The Clip Thinking Phenomenon: The typology of technological products for the bounds' overstepping and strengths' leveraging in the educational needs

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Abstract: *The paper represents a theoretical and conceptual scientific study by reference to the phenomenon of Clip Thinking, analyzed through the notional prism towards its limits for which it was stigmatized. By listing the existing research that explores tangential topics of the approached theme, the author tries to highlight the strengths of the research object, the CT phenomenon (CTP), capitalizing on them by using cutting-edge technological products.*

The current research addresses the solution of the CTP problem through the descriptive recommendation of a series of technological tools included in a systematic, authorial distribution, presented under the generic "classification of technological products to overcome the limits and capitalize on the strengths of CTP".

The given material is addressed to the teaching staff interested in capitalizing on cutting-edge digital tools in their professional activity carried out either in the pre-university or in the university environment in a constructive way that would reduce or eliminate the negative effects on the psychological and/or cognitive structure of the learner.

Among the methods used by the authors are the analysis and synthesis of specialized literature from such fields as educational sciences, learning psychology, general didactics, information and communications technology, and software product development.

Keywords: Clip Thinking, university didactics, cutting-edge technological products, engineers in the fields of computer science.

1. Introduction

The prominent characteristic of the digital age, **the 24/7 accessibility of ICT technologies and products, and more recently AI,** has partly generated the temptation, but also the dependence of users to access them permanently for various reasons (Burlacu, 2023; Ibrahimov, 2024; Manal, 2024). The intention of the educational system, as well as of their representatives, to meet the expectations of the learner transforms the methods, procedures, and teaching strategies to adapt them to the process, but also to the teaching act itself, as much as possible to the

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needs, sometimes the requirements, and desires of the learner (Burlacu, 2015; Burlacu, 2016a). One of the results of these efforts is the launch and promotion of international (Gabriel et al., 2022), national (Burlacu, 2019b), and local (Burlacu, 2019a) policies for the valorization of digital technologies and software products in the teaching-learning-assessment-self-assessment process at various levels of study (Burlacu, 2016b; Burlacu, 2021b; Burlacu, 2021c).

The abundance of information and its almost continuous access often desensitize the perception of users, which is the cause of the emergence and formation and/or development of a new type of data processing by information consumers, often coming from digital sources. The phenomenon in question, known as clip thinking, can be characterized as a way of processing information in a fragmented, most often superficial, manner.

Leaving aside, for now, the reasons for the emergence and spread of such a cognitive habit, we must note that, although in the opinion of some researchers, this ability has certain deficiencies (Bkhat, 2018), once these are known, they could be taken into consideration to be exploited from a didactic point of view.

The idea of CTP valuing, from didactic considerations, constitutes **the problem of this theoretical research**. Given the natural context of the digital age in which we live, theoretical reflections on potential solutions to the formulated problem will contain aspects of the fruition of technologists and software products in terms of improving/diversifying teaching-learning-assessment-self-assessment practices in interaction with students characterized by the presence of CTP, that is, by the existence, with some degree of preference, of consuming information in a fragmented style.

The objectives of our research were formulated as follows: (1.) a brief theoretical introduction to the notion of CTP; (2.) an analysis of the pedagogical and psychological aspects of CTP, as well as (3.) the creation and presentation of the typology of didactic and technological tools to be applied in education with the aim of improving the less desirable effects of CTP; (4.) a conceptual description of the items included in the typology of given tools, as well as an analysis of their functionalities and purpose. The article is addressed to those interested in the phenomenon of CT, mostly actors of the teaching process, teachers—students and/or educators — learners and/or parents, but also to scientific researchers in the fields of pedagogy, psychology, and software product development.

2. General presentation of the Clip Thinking Concept

The phenomenon of clip thinking is a notion with some history. This phenomenon begins to be reported with the observation by scientists of cognitive changes, apparently determined by the progress of mass media, among consumers of mass media products. Given that these transformations were recorded around the middle of the 20th century, predominantly, consumers of mass media products

inclined towards the formation of CT were viewers, that is, representatives of the population who preferred watching television programs. As early as 1964, from the writings of Marshall McLuhan, the idea of the theoretical and applicative potential held by products developed with the support of various media, which today we would call multi- and/or macro-media, in transforming our way of thinking and perceiving the world is clearly evident. Currently, there are studies that reflect the concerns of their authors on various aspects of the phenomenon of CT, among which we also attest attempts to define the concept in question.

