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Rethinking a Case Study Method in Educational Research: A Comparative Analysis Method in Qualitative Research[1]

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There are two types of qualitative research that analyze a small number of cases or a single case: idiographic/differentiation and nomothetic/generalization. There are few case studies of generalization. This is because theoretical inclination is weak in the field of education, and the binary framework of quantitative versus qualitative research is strong. Thus, individual case studies are not linked to systematic theory construction. In the present paper, from the findings of social science methodology, a methodology of case studies that goes back to the basics of rotation of abstract (theory) and specific (experience) is presented.

Keywords: case study; qualitative research; social science methodology; inference; comparison

1. Introduction

The purpose of the present paper is first to examine methodological issues of case studies in the present educational research[2]. In order to cope with such issues, the second purpose is to raise questions about how case studies in educational research (in the field of social sciences) should be, by using a methodological base of empirical analysis in social sciences.

Using a term related to methodologies in the social sciences, it is possible to rephrase case studies as qualitative research. In this paper, analyses that focus on cases with a small number (Small-N) or only one (N = 1) are considered as qualitative research (King, Keohane, Varba, 1994 = 2004, KKV, hereafter, translation version, p.2 [3]). Qualitative research includes researches such as researches adopting field work, ethnography as well as case studies that do not clearly use such methodologies. It refers to a broad range of researches that the application of a quantitative method is difficult due to a small number of observations. On the other hand, researches with a large number of observations (Large-N) are defined as quantitative research. Statistical methods are often used in quantitative research.

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However, it is not that there is a rigid definition amongst researchers regarding a distinction between quantitative and qualitative research, and how they are actually used vary as well. For instance, take a case of comparative research with small-N that aims to clarify a causal relationship, which is picked up mainly in the present paper. Where does it belong, quantitative of qualitative research? It seems to belong to qualitative studies in the sense that they do not use numbers. According to Fairbrother (2007 = 2011), however, comparative research whose purpose is to clarify a causal relationship is classified into quantitative research. On the other hand, such research includes elements of both qualitative and quantitative and it cannot be clearly distinguished in Merriam (1998 = 2004, p.12 in translated version). In this paper, qualitative and quantitative researches are defined as a case in which the number of observations to be analyzed is small and the number of observations to be analyzed is large respectively.

Next, I would like to state my question and conclusion in advance. Here, questions are what are the issues in (small-N or N = 1) qualitative research in educational research, and what improvement is necessary in the future. My claims towards such questions are as follows: Firstly, in the present condition of educational research, there is a lack of theoretical model (related to causal relationship) or a bias in methodologies in qualitative research. Therefore, it seems that a linkage between quantitative and qualitative research is not enough, and findings of research are not accumulated systematically. In other words, qualitative research following empirical methodologies in the social sciences is weak. Secondly, in order to overcome these issues, as Takane's (1979) excellent introductory book on methodologies in the social sciences points out, it is necessary to enrich qualitative research that is in line with the logics of quantitative research. Reasonably, this type of research methods has already been mentioned in the field of comparative education (Yoshida, 1990, p.27–37). There should be many educational researchers who have read Takane (1979) and Kariya (2002), not limited to those in educational sociology. However, if an interest towards a theoretical model is weak, it is realistically difficult to design researches based on such methodologies. Not only should we learn about methodologies, but also we have been asked to conduct qualitative research clearly aiming at the formulation and inspection of theory. This is done by returning to the basics of going back and forth between abstract (theory) and specific (experience).

As it is a well-known fact, research styles of quantitative and qualitative research differ greatly. Therefore, when we consider research methodology, we tend to divide it into either quantitative or qualitative, although they are not strictly defined. However, I would like to argue that this is rather narrowing meaning and possibility of qualitative research. Even in the case of conducting qualitative research using the same logics as in quantitative research, there are merits unique to qualitative research.

What is presented in this paper, however, is not at all new. Rather, it could be said that it is a common opinion in the social sciences. On the other hand, recently in educational research in Japan, qualitative researches that are distinguished from positive theory such as discourse analysis and action research are increasing. In contrary, it seems more difficult to have a dialogue and share findings between qualitative and quantitative research. In addition, it is still not difficult to find case studies with a single case with its methodology difficult to locate. If such tendency increases, looking from one of missions of academic research as formulating systematic theories, it might have a negative influence. Since going into case studies is easier compared to that for such as quantitative analysis, it is comparatively easy for beginners to work on (though there is depth). Also depending on cases, it is possible to conduct a certain level of research without having a

structured training in methodology. Examining the number of journal articles, Small-N or N = 1 researches cover a large proportion, and there are also excellent articles. Reasons for choosing methodologies of qualitative research in this paper are there are many researchers that use it for one, and because of that it is important to consider methodologies in order to accumulate theory and finings systematically for the other[4].

