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### METHODOLOGY AND HISTORY OF PEDAGOGY МЕТОДОЛОГІЯ ТА ІСТОРІЯ ПЕДАГОГІКИ

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## APPLICATION OF CONTENT ANALYSIS METHOD IN PEDAGOGICAL RESEARCH

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The article presents the possibilities of applying the method of content analysis in pedagogical research carried out by future teachers. The authors emphasize the importance of preparing future teachers of geography for the organization and implementation of scientific and pedagogical research in professional activities. It is noted that research activities of students are a natural continuation and deepening of the educational process by studying specific topics and problems using a system of methods of pedagogical research, which contributes to the development of scientific and pedagogical thinking, the need for intellectual development, self-development and self-education.

It is stated that content analysis is an important tool of scientific research, which provides a step-by-step procedure for studying the basic category (concept, pedagogical phenomenon) in the system of psychological and pedagogical sciences. The essence of this method is to consistently and systematically record the units of the studied content (certain meaningful concepts), identify the frequency of their use, as well as to trace the relationship with the content of the entire document and group them for different purposes within a conceptual scheme or theory, in particular to study their specifics.

The step-by-step procedure of content analysis in the process of studying the essence of pedagogical concepts is determined. Different approaches to the application of content analysis

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are presented on the example of such categories as "talent", "strategic competence", "practice-oriented learning". The prospects and capabilities of the method under study in the field of construction of definitions of the analyzed concepts are illustrated.

It is concluded that content analysis in pedagogical research is an up-to-date and relevant method, which provides a powerful toolset for working with the conceptual apparatus of pedagogy, and contributes to the development of theoretical thinking of future teachers.

**Key words:** scientific research, scientific-pedagogical research, methods of scientific-pedagogical research, students' research, content analysis of pedagogical concepts, quantitative and qualitative analysis, stages of the content analysis procedure.

#### ЗАСТОСУВАННЯ МЕТОДУ КОНТЕНТ-АНАЛІЗУ У ПЕДАГОГІЧНИХ ДОСЛІДЖЕННЯХ

#### О. Є. Антонова, Т. В. Андрійчук, О. В. Антонов

У статті представлено можливості застосування методу контент-аналізу у педагогічних дослідженнях, які здійснюють майбутні вчителі. Автором актуалізовано важливість підготовки майбутнього вчителя географії до організації і здійснення науковопедагогічних досліджень у професійній діяльності. Зазначено, що науково-дослідницька діяльність студентів є природним продовженням і поглибленням навчального процесу шляхом вивчення конкретних тем і проблем з використанням системи методів педагогічних досліджень, що сприяє розвитку науково-педагогічного мислення, потреби в інтелектуальному становленні, саморозвитку та самовихованні.

Констатується, що важливим інструментарієм наукового дослідження виступає контент-аналіз, який передбачає поетапну процедуру вивчення базової категорії (поняття, педагогічного явища) у системі психолого-педагогічних наук. Сутність цього методу полягає у послідовному і систематичному фіксуванні одиниць досліджуваного змісту (певних змістовних понять), виявленні частоти їх уживаності, співвідношення зі змістом усього документа та їх групування з різною метою у межах певної концептуальної схеми або теорії, зокрема для дослідження їх специфіки.

Визначено поетапну процедуру здійснення контент-аналізу при дослідженні сутності педагогічних понять. Представлено різні підходи до застосування контент-аналізу на прикладі категорій "обдарованість", "стратегічна компетенція", "практикоорієнтоване навчання". Проілюстровано можливості досліджуваного метода при конструюванні визначень аналізованих понять.

Зроблено висновок, що застосування контент-аналізу у педагогічних дослідженнях є досить актуальним, доречним і цікавим методом роботи з поняттєвим апаратом педагогіки, який сприяє розвитку теоретичного мислення майбутніх вчителів.

**Ключові слова:** наукове дослідження, науково-педагогічне дослідження, методи науково-педагогічного дослідження, науково-дослідницька робота студентів, контентаналіз педагогічних понять, кількісний та якісний аналіз, етапи процедури контентаналізу.

Introduction of the issue. The research work of a teacher (geography teacher in particular) is an integral part of his professional and pedagogical activities, as well as an important aspect of the formation of his personality. Therefore, one of the indicators of the quality of training of future teachers of geography is their

readiness to conduct pedagogical research as a professional ability to conduct scientific analysis of pedagogical activities, which consists of independent search and creative activity.

Students' research work in pedagogy provides a deep understanding of the essence of pedagogical phenomena, which enhances their activity in the educational process, promotes the solution of pedagogical problems, and serves as a powerful tool for training competent professionals.

