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THE GLOBAL RETURN THE PICTURES AND VISUAL COMMUNICATION; CHILD AND SPECIFIC VISUAL CONTENT

Summary: The global return of digital images in the information age has enabled broader uses of visual texts through information technology (IT) which is a suitable tool for understanding the postmillennial generation of children. This study examines how members of this computer literate generation interpret digital pictures and how they feel during this interaction. An informative narrative represents an integration of visual elements of the child's narrative with implicit or explicit mathematical content shown in contextualized and decontextualized forms. The constancy of polysemy and auraticity during the "reading" of digital images has been examined. The findings revealed that children (a) read digital images containing implicit mathematical content rhizomatically and polisemically, (b) experience an image-narrative context as a variable category which they interpret auratically, and (c) read explicit mathematical content with a higher degree of inhibition.

Key words: auraticity, narrative, pictures, transmillennial generation, visual culture

Information age and visual culture

Information and pictures in the information age are connected by a general omnipresence. Usage of the pictures in a scientific interpretation and explanation of the world (Rose Gillian, 2007) has been present since the 18th century. However, only in the information age can we say that it is "ocularcentric" (Rose Gillian, 2007: 2). At the centre of social communication there are pictures that are constantly multiplied in media via the sharing, creating and displaying of them. Hyerle (2000) confirms that about 90% of all information that man's brain produces is created as visual information (as cited in Hartmann Tilo, 2008). The time overcrowded with pictures and information in general (Kastels Manuel, 2000) was born. Bodrijar (1991) pointed out that the world became a great simulacrum of pictures and spectacle due to which the picture predominantly represented reality. Mirzoeff (1998) therefore uses the term visual culture in order to highlight the omnipresence of the pictures in pos-

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tmodernism, which coincides with the information age. The unexpected return of pictures is defined by the contemporary information age as an age of visual culture (Duncum Paul, 2001; Mirzoeff Nicholas, 1998). Pictures are everywhere and always around us. They inform us, call us, entertain us, remind us, and inspire us. Visual communication has become, if not the only, then certainly a compulsory manner of presenting different information. Given that, new information technologies (ITs) and the digital culture in which they are being developed (Gir Ričard, 2011) and unified (Kanton Džon, 2009), and play an important role. Within this world cultural context, pictures experienced a kind of renaissance enriched with a digital form and broadened by the procedure of separating content through IT. In terms of renewal, man also has undergone rebirth by giving birth to generations of children who, in the world's digital culture, appear as social beings with new abilities, needs, and characteristics in communication processes. Born digital (Seely-Brown John & Duguid Paul, 2000) and surrounded by technology (Gargiulo Richard & Kilgo Jenifer, 2013; Veen Wim & Vrakking Ben, 2006) they grow up "bathed in bytes" (Selwyn Neil, 2009: 47) and immersed in technology (Prensky Marc, 2008). They are a collaborative generation (Tapscott Don & Williams Anthony, 2007) that develops new abilities (Palfrey & Gasser, 2008). The digital world and the new ITs are their natural environment (Terkl Šeri, 2011).

The triad: digital picture-child-narrative was the main inspiration for this paper. The digital picture was presented to the children on the computer. From the perspective of communication and information science, the basic paradigmatic research framework, understanding and interpretation of the pictures are accepted as a kind of contemporary visual literacy interpreted as an "active and constructive dimension" (Elkins John, 2010: 203) and a perception that enriches meanings. The content of pictures represented a sum of visual elements with implicit or explicit mathematical contents shown in contextual and decontextual form. Visual elements are as follows: a color as a tone and mood and an element of background (nature-non-nature; animate-inanimate), and also an ability to read the overall context of the picture. The mathematical content refers to the knowledge of numbers (presentation of quantity, basic numerical operations) and space (geometric figures and spatial relations). The research questions are as follows: How does the child observe and read digital images and does the child predominantly see the content as a visual narrative or as mathematical content?

