

# Digital Media as a Means of Developing Reflection in Students with Disabilities: Cultural-Historical Perspective

Olga Rubtsova and Natalya Ulanova

*A multidisciplinary research project “Understanding Digital Media” was launched in Moscow State University of Psychology and Education in 2011. The project aims at investigating the influence that digital technologies exert on various intra-psychological aspects of development – particularly on the formation of higher mental processes. The research is based on the fundamental idea of the cultural-historical theory (L.S. Vygotsky, A.N. Leontev, A.R. Luria) that demonstrates the crucial difference between tools and signs in human activity. In the research digital media are perceived as cultural signs, oriented towards higher psychological functions and mental processes. The article focuses on a longitudinal case-study undertaken with a disabled student of the IT Department<sup>1</sup>. The goal of the study consists in investigating the influence of digital technologies on the reflection of the student while he is working on his graduation project – shooting a documentary about his love story.*

## 1. Introduction

In the past few decades there has been a boom of research on digital media particularly in the context of upbringing and education. Scholars coming from various theoretical backgrounds highlight the importance of technologies in reshaping educational practices worldwide (Bonk 2009, Christensen et al. 2008, Heldberg 2011, Volman 2005, Voogt 2003). However the majority of recent works seem to focus mainly on the visible consequences of ICT usage (e.g.: improvement of information accessibility, expansion of the traditional borders of schooling environ-

---

<sup>1</sup> This research was supported by a Marie Curie International Research Staff Exchange Scheme Fellowship within the 7th European Community Framework Program (Project Number: 318909).

ment, modification of classroom communication, shifts in school performance, changes in interaction between teacher and students). Insufficient attention is paid to the intra-psychological aspects of media usage, particularly concerning the process of development and formation of higher psychological functions. Thus, till now there have been very few works devoted to the influence that digital technologies exert on attention, speech, memory, perception and other mental functions and processes.

Since 2011 these issues have become the focus of a multidisciplinary research project “Understanding Digital Media” launched in Moscow State University of Psychology and Education. The project aims at tracing the impact that digital technologies, used in educational process, have on various aspects of development in young people. The research is conducted in collaboration with the Department of Informational Technologies, which specializes in the education of disabled students. Thus one of the research target groups is represented by students with disabilities.

The International Classification of Functioning, Disability and Health define disability not solely in terms of health, but as the interaction between mental and physical conditions and personal and environmental factors (World Health Organization 2001). People with disabilities are often at the forefront of new media practices (Hartz 2000). Moreover, they regularly drive the demand for technological development (Verlager 2009) and push ahead the able-bodied population in their understanding of the media changes happening around (Jenkins 2008). Digital technologies deeply affect life of disabled students, who are extremely sensible to various aspects of ICT usage and represent a target group which can provide relevant data on the developing potential of digital media. Therefore it is not surprising that many scholars stress the need for a deeper theoretical understanding of the potential of technology usage and media literacy in the context of various disabilities (Alper 2012, Burne et al. 2011, Floyd et al. 2008).

The article presents a longitudinal case study undertaken with Arthur Kazakov – a 23-year-old student facing cerebral palsy. Arthur voluntarily agreed to participate in the project and gave the permission to use his name in the research work without any changes.

## 2. Digital Technologies: Tools or Signs?

Among various ways and practices of media usage, we can single out two essentially different approaches. According to the first, digital technologies are used as instruments, or tools, which are applied for achieving a certain objective. With this approach the investigator perceives media as external mediators that the student operates in order to solve concrete learning tasks. Psychological studies taking the first approach usually focus on the visible changes that emerge in the activity with the appearance of a particular media and compare them with the former practices. An example for this could be a study of how teacher-student interaction in the classroom changed with the introduction of interactive boards (compared with traditional blackboards). In the framework of the second approach, technologies are used as a means of internal activity which does not only result in changes within the activity itself, but also influences inner functions and processes. The theoretical basis for this approach is provided by the cultural-historical theory and particularly by the essential distinction that it makes between tools and signs in human activity. This distinction is closely connected with the Vygotskian understanding of mediation.

L.S. Vygotsky distinguishes between two forms of human activity – external and internal. Consequently, he distinguishes between two kinds of mediational means – tools, which refer to the external, or **mediated**, activity, and signs, which refer to the internal, or *mediating* activity. N.N. Veresov accentuates the difference between the two:

*“Mediated activity is already mediated by mediators, which were given or established, i.e. are created before. ... It is therefore, related to the fruits of development. Mediating activity, in contrast, is an activity that is not mediated, but mediates the whole process; it is an activity of mediating, not of mediation” (Veresov 2010, 86).*

From Vygotsky’s perspective, the tool reorganizes the structure of labor operations, while the sign recreates the whole structure of behavior. Thus, the substantial difference of sign from tool resides in the different purpose of the one and the other:

*“The tool serves for conveying man's activity to the object of his activity, it is directed outward, it must result in one change or another in the object, it is the means for man's external activity directed toward subjugating nature. The sign changes nothing in the object of the psychological operation, it is a means of psychological action on behavior, one's own or another's, a means of internal activity directed toward mastering man himself; the sign is directed inward” (Vygotsky 1997).*

According to this distinction, tools are directed outward and applied to the objects in the outer environment. Tools, therefore, remain external mediators. On the contrary, signs represent a means of internal activity directed toward functions and relationships. They are used to direct mind and behavior. Consequently, signs are internalized. In the context of research on mediational means (including technology) it is thus necessary to identify, to what form of activity – external or internal – a particular means refers to, and for what purpose it is applied in it.

The possible limitations of this approach in relation to media are connected with the fact that while reflecting on mediational means, L.S. Vygotsky spoke very little about the medium which makes an object being a means. According to G. Rückriem, the reason is obvious: living at the end of the “Gutenberg galaxy”, Vygotsky took for granted the mediating principles of the book printing century. He “never came under the water of digitalization” and did never reflect “neither on digital technology nor on its revolutionary importance as a new leading medium”. However the change of the leading medium always triggers profound shifts in on all the aspects of mediation:

*“In reliance to the given leading medium the understanding of what could be a tool or a helpful instrument changes. Existence, form and function of tools and instruments as well as the social rules of their application and use depend on the actually given medium and its information and communication systems. No exceptions are possible. ... Every leading medium constellation produces its own typical practices and products, activities and cooperation forms, its means, tools and devices as medium between man and environment, and it emerges symbolically generalized communication media to steer the communication between individual or social systems...” (Rückriem 2010, 36).*

From this perspective, digital technologies as the leading medium deeply affect all the aspects of mediation, reorganizing its practices, introducing new activities and forms of cooperation. In the context of digitalization the changes seem as dramatic as never before, since technologies reshape the very character of the mediational process, turning it from linear and causal, to a more interactive and dynamic one. Thus, in relation to technologies, it often becomes quite challenging to draw the line between internal and external activity, as well as to identify whether in a given situation a particular technology is used as a tool, directed outward, or as a sign, directed inward and influencing inner functions and processes. The interactive character of digital media blurs out clear boundaries separating these phenomena, and makes the relationship between them much more flexible.

At this point it might seem that distinctions, proposed by L.S. Vygotsky with regard to mediation in the XX century, are no longer relevant in the Information Age. However, despite the fact that Vygotsky never got in touch with digitalization and never witnessed technologies becoming the leading medium, he was quite aware of the dynamic character of the relationships existing between the basic components of mediating practices. Thus, even while contrasting tools and signs, Vygotsky always presupposed a profound connection between them. According to H. Daniels:

*“Vygotsky saw tools and symbols as two aspects of the same phenomena: a tool being technical and altering “the process of a natural adaptation by determining the form of labor operations”; the sign being psychological and altering “the entire flow and structure of mental functions” (Daniels 2008, 9).*

In that way Vygotsky did not set rigid boundaries separating tools and signs. Moreover, not only did he speak about close interrelation between the phenomena, but also did he point out to the developmental character of this relationship, saying that originally signs (or system of signs) exist as external tools, as a kind of cultural material, which later become tools of internal mediating activity (Vygotsky 1997). With regard to digital technologies it is important to emphasize the dynamic aspect of this transformation, which cannot be perceived as a linear, step-by-step process.

Summing up, we can assume that the general principles of mediation, provided by the cultural-historical theory, are perfectly applicable in the Information Age.

However it is important to highlight, that digital technologies as the leading medium deeply affect all the aspects of mediation. In particular, they blur out clear boundaries between mediated (external) and mediating (internal) activity, making the relationship between such phenomena as tools and signs much more flexible and dynamic.

### **3. Genetic Research Methodology: Tracing the Process**

Since our research group set the goal of investigating the influence of ICTs on intra-psychological processes, the main focus is put on the use of digital media as cultural signs. At the same time, as we are regarding the sign from a developmental perspective, structural analysis of sign mediation is not enough. We cannot be satisfied with investigating the place of sign in the structure of functions that are already formed and mature, regarding the sign exclusively as the result or the final product, but we need to study it in the course of development, tracing the very process of it becoming a sign. Importantly, we have to keep in mind that “the sign is a mental tool ... which does not simply exist, and does not only reorganize the structure of functions, but arises with necessity in the process of the cultural development of the higher mental functions” (Veresov 2010, 86). The word “necessity” here is crucial, since it implies that cultural signs (e.g. digital media) should not be studied in isolation from the general developmental frame. In our case it means that the goal of the experimental research consists in observing the process of transition from direct operation with digital technologies to using them as signs, oriented toward certain mental functions and processes – particularly, toward reflection.