For example, according to Bkhat (2018), "clip thinking" is seen as "a process of reflecting a multitude of different objects, disregarding the connections between them, characterized by the complete heterogeneity of incoming information, the high speed of shifting between fragments of the information flow, and the lack of the integrity of the perception of the surrounding world". While Volkodav et al. (2017), who analyze the CT phenomenon from an interdisciplinary perspective, consider that "The phenomenon of clip thinking is essentially synonymous with the concept of 'cognitive style".

Among **the scientific dimensions related to the CT phenomenon** are:

— *Adapting GT culture for education.*

The ways of adapting (Bkhat, 2018) the "clip culture" to educational technologies are studied by structuring information in the form of clips, changing the presentation format, and using vivid, clear, and visual presentations, which will improve the learning process for young people who have already formed the clip thinking.

— *Examining the relationship between CT versus the phenomena and/or psychic processes of the individual involved in an interaction with digital products.*

The research after Dautov, Korochentseva & Hussini (2019) proposes to solve the problems related to the analysis of basic approaches tangential to the study of clip thinking, examining the relationship between the phenomenon of clip thinking and attention.

The respective work is empirical and offers: assessing the level of clip thinking among representatives of generations X and Z; a description of the investigation process of attention mechanisms among representatives of generations X and Z; establishing the existence of connections between clip thinking characteristics and attention characteristics in representatives of the sample of generations X and Z; and detection of significant differences between the characteristics of clip thinking among representatives of digital generations and up-network generations.

Clip thinking "[...] is a result of our limited attention spans and the fast-paced nature of the digital world we live in. Instead of engaging in deep, focused thinking and analysis, we often find ourselves skimming through headlines, scrolling rapidly through social media feeds, and consuming information in bite-

sized portions (Toffler, 1970; Carr, 2008). The view on CT, which emerges from another set of research, is that it may be the result of "our attention span", but also of the natural speed, specific to today's digital world. Thus, according to Toffler (1970), and also Carr (2008), instead of engaging in "[...] deep and focused thinking and analysis [...] often", people waste their time scrolling almost unconsciously through posts on social networks, thus consuming "information in bite-sized portions".

While Bushuyev et al. (2024) capitalize on "clip thinking is a prevalent thinking pattern in the digital era, shaped by the fast-paced nature of technology and information overload".

3. CTP from psychological and pedagogical perspectives

Flashing thinking disrupts the balance of mental cognitive processes, enhancing or weakening the specific properties of a certain cognitive sphere (Dautov, Korochentseva & Hussini, 2019). This causes a decrease in the quality of selected information (Girenok, 2016), as well as the penetration and impact of third-party factors into the perimeter of the main phenomenon under investigation. Additionally, this fact burdens and disorients a person's work, as a whole.

According to Bushuyev et al. (2024), the emergence of such cognitive behavior is the result of either “[...] our attention span and the fast-paced nature of the digital world we live in”, or being absorbed by obligations, as well as the stress of dealing with them in situations of minimal relaxation: “we often find ourselves browsing the headlines, scrolling quickly through social networks, and consuming information in small portions (Toffler, 1970; Carr, 2008).

In our opinion, cognitive transformations specific to CTP have both positive and negative implications. We assume that among the positive aspects of the presence of CTP would be the fact that it allows the rapid selection and synthesis of an extensive range of information by the CTP carrier. Being “affected” by CTP, the person can (1.) stay up to date with current events while (2.) performing multiple tasks in an efficient manner. We also believe that CTP would serve as an enhancer to stimulate human creativity and promptness in terms of generating and exposing ideas and their implementation perspectives.

Previous studies were conducted on the effects of human-computer interaction, but also on user-learner and digital devices/software products developed through cutting-edge technologies, serving as direct arguments for possible results of the formation and/or development of the Clip Thinking phenomenon at the individual level.

