

Cultural Historical Theory of Learning and Development: Core Concepts, Inter-Concepts Relationships, and Application

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Abstract - This article is mainly focused on the concepts of cultural-historical theory of learning and development. The purpose of this paper is to bring up the central concepts of this theory, how these concepts are mutually related, and the practical usage in the field of educating children with autism. The main essence of this theory underlies in the socio-cultural background of an individual which contribute to shape his or her learning process and overall development.

Keywords: Tools; signs; artifacts; learning and development; dealing children with autism

I. INTRODUCTION

In broad spectrum, culture is two-folded phenomenon that nurtures through human's covert and overt behavior. More specifically, culture is transmittable process of human behavior, values, beliefs, and systems. The cultural-historical theory has emerged to study people and their context as a solo process. If we separate them, then we can view only the figure without its ground that makes meaning differently. Through this theory, it is easy to realize how cultural baggage vastly influences on the persons. Even an expected child has predetermined context, for example, if a child born in a farmer family that orients the child to their culture. The cultural-historical school is mainly allied with the Russian scholars as well as others who extend their theories based on Russian notion. The bio-ecological theory of Bronfenbrenner (1979) and Reuven Feuersteins' Mediated Learning Experience (1979) are important approaches that contribute for the extension of the cultural-historical theory in learning and development process of individuals [1]. Here we are mainly focusing on how pioneer Vygotsky's cultural-historical concepts are influential to others and practice within the special needs education, especially educating children with autism.

II. MUTUAL RELATIONSHIP AMONG TOOLS, SIGNS, AND ARTIFACTS

Within the cultural-historical theory, tools and signs are the basic notions that refer to auxiliary way of solving

problems. In our culture, there are different tools and signs existing, e.g., machines, language, symbols, number system, books, our thoughts etc. One of the pragmatists Dewey defines "tongue as the tool of tools" which refers tongue is a tool of language to communicate and interact with others. Tools and signs are considered to be similar in term of their mediating activity. Along with this similarity, there are differences between tools and signs grounded on the orientation of human behavior [2].

Firstly, tools have outer direction that makes variations in objects. Contrary, signs have inner direction that does not make any variations in objects. For example, to prepare a power point presentation- we can use books, computer, and internet as tools that are externally oriented. By using these tools, everybody makes presentation differently. On the other hand, one's perception, background, and thinking process that internally oriented helping him or her to grasp the topic. How does one make changes in object without the use of 'sign' or internal direction?

The second difference is also derived from the first one, that is, individuals' outer world activities are going to be mastered over the environment by using tools. In contrast, signs indicate individuals' mastering within their own, are the way of inner world activities. If we consider the same example of preparing power point presentation, we are targeted at mastering within our classroom and more broadly at school by using tools. To be mastered on making presentation, we have to be internalized the topic through our signs and then we can make presentation. It is necessary to gain mastery at both internal and external side as individual. How does person achieve the mastery of external activities having lack of internal mastery?

From these differences, it can be said that they are not similar in their way. However, the questions that arise from their differences make clear that there is a genuine psychological connection between them. When tool and sign bring together in psychological activities, it refers to the term 'higher psychological function' or 'higher behavior' [2].

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Another concept is ‘artifacts’ that use to terminate the differences between tools and signs. Commonly, artifacts remind us various man-made stuffs that can trace the culture of certain periods, e.g., cloths, jewelleries, stone tools, pottery vessels, bones etc. Within the cultural-historical theory, “an artifact is an aspect of the material world that has been modified over the history of its incorporation into goal-directed human action” [3]. Marx Wartofsky pointed out in his theory about how cultural artifacts can influence our perception about the world, how we behave and alter our environment. In this manner, it is possible to combine both the material (environment) and the ideal (perception) aspect of artifacts [4]. Artifacts assist us to reach our target with its duality in nature that renovate over the passage of time. This duality nature, ideal and material, is similar to the Vygotsky’s sign and tool respectively. Clothing, for example, is an important artifact for anthropologists to understand the culture of specific period of time. There is a long way to reach the present form of clothing. In the primitive society, the concept of clothing was the idea of covering the body and material aspect was putting leaves together and made cover. Moreover, the ideal aspect is not only for covering but also for aesthetic, cultural, and religious perspectives and the material aspects also have transformed from that leaves to cotton, silk, woolen in the present time. By observing the clothing, we can assume a person’s cultural belongingness. We are comfortable with specific types of clothing that we perceive from our own culture since birth. It is one of the ways to civilize and control over the nature through the mediation of clothing. The following three basic principles narrate us the functionality of artifacts [3].