The present paper is constructed from four sections. In the first section (the present section), the summary and significance of this paper was described. In the second section, after describing methods of qualitative research in the social sciences, I add an examination to the present condition of qualitative analysis in educational research, and take out methodological issues. In the third section, by applying findings of methodologies in political science as a clue, mainly methods and logic of causal inference in qualitative analysis are considered. In this paper, the method of agreement that compares cases with similar dependent variables, and the method of difference that compares cases with different dependent variables are picked up, and both features are examined. Furthermore, methods of causal inference in case studies with a single case are examined. In the final section, reviewing the discussions in the present paper, I state a direction of qualitative research in the field of education for the future.

2. The Present Condition and Issues of Qualitative Research in the Field of Education

2.1 Methodology of qualitative research in the social sciences: empirical research and interpretive research

Before I analyze the present condition and issues in the field of education, a way of thinking about qualitative research in the social sciences is described first. Not only in education but also in the social sciences, methods of qualitative analysis vary. Roughly, it seems two methodological presuppositions coexist as they loosely conflict to each other (Mizukoshi 2011).

First is researches with an empirical viewpoint. This position tends to favor strongly nomothetic as well as generalization, and thinks there is no essential difference between quantitative and qualitative research (KKV; Takane 1979; Ito 2011). Differences between quantitative and qualitative research are thought to be the number of observations (cases) and the possible range of subjects that could be analyzed. It is easy to control variables in experiments and quantitative research, or it is comparatively easy to make inferences of causal relationship compared to cases in qualitative research because the number of observations is large. On the other hand, possible subjects that could be analyzed are restricted due to the limitations of ethical issues and data in qualitative research. It is difficult to make inferences of causal relationship in qualitative research because the number of observations is small. However, making inference is possible by creatively using a comparative method. Also, a wide range of possible subjects becomes an advantage in qualitative research in the social sciences.

Second, it is not uncommon for researches in the social sciences to take an interpretive perspective not adopting an empirical stand. In such researches, they attempt to interpret deeply the understanding and meaning of individual cases, or mutual relations of phenomena, that are difficult to make inquiries in empirical analyses. Methods of field work and ethnography stress observing and describing phenomena that are difficult to analyze quantitatively. Simultaneously, not only describing facts, but they also emphasize increasing understanding through interpretation

and adding meaning. In either research, an emphasis is put on describing and understanding an individual case itself rather than generalizing. There are idiographic researches within empirical research, and such tendencies increase more in interpretive researches.

Difference in opinions between both groups is not small in modern social sciences. In the field of business management and commercial science, their positions and the differences of both groups are mentioned as a crucial methodological issue (Numagami, 2000; Mizukoshi, 2011). Moreover, as far as I am aware of, there seems to be a similar difference of a methodological position in political science. Though the weight put differ depending on academic fields, it could be pointed out that two methodological perspectives with different premises stand side by side in various fields in the social sciences.

2.2 Qualitative research in education

Examining a research tendency in the field of education, there are researches that presuppose the aforementioned two methodologies[5]. However, in qualitative research in education, it is easy to find researches that are not clear in its methodological position. Moreover, even when applying an empirical perspective, there are many cases that put emphasis on describing individual phenomena or areas rather than making generalization. At any rate, there is a strong tendency to hold interest in observing facts or relationships that are difficult to comprehend in quantitative research. We have been accumulating much information thanks to that on one hand, and it is also true that there have been the following problems on the other.

First, findings of quantitative and qualitative research have been accumulated separately, and was there an aspect that hindered a fusion of both groups? In collaborative research projects, there are cases in which multiple researchers split the same topic into a quantitative research (such as researches using surveys, etc.) and a case study. Besides such cases, however, there are not necessarily many cases in an ordinary routine where researchers mutually test findings of quantitative and qualitative researches. Methodologically, organic cooperation of quantitative and qualitative research is possible enough. For instance, that is to inspect again the findings that were demonstrated in a quantitative research using a qualitative research, or to inspect a hypothesis that was presented in a qualitative research using a quantitative research. It seems this sort of exchange is actually not taking place very often (other than where both quantitative and qualitative researches are conducted in a project-based research or in researches conducted by one researcher).

Second, it can be pointed out that there was a methodological slant in qualitative research. If idiographic researches and researches that focus mainly on understanding of an individual case itself become the majority, it becomes difficult to relate those cases mutually or to connect to a systematic theory or hypothesis even those may be excellent case studies individually.

For instance, there is an abundant accumulation of researches on particular foreign countries (regional studies). However, there is a strong criticism that there is no comparison (Ichikawa, 1990). This seems to be an issue even at present[6] (Sugimura, 2011).

Not limited to regional (foreign) studies in comparative education, many researches of small-N or N = 1 are being produced in every field of education. The present condition is, however, it is difficult to state that findings of those qualitative researches are connected to the systematic formulation and testing of theory.

