupation, wealth, attitude to risk and so on (White &Sabarwal, 2014).

The quasi-experimental research is employed when it is difficult for a researcherto applyrandom sampling to the participants in a study(Dimsdale&Kutner, 2004; Johnson & Christensen, 2014; White &Sabarwal, 2014; Sokolowski, 2015). Instead, the researcher assigns acondition tothe samples by way ofselecting the participants by themselves without random assignment, because it would disrupt classroom learning (Cresswel, 2012). Therefore, the researchers uses intact groups without individual randomized.Thus, the homogeneity of the target population must be analyzed before being considered as the participants of the study. The levene test was used in analyzing the homogeneity of the participants of the study when the data is normaly distributed, but when the data is not normally distributed Mann whitney U test is used.

Leven test is an inferential statistic analysis used to assess the equality variance of the target population. It tries to answer the null hypothesis that the samples are from the same variance by using significance level score.This hypothesis refers to homogeneity of variances when it attempt to compare group mean using statistics of *t-test* or analysis of variance (Nordstokke, 2009). These types of statistical analysis are usually used by most of the researchers to test the equality of two means (Nordstokke&Zumbo, 2010).In other words, assessing the equality of variance is to assess similarity dispersion across multiple groups participants of the study. However, levene test statistical analysis used depends on the result of normality test as mentioned previously.The data gathered recquires normality checking first as it is as statistical procedure of *t-test* linear regression analysis (Fitrianto& Chin, 2016). Therefore, this test should be conducted seriously to draw statistical and reliable conclusion (Ghasemi&Zahedias, 2012).

The normality testvaries depending on its function in a research study, includingKolmogorov-Smirnov test, Lilliefors corrected K-S test, Shapiro-Wilk test, Anderson-Darling test, Cramer-von Mises test, D'Agostinoskewness test, Anscombe-Glynn kurtosis test, D'Agostino-Pearson omnibus test, and the Jarque-Bera test. But in this article, the Shapiro-Wilk test is focused as the measurement of the data normalityas it is usually used for small sample size less than 50 students (Ghasemi&Zahedias, 2012). The Shapiro-Wilk test is the most popular test for normality assumption diagnostic (Das &Imon, 2016). Thus, the Shapiro-Wilk test was used in this research study.

The data isconsidered normal in distribution when the probability score is greater than .05 ($p > .05$). On the contrary, the data is considerednot normal in distribution when the data have the level of significance lower than .05 ($p < .05$). The Mann Whitney U test is used if one or both of the data arenot normally distributed based on the normality test or if one or both of the data donot meet the assumption of variance analyses.

2. Sample Frame

Sample frame is a group of individual of target population to be selected as the participants of the research study.It is as a set of source in selecting the participants of a study. However, the sample frame must be complete, accurate and up-to-date for achieving a qualified participants. All of the targeted population as the sample frame has the same prior to be selected as the participants of the study (Turner, 2003). Thus, as representative of the target population, the researcher needs to consider carefuly whether the sample frameis appropriate with the ojective of the study (Martinez et.al, 2016). For example to identify the effect of an approach on reading motivation and reading comprehension, the researcher may consider to utilize an English department students as the target population. It is due to the consideration that the students of this target population has reading class as the compulsary subject.

2.1. Sampling

Sampling is the process of selecting a group of individuals from a target population. A group of individuals are selected by using certain statistic analysis in quantitative research. Sampling is very useful in a research study as the technique to generalize the target population. However, the researchers need to find an appropriate target

population for the study, then select the target population as the participants by using certain statistical analysis based on the research method used. In the case of quasi experiment research, the researchers are allowed to assess the target population to identify the participants that have equal characteristic in term of academic ability such as reading comprehension ability, grammar ability, and writing ability.The equivalency ability of a group of students are assessed first before deciding as the participants.

A qualified research result depends on the sample representativeness of the target population. Representative sample enables the researchers to draw conclusion from the participants about the population as a whole (Cresswel, 2012).The more representative the sample, the more confident the researchers can be in the quality of the results.Therefore, the researchers must have earlier decision of sampling in order the data gained is representative of total population in a study (Cohen, Manion, & Morrison, 2005). Although larger sample in quantitative research is suggested to represent the target population, the number of participants are limited due to the feasibility and financial concern (Liao, 2006).

2.2. Types of Sampling

There are two types of sampling usually used inquantitative research: Probabilistic and Nonprobabilistic. These two types of sampling may be selected by the researchers when conducting a study depending on research methodology and the purposes. But in this paper, only the probability sampling will be discussed.

