Collaborative Thinking Activity as the Development Factor of the Youth Giftedness

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Abstract. The article regards the youth giftedness as the thinking initiation connected with the contradictions discovery. The author carries out the review of researches (K. Dunker, J. Gilford, G. Sekey, D. B. Bogoyavlenskaya, V.E. Klochko, S.L. Rubenstein, O.K. Tikhomirov) devoted to studying of ability to contradictions discovery. According to author’s opinions the ability to contradictions discovery is the thinking source. The empirical research of development of ability to contradictions discovery of preschool and school age children are presented in article. The research was conducted with use of techniques of G. Sekey and J. Gilford modified by V.E. Klochko. The dynamics of the development abilities to contradictions discovery in different age periods are shown and the dependency of this ability development on various intellectual and personal factors. The author correlates initiation of thinking to development of initiative style of thinking and carries out the analysis of dynamics of his formation at school age. Use of the factorial analysis has allowed to allocate the factors connected with detection of contradictions for children of preschool age. The importance of the collaborative thinking activity usage for the thinking development and the giftedness is substantiated.

1. Introduction

At the present moment, practically in all spheres of life, and rather intensively, the innovative processes connected with the adoption of the new technologies are developing. One of the factors of the person’s innovative potential development is one’s intellectual characteristics realization. It is intellect, or giftedness, or person’s thinking activity that composes the achievement basis that person implements in successfulness and effectiveness of the practicing activities.

The intellect development is one of the fundamental grounds that build up the professional and social development of the person. It is giftedness, or mental development, or person’s thinking activity that composes the achievement basis that person implements in successfulness and effectiveness of the practicing activities.

2. Background

One of the basic mechanisms evaluating the level and the quality of the person’s giftedness and thinking development is the person’s ability to contradictions discovery. This problem was intensively studied in foreign as well as in our country’s psychology. The classical studies of K. Dunker [5], G. Szekely [12], J. P. Guilford [7], O. Tikhomirov [13], S. Rubinstein [10], D. Bogoyavlensky [4], V. Klochko [8] were aimed at the analysis of this ability different components and at the study of the thinking activity mechanisms and determinants. To this pleiad of the studies one can ascribe such components that were discovered within the frame of different areas but characterize practically one and the same phenomenon: sensitivity to the problems (J. Guilford, [4]), «ability to see the problems (S. Rubinstein, [10]), intellectual activity (D. Bogoyavlensky, [4]),
active flexibility (G. Salevsky, [11]). In this case the researches were more focusing on the personal conditionality of the contradiction discovery process, and that is where the thinking begins.

Such problem solution leads the researchers to the understanding of the very fact of the thinking origin as the manifestation of the person’s activity. Activity in this case is understood as the new action initiation transforming the environment, situation, life activity of the man. This is the activity that expects man’s self-manifestation through the extension and transformation of the initial, contradictory or undeveloped situation with a great amount of uncertainty. This transformational activity reveals the person and one’s intellectual resource.

At the same time N. Eliava’s studies [6] showed that contradictions discovery and the problem formation fact itself, that is based on the aim-formation process and hypotheses producing, do not coincide. They can be differentiated by the people, by the time as well as by the reference to various subjects.

When the ability to contradictions discovery is formed as the first, initial moment, as the thinking source.

3. Methods and Results

The research was carried out on the children of different age groups. The study involved 68 preschools, 70 early schools, and 63 psychology students. We used G. Szekely and J. Guilford’s methods modified by V. Klochko [8] in our studies.

Our studies showed that the ability to contradictions discovery is the dynamical indicator changing during person’s life span. The following development dynamics can be observed: at preschool age practically all children discovered contradictions; at early school age the percentage of the children who discovered contradictions decreases; at high school age this ability decreases more and at student age it is very low (Table 1)

Table 1. The Development of Contradictions Discovery Abilities.