One of the reasons why such a problem occurs, in my opinion, is that there is a methodological problem that case studies are biased towards differentiation (Chikada, 2011, p. 115)[7]. There

seem to be the following two reasons behind why qualitative research in education aims at idiographic or differentiation rather than nomothetic or generalization.

First, a relationship between an interest and practice in the field of education can be pointed out. In the field of education, human behavior and other complex phenomena are handled. Thus, there is a stronger tendency to hold interest in understanding how the actual condition is (a question about "how") or a state of a process and mechanism of a causal relationship rather than where the causal relationship is (a question about "why") or how strong a causal effect is. A positive feature of quantitative research is that it is comparatively easy to control variables and measure the extent of causal effects. On the other hand, there is a weakness that it is difficult to analyze a process and mechanism in accordance with the context of individual cases.

Moreover, it is important to note that there is comparatively a strong inclination to attempt to enhance the reality through research in the field of education. It is necessary to have an understanding in according with the context of individual cases to improve the reality, and there are limitations to only adopting generalized and nomothetic researches.

Second, there is a problem with systematization related to theory and methodology. It seems that a lack of systematized training of quantitative research in various areas of education (besides educational sociology and educational psychology) is a factor that cannot be overlooked. As it will be mentioned more in the present paper, an interest towards a theoretical model related to causal relationship is weak in education[8]. It can also be pointed out that there are few researches that aim to construct and test theories.

Given the conditions mentioned so far, there is a strong tendency towards differentiation and idiographic research rather than generalization and nomothetic research in the field of education in Japan. However, in order to understand the actual condition and process of causal relationships more accurately, it is necessary to conduct analyses that its case as an analytical subject has few biases compared to its population, or to conduct analyses that is aware of the bias even if there is one. Speaking from a methodological perspective, it is necessary to consider a problem of what is called case selection bias. In methodology of the social sciences, the criteria of case selection in order to avoid bias is presented with logic similar to sampling in a social survey. On the other hand, there is a danger to understand the actual condition using biased cases in situations with weak methodological awareness. There is a method that examines cases with a bias in detail like researches about deviant behavior. In such a case, it is necessary to explain why the bias of the case is essential from a research perspective. Reasonably, one is demanded to be conscious about case selection bias.

3. Causal Inference and Descriptive Inference in Qualitative Analysis

3.1 Methods of qualitative research in social science methodology

Given the examination aforementioned, methodologies of experiential (empirical) qualitative research are examined using discussions in political science. Naturally, logic of theory that is raised here is common to what Takane (1979) and Kariya (2002) argue. Therefore, it can be considered as a method that is common to not only in political science but also in sociology or social sciences as a whole.

There are two types of questions in the social sciences; what is the actual condition (which is called descriptive inference), and why such a condition is taking place (which is called causal

inference) (Kariya, 2002; Kume, 2008). As a methodology of qualitative research to clarify such questions, "Designing Social Inquiry" (King, Keohane & Verba, 1994) is well known in political science[9] that claimed we should also apply quantitative logic in qualitative research. This book is often used as a methodological textbook in graduate schools of political science in America and Japan, and is called KKV from the initial letters of the authors.

As it is well known, for causal relationship to be formed, three complete conditions are necessary; 1) a cause is taking place before a result (a cause preceding a result in terms of time), 2) a result changes as a cause changes (a relationship of changing simultaneously), and 3) all other factors are the same (controlling of other conditions). If you are making a causal inference, after understanding the actual condition through descriptive inference, it becomes necessary to make clear of a cause or why that condition occurs. The most preferred method is an experiment, but it is often difficult realistically due to problems such as ethical issues in the social sciences. For instance, qualitative research is difficult to conduct where there are few observable cases or data collection is difficult because of various circumstances. In the social sciences, however, such cases often take place. To clarify a causal relationship in such a case, one has to adopt a qualitative research, though increase in uncertainty cannot be avoided.

In the following section, I would like to state the logic and methods of inference in qualitative research, using Kume (2008), Kohno (2002), and Mabuchi (2009) as references who discussed methodology of case studies by mentioning KKV and their arguments.

3.2 Causal inference in small-N researches

Researches observing small-N apply a research method that compares several cases. This is a situation where a comparison amongst cases is possible because there are several cases, but not enough observations to be analyzed using a quantitative method. When a causal inference is difficult using an experiment or a quantitative method, conducting a comparison amongst cases becomes a leading means for making an inference. For methods to compare small-N cases there are roughly two types presented by John Stuart Mill: the method of agreement and the method of difference[10].

3.2.1 Method of agreement

The method of agreement is a method that searches factors that commonly exist in multiple cases, as a cause of a common phenomenon in the multiple cases. There is a case, for instance, that Male A and Female B create various problematic behavior in school. It is a case where they both have problems at home, but all other factors are different (see Table 1). In such a case, it can be inferred that problems at home are inducing such behavior because it is only the problems at home that they both have in common.