While reading digital pictures, the postmillennial generation (Tapavički Duronjić Tatjana, 2012) of children, as skillful users of ITs, develops specific parasocial interactions of trust conditioned by their positive attitude to IT, which originated from years of experience in bionic communication, communication between IT (machine) and the child. Hence, I connected two premises in the research process: one about trust, and one about enhancing trust. Trust is manifested in the relation between the child and the child's expectations in the communication made through IT and often are not conditioned by the content of the communication but by technology as such. Another premise refers to the fact that this type of parasocial interaction enhances when a digital picture as narrative becomes part of it. A relation of trust arises as the recognition of years of the child's experience in reading picture

books and acquiring first lessons from them (Lowe Virginia, 2003). Given that the child reads illustrations and pictures (Rot Gabrovec Veronika, 2003), in order to decode these processes Hartmann's model of parasocial interaction was used which enabled "identification of three basic psychological processes within the said model, which were as follows: cognitive, affective and behavioral interaction" (Džajls, Dejvid, 2011: 111). I used the term parasocial interaction in a completely different meaning in order to talk about quasi-social interaction, an interaction done through computer machine and a bionic communication process. All three types of processes were also used in special meanings, adapted to the needs of the research. Thus, cognitive interaction referred to the reading accuracy and understanding of the content of digital pictures. Affective interaction was analyzed at the levels of acceptance of interaction and reaction (response) to interaction. The third type, behavioral interaction was used in the meaning of the manner of the children's behavior in the processes of reading digital pictures.

Benjamin's communication theory on the "auraticity" of a work of art was also used in the analysis (as cited in Tomić Zorica, 2003: 141-145). I used Benjamin's approach to point out the importance and uniqueness during the moment of children's perception of a digital picture. I analyzed the ability to read pictures through Roland Barthes' approach (Barthes Roland, 1982) to denoting meaning of visual content, which was according to author a free and fluid concept.

Method

In terms of methodological approach, the paper falls within the category of qualitative research. The following basic scientific methods were used: theoretical analysis, method of induction and synthesis, whereas a semi-structured interview and observation are used as research techniques. The entire research is of a primary and development type, which represents its specific value.

A model for simultaneous examination of the children's mathematical and visual ability represented a union of mutual elements of both types of abilities: Ability to recognize the content, ability to draw comparisons and ability to classify.

A digital picture book without text, that is, a narrative picture book (Nikolajeva Maria & Scott Carole, 2001) was designed by this author for the purpose of research. Digital pictures were shown using a photography technique and divided into three categories. The first group of digital pictures contained implicit mathematical content in a decontextualized form. The second group of digital pictures represented explicit mathematical content in contextualized form. The third group of pictures included combined content with coloring pictures, colored pictures of animals in different positions, labyrinths and computer emoticons. There were 21 pictures in total. The children's answers were coded in two ways. Arabic numerals were used in order to mark the overall number of children giving some kind of interpretation and answer, whereas roman numerals marked the children. Fifteen preschoolers participated in the study. The interview with each child lasted about 60 minutes on average.

Results

The initial content of a digital picture book was made up of a series of eight decontextualized pictures with implicit mathematical content. As an answer to the first research question: What do you see in the picture? In a description of the picture-narrative, the children saw information from the pictures as follows: dominant information in relation to content and having in mind the position of the content (central position of the boy and the girl), but also having in mind the size of the content's elements (close-up). After that, they read other elements of the picture-narrative to the smallest detail, according to their own order of observation, assuming that in the narrative there was something which was actually not there, which confirmed Barthes's polysemic orientation of observing content (Barthes Roland, 1982). The children, by reading the picture, showed that they had the ability of imagination, and also logical thinking, and that they read the picture's content starting from the centre of the picture and then moving towards the outside edge of the picture according to the model of concentric circles.

Most of the children (13) did not see the mathematical content in the picture, but "only a story". Thus, they read the picture as a group of visual information. The children successfully compared and selected parts of the picture-narrative according to the following elements of visual abilities: context of the story (15), knowledge of colors (15), and differences between animate and inanimate (13), natural and unnatural (14). According to the elements of mathematical abilities the children recognized numbers (representation of quantity and basic numerical operations (15), and understanding of space (geometric figures and space relations) (13). The way the children looked at the picture matches the manner of scanning the content like putting together a puzzle (Arizpe Evelyn & Styles Morag, 2003: 201) or playing video games. They observed different details, one by one, and then put together the whole picture, that is, the story, starting from the centre (of chosen details) and then moving towards the other parts of the picture in irregular directions and ways. Being faced with the possibility to pick the most important part of the picture on their own, the children were first drawn by colors (9), then relationships (3), meanings (2) and forms (1). They usually moved their eyes from right to left (8) and from up to down (10), which can be interpreted as an awareness that the picture is an open concept of meaning, but also as the fact that the transmillennial generation expresses transmillennial behavior (Sweeney Richard, 2006) and has stylistic individuality and courage to deconstruct standards and canons. The fact where the picture's element was placed did not influence the accuracy of the reading (cognitive ability) and analysis (affective). The children equally successfully read dominant elements and marginalia in the picture. According to this, there is an obvious holistic and polysemic approach in the interpretation of the first group of the picture-narrative.

