

Experience in Pre-school Education in Mexico: Following L.S. Vygotsky

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ABSTRACT

Background. The Cultural-Historical conception of human development and the concept of the Zone of Proximate Development (ZPD), proposed by L.S. Vygotsky and his followers, still remain unknown to the majority of specialists and are rarely taught at universities in Latin America. Only a superficial review of works indirectly concerning Cultural-Historical psychology are included in the programs of some universities, and frequently are mentioned only in historical terms with no kind of real application in practice and research. Organization of practice in public and private preschool institutions in Mexico is based on the traditional conception of spontaneous development, without inclusion of creatively-organized types of activity. Specialists, teachers, and educators are not familiar with the theory of cultural development.

Objective. The objective of our article is to show some examples of new experiments proposed by Mexican researchers for innovation in the methods of pre-school education, following L.S. Vygotsky's ideas.

Design. This article describes practical attempts for the organization of non-traditional preparation of teachers according to Cultural-Historical psychology, and to show how teachers can work with children of pre-school age in pre-school institutions. One of the examples is an experiment of guided activities for parents and children during practical sessions of university students, guided by researchers from the National Autonomous University of Mexico (UNAM). Another example is an experiment in organizing developmental activity designed according to the Cultural-Historical conception and Activity Theory in a small private school in the city of Puebla, directed by researchers from the Autonomous University of Puebla and Tlaxcala. The basic methods of development were directed to the development of play activity in preschool groups. Play activity was introduced as directed and collective activity, organized and guided by a specialized teacher. The methodology for the organization of developmental activities for pre-school age children was the object of research in this study.

Results. This article presents experiments, procedures, methodological contributions, and results of practice and research according to the Cultural-Historical conception of development and play activity in preschool institutions. The use of original methods based on Cultural-Historical psychology and Activity Theory is possible in different social contexts, but specific preparation of educators, teachers, and researchers in this discipline is an essential condition for success.

Conclusion. This article discusses qualitative achievements in child development according to innovative proposals, based on Cultural-Historical psychology. The relationship between research and the practical introduction of developmental methods at pre-school age, in public and private schools, still remains as a fundamental problem in the educational system.

Keywords: Pre-school education; developmental methods; innovative development; systems of education; Vygotsky's approach

Highlights:

- New methods for pre-school development can be based on Cultural-Historical psychology;
- The use of original methods based on Cultural-Historical psychology and Activity Theory is possible in different social contexts;
- An understanding of the relationship between research and the practical introduction of developmental methods for pre-school ages is needed.
- There are not enough specialists and university teachers with a deep knowledge of Cultural-Historical psychology.

АННОТАЦИЯ

Актуальность. Культурно-исторический подход к развитию человека и концепция зоны ближайшего развития (ЗБР), предложенные Л. С. Выготским и его последователями, до сих пор остаются неизвестными большинству специалистов и редко преподаются в университетах Латинской Америки. Лишь поверхностный обзор работ, косвенно касающихся культурно-исторической психологии, включен в программы некоторых университетов и упоминается только в историческом контексте без описания какого-либо реального применения на практике или в исследованиях. Организация образовательной практики в государственных и частных дошкольных учреждениях Мексики основана на традиционной концепции спонтанного развития, без включения специально организованных видов деятельности. Специалисты, учителя и методисты не знакомы с теорией культурного развития.

Цель. Целью данной статьи является демонстрация экспериментальных формирующих исследований, опирающихся на идеи Л.С. Выготского и предложенных мексиканскими исследователями одновременно в качестве инноваций в методах дошкольного образования.

Дизайн. В статье описываются практические возможности организации подготовки учителей в соответствии с принципами культурно-исторической психологии и показано, как учителя могут работать в русле этой концепции с детьми дошкольного возраста в дошкольных учреждениях. Одним из примеров является эксперимент со специально организованными мероприятиями для родителей и их детей во время практических занятий студентов под руководством исследователей из Национального автономного университета Мексики (UNAM). Другим примером является эксперимент по организации развивающей деятельности, разработанный в соответствии с принципами культурно-исторического подхода и теорией деятельности в небольшой частной школе в городе Пуэбла под руководством исследователей из Автономного университета Пуэбла и Тласкала. Основные методы развивающего обучения были направлены на развитие игровой деятельности в дошкольных группах. Игровая деятельность была представлена как организованная и

направляемая воспитателем коллективная деятельность детей. Объектом изучения в данном исследовании была методология организации развивающих занятий для детей дошкольного возраста.

Результаты. В статье представлены эксперименты, процедуры, методические материалы, а также основные результаты практической деятельности и исследований, проведенных в соответствии с культурно-историческим подходом к пониманию развития и игровой деятельности в дошкольных учреждениях. Использование оригинальных методов, основанных на традиции культурно-исторической психологии и теории деятельности, возможно в различных социальных контекстах, но особая подготовка педагогов, преподавателей и исследователей в этой дисциплине является необходимым условием успешности такой деятельности.

Вывод. В данной статье обсуждаются качественные достижения в развитии ребенка, возможные при использовании инновационных программ, основанных на принципах культурно-исторической психологии. Взаимосвязь между исследованиями и практическим использованием предлагаемых программ развития в дошкольном возрасте в государственных и частных школах по-прежнему остается фундаментальной проблемой системы образования.

