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Manifestations of students' "clip thinking" in working with a scientific text

Alla Belousova [1], Don State Technical University, Department of educational psychology and organizational psychology, Rostov- on-Don, Russia

Olga Efremova, Taganrog Institute of A.P. Chekhov (Branch) of Rostov State University of Economics, Taganrog, Russia

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Abstract

The purpose of this article is to research the manifestations of clipped thinking in students when reading scientific texts in the educational process. The study involved 42 students in 2-4 courses studying in the direction of "psychological and pedagogical education" at the Taganrog Institute of A.P. Chekhov. To determine the severity of clipped thinking, we used an experimental survey methodology. Based on the material of students' work with a psychological text, the article examines the peculiarities of students' perception and understanding of certain provisions of the text, depending on the degree of severity of the indicators of clip thinking as a cognitive style, characterized by the efficiency of processing information of a significant volume, areflexia, and insufficient criticality. The study revealed that with insufficient comprehension of the text, some students tend to intuitively use the protective mechanism of avoidance, reducing the assessment of some provisions of the text.

Keywords: clip thinking; cognitive style; non-critical reading; reflexive reading; text comprehension.

* ADDRESS FOR CORRESPONDENCE: Alla Belousova, Don State Technical University, Russia
E-mail address: belousovaak@gmail.com

1. Introduction

The actual problems in the development of the information culture of pedagogical university students are the orientation to the consumption of ready-made information products, insufficient reflection on the process of assimilation, and the content of knowledge (Wang et al., 2022; Hwang, Shim & Cheon, 2023). The tendency to formal assimilation of educational material is often manifested in students in situations of difficult analysis of the presented information (Russell, DiNapoli & Murray, 2022): with an abundance of scientific terms not included in their active vocabulary, if necessary, taking into account the entire context of what is being presented, as well as if necessary, being critical and finding errors in judgments and conclusions.

Digital technologies have brought a lot of new things to educational practice, making it technologically advanced and expanding the possibilities of operating with information (Castillo et al., 2021; Nickl et al., 2022; Thampy et al., 2022).

1.1. Related studies

One of the directions of research on the influence of information and digital technologies on the psyche of a modern student is connected with the study of clip art. The concept of "clip culture" was proposed by Toffler (1980), who believed that the information society actively influences a person, influencing the peculiarities of his\her perception of information, generating information clip thinking. Frumkin (2010) outlined some prerequisites leading to "clip thinking": accelerating the pace of life, increasing the volume of information flow; the need for relevance of information and the high speed of its receipt; increasing the diversity of incoming information; expanding the number of tasks performed simultaneously; spreading dialogic characteristics in the social system.

The concept of "clip thinking" ("net thinking", "post-text thinking") appeared in the work of Girenok (2016), who considers thinking as a process that requires time, reflection, and concentration of attention. In modern conditions of information culture, the flow of information involves making quick decisions, most often ignoring reflection, comprehension, and analysis of problems. Clip thinking is characterized by visualization, image building, and multitasking. Frumkin (2010) emphasizes that clipped thinking is one of the characteristics of a modern person.

According to Semenovskikh (2014), clip thinking is characterized by: the brevity of the information received, and high switching frequency. According to Rosen (2007), boys and girls aged 16-18 using modern technologies can perform about seven tasks simultaneously. Rosen (2007) highlights one of the advantages of clip thinking - rapid processing of information, and the disadvantage is the inability to process long homogeneous and single-line texts.

Rosen (2007), and Prensky (2012) believe that clipping thinking, with its inability to process long texts, unsystematic knowledge, and lack of attention, is a characteristic feature of the "digital generation". Dautov et al. (2019) in their study of the features of clip thinking and attention of Generation Z, found that the higher the level of clip thinking of Generation Z, the more mistakes they make at the beginning of the process of solving attention tasks. At the same time, the researchers found no connection between the indicators of clipped thinking and the results of solving attention tasks.

One of the factors in the formal assimilation of information when reading a scientific text may be the phenomenon of "clinical thinking" among modern students. In the literature (Dokuka, 2013; Isaeva, Malakhova, 2015; Semenovskikh, 2014) clipping thinking is qualified as a cognitive style. The authors identify such features of this style as reflexivity, fragmentariness, nonlinearity, visualization, imagery, consumer attitude towards information, and efficiency with a decrease in semantic

processing of information (Kolobaev & Vorobyova, 2019; Kraynukov, 2019; Krainov, 2019; Polyakov et al., 2019; Prensky, 2012; Rosen, 2007; Semenovskikh, 2016).

