Dr Jasna Mažgon

From Monomethods towards Combined Research Approaches

Summary: In the previous issue of Contemporary Pedagogy (SP 4/2006) we wrote about epistemological, ontological and methodological presumptions on which so called paradigmatic relativism is based, the latter representing contemporary paradigm in the development of sociological and humanistic research, hence also in the field of education. The following contribution will show models which have emerged as a result of this development. Focus of interest which led to this article are combined research approaches, forms and possibilities of research execution, including quantitative and qualitative methodological starting-points.

Keywords: monomethods, combined methods, combined research models.

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Dr Jasna Mažgon, Faculty of Arts, University of Ljubljana; e-mail: jasna.mazgon@guest.arnes.si

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Introduction

Researching in the field of social and humanistic studies tends towards more integrated methodological approach, which should be focused on the needs of a particular researcher and research group regarding combining methods during the research process. Tashakkori and Teddlie point out that a part of this methodological integration encompasses greater accuracy of the language, which is used for denoting multiple methods. A beginner in such researching faces amazing multitude of terms in the field of social research: monomethods (quantitative, as well as quantitative, with all variant forms), multiple methods, mixed methods, multi-methodological researching, triangulation of methods, methodological mixes etc. (Tashakkori and Teddlie 1998, p. 14). This paper will predominantly use the terms monomethods and combined methods, which are more precisely discussed by the authors in their book, the latter being the basis of our summarisation as well as presentation of majority of models of combined studies. We shall at the same time try to present applicability of multi-methodological approaches in the case of action researches.

1 Evolutionary development from monomethods towards combined methods

The development went from application of one basic research method towards application of various methods. Transition took place after the end of 'war of paradigms era', which was followed by the period of 'compatibility thesis' and paradigmatic relativism (the matter was presented in greater detail in the previous issue of SP).

The path of development from combined methods towards combined research models encompassed the consideration of differences in the method itself as well as consideration of differences in all phases of the research

process. The question of linking epistemology and methodology during the debate on paradigm was essential for understanding of the way of influence of paradigmatic orientation on other phases of a research process (forming a problem, study models, analysis and interpretation of the data…) due to the fact that the emerging of multiple methods was considered solely as a matter of methodology.

The basic question relating the application of linking paradigm with method and its influence on other phases of a research process was raised by Creswell (1994): 'The most efficient use of both paradigms (qualitative as well as quantitative – added by J. M.) would suggest another step toward combining designs: Can aspects of the design process other than methods – such as the introduction to a study, the literature and theory, the purpose statement, and research questions – also be drawn from different paradigms in a single study?' (Ibid.p.176). The answer to that question has, by all means, to be affirmative if one wishes to discuss the connection of two paradigms. In the opposite case one of the paradigms (qualitative or quantitative) is bound to prevail leaving the other one just enough space to 'intrude' only in the field of data collecting methods and thus leaving all the other segments of a research going on by the principles of the prevailing paradigm. This fact was also supported by Creswell, who mentioned several cases in his book to present ways of using different paradigms and scientist's views in order to fruitfully employ them in all phases of research process.

Similar view has also been developed by Brewer and Hunter (2006), who see the application of multi-methodological approach in all phases of a research, not merely in the phase of measuring and data collection. They state that: 'the decision to adopt a multimethod approach to measurement affects not only measurement but all stages of research. Indeed, multiple measurement is often introduced explicitly to solve problems at other stages of the research process… These wider effects...of…multimethod tactics need to be examined in detail, including the new challenges that the use of multiple methods poses for data analysis, for writing and evaluating research articles for publication, and for doing research in an ethical manner' (Ibid. p. 9). The methods of measuring and data collecting in the first place have indirectly led to the evolutionary move from emergence of combined methods towards introduction of combined studies. This leap has actually been the hardest, considering the fact that a researcher is always committed to value one of the paradigms and that the greatest differences reveal themselves in a series of beliefs and convictions on the nature of reality and human cognizance. This question will undoubtedly be easier to solve where a research is undertaken by a group of scientists, who, per se, belong to different groups according to their orientation (more qualitative or quantitative and positivistic or constructivist), but will nevertheless search for the solution of the problem by reaching mutual consensus and thus paving the way for greater plurality of proceedings and results. In the case of a research which is undertaken by a single researcher, the problem of applying both paradigmatic approaches is probably more complicated due to exact reasons, which have been mentioned, although it is not completely excluded, especially in the phases of measurement and data processing.

