

Visual Perception, Speech and Play in the Current Social Tools

On Interactive Technological Device Interfaces

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Abstract—The new media interfaces are the visualization that provide text, layout, format, design, user interaction factors and give measurable benefit to the user. That said, the ultimate results are implied through the user's perceptual understanding with the use of the new media devices. This paper emphasizes Vygotsky's work to the present-day use of social tools; i.e. the interactive mobile technology devices. The social tools; interface design - visual communications are children's perception and understandings of learning. The use of the social tools also relate to the constructivism and connectivism over humans instructional instruction with technologies. Therefore, this paper is also interested to examine the link between these theoretical frameworks to Vygotsky's theory of children's speech, play and the zone of proximal development (ZPD) in learning. These fields are important to be examined for children's learning attainments with the technological mediums.

Keywords—new media interface; visualization understanding; social tools; Vygotsky's theory; children's speech; play and the zone of proximal development.

I. INTRODUCTION

This paper examines the relationship of sociocultural activities, such as the use of social tools, to perception, speech, play and social interactions to human learning. The theory of social interactions, speech and the use of social tools was originated by L. S. Vygotsky, (1930) [1]. Back in 1920s of the Soviet Union's era, Vygotsky's work for children's learning included the use of social tools, social interaction, play and educational attainments. His works are mentioned in the learning of theoretical and philosophical related fields in the educational technology literature. The literature environments of children's behaviourism, cognitivism, constructivism, connectivism and instructional instruction and technologies have been presented in today's learning literature. This field has developed tremendously in recent years as part of the social psychology literature related to technology-based learning activity and methodology.

This paper emphasizes Vygotsky's work to the present-day use of social tools; i.e. the interactive mobile technology

devices. These social tools; interface design - visual communications are children's perception and understandings of learning. The use of these social tools also relate to the constructivism and connectivism over humans instructional instruction with technologies.

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II. THE STATE OF ART

The new media interfaces are the user-generated content that is shared. The research on the new media is focused now on collaboration, connections, emotion and communication [2]. Hence, the focus is on understandings people's needs, i.e., learners' preferences, likings, techniques and the different requirements for learning and support. Moreover, with the use of tablet PCs in the classrooms, sharing of information and so on, children and teachers collaborate in learning via wireless networking [3]. This paper focuses on these preferences which are still lacking. The importance of the new media technology devices is undeniable to the learners. The urges for this paper is timely in upholding the notions of social interactions theory of Vygotsky that learning is a concept of guidance and interaction, the ZPD concepts, and conversation and play.

III. THE RESEARCH PROBLEM

The new media technological devices are the digital-age social tools. The medium connects a human user to electronic information of any kind. The new media interfaces are the visualization understandings that provide text, layout, format, design, user interactions factors that yield measurable benefit to the user. That said, the ultimate

results are implied through the user's perceptual understandings with the use of the new media devices. Therefore, it is important that this paper stresses the instruction of the interface design with the theory of perception and speech when children learn. The instructional requirements are the HCI (Human-Computer Interactions) factors that contribute to the human cognitive process involved and cognitive limitations. Besides, human needs supply theories; interface designs, modelling tools, guidance and methods that can lead to the design of better interactive products [4]. Diana Laurillard [5], for example, highlights the importance of the academic goal rather than just imparting knowledge. A teacher's skill of providing knowledge is crucial, that is his or her higher aim for learners to achieve the acquired knowledge.

The results show that learners are lacking on the subject of specific experience, access needs, motives for learning, expectations, prior experience and preferred approach, and many more [6]. So far, research has been done so much on the task performances, statistical software, etc. But, the aspects on the accessibility and inclusion for learners-centred approach to support individual needs are lacking.

This research stresses the considerations to learners are underpinned over the interfaces usability, messages and interpretations that contribute to children's understandings with the teachers help with speech, teaching guidance and the use of the internet tools. The technological tools are such as the interactive white boards, the wikis, the blogs and the RSS feeds. These technological tools are the medium that this generation has been upholding contentedly for their knowledge. They acquire the new media like the 'bread and butter' in gaining knowledge and other interests in almost everything they do.

IV. THE SIGNIFICANCE OF THE STUDY

Learners' perception, visual communications and new media

The social contexts are important in determining how technology might influence teaching and learning. This statement is argued by Roy Pea, director of the SRI Center for Technology in Learning in Menlo Park, California. The technology is crucial to be used in understanding learning must consider on the strategies that relate to the social contexts. Special attention should be paid to the teaching strategies used both "in" the software and "around it" in the classroom, and to the classroom environment itself.