The investment documentation approach allows us to state that the consumption of information generated and/or disseminated through high-tech products comes with certain consequences for the user, in the case of our field of interest, this being, inclusive, the one who learns. Thus, the conducted research

shows that the set of cognitive, psychological, and behavioral characteristics of the consumer of digital products is affected. Among the possible dimensions with a negative effect of CTP on the consumer of digital products and/or information, there are scientific works that highlight (see Figure 1):

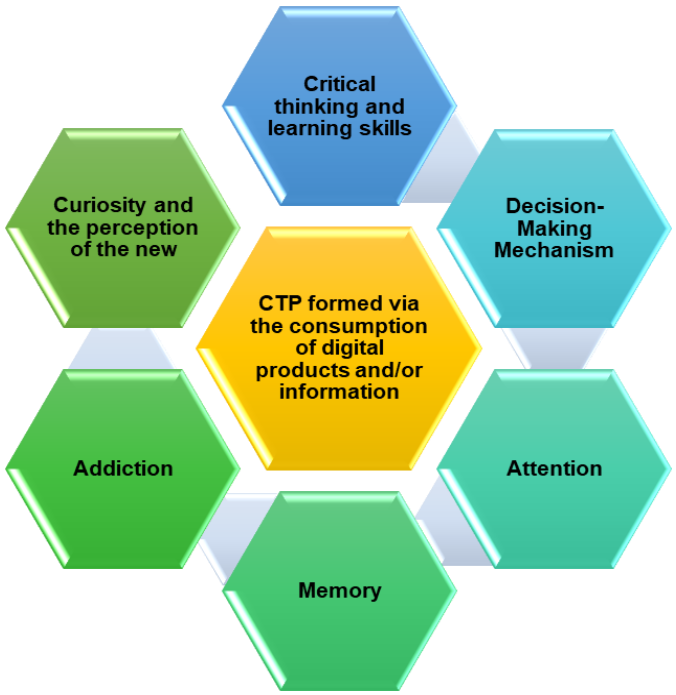

Figure 1. The influence of CTP on the consumer of digital products/information

— *Critical thinking and learning skills*

The possibilities of continuous access to the products of the digital world can lead to a decrease in the ability to concentrate, as well as the ability to think deeply (Carr, 2020). Analyzing scholarly opinions according to which CT leads to the diminution, or even the loss, of the ability to analyze perceived information under a critical prism, we found that this CT, affects self-motivation, learning ability, decision-making, and, in the long term, the quality of life.

According to Kraynov & Shalaeva (2020), the consumer of digital information is "deprived of the ability to critical reflection", thus causing the "formation of a mosaic-type consciousness" that leads to the absorption of these materials for "pleasure"; this "psychological processing" is carried out in an involuntary manner. Additionally, excessive use of digital media is associated with poorer cognitive control, including attention and inhibitory control (Carr, 2020).

— *Decision-Making Mechanism*

Digital distractions are another aspect of technology that can affect decision-making. Continuous digital distractions may reduce the cognitive capacity for

careful deliberation, leading to more impulsive decisions (Duke & Montag, 2017). Participants who were interrupted by a text message while performing a decision-making task showed a decrease in the quality of their decisions, highlighting the impact of digital distractions on decision-making ability (Mark et al., 2017).

— *Attention*

The user of digital products and information ends up forming the so-called "continuous partial attention". The phenomenon is characterized as a symptom of the user's attention overload (Firat, 2013), which is a specific characteristic of the digital age. Speaking of "continuous partial attention", we must mention that the term refers to the continuous need of the user of digital products and information to divide/permute/retain attention on several tasks or stimuli. Because the action takes place continuously and simultaneously, the user-learner fails or sometimes may not even intend to delve into the essence of what is taught-learned-assessed in the didactic process, which, as a result, affects the acquisition of new knowledge, skills, and, ultimately, special/professional skills of quality.

— *Memory*

For some time now, the scientific community has begun to use the notion of digital dementia. This notion reflects the formation of a cognitive regression caused by the excessive use of digital technology (Preiss, 2014). The phenomenon is gaining momentum among proactive consumers of digital products and information. There is research (Manwell et al., 2022) that claims that digital dementia causes functional-cognitive deficits, including the weakening of memory capacity; the appearance of hyperactivity disorders characterized by loss of attention, and a reduction in communication skills, but also the ability to make decisions. Obviously, among the consumers exposed to a higher risk of developing these deficiencies are representatives of the younger generations and/or dedicated users of cutting-edge technological products.