Evolution process leading towards more frequent applications of combined methods and combined researches has even sped up in the last thirty years due to introduction of numerous new methodological tools, fast development of new technologies, which all enable easier and faster access and application of these methodological tools. Important source of fast development of combined methods and researches with combined models is also advanced communication within sociological and humanistic sciences which leads toward greater amount of interdisciplinary connection.

2 Taxonomy of researches with different methodological approaches

Three major types of researches, which were summarized on the basis of evolution review from mono-methods to combined study methods by Tashakkory and Teddlie (Tashakkory and Teddlie 1998, pp. 17–19), will be presented in the following.

Monomethod Studies

Mono-methodological researches are carried out by so called 'purists', who operate exclusively within one of the prevailing paradigms. Most of the recent researches lead us to the conclusion that the 'Era of the Purists' has been surpassed and that such researches are fading out.

Mixed Method Studies

Such researches incorporate qualitative as well as quantitative approaches in research methodology of a particular research or a research with multiple phases.

Creswell (1994) defined four models of combined methods:

- Sequential studies: a researcher firstly performs a qualitative phase of a research and after that a quantitative one or vice versa. Both phases are separated.
- Parallel/simultaneous: A researcher carries out a qualitative and a quantitative phase at the same time.
- Equivalent status design: a researcher uses qualitative and quantitative approach approximately equally in relation to the understanding of a phenomenon which is being researched.
- Dominant/ less dominant studies: a researcher executes a research 'within a single dominant paradigm with a small component of the overall study drawn from an alternative design' (Ibid. p. 177–183).

Tashakkori in Teddlie added to those four types of combined models a fifth one:

- Designs with multilevel use of approaches: researchers use different types of methods on different levels of data analysis. The data can be analyzed, for example quantitatively on the level of a particular student, qualitatively on the level of a class, qualitatively on the level of a school and qualitatively on the level of a county (Tashakkori and Teddlie 1998, p. 18).

Mixed Model Studies

Researches, which can be found under the term 'combined methodological models' were defined by Creswell, who described them as follows: 'This design represents the highest degree of mixing paradigms… The researcher would mix aspects of the qualitative and quantitative paradigm at all or many… steps'(Creswell, p. 177–178). The definition of mixed model studies set by Tashakkori and Teddlie is a bit different. They claim that 'these are studies that are products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within different phases of the research process' (Tashakkori and Teddlie 1998, p. 19).

Compared to models of combined methods, which are directed more to the application of different methods of measuring and gathering the data, giving less attention on other phases of a research process, combined models give more attention on other phases, such as a formulation of the researched problem, forming and verifying a theory, sampling, analysis and interpretation of the data. It is essential that in the researches, where combined methods are involved, under the term method one should understand the method of data collecting and not the research method in the sense of reaching different cognitive levels of the researched field. When we discuss the combined research models we should have in mind the methodological combination of research methods in all phases of a research process.

P. Mayring has also tried to support a request for connecting quantitative and qualitative research by a survey of concrete models, denying at the same time the possibility of describing them as a contrariety (Mayring 2001, 9.§). Namely:

Technical level of integration is represented by pieces of software, which have been recommended for the last twenty years for use as a support for qualitative research. The point is that qualitative research often involves enormous amount of materials. The decisive factor regarding these pieces of software is that a computer does not evaluate (analyze) but only supports analytical steps, which are eased and documented.

Regarding *the data level*, it is mainly the case of forming categories with the help of qualitative content analysis. It is important to know that these categories, after being founded, can also be statistically processed. One can determine the frequency of emergence of the categories within a material, add simple ordinal level systems (high, medium, low), calculate a measure of central tendency … When dealing with a system of categories the first step consists of qualitative analysis, the second of quantitative procedures, which are in the third step qualitatively interpreted.