Comparative case studies using the method of agreement is often observed even in the field of education[11]. In terms of methodology, however, it is recommended to avoid using the method of agreement due to mainly the following three reasons (KKV, 1994, p. 155–165; Kume, 2008; p. 155–156). First of all, having the same dependent variable for comparing cases indicates that a relationship of changing together as one of three conditions of causal relationship is not complete. This is because the values of dependent variables or the results are the same in all cases, and it is not possible to observe changes in the first place. Thus, it is logically impossible to test a hypothesis related to causal relationship. Second, selecting the same case by different dependent variables mean the same as selecting a biased case within the population where various dependent

Table 1 An example of the method of agreement

	Student A	Student B
Dependent Variable: Problematic Behavior in school	Yes	Yes
Independent Variable: Problems at Home	Yes	Yes
Other Variables: Household Income	High	Low
Other Variable: Academic Achievement	High	Low
Other Variable: Sex	Male	Female

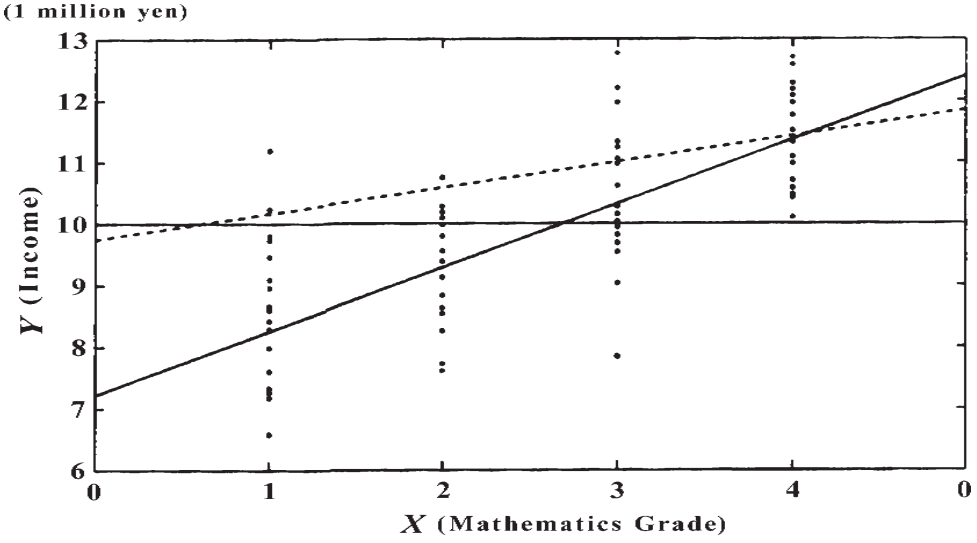

Figure 1 Relationship between income and mathematics grade

(Sourse) Kume (2008), p.156.

variables should exist. This means it is likely to cause a case selection bias. Due to this bias, there is a large danger of underestimating the real causal effect.

Let me use Kume's (2008) example. A causal relationship between a mathematics grade in high school and annual salary after working is examined. For people whose annual salary was over 10 million yen, their mathematics grade was examined. That effect can be shown in the dotted line in Figure 1. However, the effect should be measured with the group of people whose annual salary was under 10 million yen. In this case, by observing only the group of over 10 million yen, one underestimates causal effects. Third, it cannot be denied that there is possibility of other factors other than the independent variables (explanatory variables) influencing the dependent variable (Kohno, 2002). In the case of Table 1, perhaps it is not problems at home but there may be some other factors that are in common to both. It is possible to solve this sort of problem by increasing the number of observations (or the number of N). However, there is limit in the number of observations that can be analyzed in case studies. There is a similar issue in the method of difference that will be mentioned later in this paper.

As it has been described, KKV is negative towards the method of agreement. It does not

mean, however, KKV is also denying the use of the method of agreement as a method to present a hypothesis. In this sense, it is possible to find its significance. One example is that there is a situation where a common phenomenon can be observed in extremely different cases. Let us say, for instance, there was a similar social change in France, Russia and China. Because the political, economical and social systems of these countries vary so greatly, if one can find a factor that is common to all these countries, that factor can become a strong hypothesis that it provokes the change (Kume, 2008, p.165).

3.2.2 Method of difference

Next, the method of difference is considered. The method of difference is a method that confirms that a result changes by having a causal factor or not, when the condition of all other factors is the same in plural cases. A famous example using the method of difference is Durkheim's "Suicide" (Table 2). Durkheim demonstrated a hypothesis that suicide rates differ by Catholics and Protestants. Because this is targeted at Germany of a particular time, other factors such as politics and economy are controlled to a considerable degree. Because variables other than the sect are the same, it can be inferred that this is affecting the difference in the suicide rates.

In the method of difference, it is easier to make a clear question like "Why are A and B different?" because cases with different dependent variables are compared. Moreover, because three conditions of causal relationship are likely to be met, it is fit for testing hypotheses. However, there are points where attention needs to be paid.