A. Mediation through Artifacts

Mediation is a process between two parties to manage better through a medium. In this theory, artifacts are essential as mediators in the process of mediation. When we invent artifacts, these actually relate to our needs and intentions to get the better control over objects in the world. Wartofsky’s three-level hierarchy of artifacts is mediated to view the world [3]. For example: language is a product of communication (primary artifact), the schema of language develops across history (secondary), language works as tertiary when we use it in our fairy world that affect the perception of actual world. This tertiary artifact can be simplified with ‘schema’ and ‘script’ in imaginative world and context, mediation, and activities in actual world. The basic meditational triangle (subject-mediation-object) shows individuals are connected directly (natural) and indirectly (artifacts) to the object in environment [3]. For example, a farmer’s child naturally knows cultivation process (s-o) but needs mediation to operate computer (s-m-o). Without artifacts (tools and signs), mediation is not possible. Luria stated about ‘double world’ in terms of objective and subjective view that make difference between human and animals, like language as a tool has both inner and outer aspect. The basic meditational structure is extended in Engeström’s activity system in Fig 1 where he includes other cultural factors that impact on the relationship between individual and achieving goals [3].

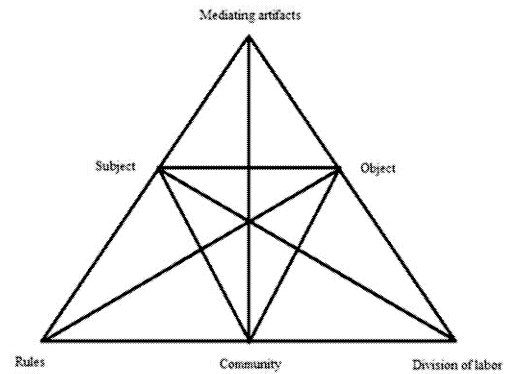


Figure 1: The basic meditational triangle expanding with rules, community & division of labor

B. Historical Development

Artifacts are transmitted and transformed from one generation to the other. Thus it is important to rediscover tools that give us the platform to discover the historical development. By studying the Egyptian, Chinese, and Harappa-Mohenjo-Daro civilization, we can understand the development of language as a tool.

C. Practical Activity

Culture is grounded on what people do in everyday way of living. Artifacts are essential means to achieve daily activities. Our insight depends on the external activities. Artifacts can play their mediating role only on the activities. All tools are developed through the path of internalization that Vygotsky mentioned in his ‘the general law of cultural development’ [3].

To recapitulate, it can be said that tools and signs (artifacts) have depended upon the behavioral role. This is because of behavior or activities result from simultaneous use of signs (conceptual) and tools (material). In such manner, signs and tools are mutually linked in the nature of duality.

III. HOW DOES INDIVIDUAL USE SIGNS AND TOOLS (ARTIFACTS) WITH OTHER CONCEPTS OF CULTURAL HISTORICAL THEORY FOR LEARNING AND DEVELOPMENT?

As Vygotsky, the instrumental act refers to the process that connects the individuals with tools and objects in the external world. How the instrumental act turns around and become mental act that affects the individual’s learning and development was Vygotsky’s main focus point in Fig 2 [4].

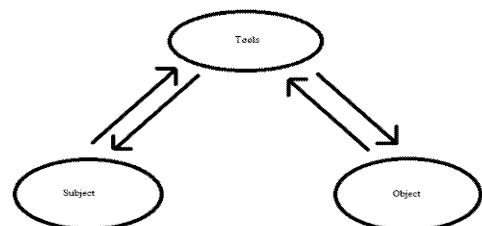


Figure 2: The model of how an instrumental act turns around and become a mental act

Vygotsky's primary emphasis was on higher psychological functioning connected with mental tools (signs: language, number system), how the mediation of signs can influence psychological relation to the environment, and ultimately impact on learning and development.