The foundation for understanding reflection in the framework of the Cultural-Historical Theory was laid by L.S. Vygotsky, who perceived this phenomenon as the image of one’s own inner processes in consciousness. From his standpoint reflection is an extremely important mechanism, since it always underlies new types of connections as well as correlation of functions (Vygotsky 1997). A.N. Leontiev regarded reflection as the capacity to assess one’s own actions and their underlying basis (Leontiev 1978). V.V. Davydov perceived reflection as turning to the foundations of one’s own actions (Davydov 1998). Each of these definitions presupposes certain alienation from one’s own position in order to evaluate it from the standpoint of an outside observer.

As any higher mental process, reflection originally emerges in social interaction – that is, between people. Investigating it from a developmental perspective can be done with the help of experimental genetic method, which according to Vygotsky, artificially elicits a genetic process of mental development and aims at *«restoring the process to its initial stage, or, in other words, converting a thing into a process»* (Vygotsky 1997, 68). One of the central principles of genetic research methodology consists in *«experimental unfolding of higher mental process into the drama, which happened between the people»* (Vygotsky 1983, 145). The concept of drama here implies a collision, an emotionally-colored moment of social interaction, where the mental process first appeared as a social relation that was later internalized.

According to N. Veresov:

*«... the requirement for experimental research is the necessity to reveal the original form of any mental function, the form of social relations named by Vygotsky clearly and openly — the drama. Every higher mental function originally exists as an interpsychological category (dramatic social event in the relations of the two people) and after that it appears as an intrapsychological category. If the only objective analysis of the higher mental function is experimental reconstruction of the history of its development, we have to start from the experimental reconstruction of its original form — the drama between the people»* (Veresov 2010, 88).

Taking this idea as the starting point, our research group set the following aims of the experimental study:

- to study the process of development of reflection tracing it from its original form – the drama;
- to observe the process of transition from direct operations with technological devices to using them as signs, mediating reflection (transformation of media-tools to media-signs).

We will target these issues on the example of a case-study, undertaken with a disabled student.

## 4. Research Context and Data Collection

The research was conducted on the basis of the Department of Informational Technologies of MSUPE. Founded in 2001, for over 12 years already the Department has specialized in the education of students with disabilities (particularly with visual and locomotive impairments). According to the common requirements for learning results, teaching students with disabilities at the Department is performed inclusively in mixed groups with regular students. Inclusion of students with disabilities usually demands an extensive period of adaptation. Thus a comprehensive support program was elaborated for disabled students entering the IT Department. The program includes:

- *Pedagogical support* (presupposes providing an individual educational program and individual schedule for each student; organizing close cooperation between students' individual supervisors and department staff including lecturers, professors, support specialists, as well as administrators and students' family members);
- *Technological and methodical support* (implies providing students with various learning aids, as well as assistance in mastering computer skills to compensate for visual impairments and locomotive deficiencies);
- *Psycho-social support* (presupposes individual counseling, correction of personality distortions, motivational work, career guidance, information on various social benefits and aids).

Based upon 12-years' experience, the IT Department staff mention a number of factors which are the most challenging for students with disabilities, particularly: weak social orientation, knowledge deficiencies, communication skills deficit, self-indulgence, problems with regulation of behavior, lack of skills to assess adequately one's own abilities and one's own limitations etc. Many of these challenges are closely linked with various aspects of reflection. Thus there is a strong demand for developing reflection and various reflexive skills in students with disabilities.

The idea of conducting research on digital media at the IT Department was enthusiastically accepted both by students and staff. Many students expressed the wish to participate in the project.



As far as the data collected by our research group in 2011-2013 is rather extensive, in this article we would like to focus on a longitudinal case-study undertaken with Arthur Kazakov, who was particularly involved in the research.

Arthur Kazakov (born in 1989) entered MSUPE after graduating from a boarding-school. From his childhood he has suffered from cerebral palsy. Due to dysfunctional family background he didn't receive the necessary medical care in time. According to his own words, it was his sister who supported him the most, since she managed to organize a series of surgeries due to which he stood up from the wheel-chair. Now Arthur is walking with the help of crutches.

Arthur learned about MSUPE while he was taking part in a preparatory course organized in his school by the University. As far as he wanted to have a creative profession he decided to apply for the program "Directing and production in cinema and television" offered by the IT Department. The curriculum includes courses in directing and production for multimedia projects, multimedia software and hardware, computer graphics and animation, computer music technologies, design and composition of multimedia programs. Educational process involves implementation of diverse practical tasks: photo and video sessions, photo script, performing theatrical pieces based on modern and classical literature, video reports, photo and video montage, creating computer graphics and animation. Besides traditional forms of work such as lectures and seminars, other learning activities e.g. practical workshops, group brainstorming and round tables are widely used. Areas of professional activities of the program's graduates include documentary films, animation, TV, commercials, educational DVDs, web-sites etc.

