

BUILDING HEALTHY HABITS: AN EDUCATIONAL PROGRAM TO OVERCOME CHILDHOOD OBESITY

ELENI KOLOKOURI

Laboratory Teaching Staff, University of Ioannina, School of Education Sciences,
Department of Early Childhood Education

<https://doi.org/10.37602/IJREHC.2025.6316>

ABSTRACT

Obesity is a complex global health issue that impacts individuals across all age groups, with childhood obesity emerging as a critical concern due to its long-term health consequences. This paper presents an educational program designed to prevent childhood obesity by promoting healthy habits from the early years. Designed within the sociocultural framework of Activity Theory, the program adopts a holistic approach, integrating nutrition, physical activity, emotional well-being, and social development. It emphasizes experiential, participatory learning and encourages collaboration between school, families, local authorities, and communities. By connecting learning with real-life sociocultural environments, the program empowers young children to make informed choices about healthy habits both at school and at home. The program relates to specific Sustainable Development Goals, such as good health, quality education, clean water, and sustainable communities. Furthermore, the initiative seeks to equip educators, caregivers, and parents with practical tools to support consistent health practices. All in all, the program fosters a positive, developmentally appropriate learning experience that encourages a lifelong commitment to healthy living and ensures a smooth, supportive transition through early educational stages. This approach offers a holistic educational experience that goes beyond the teaching content and extends to social, emotional and ethical dimensions of learning.

Keywords: Childhood Obesity, Activity Theory, Educational Program

1.0 INTRODUCTION

According to the World Health Organization (WHO), obesity is defined as an abnormal or excessive accumulation of body fat that may adversely affect a person's health and lead to a reduction in life expectancy. It is a result of a chronic energy imbalance between food intake and energy expenditure (WHO, 2020). In 1948, WHO included obesity in the International Classification of Diseases. Obesity has become a major health issue at all ages and there is evidence that childhood and adolescent obesity has become a major public health issue with consequences of serious illnesses into adulthood (Kohut, 2019).

This paper presents an educational program about childhood for the early years designed within the sociocultural frame of Activity Theory. The program offers opportunities for differentiated instruction (Tomlinson, 2001), engages families as well as local authorities and organizations, expanding the learning community outside the school classrooms. It offers a holistic approach, in which obesity is seen through the lens of adopting healthy habits related to nutrition, physical activity, building confidence and well-being. In this sense, differentiated instruction considers

children's individual needs, different learning styles and cultural backgrounds. Moreover, flexible methods of instruction are proposed to address to diverse learners and encourage students to set achievable personalized goals, fostering a sense of ownership and motivation.

It is important for early learners to promote their autonomy, to help them build confidence adapt to new conditions and feel that they are acting in a climate of security. Shared activities between school and families facilitate transition to healthy habits related to nutrition and physical exercise. Transitional activities can also create and strengthen an inclusive culture in the school as they allow the recognition and acceptance of children's diversity. Through these activities, school integrate elements from different cultures, promotes collaboration and interaction between students and create an environment where every child feels like they belong (Penteri et. al., 2022).

2.0 OBESITY: A GLOBAL CHALLENGE

Obesity has become one of the most pressing public health challenges with a high level of complexity at a global scale. In 2022, around 37 million children under the age of five were overweight, an increase from 32 million in 1990. Among adults aged 18 and over, the number reached approximately 890 million people. This increase in obesity has been observed in all WHO regions, with America and the Eastern Mediterranean showing the most significant growth. In America, for example, one in three adults is affected by obesity, while nearly three in ten adults are affected in the Eastern Mediterranean region. As the data shows, the global obesity epidemic continues to grow, affecting millions of people and causing health inequalities. Immediate action is needed to implement effective policies, create supportive environments, and promote lifelong healthy habits, ensuring that all individuals can live healthier lives. (World Health Statistics, 2024).

Obesity is not just a matter of physical appearance, it relates to a series of diseases such as type 2 diabetes, cardiovascular diseases, certain types of cancer, chronic respiratory diseases, neurological disorders, and digestive issues. These health conditions contribute to increased illness and even mortality, posing a serious threat to public health and healthcare systems worldwide (UNICEF, 2020).

Childhood and adolescent obesity are linked to early onset of several disorders and may also lead to psychological and social issues, including stigma, discrimination, and bullying. Factors contributing to childhood obesity include excessive caloric intake, poor access to nutritious foods, high consumption of processed foods, and lack of physical activity. Addressing obesity requires a coordinated, multi-level approach involving health systems, education, agriculture, urban planning, and community engagement. Strategies must promote access to healthy foods, support physical activity, and foster health literacy across all age groups. Most importantly, obesity prevention and treatment must be integrated into broader public health initiatives aimed at reducing malnutrition (World Health Statistics, 2024).