Ключевые слова: Дошкольное образование; развивающие методы обучения; инновационное развитие; образовательные системы; подход Л.С. Выготского

Ключевые положения:

- Новые методы дошкольного образования и развития могут основываться на культурно-исторической психологии;
- Использование оригинальных методов, основанных на культурно-исторической психологии и теории деятельности, возможно в различных социальных контекстах;
- Необходимо понимание взаимосвязи между исследованиями и практическим внедрением методов развития для детей дошкольного возраста.
- Специалистов и преподавателей вузов, обладающих глубокими знаниями культурно-исторической психологии, недостаточно.

RESUMEN

Introducción. La concepción histórico-cultural del desarrollo humano y el concepto de zona de desarrollo próximo (ZPD), propuesto por Vygotsky y sus seguidores, sigue siendo desconocido para la mayoría de los especialistas y rara vez se imparte en las universidades de América Latina. En los programas de algunas universidades sólo se incluyen revisiones superficiales de trabajos indirectos sobre psicología histórico-cultural y, con frecuencia, se mencionan sólo en términos históricos sin ningún tipo de aplicación real en práctica e investigación. La organización de la práctica en instituciones preescolares públicas y privadas en México se basa en la tradición de concepción del desarrollo espontáneo sin inclusión de actividades creativas organizadas. Los especialistas, profesores y educadores no están familiarizados con la teoría del desarrollo cultural.

Objetivo. El objetivo del artículo es mostrar algunos ejemplos de nuevas experiencias propuestas por investigadores mexicanos para la innovación de los métodos de educación preescolar, siguiendo las ideas de L.S. Vygotsky.

Diseño. El artículo describe ensayos prácticos para la organización de un tipo de preparación no tradicional de maestros de acuerdo con la psicología histórico-cultural con el fin de mostrar cómo pueden trabajar con niños en edad preescolar en instituciones preescolares. Uno de los ejemplos es una experiencia de implementación de las actividades guiadas para padres e hijos durante las sesiones prácticas de estudiantes universitarios guiados por investigadores de la Universidad Nacional de México (UNAM). Otro ejemplo es la experiencia de organización de la actividad desarrolladora diseñada según concepciones histórico-culturales y propuestas de teoría de la actividad en una pequeña escuela privada de la ciudad de Puebla, dirigida por investigadores de la Universidad Autónoma

de Puebla y Tlaxcala. Los métodos básicos de desarrollo se dirigieron a la formación de actividades de juego en grupos preescolares. La actividad lúdica se introdujo como actividad dirigida y colectiva, organizada y guiada por un docente especializado. La metodología para la organización de actividades de desarrollo en la edad preescolar fue objeto de investigación en este estudio.

Resultados. El artículo presenta experiencia, procedimiento, aportes metodológicos y resultados de la práctica y la investigación según la concepción histórico-cultural del desarrollo y la actividad lúdica en instituciones preescolares. El uso de métodos originales basados en la psicología histórico-cultural y la teoría de la actividad es posible en diferentes contextos sociales, pero la preparación específica de educadores, profesores e investigadores es una condición obligatoria para el éxito.

Conclusión. El artículo analiza los logros cualitativos en el desarrollo infantil según propuestas innovadoras, basadas en la psicología histórico-cultural. La relación entre la investigación y la introducción práctica de métodos de desarrollo en la edad preescolar en el ámbito público y privado sigue siendo un problema esencial en el sistema educativo.

Palabras clave: Educación preescolar; métodos de desarrollo; desarrollo innovador; sistemas de educación; el enfoque de Vygotsky

Destacados:

- Los nuevos métodos para el desarrollo preescolar pueden basarse en la psicología histórico-cultural;
- El uso de métodos originales basados en la psicología histórico-cultural y la teoría de actividad es posible en diferentes contextos sociales;
- Hace falta establecer una relación entre la investigación y la implementación práctica de métodos de desarrollo en la edad preescolar.
- No hay suficientes especialistas y profesores universitarios con un conocimiento profundo de la psicología histórico-cultural.

RESUME

Origines. La conception historique culturelle du développement humain et le concept de zone proximale de développement (ZPD), proposés par Vygotsky et ses disciples, restent encore méconnus de la majorité des spécialistes et sont rarement enseignés dans les universités d'Amérique latine. Seules des révisions superficielles des travaux indirects sur la psychologie historique culturelle sont incluses dans les programmes de certaines universités et très souvent elles ne sont mentionnées qu'en termes historiques sans aucune sorte d'application réelle dans la pratique et la recherche. L'organisation de la pratique dans les établissements préscolaires publics et privés au Mexique est basée sur la tradition de conception du développement spontané sans inclusion d'activités créatives et organisées. Les spécialistes, enseignants et éducateurs ne connaissent pas la théorie du développement culturel.

Objectif. L'objectif de l'article est de montrer quelques exemples de nouvelles expériences proposées par des chercheurs mexicains pour l'innovation des méthodes d'éducation préscolaire, suivant les idées de L.S. Vygotski.