The research group accompanied Arthur during the last semester of his studies (December 2012 – July 2013), which was devoted to accomplishing his graduation project – shooting a short film using various digital media and computer software.

Data collection for the research included:

- gathering information about the IT Department and its support programs for disabled students;
- gathering information about the student and other participants of the film-making process;

- gathering information about the video-editing technologies and software used in the film-making process;
- interviews and interaction with the student on different stages of the film-making process;
- interim and final versions of the film.

Fragments of the film-making process and interviews were video-recorded, transcribed and put on various storage devices. Thus participants of the research group were provided access to all the materials for individual work and analysis. Later on videos and transcripts were collectively studied and discussed by the researchers. Solid volume of the data collected during the semester provided a deep and multi-facet perspective of the film-making process as well as of each participant's background. In data analysis the main focus was put on studying the final version of the film.

### **Film Content<sup>2</sup>:**

The film opens with a scene of traditional ice-hole bathing on Epiphany's day. With the help of acolytes, Arthur, the protagonist of the film, performs traditional ablu-tion in an ice hole, which for Orthodox Christians signifies purification from the sins. After the opening title - "I Love" - spectators are shown fragments of Arthur's personal archives about his hobby – carting. Arthur starts speaking about his work on the graduation project and explains how the choice of the topic was made. The story is accompanied by pieces of Arthur's interview taken by his group mates in the University, as well as by snaps of the film shooting. When Arthur talks about choosing his love story to become the main topic of the film, family photos from his smartphone appear on the screen.

In the next fragment we see an episode from Arthur's life – visiting his wife in an isolation ward. The operator – Arthur's fellow student – explains to the people around that they are making a film for their friend, whose wife is in the isolation ward. At that moment Arthur tells the spectators that his wife is under arrest. Snapshots from Arthur's family archive appear on the screen, while he is explaining that their son was born in prison. The following story of their love is accompa-nied by scenes from Arthur's first year project, a film called "The Parting", particu-

---

<sup>2</sup> The full version of the film is available at <http://vimeo.com/75342726>

larly a fragment where a young man (Arthur) is slowly walking towards a girl (Arthur's wife).

Scenes from the film are interlaced with snapshots from Arthur's interview, where we see Arthur's college classmates. Views of Arthur's legs and crutches constantly accompany the story. Snapshots from the carting club interlace with snapshots from the isolation ward, where we see Arthur picking up his wife's personal belongings. Arthur continues telling the story of their love which is accompanied by pictures from their family archive and snapshots from the interview. In the next episode we see the walls of the prison, where Arthur's wife is, and a church nearby. In the following scenes from the interview Arthur talks about the event that led to his wife's imprisonment. We see scenes from "The Parting" and snapshots of Arthur walking along the prison walls. When the story comes to the most tragic part – the midnight arrest – we see Arthur crossing a busy street. On the photo from the family archive Arthur's wife appears, and later on emerges a fragment of the video of their marriage.

The story of the court session is accompanied with the scenes of a suburban train and snapshots of the municipal court building where the sentence to Arthur's wife was announced. In the next moment we see Arthur in an Orthodox church and by the monastery walls, in the voiceover he describes the circumstances which led to his wife's imprisonment. She was accused of beating her sister's baby during a quarrel, which she kept denying and which, according to Arthur's words, was extremely hard to believe. The situation was complicated by the fact that there were no witnesses to testify for her upon the trial.

In the following scenes of the interview Arthur talks about his wife's sentence and arrest, his voice breaks. In the video from the family archive we see the spouses' Orthodox wedding ceremony which took place in prison, as well as a few photos of the moment when Arthur saw his baby for the first time. Next the spectators are shown fragments of Arthur's visiting his wife in prison, we see him on the railroad station carrying gifts. The episode of his visit to prison is accompanied with a bardic song. At the end of the film the monastery walls appear on the screen once again. The closing scene brings the spectators back to Epiphany's day bathing and Arthur walking towards the church which produces the feeling of a round\circle composition.

Generally the film is shot in black and white, only the scenes of Epiphany's day bathing and final shots in the church are performed in color. Many scenes are seen by the spectators as if looking through a barred window or through a glass covered with raindrops. The film's musical score is minimal: there are church bells, church choir singing, a bardic song, a piece of instrumental music and city sounds.

## 5. Digital Media as Cultural Signs, Mediating Reflection: Data Analysis

As we have already pointed out, one of the main tasks of the research consisted in tracing the process of development of reflection through experimental reconstruction of its original form – that is, «the drama». Therefore in the course of data analysis the emphasis was put on studying the very process of film-making, rather than the film as the final product. For this reason our research group focused on the following aspects:

- stages of film-making;
- roles\positions, experienced by the student in the course of film-making;
- functions of digital media on different stages of film-making.