Thus, the above-mentioned activity is one of those that serve as a natural continuation and deepening of the educational process by studying specific topics and problems using a system of methods of pedagogical research, which promotes development of scientific and pedagogical thinking, the need for intellectual development, development and self-education.

Current state of the issue. The problem of organizing research work is reflected the domestic in Yu. Hrytsai, (Yu. Babanskyi, V. Zahviazynskyi, V. Kozakov, V. Plonskyi, O. Rudnytska, M. Soldatenko, M. Sorokin and other) and foreign scientific literature (V. Okon and other). Scientists have conducted a number of studies on the methodology of pedagogical research (S. Honcharenko, V. Kraievskyi other); training of future specialists for activities (P. Horkunenko, research O. Pryhodko, N. Yakovlieva, implementation of scientific activity in pedagogical institutions of higher (V. Andrieiev, education V Moliako, V. Uspenskyi and other). importance of the problem of preparing future teachers for research pedagogical activities is indicated by foreign experience, covered in the works of Ukrainian (I. Zadorozhna, L. Ziaziun, T. Koshmanova and other) and foreign Ch. Siaoman, (L. Brice, G. Golm, S. Florio-Rayen and other) scientists.

Scientific research work of future teachers within the curriculum and programs of psychological, pedagogical professional disciplines and mandatory for each student and includes various types of research activities (writing reports, articles, abstracts, laboratory work and research tasks, preparation and substantiation

of research papers, dissertations, etc.), which involves studying the basics of scientific research process, including the concept of research methodology and scientific organization of work, independent work with corresponding literature, pedagogical experiment. processing of experimental data and, above all, analysis of basic concepts in particular. Often the ambiguity of the conceptual apparatus of pedagogy causes difficulties for students during research. Therefore, we consider it extremely important to teach the future teacher to compare, contrast, analyze the basic concepts of the issues under highlight their research. essential features. construct their definitions of the main categories.

**Aim of research** is presentation of step-by-step methods of implementation of the analysis of concepts and derivation of own definitions on the basis of mastering the method of content analysis by young researchers.

Research methods. During implementation of scientific research, future teachers should get acquainted with the conceptual apparatus science, the degree of mastery of which depends on how accurately, clearly the young competently and express researcher will his/her thoughts, substantiate a fact, etc. An important tool at this stage of scientific research is content analysis, which provides a step-by-step procedure for studying a certain category (concept, pedagogical phenomenon) in the system psychological and pedagogical of sciences.

Content analysis is a standard method of research in the social sciences, the subject of which is the analysis of the content of text files and products of communicative correspondence (e.g. comments, forums, e-mails, articles, etc.) [5] to further meaningful interpretation of quantitative and qualitative patterns. Content analysis is used in the study of

various types of material media (books, magazines, newspapers, phonograms, audio and video recordings. photographs, letters, office documents, meetings, departmental documents (orders, resolutions, orders, circulars, instructions, etc.)), which are the product of human activity. Its essence is to consistently and systematically record the units of the studied content (certain meaningful concepts), identify the frequency of their use, establish the relationship with the content of the document and group them for different purposes within a certain conceptual scheme or theory, in particular to study their specifics.

There is a significant number of content analysis methods, but they all have common features: the object of study in any case is a document, and the research procedure covers both quantitative and qualitative indicators. The general principles of content analysis include: systematicity, representativeness, repeatability elements, statistical content significance and formalization, compliance of the procedure with the and stated goal objectives, definition of categories.

Within the content-analytical research, quantitative content analysis can be used, which is a method of text analysis by quantitative comparison of analytical categories through calculation of keywords (or other units of account); qualitative content analysis is understood as a method of text analysis by systematic interpretation of texts through the selection of topics, trends and their corresponding coding or a combination thereof [2].

Researchers conditionally distinguish four stages of the procedure of content analysis (according to the method developed by O. Manaiev) [3].