It is urgent to invest on prevention and treatment of obesity as well as the health consequences, especially from the early years (Kohut, 2019). A research review (Yuksel et. al, 2020) that examined 19 school-based intervention studies aimed at preventing obesity and promoting physical activity and fitness among children and adolescents suggested that physical activity, can effectively contribute to obesity prevention and increase fitness levels among school-aged

children. More specifically, the studies prioritizing physical activity showed higher success rates in improving Body Mass Index (BMI) and physical activity levels than those in which physical activity was secondary. Combating obesity is crucial for improving individual and public health, as it addresses not only the physical consequences of the disease but also the social and emotional challenges individuals face. Language that puts labels on individuals such as "obese" or "fat" can create negative feelings and can lead to bias or discrimination and isolation for children and adolescents. The Obesity Action Coalition (ObesityAction.org) emphasizes the importance of education, advocacy, and support in empowering those affected and ensuring access to effective prevention and treatment. By raising awareness, promoting evidence-based information, and fighting bias and discrimination, efforts to combat obesity can lead to healthier lives and more inclusive, supportive communities.

Families are children's first social environment and thus play a crucial role in the initial formation of his personality and values as it contributes to the development of the child's initial understandings of the world and human relationships. Towards this direction, it is extremely important to include family education in combatting obesity to ensure a continuity of healthy habits and well-being and create supportive environments both at school and at home.

3.0 ACTIVITY THEORY AS A FRAMEWORK FOR DESIGN AND ANALYSIS

In this paper, Activity Theory is used as a theoretical framework for the design and analysis of an educational program about childhood obesity. Vygotsky laid the foundations for the study of human behaviour within the sociocultural environment and, in addition, supported the study of the individual within the social, cultural and historical context in which he lives. Leontiev changed the focus from the psychological development of the subject within a sociocultural environment to the transformation of the object of activity (Barab et. al, 2003). Within the Activity Theory context, construction of knowledge is carried out through the participation of individuals in the community with tools mediation. Learning is a process of social interaction and is directly linked to the social, historical and cultural context in which it takes place. The individual, through collaborative processes within the learning community, consciously develops abilities and skills that would otherwise be latent (Plakitsi et. al, 2018). In this frame, Activity Theory offers a theoretical framework, which allows us to identify and analyse at multiple levels the interactions that take place during the process of the child's learning and the multiple roles of all those who participate in it (family, school, community, society). In this sense, the collective nature of learning is recognized as well as the necessity of developing formative interventions that aim at the transformation of the systems involved and respond to the profound changes in relationships and demands that arise during the child's process of learning.

The development of Activity Theory can be understood through four successive generations, each of which has offered new conceptual tools and approaches to understanding human action (Engeström & Sannino 2021). The first generation, based on Vygotsky (1978), introduces the concept of cultural mediation, that is, that human activities are mediated by cultural tools, such as language and symbols. The basic conceptual representation is the triangular model of the subject, the tools and the object. The unit of analysis focuses on the individual who acts to achieve a goal using tools. The second generation, influenced by Leontiev, expands the theory with an emphasis on collective activity and the division of labour. He retained Vygotsky's

triangular model but highlighted the differentiation of individual from collective activity through the division of labour in his example of the “collective hunting of primitives” (Leontiev, 1981, p. 210-213). Within this frame, Engeström (1999) introduces the activity system, an extended triangular model that includes, to the subject, tool and object, rules, community and division of labor (Plakitsi et al., 2018). The role of contradictions that arise in a system of activity is fundamental, as a driving force for reconstruction and change. The American psychologist Michael Cole stressed the need to expand the theory so as to take cultural differences into consideration (Cole, 1996). In this frame, the third generation of activity theory developed conceptual tools to understand dialogues, multiple perspectives, as well as networks of interacting activity systems (Plakitsi et al., 2018; Engeström & Sannino 2021). The basic model of the activity system is connected with at least two interacting activity systems that share a common goal object. Activity systems of this type can be found in any collaboration, network or alliance that shares long-term and constantly changing goals.

The fourth generation of theory, (Engeström 2015, Engeström & Sannino 2021), responds to global social and environmental challenges such as poverty, climate change and pandemics. It focuses on multi-level collaborations that transcend cultural and national borders and on the interconnection of systems of activity on a global level (Yamazumi, 2009). The fourth generation of Activity theory can be used to study the interactions between different activity systems (e.g. kindergarten and family) to address a crisis, such as changing lifestyle and overcoming obesity. Transition of a child from one activity system to another brings to the front the boundaries and “discontinuities” between the two. The differences in philosophy, organization and pedagogical practices between the school and the family can function as a focus on the efforts to solve problems that may arise in a collaborative project. In this direction, the complexity of overcoming obesity is recognized and interventions designed aim at the transformation of both systems: kindergarten and primary school. This transformative approach (Engeström & Sannino, 2010) involves all participants in the transition process: students, teachers, families, local government and the wider community.