It is a recurrent finding that the effects of the best software, visual message and narrative can be neutralized through improper design, or use, in learning outcomes.

Learners and instructors' speech

In mentioning the children's learning achievements, Vygotsky believes human speech is the most important sign-using behaviour in children's development. He claims

that children free themselves through speech from many of the immediate difficulties that they are facing. With speech, children are able to prepare, plan, order and control their own behaviour as well as others for future activities (Cole, et al., 1978) [7]. In an experiment, Vygotsky recorded that a child achieved their goals just by using speech. A child's speech and actions go on simultaneously; thus, he or she provides commentary after speaking about what they are doing. The commentary describes how a child engages in a number of initial acts, as well as mediated methods such as asking questions to the people standing nearby them. At the same time, the child solves his or her problems as their speech reacts to their complex psychological functions of perception, attention and social interaction. Hence, this paper relates the children's social interaction through the 'external stimuli' of the technological devices. Children use the devices as their source of operating learning activity. The child speech is an activity of their external activity that develops their inner organization of thought from the new media/technological devices. The speech is the inner organization of thought which stimulates, mediates and regulates the child's daily activity, including learning. In turn, those thoughts mediate the meaningful signs of their speech and actions. Speech and actions, Vygotsky claims, mediate the child's thinking to a much higher level of intellectual. This means, the child is able to develop, engage, respond and produce intellectually productive learning, work in the classroom, house and society. He asserts that the greater the child's action, the more they rely on speech. Vygotsky wrote:

"They are characterized by a new integration and co-relation of their parts. The whole and its parts develop parallel to each other and together. We shall call the first structures elementary; they are psychological wholes, conditioned chiefly by biological determinants. The latter structures which emerge in the process of cultural development are called higher structures... The initial stage is followed by that first structure's destruction, reconstruction, and transition to the structures of the higher type. Unlike the direct, reactive processes, these latter structures are constructed on the basis of the use of signs and tools; these new formations unite both the direct and indirect means of adaptation" [8]. (Vygotsky, 1930)

Thus, how does the speech relate to children's perception and visual communications then contributes to their learning development? Vygotsky argued that the higher psychological functions of human development are such as perception, attention, speech; sensory-motor operations and memory will eventually form the unity of children's goals and adaptation. For example, his student, A. R. Luria stated that the unitary functions of these components are formed during each individual's development and are dependent upon the social experiences

of interactions in the child's environment and culture. Then, the functional systems of an adult are shaped essentially by his or her prior experiences as a child, as well as the social aspects (Cole, et al., 1978) [9]. The basic functions are integrated into new functional learning systems. At the same time, the child's higher psychological functions are not being usurped by the basic processes. They represent a new psychological system in the child that leads to their intellectual understandings.

The role of Play in Children's Development

Vygotsky claims that play advances the development of a child. Play is important to children – they satisfy certain needs in play by using their imaginations and acting out their desires immediately. Vygotsky argued that children perform as an adult character during play. They act out the activities of their culture and rehearse any future roles and values that they admire. Vygotsky explained [10]:

“The child sees one thing but acts differently in relation to what he sees. Thus, a condition is reached in which the child begins to act independently of what he sees”. (Cole, et al., 1978, p. 97)

Vygotsky asserts here that everyday situations in a child's behaviour are the opposite of his behaviour in play. He claims that during play, a child's actions are subordinated to meaning, but in real life, action dominates meaning. In play, a child always behaves beyond his or her age, above himself or herself. All children's developmental tendencies are condensed and contained in play. So, in play, children's development can be compared to instruction. Vygotsky further claims that play provide a much wider background for changes in needs and consciousness. Children's action in play is their imaginative sphere of the world where they create the voluntary intentions, i.e. they act as a doctor, a teacher or someone they looked-up to. The creation of voluntary intentions such as those mentioned, could affect the formation of their future real-life plans and desirable motives. Desirable motives are the imagination of the roles that they play. For example, children play with the doctor's first aid kit, one of them acts as a patient, and the doctor is looking after the patient, and so on. Vygotsky claims that play, moves children forward significantly and is the highest level of their preschool development. Therefore, play is considered a leading activity that determines the child's development (Cole, et al., 1978) [11].

Vygotsky argued that human activity transforms both nature and society. During preschool and school years, the conceptual abilities of children are stretched through play and the use of their imagination. The play-development relationship is not like an instruction - development relationship. Play gives a broader background for changes in needs and consciousness to children [12]. By the early age

of human development, they have already experienced the tension between desires that can be fulfilled only in the future and is something that demands immediate enjoyment. Through play this contradiction is explored and temporarily resolved. Here, Vygotsky places imagination as representing a specifically human form of conscious activity. It arises from the action in play.