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Contradictions discovery ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool</td>
<td>95%</td>
</tr>
<tr>
<td>Early school</td>
<td>89%</td>
</tr>
<tr>
<td>High school</td>
<td>55%</td>
</tr>
<tr>
<td>Student</td>
<td>43%</td>
</tr>
</tbody>
</table>

The received results let us say that there is a tendency connected with the fact that initiative mechanisms and person’s thinking characteristics are developing towards to initiative decrease. Moreover, this decrease is not just thinking decrease. Thinking carries on developing but its creative, initiative components are displaced by the other ones that become dominant thus providing corresponding direction of the thinking development.

The dominant ability to contradictions discovery comprises the basis for person’s initiative thinking style for which the generation of the ideas and suppositions is characteristic. If we look at the thinking style development dynamics at different age stages, we can see the following picture (Table 2).

Table 2. Initiative Thinking Style at Different Age Stages.

<table>
<thead>
<tr>
<th>Thinking style</th>
<th>13-15 years old</th>
<th>16-17 years old</th>
<th>18-22 years old</th>
<th>25-30 years old</th>
<th>31-40 years old</th>
<th>41-55 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiative</td>
<td>4,18</td>
<td>4,84</td>
<td>4,09</td>
<td>3,83</td>
<td>4,08</td>
<td>4,21</td>
</tr>
</tbody>
</table>

The data given at table 2 let us say that initiative style is developing more intensively at the adolescence. Its quantity is the highest in all age groups. One can observe only the decrease of this thinking style further. The whole youth, the most active in a social aspect age, characterized by the decrease in the formation of this thinking style. And only at adulthood there is an increase in its quantity which, nevertheless, does not achieve the level characteristic for the adolescence.
The analysis of the data given at the tables, received from different samples and different methodological material, let us say that there is a similarity between contradictions discovery development ability and initiative thinking style. The received results let us say that there is a tendency connected with the fact that initiative mechanisms and person’s thinking characteristics are developing towards to initiative decrease. Moreover, this decrease is not just thinking decrease. Thinking carries on developing but its creative, initiative components are displaced by the other ones, ceding to reproductive, practical thinking thus providing corresponding direction of the thinking development. This means that creative, productive, connected with intellectual initiative thinking components become subdominant, fade to the background, leaving its place to the reproductive components, practical thinking.

We tried to understand by what determined and how is interconnected thinking with the other intellectual characteristics of the person, its creativity at different age stages.

The factor analysis based on the research results of the preschool age children showed that contradictions discovery and verbal thinking though form the same factor are in oppositional relations.

Table 3. Intelligence Factor at Preschool Age.

<table>
<thead>
<tr>
<th>Identification of emotions</th>
<th>1st factor</th>
<th>2nd factor</th>
<th>3rd factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Creativity</td>
<td>Nonverbal intellect</td>
<td>Verbal-not contradictions discovery</td>
</tr>
<tr>
<td>Identification of emotions</td>
<td>0,962</td>
<td>0,631</td>
<td>0,695</td>
</tr>
<tr>
<td>Assembling figures test</td>
<td>0,921</td>
<td>0,835</td>
<td>-0,740</td>
</tr>
<tr>
<td>Fluency</td>
<td>0,917</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>0,890</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Originality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Story pictures test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contradictions discovery</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The received data let us say that at the preschool age there are three factors in the structure of the children intellectual activity: creativity itself, nonverbal intellect, verbal-not contradictions discovery. The thinking initiation is neither in the creativity factor, nor in the nonverbal thinking factor. This means that these factors do not play significant role in the development of the contradictions discovery processes at the preschool age. The interest lies in the discovered factor which shows interrelations between contradictions discovery and verbal intellect. These connections exist, but they have inversely proportional character. It means that the higher the development level of the verbal intellect, the less the contradictions discovery ability. And creativity as the personal characteristic, meaning the ability to create something new, original is not connected with the thinking initiation or nonverbal intellect. One can assume that more complex relations and thinking development determinants exist in the preschool age. Another tendency is observed in the early school age (Table 4).