1.2. Background of the study

Research on clip thinking, which is predominantly theoretical (Dokuka, 2013; Krainov, 2019; Kolobaev, Vorobieva, 2019), states the urgent need for empirical research for scientific understanding of this phenomenon and specification of the category of clip thinking (Isaeva & Malakhova, 2015, p. 181-182). The study of the perception and understanding of a scientific text, taking into account the degree of manifestation of clip thinking in recipients, is new in psycho-logo-pedagogical research. The purpose of our study is to study the manifestation of "clip thinking" by students when working with a scientific text.

We assume that when evaluating psychological information, students often use criteria such as truthfulness, the degree of accessibility of information for understanding, emotional and personal acceptance of information, the degree of interest caused by this information, and the possibility of using the information in practical activities. These evaluation criteria do not always change consciously and differentially, they are often implicitly presented in a complex undifferentiated general assessment: "interesting", "should be taken into account" or "it is not clear what it is", "nonsense", "abstruse". At the same time, criticality to the interesting information that has appeared may not be sufficiently manifested. It is also possible to reject not quite clear theses as having no practical significance, being uninteresting, and not worth attention. These assumptions form the basis of our study. The problem of this study involves identifying the relationship between the characteristics of the perception and understanding of the scientific text by students and the severity of their manifestations of clip thinking.

1.3. Purpose of study

The purpose of this research is to study the manifestations of clip thinking of students when reading scientific texts. In this direction, answers to the following questions are sought.

1. How do students perceive and evaluate scientific texts differentiated into true; false; true but difficult to understand?
2. How are the features of clip thinking related to the evaluation of scientific texts as true; false; or true but difficult to understand?

2. Materials and Methods

2.1. Participants

The study involved 42 students of 2-4 courses studying in the direction of "Psychological and pedagogical education" of Taganrog Institute of A.P. Chekhov. This study used a continuous sample of students studying at the Faculty of Psychology and Social Pedagogy, regularly attending classes, and having the results of intermediate certifications "good" and "excellent". Respondents were not coded according to the performance criterion, since all of them demonstrated rather high academic performance in the disciplines of the psychological and pedagogical cycle.

2.2. Data collection instrument

Theoretical methods used include phenomenological and problem analysis. The empirical methods include an experimental survey (students' assessment of true, distorted, and insufficiently reflected judgments) and a questionnaire (self-assessment of the severity of clip thinking indicators).

Using the example of one of the educational texts on correctional pedagogy and psychology, we have developed an experimental survey methodology for analyzing students' perceptions and understanding of scientific psychological information. After reading the text "Diagnosis and Correction of child aggression", compiled according to the work of Venger & Tsukerman (2001), the respondents

were asked to evaluate statements reflecting the provisions set out in the text on the problems of child aggression and attitudes towards it. The assessment was carried out in points from 0 to 5 in the following positions: "true", "understandable", "I accept", "interesting", and "useful for practical activities". When starting work, the interviewees had to carefully read the proposed text, then put it aside and answer questions without consulting the text. The instruction allowed for the possible omission of answers for individual positions if they could not evaluate them.

2.3. Analysis

The first section of the methodology involved the evaluation of true judgments taken directly from the text:

- True aggressiveness is a rare variant of a child's development.
- Defensive aggression can be mistakenly perceived by adults as true.
- If the child's main diagnosis is the unformed means of communication, the symptoms of aggressiveness are not detected in projective methods.
- It is especially important to establish the presence of auto-aggression in the transition from primary school age to adolescence.
- It is advisable to translate actual aggression into the form of verbal aggression.
- With self-rejection and severe self-criticism, it is advisable to direct destructive tendencies toward overcoming external obstacles.
- With severe defensive aggression, it is useful to teach the child self-control and relaxation techniques.
- Unformed means of communication are corrected in the process of discussing with the child the causes of conflicts and ways to resolve them.

One of the sections of the methodology assumed the creation of situations of difficulty in analyzing and understanding the provisions given in the text. Thus, after reading the text, it was proposed to evaluate statements that seemed scientifically sound and close to those contained in the text but asserted directly opposite provisions compared to those reported in the text (no distortions were reported to the subjects). To model this situation of difficulty, the following technique was also used: before evaluating these incorrect judgments, the interviewees evaluated the true judgments taken directly from the text. When analyzing incorrect judgments, it was necessary to be critical, reflect on their inconsistency, and note their inconsistency with real phenomena.

This section of the methodology included eight inadequate (false) judgments to be evaluated in five specified positions. Here are these judgments and excerpts from the text, demonstrating their discrepancies in meaning with the inadequate judgments presented for evaluation.