The most important point is to have a premise that values other than independent and dependent variables are all equal in the method of difference (This is called "unit homogeneity"). This is because if variables other than a cause (an independent variable) is affecting a result (a dependent variable), a condition of controlling other variables is not met.

In reality, however, it is rare to be able to observe plural cases where values other than independent and dependent variables are all equal. In a cross-national comparison, for instance, various variables such as politics, economy and social environment are different by nations.

There are two possible solutions to solve this problem. One way is to increase the number of subject (N). If N can be increased, controlling of variables besides independent and dependent variables also becomes possible. In the case of case studies, however, limiting the number of N cannot be avoided.

For the problem mentioned above, KKV present the following measures[12]. First, for a variable besides independent and dependent variables that does not influence the value of a dependent variable, it can be ignored. Second, even if there was a variable, besides independent variables, which influenced the value of a dependent variable, that variable can be ignored if it

Table 2 An example of the method of difference

	Catholic Region	Protestant Region
Dependent Variable: Suicide Rate	Low	High
Independent Variable: Denominations	Catholic	Protestant
Other Variables: such as Economic Conditions	Same	Same

(Source) Kume (2008), p.158.

was not correlated to independent variables. This is because the causal effect of independent variables does not change even if that variable was ignored. For example, here is an analysis that states an expenditure spent on an election influences the rate of votes. Being currently in office or not has an essential influence on the rate of votes, and there was a criticism pointing out an analysis that does not consider that is inaccurate. In this case, it is not a problem to ignore the variable of currently in office or not if there is no influence on the rate of votes. Also, even if the variable of currently in office or not was affecting the rate of votes, there will be no bias on causal effect of election expenditure if there was no correlation between the election expenditure variable and variable of currently in office. Therefore, it is not a problem to ignore the variable of currently in office if the purpose is to test a hypothesis[13].

Another measurement is to narrow down variables to be included by using a theoretical model related to causal relationship. KKV emphasize that a theoretical model (related to causal relationship, see the note) is necessary in testing a hypothesis. It is possible to run "regressions or qualitative analyses with whatever explanatory variables we can think of. Without a theoretical model, we cannot decide which potential explanatory variables should be included in our analysis" (p.174).

Taking cross-national comparison as an example, it is true that various situations and contexts vary greatly depending on countries. As a result, it seems the premise of unit homogeneity cannot be realized. A reason why it is difficult for researches not only comparative education but also in foreign studies to proceed to a clear cross-national comparison (regardless of the awareness of researchers) is probably largely due to a problem of unit homogeneity. It is for a similar reason why researchers of comparative education hesitate to "compare" (Matsuzaki, 1990).

However, this is the same as saying there is no theoretical model. If there is a theoretical model, explanatory variables to include (or not to include) are restricted. If there is no appropriate theoretical model, there are ways to construct a theory deductively using such as a mathematical model, or to present inductively a theory or a hypothesis that can be generalized from case studies. Like this, in order to conduct comparison, reciprocating motion between theory and experience with methodological awareness is necessary. In that sense, it is correct to point out that regional studies that aim at theory formulation and hypothesis testing are necessary (Umakoshi, 1993). In other words, not only describing facts, but also accumulating case studies that have clear purposes about theory formulation or hypothesis presentation are necessary. Furthermore, presenting how they get connected to hypothesis testing in later researches is needed. In short, as Imai (1990) states, a linkage of "generalization" and "differentiation" is effective in theory construction.

Examining the actual researches, however, as mentioned earlier in this paper, the accumulation of regional studies has been a disordered accumulation of minute knowledge due to interests in the field of education and problems of theoretical or methodological systematization. In other words, it cannot be denied that it is heading towards one-sided "differentiation" (Chikada, 2011; p.115). Moreover, it could be stated that this issue is not limited to only in comparative education but also in educational research as a whole as social science.

3.2.3 Standards of case selection

Just as sampling in quantitative research, how to choose cases in qualitative research is very important in research strategy. In KKV, they recommend that the best research design is to choose cases that include dispersed independent variables (p.168–170). They consider best to select plural observations that include different causal variables that explain a phenomenon. For example, one

aims to explain differences in educational expenditure standards of every nation by differences in government forms. In such a case, it is preferred to choose cases focusing on differences in government forms (though how to observe this is a difficult issue), and not focusing on expenditure standards.

On the other hand, KKV also state that it is not realistic to conduct case selection that always matches independent variables in qualitative research (p.170). Certainly in the real qualitative research, cases are often selected by focusing on differences in dependent variables. For example, a question why a progressive scheme was possible in a municipality adopts a research design that selects cases focusing on differences in dependent variables.

However, if cases were selected focusing on differences in dependent variables, KKV claim that it is necessary to conduct another research that focuses on differences in independent variables (p.170–180).