How does learning occur? In general, learning occurs by doing. In the light of constructivism, learning is active processes where learners work actively to construct own learning through the mediation of experts or tools that help them to reach their target by achieving internalization [5]. The cultural-historical approach is focused on the environment and acquisition of tool mediation for the learning. Language works as mediating tool in creating higher psychological processes. It describes as "the communication of information through symbols arranged according to systematic rules" [6]. It is the communicating tool that mediates to think about and understand the world. According to the learning theory, the acquisition of language follows the principles of reinforcement and conditioning. But learning theory has difficulty for acquisition of language rules. Then, Noam Chomsky's (1968, 1978, 1991) alternative notion opens a new window that tells us that human has an innate 'language acquisition device' that can help to learn the structure and strategies of child's native language through maturation [5,6]. Chomsky was also criticized for his innate syntactic readiness. Bruner mentioned his own idea about acquisition of language is child's readiness for language in which prelinguistic skills, function, and grasp of context are important. Narrative folk psychology is Bruner's tool which includes the imaginary stories, script. The central point of such stories is to entry into meaning through which child can experience own self and others, can learn to use the language, to communicate with others. Narrative folk psychology as an instrument can help child to organize the experiences. Later, such experience can become a tool to survive in the outer world. When child hears the stories, these are their external tool. Gradually, it becomes internal through the process of internalization [5]. As Bruner, Rogoff also uses different cultural tools for learning, such as, literacy tools (scripts, stories), mathematical tools (number system), language, schematic map etc. [7].

The process of internalization is related to the maturational development of the child. Children's learning appears twice in the development of culture; the first one is 'interpersonal process' where child learns to solve the problem with the help of others and another one is 'intrapersonal' where child becomes able to do it on own. The bridging from one process to another one is gone through the individual internalization. In the initial phase, child has ego-centric speech in which child starts to develop language. Later, child learns through the imitation of adults' sounds – as interpersonal process and develops social speech. As child grows, it is easy to rely on external tools ('A', 'B', 'C') through the mediation of adults, books, and/or around the environment. This mediation helps to create the inner speech (sign) – as transform into intrapersonal process that goes through the developmental events. Internalization refers to "the internal reconstruction

to the external operation" [2]. Rogoff used the term internalization as 'appropriation' in order to elaborate children's learning process and development in which how a child makes own sense about the culture that pointed out as "development...[is] a process of children's appropriation of their culture" [8]. From this point it can be said that when appropriation occurs that time culture is actually residing within individuals. Before internalization, we view culture as outsider. For example, it is hard to understand the family bonding from outside the home but easy to realize being a participant of family.

There was a long debate about the interaction between learning and development. Vygotsky provides a new concept that can show the relation between learning and development, 'the zone of proximal development'. Here Vygotsky points out the children's two developmental level; one is actual developmental level in which child can learning and solving problem on own and other is potential developmental level in which child can achieve the targets with the help of more knowledgeable peers, teachers, parents or other tools. The gap between the two levels is the child's zone of proximal development. For example, a child has very short attention span. To maximize child's attention, mother tells story with the choice of child. Child picks *Cinderella* book. Mother asks a view question in the midst of story, like 'what is it?', 'look big pumpkin', or 'show me her shoes' etc. through which child is also actively participating and gradually moves the zone and increase the attention span. Mother uses prompt, modeling, verbal praises, physical touch, and simple instruction to gain child's attention. The most important is the child's surrounding and make child active during the task. We can use 'apprenticeship' as a metaphor to express the reciprocal relationship between apprentice or learner and knowledgeable adult or expert [8]. This interaction creates intersubjectivity where both of them are concentrated on their joint activity to achieve the goal [9]. Affectionate bonding is also important tool to mediate and reach the zone of proximal development. The structured and systematic mediation between child and expert that creates a situation to upgrade the current level of child is termed as 'scaffolding'. There are six components of scaffolding that help to reach the potential level of child; these are as-child's interesting and collaborative involvement, task analysis, keeping child on track, pointing out key things to do, controlling child's frustration, and demonstrating the task. Bruner also used the term scaffolding to describe the participatory role of parents in child's language development [8]. It is necessary to use scaffolding for parents. Because, parents are not only for giving birth of the child but also they need to participate and provide support for child's learning and development. In relation to these meditational aspect, Rogoff mentions about another term 'guided participation' through which collaborative learning occurs between child and expert guidance when both of them have a common goal. Through guided participation, it is possible to make mutual bridging of meanings and mutual structuring of participation between participants by using culturally available tools, such as, words, gestures, stories, play etc [7]. As we perceive, the importance of the guided participation relies on mutual involvement, understanding