1. First of all, the topic, task and hypothesis are formulated; a sample is made. *Topic*: definition of a certain pedagogical concept. *Sampling*: studying the psychological and

- pedagogical literature reveals a number of definitions of various domestic and foreign authors. *Task*: a reasonable definition of a certain psychological and pedagogical concept is formulated. *Hypothesis*: formulation of the author's understanding of the pedagogical concept, which is investigated using the method of content analysis.
- 2. Categories and units of analysis, contextual units and units calculation are defined. Categories of analysis: a number of simple questions are used as categories of analysis, the answers to which were selected from a sample of definitions. These answers logically form semantic units, which gives the opportunity to count in each of them repeated words or synonyms. At the same time adhere to the principle of statistical significance. In addition, the text segments of a homogeneous semantic plan analyzed here, which made it possible to use the principle of formalization. The principles of formalization and statistical significance are desirable for effective content analysis. Words and phrases are chosen as units of analysis, and sentences are chosen as contextual units. The units of calculation are the frequency of repetitions of words and synonymous phrases.
- 3. Construction of the table and calculation of the received results. According to the task, the table shows: the process of forming a preliminary definition during the content analysis, ordinal numbers of words and phrases analyzed, units of analysis, the results calculating the frequency repetition of these units among authors, the previous column percentage.
- 4. Calculating the results of content analysis and constructing a plausible definition of the pedagogical concept being studied. As a result of application of a method of the content analysis, structural components of pedagogical concept are allocated, and the received results are submitted to the table.

**Results and discussion**. In order to illustrate the application of content analysis in pedagogical research, we present the procedure of content analysis of some pedagogical categories carried out by PhD- and doctoral students while working on dissertation research.

# The simplest example of using content analysis for the category "giftedness" [1:73-76].

Currently there are many approaches to understanding defining the concept of "giftedness" (according nowadays to some researchers - more than 100). Analysis pedagogical and psychological literature, which includes works of domestic (H. Burmenska, Yu. Hilbikh, M. Hnatka, S. Honcharenko, O. Kulchytska, N. Leites, O. Matiushkin, V. Moliako, O. Muzyka, A. Petrovskvi. S. Rubinshtein.

V. Slytskyi, B. Teplov and other) and

foreign (B. Bloom, J. Gilford, F. Monks, J. Rensully, A. Tannebaum, L. Terman, P. Torrance and other) researchers (125 sources total) allowed us to identify the main essential features of the concept of "giftedness".

The topic, tasks and hypothesis are formulated, and a sample is made. *Topic*: definition of "giftedness". *Sample*: 125 definitions of various domestic and foreign authors. *Task*: to formulate a reasonable definition of the concept of "giftedness". *Hypothesis*: giftedness is a kind of combination of internal and external factors that allows a person to perform certain activities at a higher than average level and achieve significant results.

As a result of applying the method of content analysis, 14 structural components of the concept of "giftedness" were identified. The results obtained are shown in table 1.

Table 1

### ${\bf Main\ features\ of\ the\ concept\ of\ "giftedness"}$

<b>№</b>	Categorial features	Number of authors (%)		
1.	Presence of outstanding abilities (general abilities), the development of which exceeds the average level	46		
2.	High level of intelligence	42		
3.	Ability to achieve outstanding success in a particular activity, focus on a particular activity	42		
4.	Possession of creative capabilities (creativeness)	33		
5.	Persistence, high efficiency, enthusiasm for the problem 33 (motivation aimed at the task)			
6.	Possession of abilities to perform a certain type of activity (special abilities)			
7.	Positive emotional attitude to performed type of activity	17		
8.	Internal personality traits based on genetic conditions	12,5		
9.	Favorable environment	8		
10.	Level of self-respect, "I" – concept	8		
11.	Presence of value meanings of individual consciousness	4		
12.	Factor of luck (lucky chance)	4		
13.	Knowledge (erudition)	4		
14.	Level of achievements (higher than average)	4		

The results of the analysis showed that the concept of giftedness outlines a

significant range of different meanings, namely:

- systemic quality of the psyche, which develops throughout life, determines the ability of a person to achieve exceptionally high results in one or more activities compared to other people;
- hereditary prerequisites for the level of mental development that characterizes each person;
- ability to gain outstanding achievements in any socially significant field of human activity (not only in the academic field);
  - level of talent manifestation;
- one of the key subjective determinants of human activity, which provides a high level of corresponding activity;
- achievements and the possibility of getting achievements (i.e. the need to take into account both those abilities that have already manifested and those that may manifest).

Our content analysis of the concept of "giftedness" gives grounds to identify the **leading features** that characterize its essence, namely:

- the presence of outstanding general (special) abilities, the development of which exceeds the average level;
- qualitatively unique combination (of general/special abilities), which ensures the success of one or more activities (the joint action of abilities is a certain structure that allows to compensate for the lack of a particular skill/ability through the predominant development of others);
- the presence of prerequisites for the development of creative abilities (creativity), which determines the ability of the individual to conduct creative search, as well as to generate new, original ideas, find non-traditional ways to solve problem situations and scientific issues:
- holistic individual features of cognitive capabilities and abilities to learn;

- a set of inclinations, natural capabilities that characterize the degree of manifestation and originality of natural preconditions of abilities;
- the presence of external and personal prerequisites for outstanding achievements in the activity;
- positive emotional attitude to the performance of activities that establishes its developmental properties;
- development of persistence, motivation aimed at solving certain tasks;
- the presence of value-based meanings of individual consciousness.

based the categorical Thus, on formulated analysis, we а basic definition of the concept of giftedness as an individual potential originality of hereditary (inclinations), (favorable social environment) and personal (positive "I" - concept, the appropriate willpower, presence of focus, perseverance, etc.) prerequisites to develop the abilities of the individual a level above the conventional "average", through which one can significant achieve success particular field of activity.