In addition, they also state that if both independent and dependent variables select cases to meet a hypothesis, it means there is a high risk leading to bias in results (p.171–176). This is because danger to select cases arbitrarily to meet one's own hypothesis increases. In any rate, when conducting a case selection focusing on difference in dependent variables, one must pay attention that there is danger leading to a biased result.

Furthermore, there are situations where cases with no dispersion in dependent variables are chosen like in the method of agreement, or cases with no dispersion in independent variables are chosen depending on circumstances. Related to this, KKV admit there could be benefits to such researches from the point of presenting hypothesis. Moreover, if there is enough information from prior research, they also state it is possible to make a reasonable causal inference by combining it (p.176–179).

It is appropriate that selecting cases focusing on the dispersion of independent variables without considering the value of dependent variables is best. Because N is large in quantitative research, the dispersion of a dependent variable is naturally secured to a certain degree even in such cases. In qualitative study, however, because the number of N is small, there is a possibility that all of the dependent variables will have the same value as a result when cases were selected focusing on the dispersion of independent variables. Reasonably, as long as a hypothesis testing is to be conducted, there is possibility that a hypothesis is not supported as a result of an analysis. In the case of qualitative research, having understood every possible danger leading to bias, conducting case selection focusing on a dependent variable is unavoidable to a certain extent from a point of research strategy.

3.3 Causal Inference in Single-Case (N = 1) Research

Next, methodology about single-case research is described. According to KKV, single-case research is considered extremely difficult to handle. They state that it is possible to increase the number of observations even in a single case, and that is considered preferable (p.247–272). For instance, if time before and after a change of some phenomenon can be observed, the number of N can be increased to two. Even in a research of a single country, there is a way of segmenting by municipality. Yet, what should be done in a situation where there is only one case (N = 1) can be observed due to various restrictions? KKV's answer is that there is no hope in such a research (p.251).

Contrary to such claims, there are some opinions that state there is unique significance to single-case research (Kume, 2008; Mabuchi, 2009). First, it is the discovery of a new question (a

puzzle) or a hypothesis. In a single-case research, there is a merit of being able to deeply pursue facts that are related to that case. From there, it is possible to make theoretical contribution by finding a new question and hypothesis. Second, it is process tracing. Even if effect is measured by making inference of causal relationship in quantitative research, it is difficult to inquire into a process or mechanism of why such a causal relationship took place without qualitative research. It is easier to conduct such a pursuit of process in a single-case research. Third, there are some methods to test hypothesis even for single-case research (Takane, 1979; Kume, 2008). Three types of methods are described here: outlier case research, counterfactual, and critical case studies.

First, outlier case research is, regardless of whether it is clear or not, a method that compares a case that is deviated from a mean and a normal case. Specifically, it is used in deviation behavior research such as problematic behavior of youths. It is usually difficult to observe the actual condition of such deviation behavior, and we need a lot of times when the actual condition cannot be understood unless one goes deeply into analyzing a subject. Also, quantitative research is often very difficult. In a case like this, a single and outlier case is analyzed and compared with an average case, and what factors brought about a deviant case is discussed. Not limited to deviant behavior, a method of analyzing an outlier case in the population and comparing it with an average case is logically the same as outlier case research.

Next is counterfactual. This is a method that considers what would have been the result "if there was no…." or "if this had not happened." That is to say, it is a method that by imagining what would have been the case if the values of independent variables were different at a certain period, and compare that with a case that was actually observed. What Takane (1979, p.165–168) describes as imaginary experiment is an example.

Last are critical case studies. This is a method that rejects a counter hypothesis by showing that a hypothesis does not fit after analyzing a case that might make the counter hypothesis most favorable. It is also a method to confirm accuracy of a hypothesis by presenting that the hypothesis is once again true, after analyzing an example that leaves the hypothesis most unfavorable. If a counter hypothesis is rejected in a case where it is most likely to be held true, it can be said "fill in the blanks" (Mabuchi, 2009, p.15) in other cases as well, and it does heavy damage to the counter hypothesis. Furthermore, even in a case where it is most difficult to test one's own hypothesis, if the validity of that hypothesis is demonstrated, it can be expected similarly that the hypothesis is likely to be true, and possibility of one's own hypothesis being correct increases.

The aforementioned three methods hold in common that they all include a comparison with a counterfactual case. Although only one case is actually observed in all cases, a comparison takes place by comparing with an average case or a case that actually did not take place.

It cannot be denied that causal inference of single case research is incomplete as inference because it simply compares with other imaginary case. However, there is an advantage that hypothesis testing is possible while deeply tracing a process and mechanism of causal relationship. Furthermore, because three methods mentioned above can analyze a single case deeply, they can be used not only in research aiming at generalization but also differentiation. If setting up hypotheses and case selection are appropriate, perhaps conducting qualitative research having both features may become possible. However, when carrying on a research with a weak methodological awareness, there is a danger of falling into simply describing individual cases.

