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Cognitive styles in the context of learning activity of students

Issue statement. On the background of intensive implementation of information-communicative technologies, the issue of the style phenomenology for solving educational tasks comes to the fore. Present-day education is guided by the values and importance of competency thus makes the call for teaching ways that are topical from the perspective students become subjects in accordance to their own cognitive activities.

Nowadays, the rapid changes in society and future education require not only world lore as the eventual educational outcome but personal concern about knowledge that is formed on the ground of critical treatment of information. Resolving the like tasks develops the necessity of multifunctional implementation of different storage medium. The use of diverse forms and degrees of intensity of information-communicative technologies increases information realm which enables cognitive processing to a mighty degree. Besides it guarantees the students to have a potential advantage with the aim to mainstream intellectual activity. However, potentialities may not become realities if a student

does not have corresponding cognitive approaches which enable him to select, adapt and code information effectively. The necessity to take into account personal-psychological peculiarities of an intellectual activity of a student appears. It becomes a kind of arrangement of interpersonal behaviour between the objective and communicatory medium. No less important is the issue of strategy and tactics research that is used by students in the process of knowledge assimilation which can be considered as specific-individual means of cognitive activity organization.

The review of recent researches and thematic publications. A review of the researches indicates that cognitive-educational realm and specific individual ways of information learning in particular are the very important index of intellectual activity control that directly affects grades rate at college. Besides it is a factor which proximately forms specific individual approaches of mastering

a profession and models possible styles of interpersonal behaviour (D. Kolb, James F. McKenney, M. O. Kholodna, V. A. Kolha, Craig R. Stenberg, M. S. Yehorova, I. P. Shkuratova).

The conceptual principles of the research on cognitive-style issue are closely connected with works of R. Hardener, Donald Kagan, Duard G. Kleyn, Gordon Allport, H. Witkin. The matter of cognitive-style influence on different behaviour patterns of a person are extensively studied by O. H. Asmolova, V. Kolha, Eilat Gordin Mastwilisker, O.V. Libin, I. M. Paley, M. V. Smirnov, Y. T. Sokolova, M. O. Kholodna, I. P. Shkuratova, A.L. Yuzhaninova and others. The general idea of a personal unique character and specific firm conviction in all particularly individual ways of reality treatment is of main concern for cognitive-style researches. The matter of cognitive styles is the object of study of two facets of science: cognitive psychology and individual psychology. The research on personal style arrangement was first carried on by Alfred Adler and G. Allport, the representatives of the psychological analytical school. The peculiarity of foreign research is empiric approach to the study of cognitive-style phenomenon. The researchers who developed style approach (V. A. Kolha, I. M. Paley, M. O. Kholodna and others) were concentrated on theoretical demonstration of the part, role and importance of style in the integrity of a personality which is still developing, as well as on the subject of an activity. They studied development of style peculiarities in the form of integral individuality in accordance to the notion of

"individual style of activity" (Y. O. Klimov, V. S. Merlin, V. O, Tolochek and others). Psychologists distinguish various cognitive styles and their characteristics. The principle of their differentiation is the peculiarities of perception, notions formation, classification, decision making or on matter reflection.

The purpose of the research is to compare the peculiarities of style characteristics of an intellectual activity, field-dependent or field-independent cognitive styles of Mathematics School and Arts School students in particular.

Basic research presentation. Since 50s of the 20th century there have been fundamental changes in psychology that led to acknowledgement of the right and ability of a person to be an active subject of personal life-sustaining activity. That means a person can independently choose values and keep to them, to manage one's own professional activity and life in general in one's own way. Personalization of new estimation of a personality and its attitude toward social medium has been realized in style differentiation. In cognitive psychology the phenomenon of "style" was introduced as cognitive styles and cognitive controls (Broverman, Kagan, Witkin, Godenough), in socio-psychology and psychology of management it is presented as leadership styles (Fiedler, Levin, Likert, Tannenbaum), in sociology it acts as life styles and behavior styles (Levin, Barker), in labour psychology it is called individual activity styles (Klimov, Merlin).

H. Vitkin, R. Hardener and James Kleyn interpreted cognitive styles (controls) as steady symptom-complexes, personality-determined, individual and age-determined in cognitive activity.