A more complex version of the implementation of content analysis was used in the analysis of the concept of "strategic competence" conducted by N. S. Shcherba [7].

At the first stage of the analysis, its topic, tasks and hypothesis were also identified. After that, a sample was Topic: strategic competence. made. Sample: 29 definitions of the concept of "strategic competence" of domestic and foreign authors. Task: to formulate a reasonable definition of strategic competence. *Hypothesis*: strategic competence is the ability to compensate for disruptions in the communication process using verbal nonverbal communication and strategies.

As a result of the analysis, a table was constructed to calculate the results

of content analysis and develop a plausible definition of strategic competence. Only the most frequently repeated units of analysis are displayed. The parentheses list the questions used as analysis categories.

Table 2

Table of development of the categorical apparatus of the "strategic competence" concept and registration of units of analysis (fragment)

Distinguished definitions of SC	<b>N</b> º	Categorial features of "Strategic competence" concept	Number of authors	~ %
		What?		
	1	Ability	12	41,4
	2	Skills (abilities), to be able to do (to be capable of doing)	5	17,2
Strategic	3	Knowledge (system of knowledge)	3	10,4
competence is	4	(Perfect) mastery	3	10,4
	5	Strategies (set of strategies)	2	6,9
	6	Need	1	3,5
	7	How we exploit	1	3,5
	8	Rules	1	3,5
	9	Level of awareness	1	3,5
		Which?		
Strategic	10	use	8	44,4
competence is the ability to	11	Identify and update (breakdown in communication – interrupted speech)	1	5,6

Thus, the majority of authors - 12 (41,4 %) believe that strategic competence is (What?) "ability". Strategic competence is the ability (What?) to "use" (8 repetitions, which is 44,4 %). Some authors believe that strategic competence is the ability to use (What?) "strategies" (87,5 %). These strategies are (What?) "verbal and nonverbal" - 4 repetitions, 44,4 % and "communicative" – 3 repetitions 33,3 %. Accordingly, strategic competence is the ability to use verbal communication non-verbal strategies (In what?) "in the process of communication" - 5 repetitions (which is 38,5 %).

Thereafter the calculation was carried out taking into account not only the literal repetition, but also all the phrases close in meaning.

Thus, strategic competence is the ability to use verbal and nonverbal communication strategies in the process of communication... (For what

purpose?) "to compensate the breakdown communication" in (11)repetitions, which is, respectively, 34,4 %), "to compensate insufficient communicative competence" - repeated 6 times (18,8 %), "to achieve the goals and objectives of communication" - 4 repetitions, i.e. 12,5 %," to increase the efficiency communication of the process" (3 repetitions - 9,4 %), "to prevent disruption in communication" (3 repetitions – 9,4 %), "to better learn the language and get a speech and social experience of communication in a foreign language" - 3 repetitions, which is 9,4 %.

The analysis allowed the author to formulate a preliminary definition of "strategic competence" as the ability to use verbal and nonverbal communication strategies to prevent or compensate for disruption in communication, as well as effective achievement of its goals, deepening language skills, speech and social

experience in the case of insufficient communicative competence of interlocutors or in an unfavorable speech situation.

## Step-by-step content analysis of the concept of "practice-oriented learning" [6].

At the first stage, accordingly, topic, tasks and hypothesis were determined and a sample was made. Topic of analysis: practice-oriented content learning. The task was set as follows: derive scientifically sound definition of practice-oriented learning. hypothesis of content analysis was the assumption that practice-oriented learning is an educational process, the content of which has а career orientation, and which prepares its solve subjects to a minimum of problems in the context of professional

fields. *Sample*: 61 definitions of "practice-oriented learning", borrowed from scientific publications of domestic and foreign authors.

The structure and process of filling in the coding matrix, which contains 5 columns, is relatively contenting. The reflects the first one levels development of the currently composed definition of the term "practice-oriented learning". The transition to each subsequent level is due to the addition of one semantic component (word or group of words). The latter are selected from the sample as the most frequent answers to open-ended questions contained in the first lines of the third column of each level. Thus, gradually, during the analysis the definition of the studied concept is formed.

