

COMBINATION OF QUALITATIVE AND QUANTITATIVE METHODS IN EDUCATIONAL MANAGEMENT DIAGNOSTICS

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ABSTRACT. One of the most significant factors, determining effectiveness of any organization is an optimal management of the system, which is perceived as a social organization. Otherwise strategy errors in management potentially undermine the whole system of the organization. Assuming that management based on authoritarian relations may illusionary create an image of swift and effective management however, as it has been proved by definite studies, it actually stiffens the management however as it has been proved by definite studies, it actually stiffens the organization and drives it towards management and functional crisis (Stahle, 1994). On the other hand, management based on humanistic – democratic relations liberates human resources, foster social self – expression in an individual and a group, awaken creative and inner motivated potential of an individual. Management of educational institutions, being in between management and education/pedagogy, is a specific for scientific research. It should be noted, that a definite input in research work on management of educational institutions on the background of definite organizations does exist. In spite of some positive input in the research on educational management (e.g. Lenz, 1991, Merkys, 2000; Wissinger, 1996; Hopkins, 1998; Zelvys, 1994, 1999) it has to be stated that one sphere of such research management diagnostics (including educational management diagnostics as well) has been neglected.

Research problem. The following questions are the background of the research problem: *Which theory, tradition should be prioritized in a concrete research of educational management? Which theory is optimal from the standpoint of educational management practice that helps to emancipate the management as a sphere of social practice? IS it possible to find the optimal theoretical priority by empirical way, using non – standardized questioning? Which management theory that is proven in the other cultural environment could be applied without limits in Lithuania?*

Aim. To test triangulation procedures of the methods and to assess explorative – heuristic effectiveness of these methods in the conditions of a definite diagnostics in educational management research

The background of the research, which is presented in a paper, illustrates one methodological standpoint point. While studying social attitudes and social behaviour of people (here of school heads) the deeper cognition is possible when there are attempts to combine the quantitative and qualitative methods

KEYWORDS: *qualitative methodology, quantitative methodology, hermeneutics, diagnostics.*

THE CONTEXT OF THE RESEARCH

The last ten years the Lithuanian system of education and its management undergo the substantial transformation. Part of the changes is going on naturally and spontaneously, some

because of the purposeful reforms. The ideological orientation of the education and its legitimate basis, humanistic and democratic background of it have changed, the element of competition and commerce become evident, the schools start broader project activities and international partnership. The ICTs were quite well assimilated in a short time. For example, the system of education in Lithuania is much better computerized than the system of Health care. Otherwise some disadvantages manifest themselves. The demographic crisis and economic logic forces to make changes in school network, which was highly outspread in socialist times. Some of schools are being closed, some are reorganized are joined together. Many teachers face unemployment and thus the climate in organizations becomes worse because of tension. Though the democratic intercourse is legitimated *de jure*, the communities and the self-governing institutions are functioning in schools the press succeeds to disclose the facts of authoritarian school management when the community is nominal and the self - governing institutions and trade - unions have no rights. The media pays attention to the facts of non-constructive conflicts between heads and teachers and even about such extremities as physical punishment of the learners.

From many cross - cultural “East – West” studies it is known that the community of teachers of East block countries is characterized as presenting more autocratic attitudes than their colleagues in the West. The reason here is trivial – the authoritarian structure of the society is logically reflected in the structure of the personality and the professional community. Such a tendency contradicts the social order that the democratic society delegates to school (Hurrelmann, 1991, 1994; Lederer, 1982a, 1982b; Mazeikiene, Merkys, 2002; Merkys, Ruskus, 2000). The climate of the organization charged with authoritarianism and the corresponding social intercourse isn’t and can’t correspond to the modern educational environment. Here the Lithuanian proverb “The fish starts spoiling from its head” gets to the very point. It is very important that the management and the social intercourse in the school were grounded on the humanistic and democratic position. Unfortunately there is difference between what is declared and what is in reality. The conception about “the authority of the school head”, “his/her style of management”, “the authority of the teacher” to a certain extent is a deep cultural construction. That is a typical trait construction, which can’t change in the consciousness of the professional community very fast. It is obvious that the community of the teachers and school heads of the country is confronting with such challenges to overcome which successfully the structure of mentality and attitudes is required (Neulinger, 1990; Nevermann, 1982; Staehle, 1994; Rolff, 1993).