3.4 Descriptive Inference

Even in a research that takes an empirical perspective, its purpose is not only on making

inference of causal relationship. Descriptive inference is also important in a sense that it clarifies how the actual condition is. This is because in order to clarify causal relationship it is necessary to accurately understand how variables of cause and result are related.

It can be said that descriptive inference is the simplification of complex facts (Tatebayashi, Soga, Machidori, 2008, p.18–19). In order to do this, it is necessary to understand the facts by using concepts or models. For instance, towards a question such as "Who is deciding educational policy of Japan?" finding patterns of influence mechanism such as in conflicts or disputes over educational policy is an example of descriptive inference (Schoppa, 1991 = 2005).

KKV state that distinguishing systematic elements from unsystematic elements in a phenomenon is one of the fundamental purposes of making inference (p.67). Summarizing historical facts in detail is important but not sufficient. They state that making effort to extract systematic characteristics of a research subject is necessary (p.75). Classification is also one of methods in order to distinguish systematic elements from random elements.

In any case, descriptive inference is different from a simple description on a point that it is not only to deepen understanding about cases of subjects, but also to further understand a more general phenomenon from there. Certainly, it is difficult to distinguish systematic elements from random elements, because there are only few cases of observation in case studies. However, it is important to conduct descriptive inference itself as basic work for conducting causal inference.

4. Implications for Future Educational Research

In this paper, an examination was added to methodological issues of case studies that are often used in educational research at present, using methodology of the social sciences (particularly that of political science) as a clue. At the same time, methods of case studies for accumulation of systematic findings and theory construction were also stated. In the following section, discussions in this paper are summarized, and implications towards educational research for the future are discussed.

In this paper, I stated that there were two types of methodological premises in qualitative research. One of them is research that takes an empirical position, and it is a position that attempts to conduct research using the same logic for quantitative and qualitative research. Nomothetic and generalized inclination is strong, and descriptive inference and causal inference become the main purpose more than describing and understanding individual cases. Another is interpretive research. This takes a serious view on differentiation and idiographic more than generalization and pursuing universality, and puts emphasis on deeply understanding individual cases through such as describing and adding interpretation or meaning. Also, relation with quantitative research is rarely considered.

On the other hand, it is common to rarely consider the methodological differences between the two in qualitative research in education. Moreover, even in a case where it takes an empirical point of view, a tendency to focus on differentiation and describing and understanding of individual cases are strong. For such reasons, educational research in Japan holds a crucial methodological problem. For one, there is a strong tendency to accumulate findings of both quantitative and qualitative research separately, and the linkage of the two became insufficient. For another, because qualitative research became slanted towards aiming at differentiation, it became difficult to construct and test systematic theories. Even if many fine descriptions about

individual cases are produced, they are not necessarily used to the fullest for a theoretical development through formulation or testing of a theoretical model. Furthermore, weakness of generalization tendency lead to the absence of a theoretical model, and it created a condition where nomothetic or generalized research more difficult to conduct.

Given the problems mentioned, as a way to make systematic inference, the summary and features of the method of agreement and the method of difference with small-N case studies, and how to conduct case selection was stated in the present paper. Furthermore, as methods of causal inference of a single-N research, outlier case research, counterfactual, and critical case study were mentioned.

Next, based on issues that have been examined, there are two methodological or theoretical implications to be stated. First, were we not overly prepossessed with the framework of quantitative and qualitative research divide in terms of methodology until present? It seems that there was a strong tendency to have quantitative research in the category of nomothetic or generalized inclination or hypothesis testing, while qualitative research in the category of idiographic, differentiation, or hypothesis formulation in the field of education. It is true that there are advantages in each point, but there is no need to consider it in binary that quantitative research equals nomothetic, generalization, or hypothesis testing, and quantitative research equals to idiographic, differentiation, or hypothesis formulation. Also, did we not have a preconception that nomothetic research is for when the number of N is large, and idiographic is for when the number of N is small? As it has been described in this paper, nomothetic or generalized research is possible even in a small-N research[14]. Furthermore, it is possible to observe the process and mechanism of how causal relationship takes place. This is a merit that does not exist in quantitative research.

Certainly, this is not to deny the significance of interpretive research that does not pursue causal relationship. Considering the broad range of subjects and variety in methodology in the field of education, the balance of empirical research and interpretive research is also important. However, examining education as a field in the social sciences, my argument is that there are too few qualitative researches that generalize from an empirical perspective in the present condition[15].

Second, it is necessary to consider more strongly the basic style of empirical research that is a cycle between abstract (theory) and specific (experience). This point is written in textbooks and taught in classes as well. Most case studies spend much time on understanding and describing experiential facts. However, it is often not certain that clarifying the facts connects to what sort of theoretical contribution in education.

Research in the social sciences should put up an essential "question" of the real world. At the same time, it should make specific contribution to the development of a particular academic research (p.16–17). Naturally, the main interest of each research is directed towards one of them, but it is necessary to make effort to satisfy both criteria to be a research in the social sciences (p. 20). Did educational research as a research in the social sciences not have weak interest towards theoretical contribution for academic research, as a result of hoping too strongly to improve conditions in the reality?