Implicit mathematical content presented as a short narrative

In general, all children showed that they had a cognitive ability to "read" the content accurately, but also the ability to "come up with" an additional content,

which was not present in the picture. It was noticed that those additional contents were rationally placed in the picture and in the story as well, from the perspective of logical thinking and space orientation. Polysemic orientation of the children while observing and analyzing the content was a dominant approach of the children to the pictures. They observed the pictures from the group by moving from the dominant element, which was, by rule, a central element of the picture, towards marginalia of the picture. From the aspect of our model of parasocial interaction, cognitive interaction was developed, because the children accurately read and understood the content of the first group of pictures. An independent addition in meaning and taking certain assumptions into the pictures' content by a great number of children (9) does not question, in my opinion, the correctness of this interpretation, because in the case of expanding the story the children added logical elements and views of the pictures' content. Emotional interaction was also strongly expressed through openness for conversation and interpretation of value in the pictures (11). Interactive behavior of the children in the example of these pictures showed that the children face the context as a loose structure, that is, a composition that can be approached in many ways (12). Namely, the children read the pictures nonlinearly, rhyzomatically, in "their own chosen way". Sometimes the reading took the model of concentric circles, and sometimes the model of a chaotic labyrinth.

Interpretation of Pictures with Explicit Mathematical Content

The second group contained eight pictures with explicit mathematical content presented in contextualized form. The structure of content of a typical picture from this group was made up of an explicit mathematical task presented numerically and the same task presented non-numerically, that is, as a picture. The interpretation of the pictures' content was cognitively correct with the majority of children (13). The children understood both the visual and mathematical content and task they were supposed to solve (12). While solving a mathematical problem, the children: successfully represented quantity (15), solved a numerical operation of adding numbers (14), correctly named geometric shapes (14). They were less successful in solving the task of subtraction (11), as well as in determining spatial relationships: beside (10), above (11), under (12). The recognition of a series of geometric shapes from bigger to smaller was more successful (12) than from smaller to bigger (8). It was noticed that the children saw a third dimension of geometric shapes, whether this was visually marked or not. Even in places where the geometric shape was presented in two dimensions, the children described the geometric shape as a shape in third dimension. Faced with a choice, the children were solving mathematical operations first in the form of the picture. Tthe children behaved as if the tasks were completely different (9). They neither noticed the similarity in solving the problems, nor applied analogy (8). The children actually approached the solving of tasks as separate wholes that did not have anything in common.

Generally, the children's attention was immediately reduced when faced with the explicit mathematical content. The children significantly changed their mood.

This kind of affective interaction directly influenced the quality of emotional interaction. In our understanding of the emotional interaction, it was actually increased. Namely, the manner of interpreting the picture's content remained rhyzomatic, hypertextual, and accelerated at the same time. The increased rhizomatic approach in moving around the picture created chaos. The chaos was not connected to accuracy in interpretation and understanding of the content, but it related to the manner and acceptance of interaction. Cognitive interaction was also correct with mathematical and visual abilities, affectivity was quick and chaotic with both types of ability, and interactive behavior was increased by hypertextuality, due to emotional impatience and the content interpretation speed. The theory of auraticity was not confirmed in these pictures. In repeated interaction and interpretation of the pictures, the children answered mechanically and without inspiration.