Table 3

Coding matrix (fragment).

Development of a categorical apparatus for the concept of "practice-oriented learning" and registration of units of analysis

		did registration of units of analysis	B7	
Levels of composition of reviewed definition	<b>N</b> º	Categorial features	Number of authors	~ %
	1	approach / learning approach	32	52
	2	learning	20	33
Duncting oriented	3	preparation / preparatory model	3	5
Practice-oriented can be	4	education	2	3
can be	5	technologies	2	3
	6	method	1	2
	7	competence	1	2
	What?			
	8	combination / unity / totality /	18	40
		interconnection / connection / relations / interpenetration / coordination / possibility to integrate / maximal rapprochement / ratio		
Practice-oriented	9	method	3	7
learning is	10	tool	3	7
	11	concept	2	4
	12	structure	2	4
	13	component	2	4
	14	orientation	2	4
	15	approach	2	4
Practice-oriented		What with what?		

Levels of composition of reviewed definition	<b>N</b> º	Categorial features	Number of authors	~ %
learning is the combination of	27	educational activity / training / teaching and educating / method of obtaining new knowledge of the pedagogical process – with practical activities / performance of real practical tasks / practical work / their [knowledge] practical application / with the needs of practice, life / [development] of practical skills / with the environment	10	37
	In which educational institutions?			
Practice-oriented	32	in pedagogical HEIs	22	43
learning is a	33	in HEI	20	39
combination of	34	at school	5	10
educational and practical activities	35	in secondary vocational institutions	4	8
		In what conditions?		
Practice-oriented learning at school is a combination of educational and practical activities	36	AT SCHOOL: in solving vital tasks and problems / [during the formation of pupils' ability] to use knowledge in everyday life (when performing creative tasks) / combination of theory and practice	4	80
	37	in terms of the competency approach	1	20

The last stage of content analysis included the calculation of its results

and the development of two derived definitions of practice-oriented learning.

 $Table\ 4$  Levels of development of the categorical apparatus of the concept of "practice-oriented learning"

can be practice-oriented WHAT? (learning)			
Practice-oriented learning (POL) - is WHAT? (combination)			
POL is the combination of WHAT WITH WHAT? (educational and practical			
activities)			
POL is the combination of educational and practical activities IN WHICH			
EDUCATIONAL INSTITUTIONS? (at school / in HEIs)			
POL at school is a combination of	POL in HEIs is a combination of		
educational and practical activities	educational and practical activity		
IN WHAT CONDITIONS? (in solving	IN WHAT CONDITIONS? (in real		
important tasks and problems)	<u> </u>		
POL at school is a combination of	POL in HEIs is a combination of		
educational and practical activities	educational and practical activities		
in solving vital tasks and problems,	in real working conditions, which		
which allows	allows		
WHAT RESULT IS EXPECTED? (gain	· ·		
new knowledge and form experience of	and develop professional competencies)		

and evaluation)

its use)

POL at school is a combination of educational and practical activities in solving vital tasks and problems, which allows to gain new knowledge and develop experience in its use due to...

**DUE TO WHAT?** (emotional and cognitive content of creative search of pupils)

Formulated definition: POL at school is a combination of educational and practical activities in solving vital tasks and problems, which allows to gain new knowledge and experience in its use due to emotional and cognitive content of pupils' creative search and career guidance.

Thus, the last example, despite its complexity, is the most optimal, for it allows to simultaneously analyze the concept and formulate its definition.

Conclusions and research perspectives. As it can be seen from the examples, the use of content analysis in pedagogical research is a relevant, appropriate and precise method of dealing with the conceptual apparatus of pedagogy. Unfortunately, young researchers do not use it often due to their concerns of external complexity of the process. However, with a more detailed acquaintance and acquisition of certain skills, content analysis can be a reliable assistant in the implementation of research of future teachers. That is why it is necessary to teach students to apply content analysis of basic concepts when writing term papers and later when working on diploma and qualification This will allow research. young researchers not only to use approaches of well-known scientists to understand a certain concept, but also to construct their own definitions of basic categories, investing in them their understanding of their essence.

POL in HEIs is a combination of educational and practical activities in real working conditions, which allows to form and develop professional competencies due to...

DUE TO WHAT? (use of active teaching methods and innovative forms of control

Formulated definition: POL in HEIs is combination educational of practical activities in real working conditions, which allows to form and develop professional competencies due to the use of active teaching methods and innovative forms of control evaluation.

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