— *Addiction*

Addiction to the consumption of digital products and information can also accompany the impairment of the decision-making mechanism. Neuroscience research has informed those concerned with the implementation of technologies, including for educational reasons, that excessive consumption of content from digital media generates low levels of self-control, which affects the decision-making process of users of such products. The results of the study state that such users often make decisions based on impulse, and for those of them who are engaged in a study process, that is, they also have the status of a student, this aspect leads to a decrease in academic performance (Wilmer et al., 2017; Shanmugasundaram & Tamilarasu, 2023).

— *Curiosity and the perception of the new*

Unequivocally, curiosity and the perception of the new are natural and determining components of human cognition. Today, when digital technology

products offer an infinite number of new topics and approaches to people interested in expanding the horizons of individual and global knowledge, it would be a great sin not to resort to their inclusion in education. To satisfy the exploratory curiosity of the learner and / or any other individual oriented towards knowledge, but also for teachers tempted to adapt to the technological trends of the digital age, there are a multitude of strategies, environments, and technologies that respond to the needs and / or desires for training and development of the skills to be acquired within the teaching process. Here it is appropriate to mention the expansion of didactic formats, both classroom and non-classroom and/or online (Burlacu, 2021b) and offline (Burlacu, 2021a); and the transition from purely theoretical formats to applied ones.

4. CTP: Technological Tools to Be Applyed in Education

Although the results of scientific research in the field of behavioral and/or cognitive sciences could already serve as evidence of possible effects of the interaction of the user of digital products-student at the level of CT training, this being a contradictory phenomenon, it has managed to arouse the interest of scholars concerned with the educational integration of digital and finite products generated by cutting-edge technologies.

Clip thinking (Dautov, Korochentseva & Hussini, 2019) upsets the balance of cognitive mental processes, enhancing or weakening specific properties of a particular sphere. This leads to a decrease in the quality of the selected information, as well as the mixing of third-party factors with the main investigated phenomenon, which additionally loads and disorients the work of a person as a whole (Kushnir & Khachatryan, 2022).

In our opinion, under the generic term "work" can be included various types of intellectual and physical activities, as well as the activities tangential to the teaching process. In this sense, for the actors involved in the teaching process, the pupil-learner-student, on the one hand, and the teacher, on the other, it becomes imperative to strengthen the mental faculties of the learner, capitalizing on digital tools for educational purposes.

Primordial in selecting the technological tools necessary for capitalizing on the learner's CTP skills is their selection based on (Burlacu, 2014; Burlacu, 2020) didactic and educational considerations, as well as those related to the psychology of learning.

However, based on the factors listed, in our view, for interested teachers, but also for developers of educational software products, a clarification would be necessary on the typology of digital and technological tools capable of responding to the solution, if not total, at least partial, to this problem. For these reasons, the classification diagram was created (see Figure 2), followed by the description of each component of this typology.

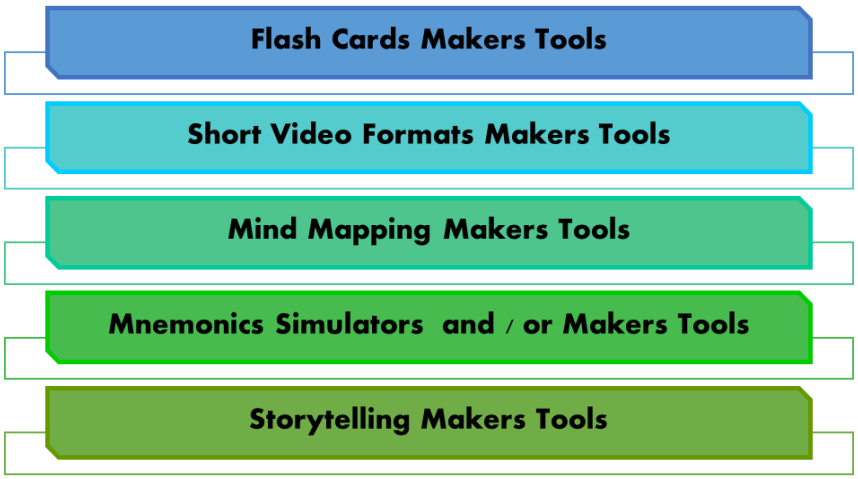

Figure 2. Typology of applications to overcome CTP limitations

If we are to analyze the functionality, but also the area of applicability of the proposed typology of tools, we must mention that the postfix of Makers Tools, common to all the elements listed in Figure 2, represents the fact that for these categories of teaching materials there are various digital tools, online or desktop applications, platforms, or components thereof that offer the possibility of creating such educational materials.