Naturally that we are talking about humanistic, democratic, dialogical attitudes as the contrast to authoritarian and dogmatic attitudes. Exactly such attitudes open possibilities to free the people of organization creatively, to cherish the culture, climate and social intercourse of the organization that are becoming the favourable environment of socialization and education (Klosinski, 1995).

THE RESEARCH OF MANAGEMENT DIAGNOSTICS

Conceptual framework

It was decided to perform the research from the sphere of the management diagnostics, which could diagnose what model (or models) of social intercourse and climate is developing in comprehensive schools of Lithuania. What model authoritarian or humanistic democratic prevails and is dominant? The theoretical conception of the research is based on three different theoretical traditions: a) humanistic psychology and pedagogy; b) theories of social psychology about authoritarian personality; and c) symbolic interactionism.

Deliberately it was resigned to do the traditional questioning which usually is executed with the help of questionnaire with closed-ended questions and is processed only quantitatively. There was a worry that in such a way it wouldn’t be able to escape the orientation of the respondents towards the

social expectations and the research would be shallow. It was decided to refer to triangulation—the assimilation of quantitative and qualitative methods and assimilation of standardized and project methods (Huber, 1989). The original methodology of reflection on the managerial mistakes performed by the school heads had been created. Anonymous questionnaire, which required open (free) answers, was prepared and disseminated among the school heads. As it could be expected though the quote of reciprocity of questionnaires was a bit over 50% it was not high – sounding but nevertheless acceptable/passable. The formulation of the question is given in the Table 1.

Table 1. The format of the open-ended question formulation and the answer

The stimulating material of non-standard test	The format of the answer (the way of registering the response behaviour)
<p>Name five most evident mistakes you performed when communicating with:</p> <ul style="list-style-type: none"> • Pupils • Teachers • Authorities (<i>head, deputy heads</i>) • Operating personnel • Staff of the educational department • Parents of pupils 	<p>Free answers are given in written</p>

Usually mistakes leave psycho-emotional traces in the man’s mind. The reflection of such mistakes can be treated as quite intense and “colourful” psychometric stimulus. Itself the concept of the “mistake” remains quite abstract and doesn’t enforce any particular contents for the one who is being questioned. On the contrary, he/ she has to generate and verbalize the particular contents. The situation when the investigated person attains a strong but quite abstract stimulus is par for the project testing like Rorschach’s test, drawing, history interpretation tests and others. Supposedly that with appropriate psycho-technical means the extracted stream of consciousness with its heuristics and in formativeness in many cases is much more advantaged than “Ticking and crossing” in the closed-ended-type questionnaire (Saparnis, Merkys 2000a, 2000b). The main advantage is that the investigated are not forced with the contents of alternates either with particular assimilation of them (like in close type questionnaire). If in the closed-ended-type questionnaire there appear questions and propositions the contents of which isn’t actual or known to the investigated then the possibility to receive a formal answer is greater.

On the other hand, if the investigator due to the limited working theory doesn’t include any important aspect or question of the research into the questionnaire then the corresponding information for the science (or at least for the research) is practically lost. Besides the purposeful orientation towards the emotionally and significantly strong irritant – the reflection of the mistakes made by the head of institution opened the possibility to disclose the construction, which is being diagnosed in the aspect of unity of the cognition in the consciousness of the investigated person and his/her emotional experience (Blumer, 1969).

In such a case the psycho-semantic structures coming out of the consciousness of the investigated person, which later become the “raw material” for quantitative and qualitative content analysis turn to be the essential diagnostic indicator. The respondents gave 187 answers consisting of approximately 3 sentences to the 6 mentioned questions. Thus a great mass of answers came back which makes about 3, 4 thousand sentences ($6 \times 3 \times 187 = 3366$).

Having such a plentiful of text material eventually it is inevitably to turn to the system of strict variables. Otherwise it is impossible to apply the quantitative research method. If it was decided to refer only to the qualitative level then after reading several sentences it would be difficult to remember what was the difference, e.g. between the first and the fifteenth sentences or how were they related. Today the qualitative analysis based on the computer is in fashion. The frequency, the

contingency of characteristics can be calculated like this or the taxonomies can be formed but you can't fully delegate the computer such a subtle ingenious procedure like creating categories. The investigator him/herself should do it of course with the help of computer. Thus at first the qualitative content analysis of the text material was fulfilled. The manifest analysis principle was used. In other words it wasn't looked for the hermeneutic sense of the propositions. Just the sentences consistent in their implication were joined in categories. There were formed from 33 to 50 categories. So after the categories were formulated the primary text material was condensed from 10 to 20 times.