Currently on the matter of styles, cognitive in particular, the following key principles can be distinguished:

1. A personality's success (either social, or professional, or educational) is determined not by particular characteristics, but by their implementation into a special psychological system.
2. Persons with different individual characteristics are potentially equal as to adjustment to social medium.
3. Style forming can happen both spontaneously, as well as purposefully; it can be a consequence of subconscious arrangements as well as conscious regulating.
4. Psychological style arrangements appear through integration of individual characteristics that leads to coming forward and

developing some of them, replacement and liberalization of others and eventually compensation of less-developed characteristics.

5. Style essence is such arrangement of personal individuality, energy, inner and outer activity by a human oneself that brings to successful managing obstacles, effective resolving social tasks having limited resources.
6. Specific to a personality style allows not only to resolve of social tasks effectively but to bring satisfaction, as well as to work sparing less psycho-physiologic energy, to save professional health and longevity.
7. The difference of individual styles of people does not prevent their common social activity and their effective cooperation [4, 35].

Let us consider cognitive style field-dependent, field-independent closely. The notion of differential field was introduced by H. Vitkin who defined it as bipolar dimension of a personality characteristic within the notion of field-dependence (FD) and field-independence (FID) [11]. The tendency to control visual field by virtue of relying on inner personal experience and to separate a part from a complex form was defined as field-independence; but the tendency to rely on external visual field and to undergo difficulties while distinguishing parts from integral whole was defined as field-dependence. Quick distinguishing a simple form from a complex one is a characteristic to field-independent style, while slow distinguishing is common for field-dependent style. Field-independence appears in analyticity of cognitive images: habitus to specify one's own cognitive impressions. Field-independence style of typical behaviour is distinguished by structuring and arranging semantic information: representatives of this pole can structure any text better; their synopses are distinguished as rather distinct and clear [9]. Field-independent come out of pressure of external interrelations, perceive and work over stimuli irrespective the context, so they are capable to separate the form from the background quickly and safe-perceptively. The researches of K. Jackert and R. Bugner identified the influence of evident field-dependence and field-independence style on educating process. Especially it concerns assignments which are related to perception [1, 98]. K. Klaus believes that at very early stages of ontogenesis this style takes part in structuring inner representations of visual impressions. It may come in useful for individual adjustment

to the received sensitive experience, its semantic adaptation and use in the thinking activity, thus for spiritual evolution of a child in general [1, 100]. This cognitive style makes an essential influence on behaviour of a person in the realm of communication. In their researches H. Vitkin and D. Gudina found out that field-independent individuals mainly try to distance themselves while speaking, demonstrate less inclination to reveal their feelings and traits of character in the conversation; show less sentimentalism to different kinds of social hints and display worse memory countenance [10].

Research methods and the outcome of the study. An attempt is made to compare and analyse the peculiarities of cognitive-style field-independence, field-dependence of the students of different University Schools.

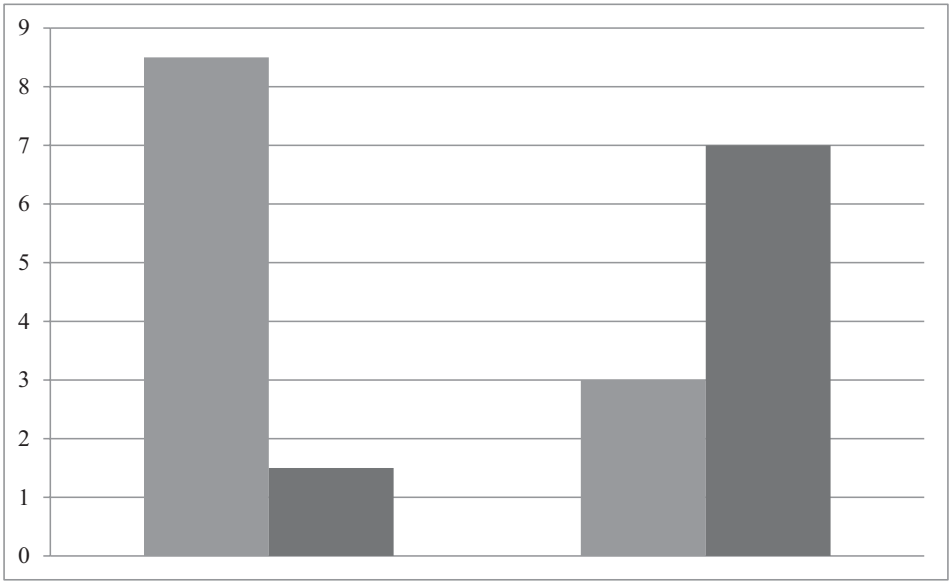
For recognizing style characteristics of mental power the psychognostic methods of "Included men" by Owen K. Gottshald were used. The methodology was applied for experimental study of the cognitive-style field-dependence field-independence. The measurements: overall time of all tasks fulfilment (min.); total number of mistakes; proportion between the number of correct answers and time of test fulfilment, shown as efficiency (index FD/FID); integral test rating (overall time spent on test doing and doubled sum of mistakes number and skips).