Weakness in theoretical inclination can bring about difficulty especially in empirical research that conducts causal relationship. As mentioned above, this is because selecting which variables to add, from infinite variables in society, in an analysis rely largely on a theoretical model. Therefore, educational research as a social science was in general directed towards accumulating descriptive and differentiation research rather than aiming at generalization.

Against views presented in the present paper, there may be a fear that peculiarity and uniqueness of education is ruined if empirical methodology in the social sciences was borrowed. Or there may be criticism that it is necessary to formulate methodology unique to education that is different from other fields in the social sciences. My view towards such criticism is that there is no need both methodology and theory to be unique to an academic field in order to maintain uniqueness and identity of that academic field. For instance, even if a methodology was shared with other fields, it is possible to claim uniqueness of that academic field if an original theory can be formulated using that methodology. Methodology is a tool, and what is important is to use that to produce original findings. At the same time, it is to formulate a systematic theory that is useful in understanding various social phenomena. However, the use of a tool differs depending on fields, and it is not to deny that a unique tool and its usage appropriate for educational research are to be worked out.

For phenomena related to society and humans not limited to education, I believe there are definitely cases that cannot be observed only in quantitative research. Thus, qualitative research is necessary. Moreover, clarifying causal relationship is not the only purpose of research of education, but there is no objection that an interpretive perspective is also important[16]. However, if the development of education as a social science is considered important, it is impossible to not have interest in causal relationship. Also, there is no need to give up making inference just because it is a case study. It can be said that we no longer live in a time where case studies meant only to compete the accumulation of findings related to facts, and people were indifferent to the logics of descriptive inference or causal inference (Kume, 2008, p.167).

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Notes

1. This article was originally published, in Japanese, in *The Japanese Journal of Educational Research,* Vol. 78, No.4, 2011
2. My field of specialization is educational administration and I am not fully knowledgeable in other various areas of education. Thus, this paper mainly considers areas that research education from the perspective of a social science. I believe, however, the aim of the present paper is a logic applicable to the field of education on the whole.
3. Hereafter, it indicates the cited page number of the translated version of KKV, if only page numbers appear.
4. Reasonably, there can be researches that do not aim to analyze empirically in education. For example, Merriam who is a researcher of adult education, in a textbook about research methodology, raised three types of educational research methods: empirical research, interpretive research (such as history and philosophy) and critical research (such as action research) (Merriam and Simpson, 2000 = 2010). However, even with researchers that adopt methods other than empirical research, it is necessary to know at least the summary of methodology that is described in the present paper.
5. Rather interpretive researches are often imagined than empirical case studies when qualitative research is mentioned in the field of education. For instance, researches that adopt methods such as field work, ethnography, and discourse analysis are dealt broadly as qualitative research in educational sociology (Shimizu and Uchida, 2009).
6. Examining the titles of 82 articles that were published in "Comparative Education: Bulletin of the Japan Comparative Education" for the recent past ten years (2001–2010), 70 of them deal with a case of a single country. In contrast, there are only 3 articles that are explicit about a cross-national comparison (Judgment cannot be made from the title of 9 articles). It is difficult to judge because there are cases where longitudinal comparison or regional comparison within a country are conducted even in a case with one country, but it can be pointed out that researches that individually describe cases of one country are the majority even in the recent years.

7. Also, lack of a theoretical model is an extremely important problem, but this is described later.
8. There is an opinion that a model of nomothetic causal relationship is not necessary if one is to take an interpretive viewpoint. On the other hand, in case studies in education, there are researches that are not clear about whether it takes an interpretive or empirical position, or there are researches that show no interest even in a theoretical model that clearly takes an empirical viewpoint.
9. Disputes related to methodology became vigorous in American political science after the book was published, and there are articles that critically examined KKV (Brady and Collier, 2005 = 2008).
10. Refer to Kohno (2002) and Kume (2008) for details of the method of agreement and the method of difference.
11. In educational policy studies, some municipalities that conduct progressive policies are selected, and often there are research studies that look for reasons why such an introduction of progressive policies in the municipalities was possible.
12. Refer to KKV (p.202–217) for details.
13. However, in a case where hypothesis testing advanced further and predicting the values of dependent variables was also a purpose, it cannot be denied that the validty of regression analysis decreases by ignoring the variable of currently in office or not.
    Comparative Education: Bulletin of the Japan Comparative Education Society
14. Reasonably, there can be idiographic and differential researches in quantitative research.
15. According to Imai (1990), generalization and differentiation are in a relationship of circulation, and it is only a difference in scenes they focus that they differ.
16. In methodology research in business administration, a new methodology to go beyond the conflict division between interpretive and empirical approaches, the importance of case method is pointed out (Mizukoshi 2011).

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