V. THE RESEARCH QUESTION

Our research question is focused on: 1. *How do the child's perception, speech, play and the use of social tools relate to their visualization understandings?* 2. *What type of consideration the adults/teachers should look into in helping them?*

This research deals with the approaches in helping children visualization with new media by the adults; i.e. teachers, parents, peers can help children's learning. For example, Vygotsky emphasised the role of learning in facilitating and supporting people in society. In the societal context, children's learning and behaviour development require interaction and support by their guardian, teacher, more capable peers or parents. Interaction, engagement and participation are the major factors that are critical for children's learning process. Children learn from teachers, more capable peers or parents. Vygotsky included the specification of the societal context in which the child's behaviour developed, such as children's action or reaction through their involvement with society that develops the quality of humans and relationships.

VI. THE RESEARCH METHODOLOGY

Research has shown that the human-computer interactions field has not been led to a specific textbook [13]. Thus, teaching and learning instructional methodology that put emphasis on the HCI and ZPD concepts in the classrooms with the technological devices has yet been pioneered. This paper proposes a few research questions that help underpin the research contribution to children's learning. Preece, Rogers and Sharp [14], claim that attention, perception and recognition, memory, reading, speaking and listening, problem-solving, planning, reasoning and decision-making learning are important. These are the core cognitive aspects. Moreover, learners' preferences are important to be recognised and examined. Dagger, Wade and Conlan [15] discussed about learners preferences such as different concerns, likings, techniques and different needs for learning and support.

For example, this paper highlights the children's developmental process of perception, speech, play and the use of social tools with the technological mediums relate to the children's perceptual understandings. A few case studies

will be examined based on the learning activity programs that children and teacher have developed in the classrooms in the European countries. A detail of the case studies will be presented to show the documentation of the learning activity concerning visual communications field studies. This includes the principle and elements of the arts, i.e., colours, lines, space, contrast, etc. The methodology includes observation, test, questionnaire and interview sessions with school children. The targeted children are between 10-15 years old.

This research proposes the adults, i.e. parents, teachers and peers to help children's learning. Children's cognitive development process, Vygotsky argued, is a process of 'telescopes changes'. Telescope changes are observing the process of children's actions and reactions (Cole, et al., 1978). Therefore, a special program for children's learning approach will be set to examine children's learning styles in the classrooms. At home, the task is for the parents to monitor and record. Thus, the results of the teacher/parent monitoring will be documented and examined to formulate the outcomes. Vygotsky's concept of ZPD emphasises the various sociocultural structures and their impact on the interactions between individuals, artefacts, technology and environment. Vygotsky asserts that teaching is stimulated by insightful development and subsequent learning. He argues that teaching means providing advancement to the learner, socially elaborated human knowledge and cognitive development. Cognitive development is something for which learners must put their own reflective and internal strategies to work. Vygotsky named the "actual developmental levels" which characterise mental development retrospectively. Simply put, if a child can do such-and-such independently it means the functions have already matured in the child. And, the ZPD is the assistance provided to the child when he or she cannot do such-and-such independently.

VII. THE CONTRIBUTION TO KNOWLEDGE

This research is about the perception, speech, and the use of social tools in children's development. Vygotsky's research shows that there is a link of mediated activity in between the goal and the reaction in children. He claims that children's higher psychological processes of memory require children's reaction in order to produce something. Vygotsky considers perception, attention and speech as the children's reaction. Thus, these functions help promote their learning. With these functions, children produce action reaching their goals. Vygotsky argued that through such stimuli, a child would be able to see the immediate situation and react upon it. Vygotsky describes it as 'active human intervention' (Cole, et al., 1978) [16]. Vygotsky claims that these supporting stimuli are for children a means of active adaptation. The supporting stimuli are highly diverse and include the tools of the child's culture, the language of those

who relate to the child and the ingenious means produced by the child himself, including the use of his own body (Cole, et al., 1978) [12].

VIII. CONCLUSION

As such, high levels of engagement can in turn affect the cognitive distribution of children's perception, understanding and confidence for educational achievements. Their attention, inquisitiveness and reflection are developed in this context. The arguments have sustained many of the examples made by scholars of social interaction - using intellectual development as the factors of stimuli in children's cognitive growth. Vygotsky uses the example of play by poor children who do not have access to manufactured toys but whom, nevertheless, are able to play house, train, and so on with whatever resources are available to them. Theoretical explorations of these activities in a developmental context are a recurrent theme of this thesis. Similarly, cognitive development in children's perception, understanding and confidence for learning should be looked into.

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