Based on these, we will list below a brief description of these teaching tools.

Flashcards: teaching materials that can exist in physical or electronic format, containing information, usually textual and/or graphic. In electronic versions, there is the possibility of using animated effects, soundtracks, and video sequences on one of the two sides of the flashcard. From a didactic point of view, flashcards are predominantly used for memorizing, updating, reproducing, and recalling theoretical concepts, but also certain practical contexts of their use.

Short Video Formats are videos, the entire content of which is very, very short. If we start from the specialized platforms for which they will be broadcast, their duration must be from 5 to 90 seconds. At the moment we are talking about platforms that recognize, accept, and store in the long term, but also broadcast such content. Such host platforms are Instagram, TikTok, and YouTube. As a rule, these platforms are flooded with commercial content, oriented towards potential customers and consumers of certain products, classic in this sense being videos that fall into the genre of videos created for the digital marketing area. Clearly, representatives from the education field, often in the person of various providers of various courses, trainings, and afterschool programs, but also larger educational entities, have taken over this trend. Currently, there are also teachers who try, if not to film themselves, at least to use or challenge their students to film such video sequences, capitalizing on them within the teaching process and / or in their eventual projects.

Mind Mapping was conceived as a brainstorming technique, which is used to organize data/information/concepts so as to facilitate the visual perception of the total and/or partial connections existing between them. As a rule, the arrangement of information through applications and/or only functionalities included in certain software products (accessible online or in desktop application versions) capable of creating mind mapping is carried out in a hierarchical form; key ideas are present as the central point of the diagram of the given type, and secondary topics that branch out are connected to the notions/ideas that support and/or explain them.

The respective technique, but also the mind mapping diagrams themselves, allows the overall analysis of the way in which ideas/phenomena/concepts, etc., appear, evolve, and also interconnect with each other. Thus, this tool offers the possibility of fixing the questions/problems formulated, generating possible new solutions sometimes based on the detection of new cause-effect dependencies.

Mnemonics Simulators: Its etymological analysis denotes a Greek origin later taken over by the French (> [< fr. mnémonique, cf. gr. mneme – memory]. From here, the analysis of the semantics of the term makes us conclude that it means "facilitating/helping memory". Mnemonics Simulators, also called mnemonic devices, allow the individual to organize and/or extract memorized knowledge more efficiently, operating according to the principle of anchors through which the human brain assimilates/stores/extracts information. Mnemonics Simulators can be in the form of images, video sequences, acronyms, rhymes, and slogans — fragments presented in any format — as a basic characteristic endowed with the ability to generate certain associations.

Storytelling turns out to be, in fact, a story exposed/broadcast in oral or digital format. Being a form of communication, which capitalizes on words and/or actions, it involves a storyteller and a listener/a group of listeners. Because storytelling involves at least two roles, that of storyteller-speaker and that of listener-receiver, this technique can also be considered an interactive artistic teaching method.

5. Conclusions

Our research tends to highlight the problem of the CT phenomenon, tangential to an educational process specific to the digital age and, namely, that of massive integration of technology in education, but also in the direct teaching act. In this context, this paper also proposes solutions to reduce the harmful effects of CTP training and development; here, as saving tools, various teaching materials deliverable in digital formats are capitalized on.

The respective teaching tools are: (1.) included and described in the author typology presented in this paper; (2.) recommended for use within the teaching-learning-evaluation process and; (2A.) either already exist and should be taken into account by teachers at various levels of study, but also curricular areas of school or

academic education; (2B.) or could be kept in view by those software developers who are interested in creating and implementing potentially useful applications in the field of education, as well as those addressed to the general public, respectively, oriented to respond to a wide spectrum of imperatives of the socio-economic environment, in order to reduce the risks of the occurrence of CTP in future users.

Although, in our view, the analyzed tools are promising from the point of view of the benefits brought to those involved in the educational act, their analysis at the level of impact on increasing the degree of student involvement, flexibility of the teaching-learning-evaluation process; efficiency of a technology-assisted teaching process; adaptability and personalization of the pace and/or degree of complexity of the teaching content; and monitoring of the progress of students could be subjects of possible scientific studies.

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