nature of each other, maintaining rules and routines in learning process that help to reach child's high level of development.

A child rears up within the phylogenetic and ontogenetic development of culture that relate to how and what a child should learn. Vygotsky states about the former one is developed through history that gives the continuous flow of creating activities and the later one is developed within a certain culture [3]. Childs ontogenetic development depends on the phylogenetic one that shows a relation between them. As a child I was born in extended family, have schooling and technological facilities to rear up, this is my ontogenetic development. On the other hand, a maid-servant who was also born in extended family but not have any schooling and technological facilities, which is his ontogenetic development. The learning context of both of the children has different because of the cultural/societal variation. When we are talking about personal development, we cannot ignore our roots or phylogenetic development because of its inclusion of our ancestors' prior inventions, behavior, and culture. Only the invention of electricity could make possible to use computers now. So it can conclude that phylogeny or history of a culture is our basic that has strong influence to outline the different level of contexts as Bronfenbrenner structured as micro, meso, exo, and macrosystem of contexts. All of these social contextual levels are integrated with historical influence of culture [10]. For example: independence war of my country has changed the society or culture of child who born after independence in comparison to others who born before it. Independence gives us freedom to use our own language, democracy, increasing living standard, opportunity to proper education, and so on. Our interpersonal processes can help to be acquainted with phylogeny and ontogeny through the appropriation or internalization of cultural tools, such as museum, books, arts, music, movies, political slogan etc. to make the intrapersonal process. In such way, the duality aspect of artifacts is related to other concepts of cultural-historical theory of learning and development.

In wrapping up, it is worthwhile to say that artifacts play the central role to understand human perception about the world and to execute the higher psychological functioning through internalize from the way of interpersonal activities to intrapersonal one. These higher mental activities are stirring up different developmental processes that help to interact with others by using varieties of artifacts.

IV. DEALING CHILDREN WITH AUTISM IN LIGHT OF THE CULTURAL-HISTORICAL THEORY

A paradigm shift has occurred in the field of special needs education in the professional attitude and practice, the scholarly literature for practical implementation, and the importance of child's needs and role of adults in children's learning and development [11]. The cultural-historical theory has an enormous effect within such evolutionary changes. How does a child with autism educate within this theory? We can examine the application by providing an experiential example that fits into the theory.

Within the cultural-historical theory, the context of the child is important as Bronfenbrenner's model of ecological theory expressed the contextual connection with individual as a single unit in Fig 3 [12].