2.2.1. Probabilistic sampling

Probabilistic sampling is selecting the sample from target population based on principle of randomization or chance.However, the sampling should assign as many sample as possible to avoid bias (Till´e& Wilhelm, 2016). All individuals in target population have similar probability to be selected as the sample of the research and the conclusion can be drawn to the sample as representative of the population (Schreuder, Gregoire, &Weyer, 2001). In this type of sampling, selected individuals are as representative of that population (Cresswel, 2012).There are some different types of probabilistic sampling detailed as the following.

*Simple Random Sampling:*It is a type of probabilistic sampling in which each individual has the equal probability to be selected as the sample of the study. The individuals are selected froma list of members of the target populationrandomly with blind or folded eyes (Singh, 2015).It intends to select individuals as the representative of the target population. This type of probabilistic sampling is considered as the simplest forms of collecting data from the total population. For example, the total of the students in a school is 200. A sample of 20 students is selected for a research. Each of 200 students have equal possibility to be selected randomly as the sample of the study.

*Systematic random sampling:*This type of probabilistic sampling has the same statistical principle with simple random sampling. However, it is used to select large participantsfrom the target population. In this sampling, the researchers must firstly decide the number of students out of the total population to include in the participants, then decide the interval of sampling as the standard of distance between sample element. For example, when the researchers want to select 1,000 students of 10,000 population, he or she can choose every tenth person from students' list.

Stratified sampling: in this type of probabilistic sampling, the population is divided into some specific characteristic(Cresswel, 2012).Moreover, when there are many variances among subgroups, the data need to be stratified by variance (Sharma, 2017).Each stratum is then chosen randomly to be participants of the research, for example, when the researchers want to investigate the effect of an approach to students of different reading abilities of senior high school, he or she can choose three strata of senior high school students; high reading ability, medium reading ability, and lowreading ability. Then, each of the school are randomly selected. Thus, stratified sampling is used when the subgroups of the population have different characteristics or behaviors (Ravid, 2011).

Cluster sampling: it is defined as creating multiple clusters of individuals from a population. It is mostly used in quasi experimental research because of its low cost and time saving device (Pradhan, 2004). The reasearchers can randomly choose the population attempt to study. However, the participants selected must be homogenous by comparing each group of the individuals. For example, when the researchers want to conduct a study on reading comprehension ability in a university, he or she can choose English department students as the target population as they have reading class. The reading scores of each class are compared to analyze their homogeneity and their equal ability in reading comprehension.

Multi-stage sampling: This type of probabilistic samplingchooses the participantsin two or more stages because the researchers cannot easily identify the large population become participants of the research.Multi stage sampling aims to select participants based on a few geographical regions (Taherdoost, 2016). For example when the researchers want to identify the students of English as a foreign language motivation in Indonesia, he or she can select school based on the district in Indonesia randomly. Using this type of probability sampling can save time and money because the researchers can select the participants based on a few geographical regions or

district by using a technique of cluster sampling then use simple random sampling to select a participants of the target population (Mertens, 2010).

2.2.2. Non-Probabilistic sampling

Non-probabilistic sampling is a type sampling that selects individuals because they are available, convenient, and represent some characteristic the investigator seeks to study (Cresswel, 2012). It provides a lower cost compared to probabilistic sampling, however low in quality of data, because non-probability sampling measure not generalize the larger population. Sometimes, researchers use volunteer students as participants. There are two types of Non-probability sampling according Cresswel(2012).

*Convenience Sampling:*it is type of non-probabilistic sampling in which every subject is used as the participants of research as it the target population easier to be accessed and willing to be participants (Etikan, Musa, Alkassim, 2016). The participants are selected based on researchersjudgement. In other words, the individuals are selected as the participants because they available to be studied (Cresswel, 2012). For example, a researcher may decide to conduct the research on all mobile dictionary users at university, convenience sampling can be applied as sampling technique without random. This non probabilistic sampling is sometimesregaraded as accidental participants because each individuals may be selected as the participants of the study due to the consideration of their convenience involmentin a data collection.

*Snowball Sampling:*The participants are asked to generate others to become part of the participants when the researchershards to recruit the large number of the participantsrequired for research a study.In other words, this non-probabilistic sampling aim to recruit the participants who know others related to the research conducted to assemble them as participants of the research. This type of non-probabilistic sampling used to elminite the possibility of the participants who do not return questionnaire (Cresswel, 2012). For example, when the researchers want to know the teachers' satisfaction of the English teaching requirement at a school, the teachers can be initial samples of headmaster at certain school decided to be the target population.