Mise au point. L'article décrit des tentatives pratiques d'organisation d'un type non traditionnel de formation des enseignants selon la psychologie historique culturelle et montre comment ils peuvent travailler avec des enfants d'âge préscolaire dans des établissements préscolaires. L'un des exemples est une expérience de mise en œuvre d'activités guidées pour parents et enfants lors de sessions pratiques d'étudiants universitaires guidés par des chercheurs de l'Université nationale du Mexique (UNAM). Un autre exemple est l'expérience d'organisation de l'activité de développement conçue selon la conception historique culturelle et les propositions de théorie de l'activité dans une petite école privée de la ville de Puebla, dirigée par des chercheurs de l'Université autonome de Puebla et de Tlaxcala. Les méthodes de base du développement étaient orientées vers la formation de l'activité de jeu dans les groupes préscolaires. L'activité de jeu a été présentée comme une

activité dirigée et collective, organisée et guidée par un enseignant spécialisé. La méthodologie d'organisation des activités de développement à l'âge préscolaire a fait l'objet de recherches dans cette étude.

Résultats. L'article présente l'expérience, la procédure, les apports méthodologiques et les résultats de la pratique et de la recherche selon la conception historique culturelle du développement et de l'activité de jeu dans les institutions préscolaires. L'utilisation de méthodes originales basées sur la psychologie historique culturelle et la théorie de l'activité est possible dans différents contextes sociaux, mais une préparation spécifique des éducateurs, enseignants et chercheurs est une condition obligatoire de la réussite.

Conclusion. L'article discute des réalisations qualitatives dans le développement des enfants selon des propositions innovantes, basées sur la psychologie historique culturelle. La relation entre la recherche et l'introduction pratique de méthodes de développement à l'âge préscolaire dans les secteurs public et privé reste toujours un problème essentiel dans le système d'éducation.

Mots-clés: Education préscolaire; méthodes de développement; développement innovant; systèmes d'éducation; L'approche de Vygotsky

Points principaux:

- Les nouvelles méthodes de développement préscolaire pourraient être fondées sur la psychologie historique culturelle;
- L'utilisation de méthodes originales basées sur la psychologie historique culturelle et la théorie de l'activité est possible dans différents contextes sociaux;
- Une relation entre la recherche et l'introduction pratique des méthodes de développement à l'âge préscolaire est nécessaire.
- Il n'y a pas assez de spécialistes et d'enseignants universitaires ayant une connaissance approfondie de la psychologie historique culturelle.

Introduction

Currently, Mexico is experiencing radical changes in governmental administration, which started officially in January 2019. The new government has proposed a modification of educational policy, which includes not only restoration of labor rights for the teachers, and economic help for families, but also changes in the content of educational programs at different levels. In 2019, the new government declared the necessity for restoring and maintaining psycho-pedagogical help for children, and economic help for families who have pre-school children. The new educational policy includes taking into account cultural traditions and non-Spanish native languages. Statistical data (<https://datos.gob.mx/busca/dataset/mexico-con-educacion-de-calidad-estadisticas-nacionales>) indicates that there are 4,791,323 children from 3 to 5 years of age, who attend preschool institutions, constituting 71.9% of children in this age bracket.

The present policy of preschool education purports to use the strategies of play activity, including thematic games with social roles, as an important psycho-pedagogical resource for children's development (Solovieva, Escotto, Baltazar, & Quintanar, 2017; SEP 2011, 2012). Additionally, the present educational policy proposes to insure broad socio-cultural participation of parents, teachers, and institutions. The main difficulty for achievement of the goals of this new policy is that there are no specialists in education trained according to Cultural-Historical psychology, so that only a

few teachers have clear concepts of games with social roles, the Zone of Proximate Development, and external symbolic means.

Some concrete examples of the changes of new educational policy in Mexico are particularly significant for the authors of this article. For instance, the local government of the City of Puebla (the fourth largest city in the Mexican Republic) has started to establish links with current academic psychological research based on the Cultural-Historical conception of development and Activity Theory. This kind of research was promoted by the Master's Program in Neuropsychological Diagnosis and Rehabilitation, of the Psychology Faculty of Puebla Autonomous University, for 25 years. This program was based, initially, on the conception of L.S. Vygotsky and A.R. Luria, and has broadly defined this approach in Mexico and Latin America since 1994. More than 200 specialists have graduated from this Master's Program. Such a situation continued until February 2020, when the Administration of the University suddenly decided to change the program into a more traditional one based on cognitive psychology and neuropsychology. The authors of this article are currently continuing with developmental research in a small private college with groups of pre-school and primary school children, and also in the Autonomous University of Tlaxcala as researchers and university teachers.

In 2019, the local department of the National Council for Science and Technology of the State of Puebla (CONCYTEP) expressed a deep interest in education, research, and implementation of the Cultural-Historical conception of development in pedagogical practice in the State of Puebla. CONCYTEP has made an agreement with the authors of this article for elaboration of proposals for incorporation of innovative methods for teaching and psychological development according to the Vygotskian theory of development, and for creative methods for the development of conceptual thinking in primary school.

These methods have been developed and applied for 11 years in Kepler College in the City of Puebla (www.colegiokepler.edu.mx). In 2019 the College was designated as the base for experimental education by CONCYTEP. CONCYTEP and Kepler College agreed to jointly organize, in Puebla, courses for the training of specialists in education according to Activity Theory.