- In projective diagnostic techniques, aggressive tendencies are usually masked in a child with sadistic tendencies. (In the text: "Usually such aggressiveness, sadism as a distortion of drives is not masked and is directly detected in all projective techniques").
- True aggression is usually combined with auto aggression. (In the text: "Genuine aggressiveness as a direct desire to cause pain, harm, damage to others is the rarest variant of a child's development. ... It is necessary to distinguish true aggressiveness, always directed outward, at other people, from auto-aggressiveness, aimed at self-destruction").
- A child with defensive aggression tends to hurt others and is hostile towards them (In the text: "Defensive aggression is one of the most common causes of behavior that seems aggressive to an adult").
- If the means of communication are not formed, the child usually behaves aggressively. (In the text: "Unformed means of communication can also give a picture of behavior that looks similar to aggressive. When meeting with an active partner, individual manifestations of aggressiveness are possible simply because of the inability to build other, more meaningful relationships").
- True aggression should first of all be redirected to external obstacles. (In the text: "And only after the immediate aggressive impulse has been worked out, joint classes are possible in which the

destructive impulses of the child can be redirected from the partner to external obstacles on the way to a common goal").

• Autoaggression can be transformed into brutally destructive forms of behavior (In the text: "Autoaggression obviously cannot result in brutally destructive forms of behavior: self-disparaging children tend to see the source of guilt and trouble that requires destruction in themselves, and not in other people").

• Defensive aggression should be directed to the fight against external danger (in the text: "In case of defensive aggression, it is recommended first of all to work on teaching means of communication. In addition, it is necessary to relieve anxiety, which is facilitated by a warm emotional atmosphere of home communication, and mental comfort, because behind defensive aggression there is a feeling of insecurity, a threat to the outside world.")

• If the means of communication are not formed, an adult should actively intervene in the communication process, directly help the child, and advocate for his peers (In the text: "The general principle of adult participation in children's communication: as inconspicuous help as possible, a hint in case of conflict or falling out of the common cause. But, having been reminded, for example, of a little count or a certain way out of a protracted dispute..., an adult should be able to eliminate himself in time, giving further initiative to children"). We assumed that with the severity of the indicators of clip thinking, which is characterized by the superficiality of information processing, students may tend to consider false judgments as true ones.

Another section of the methodology contained true judgments that can be understood from the context of what was read. However, they also admit the possibility of difficulties in deciphering their meaning because they contain special terms or foreign words, or because their meaning is obvious only in the general context. This section of the methodology covered information that was not always clear to students and was often not specifically reflected by them. The inclusion of this section simulated the situation of possible uncritical acceptance of foreign and incomprehensible information due to the desire to demonstrate competence. The section included the following eight judgments to be evaluated:

- It is possible to manipulate the child's focus on destruction.
- It is hardly possible to reduce true aggressiveness.
- Verbal aggression is more conventional than actual aggression.
- One should look for ways to channel true aggression.
- Heteroaggression is less dangerous than auto aggression.
- Defensive aggression has a different energy than true aggression.
- The immediate aggressive impulse must be worked out.
- Sublimation of hypertrophied aggression is necessary.

We considered it fundamentally important to identify whether students understand these judgments taken directly from the text or whether they reject them due to misunderstanding and superficial reading (the latter is typical for clip thinking). Total scores were calculated for each section; the maximum possible score was 40 points.

To determine the severity of clip thinking, we used an experimental survey methodology developed and presented in one of the works of Efremova, Kobysheva & Shalova (2020): students expressed a degree of agreement (from 0 to 9 points) with 20 judgments characterizing clip thinking. The judgments specified the manifestations of clip thinking described in the specialized literature (Dokuka, 2013; Semenovskikh, 2014; Kolobaev & Vorobyeva, 2019; Krainov, 2019; Polyakov et al., 2019). The judgments are concerned, in particular, with the speed of grasping and forgetting information, the peculiarities of perceiving information of a significant volume, linguistic minimalism, priority receipt of information from the Internet, simplification of intellectual tasks, reduction of reflection on perceived information, and attitude to visually given information.

Considering the manifestations of clip thinking, reflected in the special literature, the following judgments were formulated. Let us give judgments to be evaluated.