University students of "mathematics" profession (Sciences School) and of "psychology" profession (Social Sciences School) took part in the experimental study. Selection made up 47 people.

The average performance of the cognitive-style field-dependence,

Table 1.
The average performance of the cognitive-style field-dependence field-independence and 'impulsivity-reflexivity' property displayed by students of Sciences School (SS) and Social Sciences School (SSS)

School	Field-dependence, field-independence			
	ITI	Mistakes number	Time (min.)	IFD / FID
SS	23,2	7,4	8,4	2,8
SSS	29,5	7,7	14,1	1,7



Picture1. Proportion between the students which belong to different style groups of the cognitive-style 'field-dependence, field-independence' of Social Science School and Sciences School according to Owen K. Gottshald.

field-independence of the participants from Sciences School and Social Sciences School is given in table 1.

The two groups of students of different University Schools show differences according to the cognitive-style index "field-dependence, field-independence": there are slight differences as to the average number of mistakes (7.4 and 7.7 respectively) and there are great differences as to the time spent on test doing (8.4 and 14.1respectively). Critical difference is observed in integral test index as well (ITI) (23.2 and 29.5 respectively). Consequently, the students of "psychology" profession made almost the same number of mistakes as the students of "mathematics" profession, nevertheless they spent twice more time on quiz doing.

In the student group of Sciences School according to the FD/FID index (which is productivity as a proportion between the number of correct answers and time spent on quiz doing) field-independent students turned out to make up 70% and field-dependent students make

up 30% out of the total number of students.

In the student group of Social Science School according to the FD/FID index field-independent students make up 15% and field-dependent students make up 85% out of the total number of students (picture 1).

Besides every participant of the study experiment was offered a "differential- diagnostic questionnaire" (Klimov Y. O.) that shows advantages in profession choice (according to Y. O. Klimov typology: "man-nature", "man- mechanic", "man-man", "man-sign", "man-artistic image"). The participant should choose one option of the suggested pairs. The number of pairs is 20. The outcome: rating of choices on every type of profession.

The students of Social Science School in their majority chose the profession of "man-man" type (65%). Taking into consideration that the major part of this sub-group is field-dependent, we can suppose field-dependent people are more attentive to social factors, they are more sensitive to social influences, more embarrassing in communication, they are less aggressive thus resolve conflict situations easier [5].

Most of above listed characteristics are essential for representatives of the "man-man" profession, as "the most important qualities of the representatives of this type of profession are emotional determination of the psyche, watchfulness referring emotions and behaviour display, ability to imagine and model the inward man mentally, empathetic range, tolerance and forgiveness while witnessing outrageous behaviour situations, unusual outlook or way of thinking of a stranger" [3].

The students of Sciences School gave preference to the "man-sign" profession (58%) and the "man-mechanic" (63%).

Most of the ratees of the group are field-independent people. Field-dependence in these people is expressed by means of a tendency to structure and combine information they get, by ability to overcome visual field and to structure it. A person with a high index of field-independence has a nice opportunity in distinguishing, segregating a situation as well as distinct and quick taking apart the elements of entire field. All these qualities are necessary to make clear way in the identifying code, language system (both natural and artificial) [2].

Standards set up for perfect developing of productive memory, ability to manage technical drawings, different schemes and charts are predominant characteristics of the cognitive-style field-independence in the students of Sciences School. It is proved by the experiment that

"cognitive images of field-independent people are more movable which resulted in high effectiveness of the tasks done by students involving nonlinear restructuring. Field-independence correlates with the tendency to structure and combine received information" [7, 63].

The dominating part of field-independent in the group participants in the study experiment of Sciences School students agrees with the other data. The well-known fact is field-independence appears in interpersonal relations. Field-independent people are more self-sufficient, they live a consistent way of life, express a low level of social interest to other people, they display more aggressive, more impartial approach to a problem, they are resistant to the situations of distracting, they are more critical, self-supporting, self-reliant and self-determined [6; 8], they are distinguished by joining self-control over affective states.