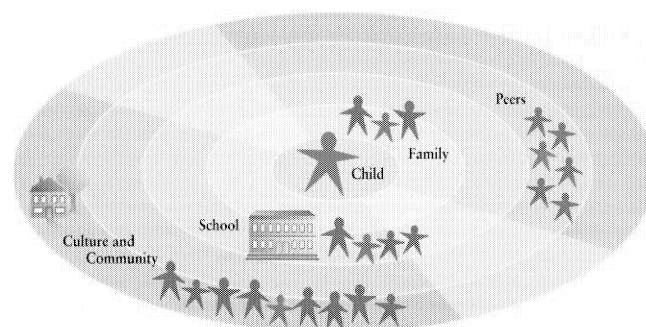


Figure 3: The ecological model of a child with autism

Working with the child in a multi-disciplinary team helps to assess the child as a member of micro system. We need assessment tools and in-depth observation that help to understand the current level of the child, how far child can go, and to find the way out how we further work with the child. Along with child, it is necessary to interview child's parents, other caregivers, teachers, peers, siblings, house-keepers, close relatives about the developmental milestones, birth history, behavior, and socialization process of the child so that we can understand the child's background. The assessment tools, framework, interview questionnaire, observation are artifacts that mediate to make a realistic Individual Education Plan (IEP) for the child. In IEP, we include parents and teachers within the team to ensure the child's functional needs. It shows the linkage of child's both family and school as microsystems and emphasize on the recent approach, 'family-centered' [11]. This Individual Education Plan also assists us to evaluate the process and monitor the child's improvement as the educational tool. Long-term and short-term objectives, instructions, activities, the process of learning should mention in IEP. We usually use one-to-one intervention, group session, home visit, school observation, Natural Environment Teaching (NET) while working with the child. The most important thing is that we must find out the strengths and choice of the child so that we can use them as reinforcers. Reinforcement is another tools for the child that makes motivate or encourage learning particular thing. The content of learning should be based on current level, functionality, and pre-requisition of certain skills. Our contents are grounded on social skills, fine motor, gross motor, cognitive, attention span, self-help, language, imitation gestures and actions etc. As learning materials, we can use the visual items, stories, rhymes, songs, items in 2 dimension, items in 3 dimension, books, blocks, puzzles, beads and threads, laces etc. All these materials are tools that mediate with the systematic and structured assistance of specific and clear instruction, prompt, redirection, and praise to internalize the specific items to learn that gradually reach the potential level of the child and then move to the another higher level as Vygotsky mentioned this difference between actual level and potential level of the child as zone of proximal development-ZPD [2]. The structured support between the child and the therapist to

attain the higher level is referred as scaffolding [8]. Before introducing new item, it is essential to prepare the child for that task. When an item was first introduced to the child, it was going through the matching, sorting, receptively identify, tacting (expressive identification), intraverbal, and then textual. In such way, that item was internalized to the child from the interpersonal level to the intrapersonal level. The child had lacking in social interaction and vocabulary to express own self. To put words within the child, our major responsibility was to build up a rapport, labeling the learning materials all the times whatever the phase of learning. If the child was in matching or sorting level, we labeled the item so that child could attend our instruction and slowly internalize it throughout repeated practice. Talking with the child was an important tool for us. The child also had less attention span, it was necessary to organize the materials and tasks before starting the work with child; otherwise it was quite hard to grab child's attention during the session and manage time to do all of the tasks within time period. To achieve the target, breaking down the tasks into smaller divisions is very important. We need to be systematic and following rules for the schedule of reinforcement and gradually fading it out; otherwise dependency would be raised there. We also need to observe child's motive of the behavior; whether behavior is for escaping from the task or sensory issues are there. School, family, and society members also treat the child with structure and systems. This is the way how special needs education and cultural-historical theory can go together on the basis of Bronfenbrenner [10], Vygotsky [2], Rogoff [8], and Engeström [3].

In short, the cultural-historical theory invents the system that has breathtaking input into the special needs educational practices in which focus on the dynamic assessment of children instead of traditional assessment. From the theory, it can be pinpointed that the focusing on cultural-historical context, meditational aspect of artifact, internalization process, amalgamation of practical activities in learning and development, and mention about the individual differences within and across cultures are the fortes of the cultural-historical theory of learning and development. In the other extreme, it is noticeable that the theory explains the individual differences of learning and development but they did not so much attention to the developmental aspects of the process of zone of proximal development. They did not provide any objective measurement through which we can measure how quickly child moves through own zones.

V. BRING TO AN END

At the bottom line, there is no doubt the cultural-historical approach of learning and development considers individual and context as one process and calls attention to the artifacts as mediating tools in creating higher psychological functioning. Above all, this theory asserts a process of the zone of proximal development where an expert uses various tools (prompts, lecturing, discussing, role playing) to scaffold, guide, and sharing with child to reach

the highest level and transform the child from intermental to intramental process. Though there are some forces and drawbacks of the theory, it shows us the way of thinking about the understanding of child with culture. Ahead of the limitations, this theory itself is a significant tool to study the socio-cultural perspectives of learning and development. It unlocks our way of thinking; more research on the area will give us the crystal clear notion.

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