Then the formulated categories were controlled with the help of 5 outer experts. The experts were given the table with 4-5 most typical propositions of the formulated category. Instead of the title of the category a free cell of the table was left asking the expert to label those propositions, i.e. to form a category (see Table 2). If the labels formulated by experts were semantically consistent such categories were treated as valid.

Table 2. The example of the task set to the experts to control the intersubjectivity of categories

No.	Empirical indication (Mistakes made by school heads when communicating with pupils)	Category	Remarks
1	"The situation wasn't evaluated and not enough of information collected when the decision was taken."		
	"Hasty decisions."		
	"When solving the conflicts I didn't clear all the circumstances."		
	"Sometimes I take hasty decisions being short of information."		
2	"I don't always fulfill what I had promised."		
	"You promised but didn't carry out your promise, because you promised before you'd thought it over and analyzed the situation."		
	"I don't always keep my word."		
	"The promises are not executed because of various reasons."		
3	"Too high insistence on pupils."		
	"I ask too much of my pupils in the lessons."		
	"I ask to keep to the rules and regulations accurately."		
	"Sometimes the demands are too high and too strict."		
x_i			

The validity of many categories was from very high to sufficient evaluation (see Table 3 and its subtables). In some cases it wasn't possible to ground the intersubjectivity of some categories and then they and the propositions they embraced were eliminated from the further analysis.

Table 3. The levels of the intersubjectivity of the categories: examples of success and unsuccessful cases

Subtable 3.1. Very high (trivial) consistence of expert evaluation (mistakes of heads of institutions made when communicating with pupils)

Empirical indication	I Expert	II Expert	III Expert	IV Expert	V Expert
"I grabbed by hair."	Physical punishment	Physical punishment	Physical punishment	Using physical punishment	Physical punishment
"Sometimes when I lose self-control I pull a pupil by ears"					
"In the beginning of managerial career I used the physical punishment. These were rear cases."					
"Using physical punishment"					

Subtable 3.2. High consistence of expert evaluation (*mistakes of heads of institutions made when communicating with pupils*)

Empirical indication	I Expert	II Expert	III Expert	IV Expert	V Expert
“When making decisions the situation wasn’t well estimated, not enough of information was collected.”	Decision taken being short of information	Not weighed decisions	Not grounded decisions	The hasty decisions	Not grounded decisions
“Hasty decisions.”					
“When solving the conflicts I didn’t clear all the circumstances.”					
“Sometimes I take hasty decisions being short of information.”					

Subtable 3.3. Sufficient consistence of expert evaluation (*mistakes of heads of institutions made when communicating with pupils*)

Empirical indication	I Expert	II Expert	III Expert	IV Expert	V Expert
“To treat every pupil equally.”	Deficiency of equal behavior with pupils	Categorizing the pupils	Discrimination of pupils	Diving pupils into gifted and weak	Selecting pupils
“To early started to believe that nothing will get out of some pupils.”					
“Too great attention to the leaders of the class, i.e. the gifted stems the confidence of the other pupils.”					
“The public praises to the gifted and the opposition to those who lack motivation.”					

Subtable 3.4. Very low consistence of expert evaluation (*mistakes of heads of institutions made when communicating with teachers*)

Empirical indication	I Expert	II Expert	III Expert	IV Expert	V Expert
“Once I tried to prove what I didn’t grasped myself.”	Subordination	As if authoritarianism, as if being not in place	Business like -intercourse	Avoiding near relationship with teachers	The importance of teachers’ interests
“Sometimes when the teacher is obviously incorrect I interrupt his argumentation.”					
“I avoid to have friends in the staff.”					
“Often I try to defend the teachers from the pupils’ pretensions.”					

The peculiarity of the methodology is that in the last phase of the research the hermeneutic content analysis was started to be use. At first it wasn’t thought to use. How did it happen?