3. Sampling Method According to the Type of study Methodology

In general, a quasi experimental research study aims to compare a group of students that has equivalence characteristic. However, to achieve the equivalency is not as simple as we think. Each sub-group is compared their equivalency characteristic first using certain statistical analysis before deciding as the participants of the study. The more equivalence of the group selected as the participants of the research, the more precision the result of the quasi-experiment research study. Therefore, the cluster sampling is decided as the sampling method for analyzing students' reading motivation and reading comprehension in my quasi experiment research study.This study attempt to investigate the effect of contextual teaching and learning on reading motivation and reading comprehension at state Islamic institute of Kerinci.

Thecluster sampling method is simpler than individual random sampling that usually used in true experiment research. In this probabilisticsampling method, the researchers can select unit or school of the participants for sample of the research (Cresswel, 2012; Johnson & Christensen, 2014).The classes can be randomly assigned to the experimental or the control group when the study have small sample size (Bester & Brand, 2013; Panko, Curtis, Gorrall& Little, 2015). This means that a large group of students are divided into a number of small groups (Kothari, 2004). Moreover, this probilistic sampling was chosen as the sampling method of the studyto minimizing the cost of sampling processand to avoid disturbing the students'learning process.

Literal reading scores were used in selecting the samples of the research by comparing all students' scores from each class. Comparingthe students' literal reading scores of each class aimed to get homogeneity between groups involved in this study. The groups of thestudents selected in this research were two classes of semester 2 of theEnglish Department at State Islamic Institute of Kerinci in academic year 2018/2019 as stated by Kotluk and Kocakaya (2016) that the partcipantsmust be equivalence at the beginning in quasi-experiment research.There were 63 of English department students that comprised of three classes; A, B, and C as. The reason forchoosing the students of these three classes as the population of this study was they had studied literal reading at semester 1. Therefore,theywere consideredappropriate to be the samples of the research in investigating the effectiveness of contextual teaching and learning as an approach in teaching reading in the teaching and learning process in the classroom. Only two classes were chosen as the samples of this study. This was due to the financial concern and the nature of the sampling technique in quasi-experimental research.

4. Data Analysis of My Research Study in Selecting Participants

The three classes were selected based on their reading academic performance by using levene test SPSS statistic before deciding to be the participants of the study as mentioned previously. The levene test SPSS statistic was used to measure the homogeneity and mean of the three classes as target population of the study in reading academic performance. In this SPSS statistical analysis, two classes were selected as the participants of the study. Administering the levene test for the target population is based on the quasi-experimental research

prerequirement for choosing a control group with comparable characteristics to the experimental group to improve the generalizability of the results (Gay & Airasian, 2000; Veldman, 2016). The criteria of both groups are matched in academic performance (Nagisetty, 2015).

Literal reading scores were used in selecting the participants of the research study.All literal reading scores of the three classes were compared by using levene testSPSS statistics to decide two classes as the participants of the study. The two classes selected must be homogeneous and equal in reading academic performance. However, before conducting the levene test to measure homogeneity and equality of reading academic performance, normality test was firstly conducted as the prerequirement of conducting levene test SPSS statistics and Mann Whitney U test. In SPSS statistic, *homogeneity* and *t-test* are analyzed at the same time through *levene test* SPSS statistic. Once the researchers analyze levene test SPSS statistic, the results of variance homogeneity and t-test appeared. Table 1 presents thenormality tests of the paticipants.

Table 1
Normality Test of the Participants

Class	n	Shapiro-Wilk	Sig.	H_0
A	21	.92	.16	Accepted
B	21	.93	.09	Accepted
C	21	.92	.10	Accepted

Based on thetable of normality statistical analysis above, each class was significantly different in significant scoresof literal reading (Class A was .16, class B was.09, and class C was .10). It indicated that thesignificance scores of the three classes were greater than .05. It means that thescore of each class was normally distributed. Considering thateach of the class score was normally distributed, the *Levene* statistical analysis was conducted to analyze the variance homogeneity and equality of reading academic performance.The levene test of variance homogenityand reading academic performance must be conducted after analyzing normality test. Nordstokke, Zumbo, Cairns, and Saklofske(2011) state "When conducting assessments or evaluations in the social, psychological or educational context it is often required that groups be compared on some construct or variable such as math achievement or emotional intelligence".It is usually used in verifying the assumption that data are from equal variance population (Vorapongsathorn, Taejaroenkul&Viwatwongkasem, 2004). The result of variance homogeneity statistical analysis of the population was presented first before *t-test* result of reading academic performance. The variance homogenity test of the population is presented in following table.