In 2018 the Secretary of Public Education published new program for preparation of teachers in Special and Inclusive Education (SEP, 2018). The content of the program was revised, and Luria's model of functional brain organization and the idea of qualitative assessment of development were included as a part of this program. The Public Program of Preparation of Specialists in Inclusive Education, starting in 2019, for the first time in the history of Special Education in Mexico, has included theoretical and methodological texts dedicated to topics of ontogenetic development, and qualitative psychological and neuropsychological assessment of developmental difficulties, written by followers of the Vygotskian conception of development (<https://www.cevie-dgespe.com/documentos/0803b.pdf>).

The National Autonomous University of Mexico (UNAM) also contributes progressive research for change of the educational system. In particular, such research is related to the development of educational psychologists educated within the Vygotskian conception of psychological development. This research and instruction

are carried out at the Department of Psychology of the Faculty of Superior Studies Zaragoza (FES-Z), UNAM, by the authors of this article.

The objective of this article is to show some examples of new experiments by Mexican researchers related to the modification of methods in pre-school education in Mexico.

The Vygotskian Conception of Development

Lev Vygotsky was the first researcher who completely formulated a new paradigm of sociocultural development, according to which a child's psychological development can't simply be reduced to biological maturation. Comparison of children of the same chronological age, according to weight or height, or even social economic conditions of life, would never show the precise level of a child's psychological development. Cultural development of each child should be assessed by cultural instruments, which the child is able to use in specific directed activity. L.S. Vygotsky has written that the line of psychological development in culture is the line of development of appropriate self-control of behavior. This conception was synthesized with the famous expression that self-regulation of behavior is started by external regulation, coming from another person.

Vygotsky formulated the genetic law of cultural development: "each function, within the cultural development of a child, appears on the scene twice, on two planes: first, on the social plane, and later, on the psychological plan; first, between people, as an inter-psychological category, and later as an intra-psychological category inside the child's psychic life" (Vygotsky, 1931/1995, p. 150). The immediate, practical conclusion of this theoretical idea was that the assessment of a child's development had to be radically changed. It wasn't possible to obtain a complete understanding of a child's development by assessing what the child was able to do independently. It was necessary to provide the tasks which were accessible only with the inclusion of external help and orientation presented while working on a task. Such external help might be provided by a teacher, a researcher, or even by an older or more advanced child.

This proposal, up to the present day, is the essential alternative to the psychometric paradigm of development, according to which the child must independently complete the tasks, which he or she already knows – or doesn't know at all. The concept of the Zone of Proximate Development (ZPD) obliges us to search for new and more complex tasks, in order to perceive the progressive paths of intellectual development. The ZPD permits searching for creative cooperation as the essential line of psychological cultural development. According to Vygotsky:

[D]etermining the actual level of development and quantitative expression of the difference between chronological and standardized age of the child, or the relation between them expressed in a coefficient of development, is only the first step along the way toward diagnostics of development.... In establishing the presence of one set of symptoms or another in determining the actual level of development, we actually determine only that part of the total picture of development of the processes, functions, and properties that have matured by that time.... A genuine diagnosis of development must be able to catch

not only concluded cycles of development... but also those processes that are in the period of maturation.... Ascertaining the processes that have not matured at the time, but are in the period of maturation, is the second task of the diagnostics of development. This task is accomplished by finding the *zones of proximal development* (Vygotsky, 1932/1996, pp. 266-67).

The category of the Zone of Proximate Development indicates how immature psychological functions, which are in the process of development, might become accessible only through collaboration with adults or other children: "What the child can do today in cooperation and with guidance, tomorrow he will be able to do independently" (Vygotsky, 1932/1996, p. 268).

In our opinion, the concept of the ZPD is important not only for the topic of diagnosis of intellectual development, but also for the whole process of teaching and psychological development of children. It's possible to affirm that the concept of the ZPD is more useful for the organization of teaching and learning, than for the organization of assessment of development and school achievement. Such idea wasn't expressed by Vygotsky himself, but was studied in detail by his followers.

This idea was applied in the research inspired by Activity Theory, and was applied to psychological development and to the theory of teaching the process of guided activity (Talyzina, 2019). The central point of this theory is that the effects of psychological development depend on a specific orientation, which might be provided during interaction between adults and children. The term "interaction" is not adequate to describe all the qualities of cultural development, so that the concept of "cultural activity" would be a much more precise term, which would express the need for a concept of orientation. Interaction might represent any kind of social contact, emotional involvement, directive behavior, and so on, even without any specific goal or motive (Leontiev, 1984).

The concept of cultural activity includes the elements of motive as an object of such activity and of the goal, as an anticipated image which is reflected consciously by a subject, before starting with the whole activity. Different levels of cultural activity might be studied and described (Talyzina, Solovieva, & Quintanar, 2010). The general term of social interaction, so commonly used, doesn't presuppose the anticipated image of the purpose of interaction, while the concept of activity is based on the concept of anticipated and reflected goals of activity as a process. The process of interaction might be pleasant for participants, while the process of activity should not only be pleasant, but also useful, for participants. We might also say that the process of interaction is the context of development, while the process of activity is the motor and expression of development.