The inevitability to interpret at least the most frequent categories from one or other universal theoretical positions grew up. It was substantiated by concepts of humanistic psychology and pedagogy that gave the starting-point to the procedure of interpretation. After the knowledge of social psychology about the authoritarian personality become very important in the context of the research. The quantitative research of the authoritarian attitudes of teachers executed by the author of this Paper was also significant (e.g., Merkys, Gribaciauskas, Useckiene, 2002). It was illuminated that the authoritarian attitudes in the teachers’ community in our country can be described as conditionally the mass phenomenon. According to theory of social attitude research and the practice of seven decades it is known that on the whole the attitudes of any content have the tendency to convert to model of autocratic (dogmatic, radical) attitudes or to the model of democratic (dialogic, humanistic, liberal) attitudes. The identification of the empiric manifestation of the autocracy in the psycho-semantics of the school heads was the target of the research. And such attitudes were identified. E.g., in anonymous questioning some school heads confessed that they used physical punishment for the pupils.

When generalizing the results a dilemma occurred. It noted the certain risk of the research and disclosed that the *manifest content analysis* despite all its objective merits sometimes can lead the research to the ‘deadlock’ though it can be executed precisely according to the methodology. In such research the concrete question emerged: ‘How to interpret the reflection of the mistakes of the school heads that reflected the intercourse with the operational personnel?’:

- „I control my personnel too little“
- „I can't bring myself to punish, to take measures“
- „I lack strictness, insistence“
- „I can't trust anyone. If only I don't inspect everything will be done not thoroughly“
- „Only lazy bones and careless people surround me, especially pensioners“
- „Too much democracy, that's why there's no order in school“

Manifest content analysis allows treating the words of the heads of schools straightforwardly. You should imagine that there's a good thoughtful director surrounded with careless untidy personnel and he/she tries to escape penalties for them. The hermeneutic analysis allows making deeper interpretations and we are convinced that that's correct. The similar answers, to be more precise the categories formulated on their basis, were interpreted as the indicators of the autocracy. Indirectly such answers witness the negative view towards the employees, keeping to stereotypes, lack of confidence, hidden aggression, sympathy with and longing for the hard administrating. After all questions arise, who if not the director are forming the staff/personnel of the school? According to the law of the country he can dismiss the pensioner without a great difficulty. That means that the director himself/herself creates the critical situation and upholds it. Besides the autocracy manifestation it can be treated as elementary managerial dysfunction.

On the other hand, the dilemma occurred how to treat such confessions of the heads of institutions about their intercourse with personnel:

- „I don't know how to do it, I can't listen to the people“
- „I show too little of human attitude“
- „I show the subordination and distance too evidently“
- „I associate with people only incidentally“

Following the manifest content analysis such propositions and categories should be interpreted straightforwardly. You should imagine that there exists such a type of a head of a school who isn't able to listen to the employees, shows the social distance, and is the emotionally cold and indifferent to the staff / personnel. The picture of such a man and a director isn't attractive at all. Unfortunately the manifest content analysis especially in the context of previously discussed autocratic indications, allows interpreting such categories in the different way. If the head of the school acknowledges that he/she is emotionally cold to the staff and associates incidentally with them the supposition can be formulated that he/ she is tended to reflect the social professional intercourse and remains flexible.

It is necessary in the context to take into account the technique, which helped to search out the propositions of the heads of schools especially it is important to remember the origin of the projective nature of the methodology.

If the head of the school is asked to remember the mistakes which he made communicating with his employees and the first idea that strikes to his head is “I lack strictness...” or “Too much of democracy...” then such psycho-semantics testifies nothing else but autocracy. On the other hand, if in the analogical situation the first answer is “Too little of human attitude...” or like it then such an answer at least in the context of this research can be reasonably treated as indication, which is contrary to autocracy. Here we have to talk about the specific “turned inside out” interpretation of answers. On the ontological level the theoretical key to a “turned inside out” interpretation of the answers of the school managers is the symbolic interactionism. It asserts that people grasp and

construct the psychosocial reality in not objective way but through the prism of their subjective conceptions and mental images.

The hermeneutic content analysis gives the epistemological key for such “turned inside out” interpretation. It also enables and obligates the researcher to look for the deeper and hidden meanings. Even the hermeneutics empowers the researcher more detailed and deeper to reconstruct the phenomenon of the consciousness, social behaviour and human activities on the background of the psycho-semantics that is extracted by the means of the *project* methodology (Oevermann, 1979; Mayring, 1988).