On the level of *participants in a research* qualitative researches mostly deal with analyses of particular cases. Such analyses are regarded as the ideal of qualitative researching as they give us comprehensive view of a subject and enable us to describe complex relationship between an individual and their environment. The problem, which emerges at this stage, is the question of generalization of the results of such analyses. Mayring (Ibid., 20.§) sees the solution in gradual widening of the basis of a problem during our study of comparable cases. Different

strategies are possible here: inclusion of especially frequently appearing cases, confronting extreme cases or precise analysis of theoretical cases. The level of a particular case is thus surpassed and for the purpose of generalization the base of studied cases expanded. Such a way enables integration of qualitative and quantitative procedure on the level of participants – researchees.

On the *level of models* Mayring's typology is the closest to the one by Tashakkory and Teddlie, since it deals with combinational models. He claims that even stronger integration of qualitative and quantitative procedures lies in understanding of both types of analysis as procedural steps in a superior research model. Such combination of qualitative and quantitative analysis can lead to thinking of different models (Mayring 2001):

The first possibility of integration is represented by *models of previous studies* which are, in continuation, actually a case of classical variation of quantitatively oriented research procedure although in a phase of previous study with qualitative steps of analysis hypotheses are being reached. During further phases these hypotheses are evaluated by quantitative procedures.

The second possibility of combining quantitative and qualitative procedures is represented by *a model of generalization*, where qualitative elements have greater role and significance. Firstly, the whole qualitative research is carried out, which is also analyzed and evaluated and then not earlier than in the second step quantitative techniques which enable generalization of the results take place.

The third possibility of integration is seen in so called *model of absorbing*. The procedure is reverse here. Concluded quantitative research is continued by quantitative analyses. The results are therefore better interpreted and lead to explaining of found causal connections.

The fourth model of connecting qualitative and quantitative procedures is *a triangulation model*. This is the most complex intertwining of qualitative and quantitative procedures in a research process. A particular problem is being dealt with from different positions and views with different methods at the same time being not important to determine which approach is providing the best results. The results should be mutually supported, a cross-section of particular results representing the final result (Mayring 2002, p. 147–148). Within a frame of qualitative researching, the triangulation model is used as a central criterion for quality, where one does not expect to derive the truth from searching within a cross-section of analytical perspectives, but to gradually expand cognizance by mutual comparison of different approaches.

If we return to the fifth level of possibility of combining the quantitative and the qualitative, we shall see that Mayring founds it on *the level of common research logic* (Mayring 2001, 26.§). Overcoming frequently criticized contradiction will only be successful if common research logic is formed for both traditions. Mayring does not explicitly put a claim for paradigmatic relativism here, but he can be understood in the sense of digressing from dichotomy logic of both approaches to nearing. It is not a case of new research logic or paradigm but rather a quest for common grounds for executing a research, which will provide the best results.

The quest for common research path is often obstructed because classical methodological manuals of empirical researching require formulating hypotheses at the beginning of a research as well as application of large, even better representative samples, which are rejected by supporters of qualitative approach. As a consequence qualitatively directed projects do not follow regulated and directed scheme of procedure.

Textbooks and guidelines of empirical sociological researching, as a rule, decompose research process into ideally typical separate steps, such as forming the research questions, description of a sample, methods, presentation of results and interpretation. Mayring supports a presumption that such ideally typical model can be at some points expanded and thus giving space also for qualitative projects. Such common research logic for qualitative and quantitative approach would integrate both at some higher level (Mayring 2001, 27.§):

1. Explanation and specification of research questions
Relevancy,
problem related connection of research questions,
hypotheses *or formulating open questions*.

↓

2. Interpretation of a current theory
State of so far existing researches,
theoretical draft *prior / advanced comprehending.*

↓

3. Empirical basis
Selection and description of a sample *of a particular case.*

↓

4. Methodological concept
Collection, data processing, *or testing by a pilot study in case of new instruments for data collecting.*

↓

5. Results
Presentation, summaries, analyses,
return to hypotheses *or forming questions.*

↓

6. Conclusions
Criteria of quality, *generalization*
relevancy of results (on what?).

Extensions and alternatives have been implanted into the presented model in particular places, regarding in the first step a demand for explicit formation of hypotheses. If in this phase we accept preformed questions, which do not yet anticipate possible results, we also offer a possibility of incorporation to qualitative projects. On the other side, according to Mayring's opinion, such mode represents a possibility for qualitative projects to gain scientific credibility, a lack of which is often a cause of reproach by quantitatively oriented researchers. It so happens that some researchers start working on an interesting case within so far not researched field of practice commencing collecting data without previous development of clear research questions. Research results can be logically understood only in relation to concrete questions – also in qualitative projects. On the contrary the second step precisely in interpretatively directed approaches often represents a special force of qualitative analysis. Interpretative procedure (hermeneutic cycle) namely demands forming previous cognizance from an interpreter.