The authors of Activity Theory and of the concept of the systemic process of learning with orientation, insisted that the whole organization of the learning process should be modified (Davydov, 1996; Galperin, 1998; Talyzina, 1988, 2019). According to this theory, important psychological and pedagogical experiments were conducted with positive results from the application of new methods of conceptual reflective thinking at schools in Russia (Galperin, 2000; Talyzina, 2007, 2018; Davydov, 1996, 2008), and from creative development of guiding activities for pre-school age children in Mexico (Solovieva & Quintanar, 2016, 2018).

We can affirm that this modification should be understood as a radical transformation of empirical ways of teaching, and as an argument for broad social interaction. Only guided, specific types of activities can guarantee profound psychological development of children. Not only is social interaction a necessary mechanism of psychological development, but so also are the content and the types of guided interaction used by adults and teachers for orientation (Solovieva, 2014).

According to this conception, orientation is the central element of psychological activity and of psychological development (Galperin, 2000). In modern psychology, the concept of the ZPD should be enriched and completed by the concept of orientation as the basis of action (Solovieva & Quintanar, 2019). This concept provides concrete elements, according to which it is possible to establish the path for object-oriented activity with all the features necessary for reaching its goal. The assistance which the adult might provide during cooperation with the child, has to be specified and established in detail in order to guarantee successful execution of the required action. Each orientation-based action should include four essential elements: 1) orientation in the general image of the situation (problem); 2) orientation in specific elements of the situation; 3) orientation in elaboration of the steps of execution; and 4) orientation for realization of possible verification and correction of the whole action (Galperin, 2000).

As followers of the Cultural-Historical conception of development, the authors of this article are interested in continuing research according to the concepts of the zone of ZPD and orientation for cultural activities. The aim of this article is to contribute to a positive transformation of national public education in Mexico.

Research at the Faculty of Superior Studies Zaragoza, UNAM

The Faculty of Superior Studies Zaragoza of the National Autonomous University of Mexico (UNAM) is specialized in areas of health (<https://www.zaragoza.unam.mx/>). There are 11 professionalized areas, some of them offering Master's and Doctoral Degrees. This Faculty was designed for professional development of students of medicine, psychology, nutrition, odontology, and community services, including services for elderly patients. All students are involved in practical services starting from the first semester of studies. Clinical practice with patients is conducted in eight university clinics for health attention (CUAS), which are distributed within the metropolitan zone close to the Faculty.

For nearly twenty years, the area of psychology included two programs for research and clinical attention to patients, based on the Cultural-Historical paradigm of development and child neuropsychology, using theoretical models created by L.S. Vygotsky, P.Ya. Galperin, A.R. Luria, and L.S. Tsvetkova. One program, at Clinic Zaragoza, is dedicated to the field of development in infancy. The other, at the Laboratory of Psychology and Neuroscience, is dedicated to neuropsychology.

The Program of Stimulation of Development created by Clinic Zaragoza Campus 1 of the Faculty FES-Z (UNAM) has existed for twenty years. Each decade has been characterized by a different theoretical model. During the first decade, the program was based on the Piagetian conception of development. Starting from the year of

2000, Ana María Baltazar, one of the authors of this article, has introduced a psychological conception based on Vygotskian methodology (Baltazar, 2019). The program prepares students of educational psychology for research in the field of psychological development of children. At the same time, the program offers methods and strategies for families with children from zero to six years old as a complementary public service.

The program regards the categories of the zones of real and proximate development, defined by Vygotsky, as the main instruments for diagnosis and intervention. The zone of real development is evaluated by using psychometric tests, while the ZPD is determined by the usage of qualitative help, provided by an adult. Such help is provided by psychologists and parents of children in order to guarantee the ZPD. The main procedure is the process of play, particularly play with social roles, drawing, collective narration of fairy tales, dramatic representation, and dancing, as psychopedagogical instruments for psychological development with the help of older children in groups, students of psychology, and parents.

Implementation of the Program

Stage I

In this stage the students receive training for the program of Stimulation of Development. The duration of the training is four weeks (one semester), and two times per week for five hours. The training includes the revised Wechsler Preschool and Primary Scale of Intelligence (Wechsler, 2002), and the Merry-Palmer Revised Scales of Development (Roid & Sampers, 2004). The purpose of these scales is to assess the development and to establish the diagnosis of each child. The principles of sociocultural theory are included in the training, with review of concepts such as psychological development, real level of development, and the ZPD (Vygotsky, 1979). The goal of the study is to teach students to provide interpretation of results, obtained by different scales, and to design strategies for intervention.

Stage II

After one month of training, the students get involved with the reports of parents who are searching for help for their children. Selection of children is carried out in order to determine the families who have the possibility and the ability to participate in the program. Only children with normal psychological development may be accepted to take part in the program.