1. I can grasp information quickly and conclude quickly.
2. I don't need a prolonged focus on information, I need visual support.
3. I prefer linguistic minimalism: information should be formulated clearly and concisely.
4. The main source of information for me is the Internet, whereas life experience and real communication provide only some addition to the basic information.
5. I quickly receive and quickly forget information; you can always find what you need again.
6. One should not think too long about the perceived information; modern life does not require this.
7. I feel that the consequence of the active use of gadgets is nervousness and anxiety.
8. I, like my peers, have difficulties perceiving a significant amount of information and reading large works.
9. I try to simplify any task I deal with; the solution to the problem should be minimal use of the necessary means.
10. Collecting the necessary information, I do not seek to recall the context and rely on the previously received information.
11. I often struggle to formulate my opinion and my position.
12. Stereotyping, patterns are a distinctive feature of the thinking of the younger generation.
13. Deep analysis of perceived information is a relic of the past.
14. One should not concentrate on certain ideas or objects; modern life does not allow this.
15. I, like my generation, am characterized by intellectual laziness.
16. I am fond of watching video clips, video news, and blogs.
17. I prefer to designate emotional states with the help of "emoticons", it is very convenient.
18. I like that communication in modern society is predominantly impulsive and intermittent.
19. I think it is better to superficially evaluate a large array of information than to read into a separate article.
20. It is better to use quick access to broad information than to study specific materials on the recommendation of a teacher.

For each of the judgments, students in points from 0 to 9 expressed self-assessment of the manifestation of one or another indicator of clip thinking. It was assumed that due to the fractionality of scaling, it would be possible to differentiate the degree of manifestation of students' inclination to clip thinking and, in the future, to compare the results with the peculiarities of the perception of a scientific text.

In the study of Efremova, Kobysheva & Shalova (2020), the factor analysis procedure undertaken concerning students' assessments of judgments related to clip thinking revealed the following factors: superficiality of information processing (factor 1), areflexia (factor 2), simplification, linguistic minimalism (factor 3), efficiency, speed of information processing (factor 4), impulsivity and intermittent communication (factor 5), stereotypical thinking (factor 6).

In the course of computer processing of the results using the SPSS 17.0 program, the respondents were ranked according to the results of both methods used (total assessments of text judgments by sections and parameters and total self-assessment of clip thinking manifestations). The ranks were compared, and the rank correlation was assessed (according to Spearman).

3. Results

The conducted research has shown that some students almost equally highly appreciate both the true judgments given in the scientific text and the distorted judgments opposite to them in meaning, perceived as scientific, in the positions of "true", "understandable", "I accept", "interesting," and "useful". True judgments, when evaluating which situations of misunderstanding and difficult deciphering could arise, were also most often evaluated as true. A highly significant positive correlation

(R=0.563**, N=42) was found between the estimates of true and false judgments, which indicates that students do not understand the inadequacy of many false statements that have a scientific appearance.

Curiously, even with a zero grade according to the criterion "understandable", students evaluated the truth and usefulness of the information presented in the corresponding judgment, that is, they did not use the opportunity to skip grades. Table 1 shows the average data on students' assessments of judgments evaluated in an experimental survey.

Table 1

Average student scores of judgments compiled according to the text

Evaluated positions	Evaluated judgments		
	True	False	True, but difficult to understand
1. Truly	34,1	26,6	28,2
2. Understandable	34,2	28,6	28,5
3. Accept	32,8	28,3	28,1
4. Interesting	35,0	30,1	32,0
5. Useful	36,1	31,4	32,5

Table 2

Correlations of the severity of clip thinking indicators and total judgment assessments on the problem of child aggression

Evaluated positions	Evaluated judgments		
	True	False	True, but difficult to understand
1. True	- 0,83	- 0,336**	- 0,412**
Sig. (1-tailed)	0,302	0,015	0,015
2. Understandable	- 0,231	- 0,75	- 0,145
Sig. (1-tailed)	0,070	0,318	0,180
3. Accept	- 0,158	- 0,428**	- 0,342*
Sig. (1-tailed)	0,158	0,002	0,013
4. Interesting	- 0,540**	- 0,482**	- 0,563**
Sig. (1-tailed)	0,000	0,001	0,000
5. Useful	- 0,480**	- 0,466**	- 0,527**
Sig. (1-tailed)	0,001	0,001	0,000

*Significant at p < 0.05(1-tailed)
**significant at p < 0.01(1-tailed)

The data given in Table 2 illustrates the following manifestations of students' clip thinking in working with psychological text: the higher the indicators of clip thinking, the more accurately students perceive the untruth of false judgments, but less often the truth of adequate incomprehensible judgments arebeing accepted, the less often it is noted that the latter is interesting and useful. With distinct "clip-like" thinking, true statements are also not perceived as interesting and useful.