In this context there’s no will to overload the audience with the percentage frequencies of different categories as well because they were published for several times. But nevertheless it is worth to mention that the data of the factorial and contingency analysis proved the hypothesis about the convergence of characteristics (this time the psycho-semantic structures) in tone of the models – autocratic or liberal – democratic. Though, it should be said, that the analysis of statistic connections was to some extent limited and selective. It happened like this because not a few categories were not of very high frequency. The more important are the methodological (epistemological) outcomes of the research. It should be mentioned that it was a typical triangular research (see Table 4).

Table 4. The consistence of quantitative and qualitative methods in the research

The procedure of the research/ the stage	The consistence of the elements of quantitative and qualitative methodology
The presentation of the stimulus in the open questionnaire with the elements of project methodology	Qualitative analysis
Formulating the categories	Qualitative method (manifest content analysis)
Validation of categories, evaluation of the categories formulated by experts	Qualitative method (manifest and hermeneutic content analysis)
Counting the frequency of formulated categories and statistic connections, rating, cluster analysis, factorial analysis, and contingency analysis.	Quantitative method
Interpretation of categories using the manifest and hermeneutic content analysis	Qualitative method

CONCLUSIONS

The research allowed grasping the matters significant for the methodological experience:

- 1) It became clear that the manifest analysis even when executed according to the canon could be limited and misleading. The whole interpretation of the research would have taken another direction and the different conclusions would be formulated if only manifest analysis would be taken into account. Exactly the hermeneutic approach opened new deeper and fuller possibilities of the analysis.
- 2) On the other hand there’s no background to say that the manifest content analysis is of no worth. It was sensible to start the hermeneutic analysis then when the qualitatively representative categories and the psychosemantic structures were founded. If the hermeneutic analysis were started in the beginning then the risk of the scattered categories and the operation on not valid psycho-semantics would reveal themselves.
- 3) It became clear how much productive can be the way of referring to the classical approved and universal theories and conceptions, to be more precise referring to their combination. Here we have in mind the concept of autocratic personality and the conception of the autocracy, the theory of symbolic interactionism and humanistic psychology.
- 4) Triangulation enabled to disclose the psycho-semantics of the professional community of the school managers deeper and fuller than it could be done if the traditional quantitative research was done. By the means of the project methodologies the obtained text material is

an informative indicator enabling to judge about the individual and collective consciousness of the social subjects and the nature of the social behavior, about the factual social climate of the organization.

- 5) By the way partially by the help of the project methodology the disclosed psycho-semantics if the school heads displays a lot of stimulating material, which in the future can be used in creating the traditional quantitative test to investigate management diagnostics and culture (climate) of organization.

As it is known the supporters of the hard methodology treat the qualitative methods and even the triangulation rather skeptically. It is symptomatic that the social researcher who during the last decade of years with minimal exceptions has been practically performing only the quantitative researches formulated all the conclusions favorable to the qualitative methodology and triangulation.

IMPLICATIONS

- Combination of qualitative and quantitative research methods with the purpose to identify the main educational management problems has proved to be valid.
- Attitudes of the respondents on social relations management and on the notions of humanistic psychology and humanistic pedagogy, social psychology on an authoritarian personality and interpretation of symbolic interactionism at the theoretical level have also proved to be valid.