Table 4. Correlated Connections Between the Ability to Contradictions Discovery, Creativity, Direction and Type of the Frustration Reactions.

<table>
<thead>
<tr>
<th>Contradictions discovery</th>
<th>Originality</th>
<th>I</th>
<th>M</th>
<th>GCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contradictions discovery</td>
<td>1,00</td>
<td>.352(**)</td>
<td>-.338(*)</td>
<td>.360(**)</td>
</tr>
</tbody>
</table>
4. Conclusion/Discussion

The analysis of the data given at the table 4 let us say about the existence in the early school age the interconnection between the contradictions discovery ability and originality i.e. the ability of producing the ideas that are different from obvious ones. The contradictions discovery ability is negatively connected with the intropunitive reaction (the frustration is directed on itself), but it is positively connected with the person’s impunitively directed reactions when the frustration situations are considered as something insignificant and surmountable, and as the measure of the person’s individual adaptation to the social environment. Our results match with the research results of M. Vollakh and N. Kogan that showed the interconnection between intellect, creativity and environment adaptation: children with the high level of the intellect and creativity demonstrate initiative and successfully adapt to the environment. Children with the low level of the intellect and creativity are environment ill-adapted [9].

Thus, the researches let us say that the basis of the giftedness, person’s intellectual potential is a rather complex multicomponent formation comprising not only intellectual but personal and social aspects as well. Its basis is the contradictions discovery ability which appears as thinking initiation. Thinking initiation, thus, comprises personal as well as activity-procedural aspects that in fact exist in interconnection.

Personal aspect includes active, initiative source that comes from the person, from one’s readiness and necessity to express and prove oneself, while activity-procedural aspect manifests itself in the fact of the activity initiation, in the facts of the new formations establishing (aim-building, sense-building, motive-building etc.). Social aspect characterizes other people’s influence which appears in the person’s ability to reflex on task’s content. The reflection in the case of contradictions discovery appears in attempts of the carrying out, in respect of others or oneself, the dialogical communication process when person tries to sort out for oneself or others the peculiarities and the fact of contradictions discovery. The presence of these components, their development in person’s intellectual potential create a certain combination thus characterizing individually peculiar forms of one’s development that appears differently in person’s life, activity and communication.

These researches were carried out within the framework of the conventional forms of education. To a certain degree the received results demonstrate not only psychological and age features of the initiative thinking forms formation but represent the result of these forms development within the framework of the conventional forms of education. Thus, during the person’s psychological development within the framework of the conventional education appears the person’s creativity change, the decrease of one’s initiative. In this case the educational institutions face the problems of organization such innovative educational forms and methods that are directed on the increasing of the intellectual potential.

In connection with this arises the necessity of organizing such an education that would let the person find, as A. Asmolov says, «individual paths of one’s development» [1]. The concept of variable education suggested and implemented in the middle of the 90s, supposes that in society should be formed the conditions for the aims and tasks realization of different kinds of education that approach the problem of person’s education from different standpoints. But there are general bases in these standpoints that appear in understanding the necessity of developing technologies which transform education in a person’s socializing institute.

Regardless of what kind of education person gets, one of the main tasks that society and teacher face is to teach the person to learn so to extend one’s intellectual and personal abilities and to create the most favorable opportunities for the personal and professional socialization of the person.

At the same time one should remember that the knowledge formation problem is hampered in the individual characteristics of the person’s cognitive sphere that appears in using by the person different approaches and strategies of the cognitive activity. But if individually distinctive approaches and strategies of the cognitive activity that underlie the forms of teaching and learning of the information exist, it would be logically to suppose that variative forms of presenting new
information should exist as well. And this means, from our point of view that forms and types of the
cognitive education connected with person’s cognitive sphere formation should have variable
character.