Careful analysis of the collected data permitted to divide the film-making process into five stages (s. Fig. 1):



**Fig 1:** stages of film-making process

Let us have a closer look at each of the stages.

### 1. Preparation

The stage of preparation embraced the following activities:

- choosing the topic of the film;
- writing preliminary scenario for the film;
- building up a film-making team (film crew).

At this stage the student was to decide which topic his short film would touch upon. He was free to choose any topic and any kind of genre (documentary, feature, educational film, or even animated cartoon). From the very start Arthur Kazakov wanted to shoot a documentary. Originally he was thinking of making a film about carting, which used to be his hobby for a few years. He shared the idea with one of his professors. The professor told him, that carting was a nice topic, however, he said, that he couldn't feel Arthur's enthusiasm about it – more precisely “he didn't see fire in his eyes”. And he asked Arthur: “Why don't you shoot a film about your wife? You always have fire in your eye when you speak about her”.

This moment is crucial for understanding the context of the whole semester's work and interaction. First, the professor pointed out that the main criteria in choosing the topic of the film should be the student's enthusiasm, involvement, his “perezhivanie”. Second, he warned against a formal approach to the film as to a graduation project, setting the pitch of the future interaction. Thus professor's advice reshaped Arthur's attitude to the film as to a formal, alienated from life learning task, into a meaningful project about himself, his own life and his “important others”.

Since the final decision about the film-making at the IT Department is always made by the student, Arthur was totally free to stick with his original idea. However he preferred to follow his professor's advice. The importance of this moment was many times highlighted by Arthur himself during our meetings and interviews throughout the semester. Moreover Arthur retells this episode at the beginning of the film which testifies that this conversation was indeed a turning point in the film-making process:

Arthur: *«He [Arthur's scientific advisor] noticed that when I start talking about my wife, a fire appears on my eye» («Он увидел, что у меня появляется огонь в глазах, когда я начинаю говорить о жене»)* (Documentary «I love», 02:36).

After the choice of the topic was made, Arthur was supposed to come up with a preliminary scenario for the film. At this stage of film-making the student found himself in the position of author, who was free to choose and to experiment with versions and ideas. In this creative process Arthur was mostly interacting with the supervisor and professors – the main challenge consisted in shaping the plot and

designing the main episodes. It turned out that the original version of the scenario underwent numerous changes in the course of the semester.

In parallel with writing of the scenario, the film-making team was formed. According to the Department's tradition all the students of the group are involved in each other's work on the graduation project. Thus the film crew consisted of Arthur's group mates, including other disabled students. Officially they were mostly responsible for operative work and film-cutting, however from the very beginning they were deeply involved in the project. The attitude of Arthur's group mates was totally informal: they accompanied him to the film sets, took part in long-hour discussions about the film, as well as participated in his daily life problems and activities. "We perceive and treat each other like friends, rather than colleagues," – these words were repeated by Arthur and his group mates on different stages of film-making throughout the year. As Arthur later highlighted in his interviews, the process of film-making, which was originally launched as a graduation project, quickly evolved into a meaningful collaboration and even close friendship between the participants. Arthur: *«Despite the fact that originally I was just a stranger to them, all the guys got so deeply involved in my situation, that they participated in film production, postponing their personal plans» («Все ребята, несмотря на то, что я изначально был никто, так прониклись моей историей, что участвовали в подготовке фильма, откладывая свои дела»)* (Postproduction interview, 04:02).

## 2. Shooting

Film-shooting was not organized according to a strict plan. Arthur's original scenario and his vision of the film kept changing throughout the semester. The film crew simply accompanied Arthur, recording various moments of his daily life. Thus the final version of "I Love" consists mostly of the episodes shot in the course of Arthur's life (bathing in the ice-hole on Epiphany's day, visiting isolation ward etc). The film also includes materials from Arthur's personal archive (photos and videos from his wedding) as well as fragments of his earlier works (his first-year qualification film: "The Parting"). Importantly, the final version includes numerous episodes about the film making process ("film about the film"), as well as fragments of interviews and film discussions by Arthur, his group mates and his supervisor.

Thus the film, shot by Arthur and his group mates, is a true documentary, which means that *the characters are not acting in any of the episodes*.

It is necessary to highlight, that at the stage of shooting we observe students involved in direct operations with media. Cameras and other digital devices are used as tools for targeting a concrete objective: recording various moments of reality. Thus, at this point they represent *external mediators*, and the film-making process itself can be perceived as the activity, *mediated by digital media*.

### **3. General Discussion**

The shooting of each episode was followed by a discussion. At this point Arthur, his supervisor and all the members of the film-making team gathered together to evaluate the results of the latest work. It is important to stress the informal character of these meetings. They were held either in the university, or sometimes in the flats of the participants in a friendly atmosphere and could take long hours. Arthur and the crew watched the episodes a few times, discussing the content and the stylistics of each fragment.