Stage III

After the selection and admission of children, each student receives maximum of two pre-school children for assessment of the zone of actual development. Afterwards, the students start to plan and propose different kinds of activities for the children. All activities have to achieve the goals of the Program of Stimulation of Development, and are planned in three modalities: a) activities in groups; b) individual activities; and c) home activities. Each modality of activities is described in detail below.

a) Activities in Groups

The main areas of stimulation in group activities are those of socialization and the motor sphere. The duration of each activity is 50 minutes. All children, with their parents, participate in these activities together. Some examples of such activities are competition games as follows: "pass through a tunnel made of crepe paper, pass under tables and seats, take the ball, jump three times, give the ball to the partner on the right side, give two touches, climb the stairs, stop behind your own father and make the bridge with your own body, so that the other child might pass under, and so on."

b) Individual Activities

Individual activities stimulate cognition and language. At the beginning of each session, the student talks to a parent about the goal of the session, which is planned in advance. The student and the parent work together to achieve this goal. The session is divided into five parts or tasks, so that the child might meet one or two goals. The goals might be, for example, cut the square, remember the figure, and identify the figure as a square, triangle, or circle.

The first part of each session, both in group and in individual sessions, is dedicated to narration of a short story. The story provides the starting point for the future activity. For example, it's possible to tell the story about Lucia and Juan, who take their friends on a bus as passengers traveling to the swimming pool. The following task might consist of representing Lucia and Juan, and then representing the bus and its movement. The paper might be cut in five pieces for purposes of the representation of a bus. In order to obtain pieces in circle form, the model of the form would be shown to the children. Next, the children would be told to use the circle and the squares to represent the bus with all the necessary details. The third task might consist of using colors for painting the bus, together with the parents. The yellow color might serve for painting the wheels, and the other colors for the other parts of the bus. While the paint is drying, the participants would cut triangles, squares, and circles to represent the passengers on the bus. The fourth task has children cutting big circles and painting them blue to represent the swimming pool, so that the passengers might swim and play joyfully.

Each part of the session is scheduled for a limited time period. After forty-five minutes of activity, the children are asked to clean the space, and the session ends. The last part of each session is dedicated to determining the goals achieved by the entire activity. At this moment, verbal interaction would be used for monitoring children's consciousness about activities and goals achieved, and also for reinforcement of voluntary memory. Some questions are used to guide this reflection: What did we play today? What is the shape of the wheels on the bus? What is the shape of the swimming pool? What is the shape of passengers' heads? Which is the color of the triangles and the squares we used?

It's possible that some of the goals would be achieved completely, and some of them only partially, according to the time spent in the sessions. For example, it's possible that children were able to remember only triangles, but not the squares. It's also possible that some new, non-planned goals might be achieved; for example, some

new colors might be learned by children. Children might learn how to ask things, how to tell the story, and so on. All such achievements make clear what the next goal would be.

Before singing the farewell song at the end of the session, the child receives a notebook with blank pages and a pencil. The child is asked to draw what was done during the session, so that he or she would remember better what was done. The drawing is a free process; nobody tells the child what and how to draw.

c) Home Activities

Once a week, each student gives the parents a list of games for home activities. The goal of the game is to stimulate self-help. The purpose is development of the child's independence. For example, the goal might be that the child uses a spoon and eats independently, prepares a sandwich, washes their hands, and so on. The parents are asked to play the game "dinner," the "cook," the "doctor," and so on. The students explain to the parents each kind of activity in details. The students give the parents notes with the content of the activities (games). The parents have to write out their experience with the proposed activities, including which ones they were able to fulfill, and also are to mention any kind of difficulties, impossibilities, or obstacles for the activities proposed.

During some sessions, dance activities might be introduced. Dancing might be used as a part of a game, but also as specific activity for collective coordination and stimulation of psychomotor skills of the children. The dance activity is regulated by a young teacher, invited for this purpose.

During activities, if a parent or a child shows improper behavior, for example, if any child hits someone, shouts loudly, or throws objects and toys constantly, then the students show the parent how it's possible to regulate the child's behavior and how to handle such a situation. The students have to explain the reason for such behavior and how to correct it. At the same time, if a parent shouts loudly, threatens the child, or shows frustration, the students have to resolve and explain the whole situation, providing all possible reasons for such behavior.

Stage IV

Each month, the students have to assess each child in order to record achievements, and determine which activities help the child, and which don't. If necessary, activities might be modified for the child. Or, sometimes, the same kind of activities might be approved for use with the child.

The students organize the notes (diaries) for all activities that were used, in individual files for each child. The files are classified by "evaluation," "observation" for each session and tasks, planning of individual activities, planning of activities in groups, and identification details for each participant child and his /her parents, including consent for participation and all protocols.

After training, the students are supervised by a specialist during individual assessments of children, and the specialist reviews, in groups of students, the results of the assessment of each child. All marks, punctuations, and interpretations are reviewed

during these discussions, with explanation of the achievements and the mistakes of the students. During the sessions with the parents, the specialist reviews the student's work.

Each student has to present the plan for the sessions the week before the work is started. The specialist observes the work with the parents, and makes notes. Afterwards, all the details of the students' work would be discussed in groups to obtain the students' feedback.

Two weeks before the conclusion of the semester, the specialist organizes discussions in groups of students, of each of the children and their parents. The students have to organize and prepare final reports and proposals for each participant.