Characterizing representatives of "man-mechanic" type Y. O. Klimov mentions that emotional control, stability in extreme situations, an ultimate sense of responsibility, an ability to work by oneself at limiting cooperation with colleagues are prior necessities for field-independent people. Those who active, nimble, impatient and who need constant communication at work will not get contentment working with minimum companionship in this type of profession [2].

As long as cognitive styles are connected with a wide range of personal traits and particularities of social behavior their expert studying and further learning opens potentialities for developing and even changing a personality, student in particular. Cognitive styles adjust educational abilities of a person to the calls of its present-day medium which is exceptionally important for professional training of students against the background of unstable life and constant adjustments in all realms of life of the society.

Conclusions. Awareness of cognitive styles of intellectual activity of students opens the way to purposeful forming competency and skills of arrangement assimilation of educational information. Researching relations of the cognitive styles with personal qualities in the individual structure of a student forms possibilities of perception peculiarities of creating objective and diverse world view by a student. In its turn it allows making the learning process more individual and eventually brings its effectivity.

Close study of cognitive styles of students of different schools has proved there are more field-dependent students in the sub-group of

students learning psychology, and there are more field-independent students in the sub-group of students learning mathematics (according to Owen K. Gottshald). The students learning psychology made almost the same number of mistakes as the students of Sciences School, nevertheless they spent twice more time on quiz doing.

Choosing occupations students learning psychology preferred a profession of the "man-man" type, which has requirements that agree with the qualities of field-dependence. The group of students learning mathematics more often chose the professions of the "man-mechanic" and "man-sign" type, which have the requirements that agree with the qualities of field-independence (according to Y. O. Klimov's methodology).

Therefore in accordance with the findings of the research we can make a conclusion as to existence of interrelation between the cognitive-style "field-dependence", "field-independence" and the type of profession chosen by the students of different University Schools.

Every student has a great creative potential. To put it into practice it is important to select such ways of arrangement of educational process that would take into account either the general laws of cognitive development or the laws of individual peculiarities of information assimilation, or cognitive possibilities of every participant of the process, considering their ways of cognitive functioning.

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Abstracts

НАТАЛІЯ ЗАБОЛОТНА. **Когнітивні стилі в контексті навчальної активності студентів.** *У статті розглядаються стильові характеристики інтелектуальної діяльності, здійснено детальний аналіз особливостей когнітивного стилю «полезалежність-поленезалежність». Подано результати емпіричного дослідження когнітивного стилю «полезалежність-поленезалежність» та вибору типу професій у групах студентів різних спеціальностей університету.*
Ключові слова: *когнітивні стилі, полезалежність-поленезалежність, типи професій.*

NATALIA ZABOŁOTNA. **Style kognitywne w kontekście działalności edukacyjnej studentów.** *W niniejszym artykule przedstawiono cechy stylowe działalności intelektualnej, przeprowadzono dokładną analizę właściwości stylu kognitywnego stylu «polezależność - poleniezależność». Zaprezentowano również wyniki empirycznego badania stylu kognitywnego stylu «polezależność - poleniezależność» oraz wyboru typu zawodów w grupach studentów z różnych kierunków.*
Słowa kluczowe: *style kognitywne, «polezależność – poleniezależność», typy zawodów.*

НАТАЛИЯ ЗАБОЛОТНАЯ. **Когнитивные стили в контексте учебной деятельности студентов.** *В статье рассматриваются стилевые характеристики интеллектуальной деятельности, де-*

тально проанализированы особенности когнитивного стиля «полезависимость-поленезависимость». Представлены результаты эмпирического исследования когнитивного стиля «полезависимость-поленезависимость» и выбора типа профессии студентами разных специальностей университета.

Ключевые слова: *когнитивные стили, полезависимость-поленезависимость, типы профессий.*

NATALIA ZABOLOTNA. **Cognitive styles in the context of learning activity of students.** *The work explores characteristics of the style of intellectual activity, reseaches in details the peculiarities of cognitive style "field-dependent and field-independent". The outcome of the empiric examination of the cognitive-style "field-dependent or field-independent" as well as the results of profession choice by the students of different Schools of University is presented.*

Key words: *cognitive styles, field-dependence, field-independence, types of professions.*