The third step demands expanding the cognizance of empirical basis. Qualitative projects in social sciences are nowadays entirely understood as empirical containing frequently small samples most often just one case as starting-point material. Even one case represents empirical basis and can be described and proved in its selection. Omission of representative sampling represents for qualitative projects a need for special argumentation and analysis of generalized results.

The fourth step, which is represented by exact definition of methods used for data collection, processing and evaluation, is an important issue for qualitative researching. This step is a central precondition for assurance of criteria of quality. According to Mayring's opinion it is necessary to abandon a claim for exclusive application of standardized instruments. Qualitative projects as a rule construct instruments anew, on a concrete case. Instruments in qualitative should therefore be beforehand tested on a small sample (Ibid, 28. §).

Regarding the next step of presentation of results for qualitative as well as quantitative projects, it should be obvious that they relate to in the first phase formulated questions and hypotheses. As for a qualitative research, it does not exclude the possibility of finding new views on the observed object, which were not comprised during the forming of questions. Regarding new angles in a research, it should be necessary to reshape research questions, define theoretical background according to new findings and thus shape new project framework. That would significantly raise and improve scientific credibility of a particular qualitative research.

The sixth step represents a special requirement for qualitative projects as they must define under which circumstances and with which aims should the results be generalized. It should be noted that, regarding case analyses, it is necessary to cite comparable cases, describe comparable projects and present arguments, where characteristics of a researched sample are similar to characteristics of a population, which is to be an object of generalisation.

3 Applicability of methodological approaches on an example of action researches

When comparing both presentations of combined methodological approaches (Tashakkori and Teddlie's 1998 in Mayring's 2001), we will see that both presentations regard simultaneous application of both approaches in all phases of a research process – from forming a research problem and questions, through collecting and processing data to final analysis and interpretation – as the highest achievement in combining qualitative and quantitative research. Going through the contents of research logic, one can't really separate qualitative and quantitative approach to research. Quantitative researches are more precise, explicit and predetermined, supposing that adequate variables can be identified in advance and are validly measured. Immediate orientation towards variables reduces possible disturbance, enables distinction and speeds up dense analysis. Qualitative researches are aimed at more open, temporary questions, on gathering data, which is above all aimed at open interviews and observation. There are less beforehand suppositions, including (non)determining relevant variables, which makes qualitative research more open, directed towards the context of action and aim as well as describing and judging by all participants.

Regardless of a fact that it is a matter of two different methodologies, their cognitions amalgamate. As seen in presented models, quantitative data for example come out as components of qualitative interpretations although they are frequently hidden behind a wide data processing. On the other side, qualitative cognitions tied to a local context are essential for reaching authentic alternative interpretations. Furthermore, on the level of conclusions and resolutions each conceptual theory or hypothesis supposes some »qualitative« conviction, which has an inevitable role in forming conclusions. The latter depend on actual relations which means that all research approaches are based on common sense, previous experience and logic of researched situation.

It may happen that both approaches are used in a research, quantitative as well as qualitative, but in a final analysis the results are significantly different. Using, for example, two different instruments for data gathering, we may find out that results of a questionnaire are different (or even diametrallly opposite) from results of open interview. It is up to a researcher to determine the cause of discrepancy. Was the first instrument precise enough in measuring? Was an interview perhaps biased due to our presentation, analysis or interpretation of answers? Combination of both approaches frequently shows complexity and diversity of researched field and it is the possibility of conflict between partial results and the search for causes which provides a basis for more integrated and deeper final analyses.