Laboratory of Psychology and Neurosciences (LPN) in FES-Z, UNAM

The Laboratory LPN was founded in 1997 by Eduardo Alejandro Escotto Córdova, one of the authors of this article. Economic support was provided by the Inter-American Development Bank (IADB) to UNAM, in order to establish laboratories for research (Escotto, 2009). The laboratory was equipped with digital electroencephalography (EEG) with evoked potentials and neuroimaging designed by the Center of Neurosciences of Cuba. Neuropsychological assessment with an EEG study was offered for the vulnerable population of the zone close to the Faculty FES-Z, UNAM.

The neuropsychological service was based on Luria's Cultural-Historical conception, which was introduced in the Faculty of Superior Studies starting from 1981. The concepts of the theory were reviewed together with the broad psychological concepts of L.S. Vygotsky, P.Ya. Galperin, and the concepts of Activity Theory of A.N. and L.S. Rubinstein.

Starting from that time, the Laboratory LPN has opened a variety of lines for research: (a) diagnosis and rehabilitation of children and adults; (b) neuropsychological development of children (in collaboration with Ana María Baltazar Ramos); (c) educational mathematics; (d) language, conscience, and voluntary behavior; and recently, (e) analysis of the content of dreams in adolescents and university students.

The authors of this research use the concept of the Zone of Actual and Proximate Development during diagnosis and intervention. The central focus of all strategies are activities related to language in different areas. Assessment of language takes place for different purposes: for patients with aphasia (Escotto, 2011); as a part of neuropsychological assessment (Flores et.al., 2015); as initial stage of neuropsychological rehabilitation (Escotto, 2014a); for solving problems with reading and writing in children (Escotto, 2014b); for characterization of internal speech in pre-school children (Escotto, 2011, 2013), (Baltazar, Escotto, & Esquivel, 2018; Solovieva, Escotto, Baltazar & Quintanar, 2017); for development of speech (Castillo, Baltazar & Escotto, 2017); for development of semiotic regulation in pre-school children using games with roles, drawing, and drama representation; and for semiotic variation elements in mathematics education (Escotto, Sánchez & Baltazar, 2018).

The Zone of Proximate Development and Semiotic Variations in Pre-school Children

A new topic of research within the Vygotskian model of development is related to implementation of semiotic variations, as a part of the Program of Stimulation of Psychological Development proposed by Baltazar-Ramos and Escotto-Córdova starting in 2020.

The authors understand semiotic variations as intentional change of the usage of signs for better comprehension of the same meaning. The introduction of semiotic variations during the Program for Stimulation of Psychological Development was made within the *Project on Communicative Differences* during a study of perception of a story as a function of its semiotic representation in pre-school children. The goal of the project consists of discovering the differences between pre-schoolers from three to five years old, during presentation of oral stories by different semiotic modalities (oral narration, drawing, and acting by using different materials and toys). Twenty girls and boys were participants in the project during each of three stages of the research, which consisted of sixty sessions.

Each session included two groups of children of both genders: one group of ten children of the age of four, and the other a group of ten children of the age of five. All children attended the Program for Stimulation of Psychological Development. Stage Three involves the help of psychologists, parents, and children for stimulation of the ZPD of all children. During this stage, children listen to a story in groups of four every day. The children must present the story by three different semiotic means during same session (the same day). Specifically, in the last stage, children are asked to present the story collectively, with participation of psychologists and parents. At all stages, narration and acting by the children are recorded, together with all activities of children. All the answers are transcribed for further qualitative and qualitative analysis. An agreement signed by the parents was obtained before starting with the research, which included consent for the filming of the sessions and its usage for exhibition in academic events.

The Vygotskian Conception for Modification of Education. The Case of Kepler College in Puebla

The authors of this article have decided to create new strategies and methods for teaching in Mexico. This process includes not only introduction of new methods of development, but also the changing of the minds of the teachers, which implies the “teaching of teachers.” In the words of Leontiev, this is an example of changing of the “world image” of the teachers (Leontiev, 1984).

This experience in Mexico wasn't at all easy, and it required patience and dedication during the process of creating original methods for teaching, and preparation of teachers and specialists to work creatively with these methods. However, positive achievements from this path, with interesting results, have been obtained. The method for the initial introduction of learning and reading was created and applied in the first grade of primary school for Spanish-language speakers. (Solovieva & Quintanar, 2018). The method of introduction of writing in English as a second language

for Spanish-speaking children, starting from the second grade of primary school, was introduced (Solovieva, 2015). The continuation of this systemic approach for development of writing and grammar concepts was created by one of the authors of this chapter (Solovieva, 2016).

In relation to pre-school age, the methods and strategies of development of play activity with social roles, were provided at the first three grades of pre-school education, and were gradually introduced (Solovieva & Quintanar, 2016a). The process of organizing play activity implied gradual development of semiotic mediatization by the inclusion of different symbolic means on materialized and perceptual level in games. All activities were guided, and the process of play activity always included external orientation provided by school teachers and psychologists (Solovieva & Quintanar, 2019a). The development of graphic activity and drawing was used as a strategy for working with concrete images of objects, spatial orientation, and verbal development with children of the age of 3 to 6 in the pre-school level. All these methods are used for psychological research and pedagogical practice in small, private pre-school and primary school institutions. (Solovieva & Quintanar, 2016b). All these strategies were created and applied according to the systemic psychological approach within Activity Theory, and the concept of Cultural-Historical development.