4. Discussion

The data from the conducted research make it possible to concretize the provisions cited in the literature about the features of clipped thinking. In the specialized literature, many negative

manifestations of the clip style of thinking are highlighted: illogicality, the distraction of attention (Rosen, 2007; Kolobaev, Vorobyova, 2019, etc.), areflexia, fragmentary thinking, and uncritical thinking (Dokuka, 2013; Semenovskikh, 2014; Isaeva & Malakhova, 2015; Krainov, 2019). Terms that have appeared that affirm the negative consequences of entering the world of digital technologies are "digital dementia" (digital dementia) (Spitzer, 2008), colorization of the psyche, and merging it with "technological processes" (Krainyukov, 2012).

Clipness is considered by psychologists as a characteristic of the processes of perception and processing of information peculiar to students of the digital generation, designated as Generation Z (Lancaster & Stillman, 2002). However, the advantages of the clip style of thinking are also noted: multitasking, the efficiency of switching between fragments of information, coverage, and memorization of large amounts of information (Rosen, 2007; Semenovskikh, 2014, etc.).

The conducted research made it possible to obtain fundamentally new data demonstrating empirical material on the connection between the perception and understanding of a scientific text and the severity of the manifestations of clipping thinking. The conducted research shows that, although in clip thinking there is an undifferentiated general assessment of the text's provisions, students, in general, can distinguish between true and false statements based on the materials of the text. The basis for such a conclusion is the negative correlations of the severity of the indicators of clip thinking with the assessments of the truth, acceptance, interest, and practical usefulness of false judgments. That is, it was revealed that higher self-assessments of clip thinking indicators by students correspond to lower estimates of the truth and acceptance of inadequate statements. This fact can be explained by the quality of the efficiency of clip thinking and the use of intuition mechanisms with reduced logical analysis, which make it possible to notice a catch in the presented statements, despite their scientific design. In a certain sense, clipped thinking approaches the manifestations of the cognitive style, which Evans and Waring (2011) characterize as "low analysis high intuition." As for the perception of incomprehensible judgments containing scientific terms, it can be assumed that representatives of the clip style of thinking uncritically reject them because the mechanisms of logic and reflection are not actualized.

Ignoring students when working with the text of the instruction part that allowed the omission of assessments of incomprehensible judgments may indicate inattention to the instructions and an uncritical attitude to work. Comparing the data obtained, it can be assumed that clip thinking, due to insufficient semantic processing of information when "grasping" a holistic image, more often than logical linear thinking, uses negation as a way of approaching the truth. This can explain the tendency to decrease the ratings of true judgments by the criteria of "interesting" and "useful", and the tendency to decrease the ratings of obscure, but true judgments by all criteria.

5. Conclusions

Clip thinking is a cognitive style characterized by the efficiency of processing a large array of information, intuitiveness, but at the same time, fragmentary, reflexive, and insufficient criticality, when perceiving scientific texts, can sometimes manifest themselves in making false judgments, the wording of which resembles true judgments, often excluding from consideration judgments formulated using incomprehensible scientific terms, refusing to take into account the entire context of what is being stated, and underestimating the practical significance of theoretical propositions, which are undoubtedly important for practice.

The insufficiency of critical analysis and reflection among students who implement the clipping thinking style in the perception of a scientific text is a manifestation of the orientation of representatives of the digital generation to the consumption of ready-made information products. With pronounced manifestations of clip thinking, students often demonstrate the ability to adequately distinguish between true and false judgments, which can be explained by the efficiency of processing information and turning to intuition with a lack of logical analysis and reflection. At the same time,

carriers of the clip style of thinking, feeling insufficient comprehension of the text, intuitively use a protective mechanism of avoidance when evaluating certain judgments from the text.

In the educational process, when working with scientific texts, it is necessary to specifically offer students tasks aimed at analyzing and reflecting on individual provisions of the text, assessing the practical significance of theoretical provisions.

6. Recommendations

The research conducted makes it possible to formulate several practical recommendations for teachers on organizing students' work with scientific texts. Since many representatives of the digital generation tend to use the style of clipped thinking when perceiving and processing information, they often ignore judgments containing incomprehensible terms. In this, along with efficiency, such features of clip thinking as fragmentation, and reflexivity are manifested. In this regard, it is recommended to specifically highlight parts of the text containing new terms, discuss their content with students, and reformulate using familiar terms.

It is necessary to specifically discuss with students the content of individual provisions of the text according to the criteria "interesting" and "useful for practical activities." To do this, you can offer tasks to justify the possibilities of using the information given in the text in practical work. These tasks can be varied: answering questions, writing an essay on the use of information in practical activities, annotating, reviewing, and summarizing the text.

Formulating true and false judgments based on the text and inviting students to choose true judgments and justify their choice is advisable. This will contribute to the actualization of analysis and reflection in students when studying the text and cpmpensate for such negative manifestations of clip thinking as fragmentation, the superficiality of information processing, and reflexivity.

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