Visualization of Colorful Pictures

Interpretation of the third group of pictures regained the children's interest when looking at and talking about the pictures. So called colorful pictures aimed at primarily assessing the children's spatial orientation. For this intention, pictures with labyrinth elements and different pictures of animals with geometric shapes were used, which pictorially combined, made the wholeness of a narrative. The children read this group of colorful pictures more freely, and with less inhibition. In other words, as Arizpe Evelyn and Styles Morag (2003) named this practice of visualization, the children read part by part of the picture, in a way that they put together puzzles piece by piece. Affective interaction, in general, was the most developed in the procedures of solving tasks in a form of a labyrinth. The children showed a strong desire and motive to solve the labyrinth successfully. The way in which the children were moving around the labyrinth was actually rhyzomatic, hypertextual. Within this group of pictures there were also pictures of six basic emotions in the form of emoticons. All children recognized them and marked them as the pictures from mobiles phones (9) or laptops (6). In most of the cases the children recognized the action showed by the emoticon (11). In the procedure of understanding the meaning of the emoticons, the children were less successful. Any insecurity about a correct interpretation and understanding of the usage of the emoticons, the children showed for those emoticons they themselves did not use in communication (8) or whose emotions they could not define (7). Such is the case with, for example, emoticons representing bewilderment.

The children liked colorful pictures. They interpreted and understood them correctly. The children perceived the pictures as a free space and concept with many meanings. They moved around the pictures spontaneously, starting from a specifically chosen place. While reading this group of pictures, it was noticed that the children in a repeated interaction with the same picture described the same picture-narrative significantly and essentially differently. Differences were noticed according to the order of noticing elements (7), keeping attention (14) and the choice of elements they liked the most (4). Inability of the children to recollect the changes

and to understand them was noticed regardless of the fact that nothing was changed in the picture. The repeated contact with the pictures was for the children a new perspective and a new story.

Conclusions

In general, the transmillennial generation of children interprets digital pictures structured as a compilation of mathematical content and pictures with narratives for children as open content. They have a strong need not to accept the context as the final and only possible content. They want to upgrade, change, and expand digital pictures, and they generally believe that they can transform them. As skillful users of ITs, they transfer "expectation of technology" (Terkl Šeri, 2011: 13) into content that technology represents. Transposing experience from working with IT was noticed in a way in which the children read digital pictures. Regardless of the complexity of content and the composition, they scanned and separated digital pictures by looking at them, and then putting them together in a whole. They usually read the picture according to the principle of rhizomes, hytertextually, without paying attention to linearity and order. Spontaneously moving around the picture neither influenced the accuracy and understanding of the pictures' content, nor the correct classification and comparison in the procedure of interpretation of the overall picture narrative and its parts. The children read the picture in their own way, in a polysemous manner, without ignoring the marginal parts of the picture. In the repeated interaction with the children after a certain time interval, the children changed the manner of interpretation, acting as if they are "seeing it for the first time". The auraticity of the first and the second reading is unique and different according to the order of "reading" the picture and the overall emotional interpretation.

The transmillennial generation of children likes digital pictures and stories they tell. They read mathematical content in digital pictures with a higher degree of inhibition, very accurately, and with less interest. They perceive the remaining content in the picture as polyvalent concepts, which can be changed or created.

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ГЛОБАЛНИ ПОВРАТАК СЛИКЕ И ВИЗУЕЛНЕ КОМУНИКАЦИЈЕ; ДЕТЕ И ПОСЕБНИ ВИЗУЕЛНИ САДРЖАЈИ

Сажетак: Рад се заснива на тези да је глобални опсег повратка слике у информационом добу омогућио ширење примене визуелног текста путем ИТ који је подесан за учење трансмиленијумске генерације деце. Основно интересовање истраживача у овом раду односило се на то: на који начин припадник ове генерације компјутерски способних корисника, интерпретира дигиталну слику и како се осећа у тој интеракцији? Информативни наратив је представљао интеграцију визуелних елемената дечјег наратива с имплицитним или експлицитним математичким садржајима приказаног у контекстуализованој и деконтекстуализованој форми. Испитивана је постојаност полисемичности и ауратичност у поступки „читања“ дигиталних слика. Полисемичност се односила на холистички приступ слици у односу на њен контекст, док је ауратичност кориштена у значењу јединствене емоционалне интеракције детета и слике. Квалитативним истраживачким приступом, рад ће показати да деца дигиталну слику с имплицитним математичким садржајем читају ризомски и полисемично, да контекст слике-наратива доживљавају као променљиву категорију коју ауратично интерпретирају а да експлицитне математичке садржаје читају с више инхибиција и без отворености у интерпретацији. Деца транспонују своја очекивања од технологије и искуства са учењем; дигиталне слике су им занимљиве, математички садржаји у слици су „само маттемтички садржаји“.

Кључне речи: ауралу, нарративе, парасоциал интерацтион, пицтурес, трансмилленниум генератион, висуал цултуре