REFERENCES

1. Blumer, H. (1969). *Symbolic Interactionism: Perspective and Method*. Berkeley and Los Angeles: University of California Press.
2. Gribaciauskas, E. Useckiene, L., Merkys, G. (2002). Pedagogu nuostata i fiziniu ir psichologiniu sankciju taikyma ugdymo tikslais. ISSN 1392-0340. *Pedagogika*, 56. 61-69 p.
3. Hopkins, D., Ainscow, M., West, M. (1998). *Kaita ir mokyklos tobulinimas*. Vilnius: Tyto alba.
4. Huber, G. L. (1989). Qualität versus Quantität in der Inhaltsanalyse. In Bos, W. und Tarnai, Ch. (Hrsg.), *Angewandte Inhaltsanalyse in Empirischer Pädagogik und Psychologie* (S. 32 – 47). Münster, New York: Waxmann.
5. Hurrelmann, K. (1994). *Familienstreß, Schulstreß, Freizeitstreß: Gesundheitsförderung für Kinder und Jugendliche*. - Weiheim ; Basel : Beltz.
6. Hurrelmann, K.& Ulich, D. (1991). *Neues handbuch für Sozialisationsforschung*. - Weiheim ; Basel : Beltz.
7. Klosinski, G. (1995). Macht, Machtmißbrauch, Machtverzicht im Umgang mit Kindern und Jugendlichen.
8. Lederer, G. (1982a). Autoritarismus: Einstellungen bei westdeutschen und amerikanischen Jugendlichen. In K.Wasmund (Hrsg.), *Jugendliche: Neue Bewusstseinformen und Politische Verhaltenweisen*. Stuttgart: E.Klett.
9. Lederer, G. (1982b). Trends in authoritarianism: A study of adolescents in West Germany and in United States since 1945. *Journal of Cross-cultural Psychology*, 13(3), 299-314.
10. LENZ, J. (1991). *Die Effective School Forschung der USA – ihre Bedeutung für die Führung und Lenkung von Schulen*. Frankfurt am Main / Bern New York / Paris: Lang.
11. Mayring, P. (1988). *Qualitative Inhaltsanalyse*. Weinheim: Deutscher Studien Verlag.
12. Mazeikienė, N. Merkys, G. (2002). The role of youth's authoritarian attitudes measurement investigating the hidden curriculum. *Socialiniai mokslai*, ISSN 1392-0758. 2002, nr. 5(37), p. 88-96.
13. Merkys G., Gribaciauskas E., Useckiene L. (2002). Pedagogų autoritarizmas kaip diagnostinis konstruktas: struktūros klausimai. *Socialiniai mokslai*, ISSN 1392-0758. 2002, 1 (33), p.27–41.
14. Merkys, G. Saparnis, G. (2000). Psichosocialines vadybos problemos organizacijoje: santykių kritinis vadovas – techninis personalas. *Organizacijų vadyba: sisteminiai tyrimai*, ISSN 1392-0758. 2000, 17, 215-225.

15. Merkys, G. & Ruskus, J. (2000). Les attitudes professionnelles des éducateurs spécialisés en Lituanie: les particularités socioculturelles. *La nouvelle revue de l' AIS: adaptation, intégration scolaires et éducation spécialisée*, ISSN 1289-0065. 2000, N 2, 138-151.
16. Neulinger, K. U. (1990). Schulleiter – Lehrerelite zwischen Job und Profession. Herkunft, Motive und Einstellungen einer Berufsgruppe. Frankfurt / Main: Haag + Herchen.
17. Nevermann, K. (1982). Der Schulleiter. Juristische und historische Aspekte zum Verhältnis von Bürokratie und Pädagogik. Stuttgart: Klett.
18. Oevermann, U. (1979). Die Methodologie einer "Objektiven Hermeneutik" und ihre allgemeine forschungslogische Bedeutung in den Sozialwissenschaften. In Soeffner, H. G. (Hrsg.), *Interpretative Verfahren in den Sozial- und Textwissenschaften* (S. 352 – 434). Stuttgart: Metzler.
19. Rolff, H. G. (1993). Wandel durch Selbstorganisation. Theoretische Grundlagen und praktische Hinweise für eine bessere Schule. Weinheim / München: Juventa Verlag.
20. Saparnis, G., Merkys, G. (2000a). Compatibility of Qualitative and Quantitative Methods in School Management Diagnostic: Hypothesis and First Results// *Social Sciences*, ISSN 1392-0758. 2000, 2 (23), 43-55.
21. Staehle, W. H. (1994). *Management: Eine verhaltenswissenschaftliche Perspektive* - 7. Aufl. Verlag Franz Vahlen: München.
22. Wissinger, J. (1996). *Perspektiven Schulischen Führungshandelns*. Weinheim; München: Juventa.
23. Zelvy, R. (1994). Changing Concepts of Educational Management in Lithuania. In Hamalainen, K. and Van Wieringen, F. (ed.) *Reforming Educational Management in Europe*. De Lier: Academic Book Center, 27 – 50 p.
24. Zelvy, R. (1999). *Švietimo vadyba ir kaita*. Vilnius: Garnelis.