At this stage a few important transformations took place. First, in the situation of discussion the students changed position from participants of the shooting process to the film's exterior spectators. Their standpoint shifted from "in-side" to "out-side", which was especially visible in Arthur's case. Though he had already performed in two different roles – as the author of the scenario and the protagonist of the film – both of those roles gave him an inward perspective, while the position of a discussant immediately turned him to an "outside observer".

Second, at this stage various digital media, which were earlier applied as tools for recording, were now used for a totally different objective. Their function now consisted in reproducing the recorded moments of reality on the screen. That means that they underwent a transformation from instruments of film-shooting into an image, a mirror, which became the center of the discussion. At this point we may say that media turned from a means of external activity into a means of internal activity – in other words, from tools to signs. Consequently at this point the mediated activity of film-making gave way to the *mediating activity of reflexive communication*, which we decided to single out as a particular stage of the film-making process.

#### 4. Reflexive communication

Apparently it is very difficult to draw the line between discussion and reflexive communication, since the latter gradually emerged from the previous one. However we decided to regard reflexive communication as a particular stage, in order to emphasize that it was characterized by a conflict – a dramatic collision of the participants' standpoints and opinions. We perceive this point of film-making as “*the drama*” in Vygotskian sense, and this very moment is crucial for our research, since “the dramatic event is the form in which the higher mental function appears first as a social relation before it becomes an internal higher mental function” (Veresov 2010, 83-90).

At this point the participants of the discussion came to realize that each of them had a different perception of the “ideal film”. These different perceptions became the source of the argument that started between discussants concerning the plot, the stylistics, and other aspects of film-shooting. This situation made the participants “exchange standpoints”, shift perspectives, and, eventually, “turn to the foundations of their own actions” (Davydov). Importantly, this moment was extremely strained: all the participants were deeply involved in the interaction, and each of them was experiencing and co-experiencing “*perezhivanie*” – the individual emotional experience of the situation. Thus, we may say that this is the *moment*, where reflection appeared as a social relation between the participants of the dramatic event.

A fragment of this discussion can be found in the final version of the film:

*Peter: Still, I don't believe and that's it.*

*(Петр: Все равно, не верю. Вот не верю - и всё.)*

*Nikita: Water-melon, Arthur, eat the water-melon.*

*(Никита: Арбуз, Артур. Съешь арбуз.)*

*Max: Why don't you believe? Arthur speaks the truth.*

*(Макс: Почему ты не веришь? Артур говорит правду.)*

*Peter: He doesn't seem to speak it in the right way...*

*(Петр: Ну, он как-то не так рассказывает...)*

*Supervisor: We have Stanislavsky among us!*

*(Научный руководитель: Здесь в наших рядах есть Станиславский!)*



*Peter: I don't deny that Arthur speaks honestly, but from your words it seems that you're thinking about yourself firstly, so that your life is not hollow, and she and her love comes after that.*

*(Петр: Не, я не отрицаю, что Артур искренне говорит. Ты, как бы, о себе говоришь в первую очередь, чтобы твоя жизнь не была пуста, но только потом, во вторую очередь, о своей жене.)*

*Christina: And why are you afraid to lose her love? And where are the children now?*

*(Кристина: А почему ты боишься потерять ее любовь? А где сейчас дети?)*

*21:44 – 21:47*

*Supervisor: What shall we film so that you believe?*

*(Научный руководитель: Вот что надо снять такое, чтобы вы поверили?)*

*(Documentary «I love», 20:50 – 21:15).*

It is necessary to highlight that from the very beginning the character of the argument was constructive, which means that the discussants were:

- ready to listen to each other;
- willing to understand the others' perspective;
- aware of the necessity to overcome the differences in understanding and to achieve consensus.

Later on, in the course of postproduction interviews Arthur stressed the importance of these discussions for shaping his capacities:

Arthur: «The whole film production process changed me a lot, as well my attitude to myself and other people» («Весь процесс съемки очень изменил меня, мое отношение к себе и другим людям») (Postproduction interview, 48:05).

Thus, we may say that reflexive communication, which emerged in numerous discussions of the film, contributed to the development of Arthur's reflexive skills.

## **5. Reconsideration**

The stage of reconsideration included reassessment of the previous work according to the outcome of discussions and making of the corresponding changes in the

film. The final decision was always made by Arthur. As he later stated in one of the interviews, «*the film was changing together with himself and his group mates*» («фильм менялся сам вместе со мной и моими однокурсниками»); Postproduction interview, 50:14).

From Arthur's words the most important source of self-reevaluation for him was connected with the change of positions that he experienced while working on the project:

Arthur: «*I can't say that I am just the author of this film. Together with many other people, I was involved in the process sometimes as an actor, sometimes as the director, sometimes as the script writer*» («Я не могу сказать, что я только автор этого фильма. Очень много людей принимали участие в его подготовке, и я выступал там то как актер, то как режиссер, то как сценарист»); Postproduction interview, 82:26»).