Methodology of action research does not contain rigidly directed methodological rules and is actually quite loose in its basis. It runs in spiral circles between action and reflexion, offering enough space for application of quantitative procedures on all levels. With such connection, action research projects gain in transparency and methodological sharpness. Instrumental/

technical character of research strategies is more strongly underlined, although it can lead to new dangers, if strict quantitative methodological principles are exceedingly followed (especially when interaction between a researcher and a researchee is involved). Action research gains by incorporating quantitative steps on intersubjectivity and authenticability and, above all, in generalization of results. All this provides arguments against objections of insufficient scientific character, which are still present among supporters of quantitative paradigm.

Conclusion

In contemporary expert and scientific literature one could hardly find prescribed models and precisely defined procedures of carrying out phases of a research for combining quantitative and qualitative approach. Presented and described models represent possibilities which are offered by such type of research, although a choice of a measure, quality and mode of research with combined approaches is left to a researcher's or a research team's decision. Regarding combining research models clear presentation of which phases, mode of application of different procedures as well as reached level is required, especially in a plan of a research. Without such precise definition results of a research can be diluted and lack in transparency and methodological sharpness.

Empirical researches, which in our country deal with problems in the field of education, are mainly quantitative, follow strict research phases from forming research questions and hypotheses to application of standardized instruments or instruments, which encompass variables stated in questions and hypotheses. Data are statistically processed with exacting procedures, which enable generalization; gathered samples possess great level of representativity. Application of quantitative and qualitative research approach, which are equally represented in all phases of research process, is rarely met. Most combined researches are limited on applying qualitative techniques and data gathering methods, which represent additional source in a database. Fast development of qualitative methodology has even influenced our researchers to find researches, which are defined as qualitative studies of a case, action researches etc., but they are rarely executed in a form of combined studies, i.e. supplemented with a quantitative approach.

References

Bortz, J., Döring, N. (1995). Forschungsmethoden und Evaluation. Berlin: Springer.

Brewer, J., Hunter, A. (2006). Foundations of Mulimethod Research: Synthesizing Styles. London: Sage.

Creswell, J. W. (1994). Research design: Qualitative and quantitative approaches. Thousand Oaks: Sage.

Fielding, N., Schreier, M. (2001). Introduction: On the Compatibility between Qualitative and Quantitative Research Methods [54 odstavkov]. Forum Qualitative Sozialforschung / Forum Qualitative Social Research [On-line Journal], 2(1). http://qualitative-research.net/fqs/fqs-eng.htm [retrieved 28. 2. 2001].

Flick, U. (2002). An Introduction to Qualitative Research. London: Sage.

Frieberthäuser, B., Prengel, A. (1997). Handbuch qualitativer Forschungsmethoden in der Erziehungswissenschaft. Weinheim: Juventa.

Guba, E. G., Lincoln, Y. S. (2000). Paradigmatic Controversies, Contradictions and Emerging Confluences. In: Denzin, N.K. & Lincoln Y.S. Handbook of Qualitative Research, Thousend Oaks (2nd.Ed.), London, New Delhi: Sage, p. 163–188.

House, E. R. (1994): Integrating the Quantitative and Qualitative. In: Reichardt, C. S., & Rallis, S. F. (Edit.): The Qualitative – Quantitative Debate: New Perspectives. San Francisco: Jossey-Bass Publishers, pp. 13–22.

Kelle, U. (2001). Sociological Explanations between Micro and Macro and the Integration of Qualitative and Quantitative Methods. Forum Qualitative Sozialforschung / Forum: Qualitative Social Research (On-line Journal), 2(1). http://www.qualitative-research.net/fqs-texte/1-01/1-01kelle-e.htm [retrieved 28. 3. 2001].

Marentič – Požarnik, B. (2001): Uspešna prenova terja enakopravnejši položaj 'alternativne' raziskovalne paradigme in učitelja raziskovalca. Sod. pedagogika, 52, No. 2, pp. 64–80.

Mayring, F. (2001): Kombination und Integration qualitativer und quantitativer Analyse. Forum Qualitative Sozialforschung / Forum Qualitative Social Research (Online-Journal), 1(3). http://qualitative-research.net/fqs/fqs.htm [retrieved 3. 3. 2001].

Mayring, P. (2002): Einführung in die Qualitative Sozialforschung. Weinheim: Beltz Verlag.

Tashakkori, A., Teddlie, C. (1998): Mixed Methodology. London: SAGE Publications.