The results were obtained within research and presentation of Master's Degree dissertations in the Master's Program of Neuropsychological Diagnosis and Rehabilitation created in the Faculty of Psychology of Autonomous University of Puebla by Luis Quintanar in 1994. Since that time, the entire practice and the research in this Master's Program was based on qualitative neuropsychology and the conception of Cultural-Historical development proposed by of L.S. Vygotsky, A.R Luria, and their school. 20 generations and a total of 200 students have been graduated from the program. Students from different countries of Latin America took part in this program.

One of the main problems in the contribution of these results to education was that they were local, and depended for success on the profound conceptual preparation of specialists who were learning these new methods of qualitative research and practice. The majority of the students were always much more interested in clinical neuropsychology and research than in educational and developmental psychology. It was necessary to think about more systematic and organized implementation of the developed strategies in groups of children in order to show real benefits for the field of education.

This situation has radically changed since the opening of Kepler College in the City of Puebla in 2010. The original methodology for pre-school education was created on the basis of Cultural-Historical psychology of child development and Activity Theory. All sessions are planned, and include different kinds of activities, which lead to the development of new psychological patterns in pre-school age children. The pre-school level includes groups of children of first, second, and third pre-school grades, from 3 to 6 years old. All activities involve all children in groups, and are guided by an adult. The duration of the sessions is approximately 50 minutes.

These basic daily activities are: play with social roles; gradual introduction of drawing by stages; and analysis and representation of fairy tales and stories.

1. Play with social roles. All play with social roles includes symbolic components, which are of differing complexity according to grade. The teacher takes part in play as one of the participants and, at the same time, provides all necessary orientation, models, and explanation for the children (Solovieva & Quintanar, 2016a).
2. Gradual development of drawing. The introduction of drawing starts at the empirical level by comparing the essential features of objects and toys. Later on, children learn symbolic representation of actions by gestures, in order to move on to the drawing of lines and elementary shapes. At the next stage, the children start to generalize shapes of specific objects, and learn how to draw them. At the most complex stage, children create different landscapes and variants of still life, and make illustrations for fairy tales (Solovieva & Quintanar, 2016b).
3. Analysis and representation of fairy tales. In these sessions, the adult reads fairy tales loudly with empathetic and attractive expressions to children. During reading, and at the end of the story, questions of differing levels of difficulty are presented, with the objectives of identification of characters, features, actions, situations, reasons for actions, and so on. The complexity of the texts differs from the first to third grade of pre-school education. Children make decisions and proposals for selections of stories, and for comparison of features and characters. Different types of representations of characters and actions take place. A total of one hundred stories and tales, or even more, are normally read, discussed, and dramatized by the children during each school year.

Other activities include games with concrete objects and toys for the introduction of English language (Solovieva, 2015), lessons of physical education, and arts. These activities change creatively from day to day, according to the initiative of the teachers and assistant psychologists.

Discussion and Conclusions

The present research follows in the pathway of observations made by Vygotsky, who has said that the child of three years old follows the semiotic plot of a story (Vygotsky, 1931/1995). However, the deficit of verbal expression in Mexican children seems to show the absence of such understanding. Vygotsky claims that it's possible to ask children to act, in order to be convinced that they can follow the sense of the story. This observation of Vygotsky is closely related to what we call semiotic variety, which might be used intentionally for the stimulation of children's psychological development by teachers, parents, and older children. In other words, the usage of different semiotic procedures might be useful for the passage from the zone of actual development to the ZPD.

In conclusion, some of the psychologists who graduated from the Faculty FES-Z, UNAM, who go on to work in the education sector, possess sufficient theoretical and

methodological tools which enable them not to confuse the process of maturation and growing, with the process of the psychological development of children. This notion of development includes the central element of sociocultural organization of the child's world, starting with his/her parents, teachers, and friends. Such organization might be achieved by the transition from the ZPD into the zone of actual development, which might consequently offer a new and broader ZPD.

Our experience with implementation of these kinds of sessions shows that children acquire new skills at the pre-school age, such as voluntary activity, imagination, emotional involvement in activities, curiosity, a high level of verbal expression in dialogues, and the broad possibility for using and creating symbolic means. Our proposals are totally new in Mexico and in Latin America. Kepler College is a unique institution of pre-school education based completely on Cultural-Historical psychology and Activity Theory. Our main difficulty is that the program doesn't consider the planning and direction of an official program for preschool education, and school inspectors are not happy with our proposals.

On the other hand, the positive aspect of the experiments presented above, is that the teachers who start to become part of our programs say that they can't imagine their lives without this understanding of development. The work was continued online every day during the COVID-19 pandemic, in virtual classes, in which teachers, children, and parents were able to continue their cooperation and work in ZPD.

Ethics Statement

Ethical approval statement was not required in the article, because the study shows general methodological information about the work with the children in pre-school institutions (University Center and Private College, both approved by Secretary of Education), in which children enter by agreement and wish of the parents. There is no specific sample mentioned in the study.

Author Contributions

Yulia Solovieva designed and directed the project; Yulia Solovieva and Luis Quintanar developed the theoretical framework; Alejandro Escotto Córdova and Ana María Baltazar Ramos performed methodological analysis and drafted the manuscript and aided in interpreting the results and worked on the manuscript. All authors discussed the results and contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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