According to data analysis, throughout the film-making process Arthur performed at least in three different positions:

- the author of the text
- the protagonist of the film
- the discussant of the film

In the first two positions he shared the inner perspective of the film-crew, while in the process of discussion he was evaluating his own work from the standpoint of an external spectator. It is important to highlight, that each of the stages did not occur only once or twice in the course of film-making, but repeated many times due to the fact that discussion followed the shooting of almost every episode. Thus Arthur was taking on new positions and continually changing his perspective. This continuous process of role-alternation can be perceived as an *important source of reflection development that emerged as the result of the mediating activity*.

One of the main questions which emerged after data analysis, is whether the same effect could be achieved without the use of digital media – e.g. if Arthur and his group mates performed the same story in the form of a dramatic play. A theatrical production would definitely have given the students the opportunity of experiencing various roles and positions. It could also provide the chance of role-alternation

and emotional involvement in the process of interaction. However without the use of digital technologies the perspective of the participants could have remained “inward” - the process of the interaction could not be recorded and become the object of further discussion and analysis. Video-editing media allowed to capture the exact moment of “pereživanie” and created a unique opportunity of “re-experiencing the experience”. They permitted Arthur and his group mates to go through the same situation in the position of spectators, to comment on it and to assess each other’s words and actions. Thus, if we may say so, in the case-study digital media provided the opportunity of a “double pereživanie” – one directed inward, and one – directed outward – creating favorable conditions for the development of reflection and reflexive skills.

## 6. Summary

- In the first two stages (preparation and film shooting) video-editing media were used as tools, necessary for recording. Their function consisted in capturing concrete moments of reality. At this point they represented *external mediators*, and the film-making process itself could be perceived as the activity, *mediated by digital media*.
- At the stage of discussion video-editing media underwent a transformation from instruments of film-shooting into an image, a mirror, which meant that they could no longer be perceived as external tools, but as signs, oriented toward internal functions and processes. Consequently at this point the mediated activity of film-making gave way to *the mediating activity of reflexive communication* - a particular stage, characterized by a collision of the participants’ standpoints and opinions. We perceive this point of film-making as “*the drama*” in Vygotskian sense.
- Throughout the film-making process Arthur performed at least in three different positions: the author of the scenario, the protagonist of the film and the discussant of the film. The first and the second positions granted him the perspective of the internal participant. At the stage of discussion he turned into one of the film’s exterior spectators and his standpoint shifted from “in-side” to “out-side”.
- Constant alternation of roles and positions, and the opportunity of “re-experiencing the experience”, provided by digital technologies, created favor-

able conditions for the development of reflection and reflexive skills in the participants of the film-making process.

## **7. Some Concluding Remarks**

The departing point for the study undertaken by our research group is represented by the basic distinction that cultural-historical theory makes between tools and signs in human activity. Tools are directed outward (toward the object) and represent a means of external, or mediated, activity. Signs are directed inward (toward human functions and relationships) and represent a means of internal, or mediating, activity. Tools remain external mediators, while signs are internalized. In relation to technologies, it often becomes quite challenging to draw the line between internal and external activity, as well as to identify whether in a given situation a particular technology is used as a tool, directed outward, or as a sign, directed inward. The interactive character of digital media blurs out clear boundaries between tools and signs, making the relationship between them much more flexible and dynamic.

Keeping in mind that the sign arises with necessity in the process of the cultural development of higher mental functions, we investigated the sign from a developmental perspective, focusing not on the place of sign in the structure of functions that are already formed and mature, but on tracing the very process of it becoming a sign. Therefore, in our case the goal of the experimental research consisted in observing the process of transition from direct operation with digital technologies to using them as signs, oriented toward mental functions and processes – particularly, toward reflection. For targeting this objective we applied the genetic method, which, according to Vygotsky, consists in experimental reconstruction of the original form of any higher mental process — the drama between the people.

The limited space of this paper allowed us to present the results of one case-study, which illustrates only a few aspects of the developmental potential of digital media.

Further research challenges are connected with providing a deeper insight into the problem of transformation of digital media from external mediators (tools) into signs that could stimulate the development of different psychological functions. A

detailed investigation of the developmental potential of ICTs for various target groups could help in reorganizing educational practices in order to acquire better learning and developmental results. Our research group will continue working on these issues in the framework of the multidisciplinary project “Understanding Digital media” in the coming two years.

## Acknowledgments

The research group would like to thank the Rector of the Moscow State University of Psychology and Education Prof. Vitaly Rubtsov and the Dean of the IT Faculty Prof. Lev Kuravsky for help and assistance.

Our deepest gratitude goes to Arthur Kazakov and his family, Victoria Fomina and all students, who participated in the film production and research project.