In this case it seems possible for us to talk about variable cognitive education. In fact, the
peculiarities of people’s cognitive sphere formation differ in their pace, dynamics (pace, rate) and
structure matter characteristics (psychical processes formation, notion and judgment development
level, regulative structure formation etc.). In other words, person’s cognitive sphere in its direction,
structure and formation of certain approaches and strategies develops in a unique and inimitable
way thus leading to the fact that during the process of education person demonstrates various
declines and ascents characterizing the heterochronism of one’s cognitive sphere formation. And
the approaches, means, intellectual mechanisms the person use would differ [3].

The modern level of the knowledge development, informational technologies, the increase of
knowledge close to infinity demands advanced requirements to the learning i.e. to the processes of
generating and forming something new, different intellectual and personal new formations.
Actually, person’s socialization processes to the society as well as to the profession, the necessity of
acceptance and usage of new informational, social as well as humanitarian technologies is
practically impossible without the usage of the thinking activity which is the basis of their
acceptance, therefore, the formation of something new.

At the same time, one should realize that the necessity of the formation of these abilities to
generate and form something new differs within the representatives of different professions,
different social status, and this determines the necessity of variable cognitive education. Within the
framework of variable cognitive education one can change the requirements to the level and
peculiarities of the person’s thinking and intellect development. The study of the psychological
mechanisms and thinking peculiarities let one realize how to form the education process as
individualized process, taking into account the individually distinctive means of the reflecting and
processing the information that are generated by the students. This means that a person, potentially,
can achieve one’s object using one’s own resources, but will do it in a different way from the
others.

One can consider the thinking characteristics as a factor basing the individualization of the
education and, in the whole, person’s education. And one can suppose that education forms and
methods that are well-established in the education system do not always conform the thinking
characteristics and styles that the person develops. Although in many respects the education system,
the teaching technologies to be precisely, is one of the factors influencing the thinking formation.

The modern school is now searching for the ways of formation of the new type educational
strategy. One can say that the basis of the innovative education is humanistic tendency which
implies person’s development, one’s creative abilities, one’s self-manifestation and self-
actualization, the transformation of the students from the objects of the teachers’ impact and
influence into the subjects of the personal and professional development. The methods meeting
these requirements are the methods based on collaborative thinking activity formation i.e. the
methods stimulating student’s thinking initiation and providing youth’s intellectual potential
development.

To the number of the methods modeling collaborative thinking activity, the small group method
is referred. Collaborative problem discussing, students’ mutual dialogical thinking create conditions
for contradictions discovery, thinking initiation, psychological and personal new formation.

We act on the premise that during the educational process by the small group method appears the
students’ thinking formation and development. The student acts not just as “receiver”, “listener” but
as “co-thinker”, “co-creator” i.e. full member of the collaborative thinking activity during which
student’s thinking mechanisms are realized and developed. During the communication, the
personification and personalization processes start, by their means the participants’ interaction, their
capacity of interference and interdevelopment is realized. In collaborative thinking activity the
impact that comes from the other is added. And the partners’ impact is connected with how other
participants are perceived: 1) as the source of the knowledge, sense and value; 2) as the field or area
for the development; 3) as an “ideal form” or the example for the development i.e. person’s self-modification and self-actualization [2]. It is necessary to mention that this process is influenced by the participants’ activity and communication who are objectified and alienated from their subject, starting to live independently from their existence. Their objective and objectified existence acts as the possible source of the psychological qualities reflected by the collaborative activity participants.

Thinking initiation can be interpreted as the processes that are responsible for the development of the higher level needs, that is to say the needs for development and person’s self-actualization. In other words, the possibility of the individual thinking initiation and development in collaborative thinking activity receives an additional impulse initiating person’s creativity, giftedness, activating and transforming one’s potential resources into real ideas, hypotheses and solutions, improving intellectual potential, realizing one’s self-development and self-actualization processes.

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References