Table 2
Variance homogeneity Test of the Population

Class	n	*F*	*Sig.*	H_0
A vs B	21 vs 21	1.49	.23	Accepted
A vs C	21 vs 21	8.34	.01	Rejected
B vs C	21 vs 21	17.69	.00	Rejected

As seen in the table above, the significance score of literal reading forAvs B was .23. This means that both classes werefrom the same variance of population. However, the comparison of literal reading of Avs C and B vs C showed different result with A vs B above. Significance score of literal reading for Avs C was .01, and B vs C was .00. This means that the classes were from different variance of population. The next step presented *t* or *t'*-test of levene test statistic analysis. The *t*-testwas used forthe homogenous class score (A vs B) while *t'-test* was used for non-homogenous class score (A vs C and B vs C). The results of the*t* and *t'*-test of the population are presented in table 3.

Table 3
t and *t'*-test of the Population

Class	N	Mean		t	t'	*Sig. (2-tailed)*	H_0
A vs B	21 vs 21	76.28 74.14	vs	2.02	-	.05	Accepted
A vs C	21 vs 21	76.28 81.24	vs	-	-3.23	.00	Rejected

B vs C	21 vs 21	74.14 vs 81.24		-	-4.92	.00	Rejected

The resultsof *t* and *t'* test table of each class in literal reading shows that there were significant different score of each class. The result of t test A vs B was ≥ .05) with mean score 76.28 vs74.14, A vs C was .00 < .05 with mean score 81.24 vs 76.28. While the result of *t*-test B vs C was .00<.05with mean score 74.14 vs 76.28.Based on the results of *t* and *t'*-test above, class A and B were chosen as the participants of this study, it was due to the consideration that significance score of these two classes was equal to .05 as standard of significance score for this study. It indicated that both of the classes nearly similar in literal reading scores as stated by Johnson and Christensen (2014) that experiment and control group must be matched at the beginning.

5. Conclusions

Deciding the sampling technique of selecting the participants in a population is considerably important in a research study. A right planning stage of sampling influences the results of the study conducted, because each sampling has different steps, including sample size estimation, sample frame identification, and selection of the sample mehod to be adopted when conducting a research study. A poor sampling technique in a research study impedes the researchers to draw inference about the population. Especially in selecting participants of quasi experiment research, the right steps of sampling must be followed to achieve precision result. The steps including choosing right target population and selecting the participants of the study.

With reference to the target population and selecting the participants, this article showed that three classessecond semester students English department of State Islamic institute of Kerinci was appropriate to be population of the research study as they had studied literal reading at the first semester. Then, the three classes selected randomly to be participants of the research using levene test statistical analysis. This parametric test firstly preceded by normality test as the prerequirement.

The recommendation for other and future research had emerged as a description of the sampling method used in this article. The appropriatness of research methodology with sampling method must be considered by the researchers before conducting a research study, because it can affect on researchers to draw inference about the population and the precision result of the research study.hopefully, this article can guide the new researchers in selecting participants of quasi-experiment research in choosing appropriate sampling method and Statistical analysis.As new lecturers in higher education search for sampling method and Statistical analysis for quasi-experiment research with two groups participant, they should consider the steps of this article in selecting the participants and Statistical analysis.

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Appendix
Literal Reading Score of the Study Population

No	Student' Code	Score	Student' Code	Score	Student' Code	Score
1	A1	77	B1	78	C1	91
2	A2	80	B2	75	C2	77
3	A3	81	B3	71	C3	86
4	A4	75	B4	72	C4	90
5	A5	80	B5	72	C5	72
6	A6	75	B6	71	C6	77
7	A7	76	B7	78	C7	75
8	A8	81	B8	72	C8	78
9	A9	81	B9	75	C9	84
10	A10	70	B10	75	C10	77
11	A11	75	B11	75	C11	92
12	A12	72	B12	75	C12	76
13	A13	80	B13	78	C13	78
14	A14	78	B14	80	C14	74
15	A15	76	B15	75	C15	77
16	A16	70	B16	73	C16	78
17	A17	71	B17	73	C17	83
18	A18	75	B18	78	C18	85
19	A19	82	B19	71	C19	85
20	A20	74	B20	70	C20	85
21	A21	73	B21	70	C21	86

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