## References

- Alper, M. (2012): Promoting emerging new media literacies among young children with blindness and visual impairments. *Digital Culture & Education*, 4, 3, 243-256.
- Buckingham, D. (2004): *The media literacy of children and young people*. London: Centre for the Study of Children Youth and Media, Institute of Education, University of London.
- Burne, B.; Knafelc, V.; Melonis, M.; Heyn, P.C. (2011): The use and application of assistive technology to promote literacy in early childhood: A systematic review. *Disability and Rehabilitation: Assistive Technology*, 6, 207-213.
- Christensen, C.M.; Johnson, C.W.; Horn, M.B. (2008): *Disrupting class: How disruptive innovation will change the way the world learns*. New York.
- Cope, B.; Kalantzis, M. (2009): Multiliteracies: New literacies, new learning. *Pedagogies: An International Journal*, 4, 164-195.
- Floyd, K.K.; Canter, L.L.S.; Jeffs, T.; Judge, S.A. (2008): Assistive technology and emergent literacy for preschoolers: A literature review. *Assistive Technology Outcomes and Benefits*, 5, 92-102. URL: <http://www.atia.org/i4a/pages/index.cfm?pageid=3305> [20.08.2014].
- Hartz, D. (2000): Literacy leaps as blind students embrace technology. *The English Journal*, 90, 2, 52-59.
- Heldberg, J.G. (2011): Towards a disruptive pedagogy: Changing classroom practice with technologies and digital content. *Educational Media International*, 48, 1, 1-16.
- Jenkins, H.; Purushotma, R.; Clinton, K.; Weigel, M.; Robison, A.J. (2006): *Confronting the challenges of participatory culture: Media education for the 21st century*. Chicago.
- Jenkins, H. (2008): Media literacy: Who needs it? In: Willoughby, T.; Wood, R. (Eds.), *Children's learning in a digital world*. Oxford, 16-39.
- Kontopodis, M. (2012): *Neoliberalism, pedagogy and human development: Exploring time, mediation and collectivity in contemporary schools*. New York.
- Kress, G. (2010): *Multimodality: A social semiotic approach to contemporary communication*. London.
- Leontiev, A.N. (1978): *Activity, Consciousness, and Personality*. Hillsdale.

- Rubtsov, V.V. (1991): Learning in children: Organization and development of cooperative actions. New York.
- Veresov, N.N. (2010): Introducing cultural historical theory: main concepts and principles of genetic research methodology. *Cultural-historical psychology*, 4, 83-90.
- Verlager, A.K. (2009): Literacy as process: The multiple literacies of blind readers. *Journal of Media Literacy Education*, 55, (1 & 2). URL: <http://www.journalofmedialiteracy.org/index.php/past-issues/2-cultural-diversity-v55-n1a2/23-literacy-as-process-the-multiple-literacies-of-blind-readers> [Date of access: 20.08.2014].
- Vygotsky, L.S. (1982): *Sobranie sochinenii, Tom vtoroi, Problemy obshchei psikhologii* [Collected works, Vol. 2: Problems of general psychology]. Moscow.
- Vygotsky, L.S. (1982a): *Sobranie sochinenii, Tom tretii. Problemy razvitiya psikhiki* [Collected works, Vol. 3: Problems in the development of mind]. Moscow.
- Vygotsky, L.S. (1984): *Sobranie sochinenii, Tom chetvyyi: Detskaya psikhologii* [Collected works, Vol. 4: Child psychology]. Moscow.
- Vygotsky, L.S. (1984a): *Sobranie sochinenii, Tom shestoi: Nauchnoe nasledstvo* [Collected works, Vol. 6: Scientific legacy]. Moscow.
- Vygotsky L.S (1997): *Collected works. The History of the development of higher mental functions*. New York.
- Westby, C. (2010): Multiliteracies: The changing world of communication. *Topics in Language Disorders*, 30, 1, 64-71.
- World Health Organization (2001): Agenda item 13.9: International classification of functioning, disability, and health. Resolution of the Fifty-Fourth World Health Assembly.

**Keywords**

cultural tools and signs  
mediating and mediated activity  
reflection  
disability  
drama  
reflexive communication.

**Index of names**

Alper, M.  
Bonk, J.C.  
Burne, B.  
Canter, L.L.S.  
Christensen, C.M.  
Curie, M.  
Daniels, H.  
Davydov, V.V.  
Floyd, K.K.  
Gutenberg  
Hartz, D.  
Heldberg, J.G.  
Heyn, P.C.  
Horn, M.B.  
Jeffs, T.  
Jenkins, H.  
Johnson, C.W.  
Judge, S.A.  
Knafelc, V.  
Kuravsky, L.  
Leontiev, A.N.  
Luria, A.R.  
Melonis, M.  
Rubtsov, V.V.  
Rückriem, G.  
Veresov, N.N.  
Verlager, A.K.  
Volman, M.  
Voogt, J.  
Vyotsky, L.S.