An Activity system is object oriented as subjects move towards the achievement of the goals they have set, and the outcome of these will determine the application of knowledge in everyday life. Its basic parts are the Subject, the individual or group participating in the activity (e.g. the children, the teachers), the Object, the goal sought to be achieved,(e.g. to adopt healthy habits both at school and at home),,the Tools „the means which the subjects uses to achieve the goal (e.g. pedagogical methods, educational materials, digital tools), the Rules that are formed by the Subjects to achieve the goals and the ways in which they are formed(e.g. curriculum, pedagogical principles, social norms), the Community that participates in the Activity system (e.g. the children’s families, the local community, the educational authorities),and the Division of Labor, a way in which roles and responsibilities are distributed among community members(e.g. roles of parents, teachers, children). Although the analysis of the basic parts of an activity system gives us valuable information about its operation, the system constitutes a whole and should be treated as such (Engeström, 1987). The Figure below (Figure 1) depicts the activity system of the educational program proposed in this paper.

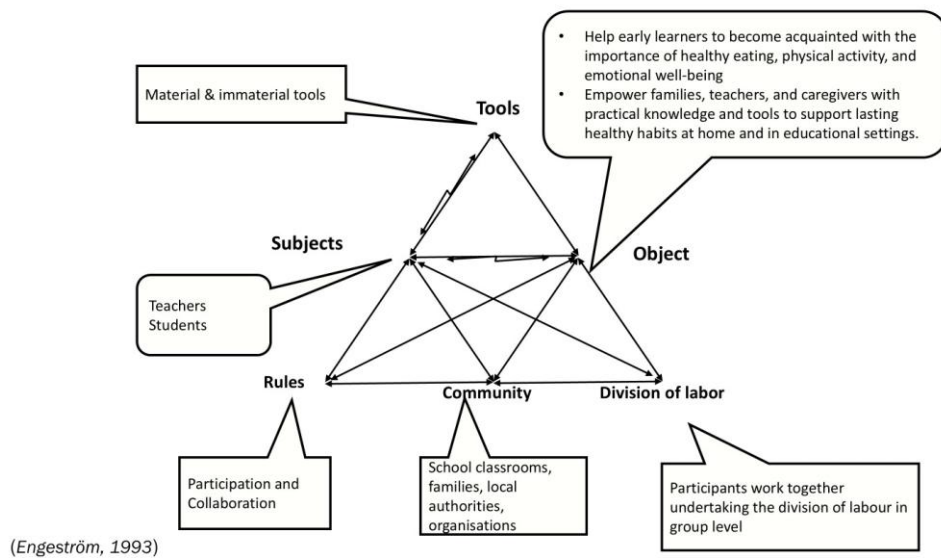


Figure 1: The Activity system of the educational program

An activity system, during its evolution, adopts new elements which bring about changes in the components as well as in the whole system. These changes are described as contradictions or conflicts and are considered as a process of change and evolution. (Daniels, 2011). This paper identifies possible contradictions in the design and implementation of the educational program, which are presented in the discussion chapter. The educational program includes both a theoretical and a practical approach through various collaborative processes. The theoretical approach includes briefings to participants on childhood obesity, healthy loving and wellness, the phases of the program and the importance of collaboration between all participants, while the practical approach includes all the activities of the educational program.

4.0 THE EDUCATIONAL PROGRAM

The educational program proposed in this paper, is connected with the early years' curricula for early years in Greece (Penteri et al., 2022) and the curriculum for active citizenship (2024) for all levels of education, which mainly aims to introduce education for democracy, human rights and sustainability from a young age. The curriculum includes seventeen units that correspond to the 17 Goals of Sustainable Development (SDG) of the agenda 2030 and emphasizes the construction of the identity of an active citizen through processes of experiential learning, participation, collaboration and the cultivation of empathy and responsibility.

The purpose of the educational program is to prevent childhood obesity through a child-centred approach that encourages healthy living from the early years. The program aims to help early learners to become acquainted with the importance of healthy eating, physical activity, and emotional well-being in ways that are developmentally appropriate and engaging. It seeks to empower families, teachers, and caregivers with practical knowledge and tools to support lasting healthy habits at home and in educational settings. By involving health specialists, the program ensures early, holistic prevention strategies. Furthermore, it mobilizes local

communities and authorities to build inclusive, supportive environments that promote health equity and sustainable well-being. In this context, the educational program is linked to the 17 Sustainable Development Goals (SDGs) and the five preambles of the agenda 2030, that is people, planet, prosperity, peace and partnership as shown in Table 1 (UNESCO, 2017).

More specifically, the SDGs that were used in the program were SDG 1 (o Poverty), SDG 2 (Zero Hunger), SDG 3 (Good health and well-being), SDG 4 (Quality education), SDG 6 Clean Water and Sanitation, SDG 11 (Sustainable Cities and Communities), SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnerships for the goals). To this end, the educational program includes actions to promote health and well-being through nutrition, physical exercise and mental empowerment, the cultivation of skills for quality education with an emphasis on equal access, participation and the strengthening of teamwork, awareness of human rights and the strengthening of partnerships within the community. to achieve all of the above through synergies with the family, municipalities and cultural institutions.

The program extends over a period of three to four months, starting in the second half of the school year, to allow time for preparation and maturation of the collaborations. The main phases of the educational program are reflected in the table below (Table, 1):

Table 1:

Preamble	SDGs	Goals of SDG Contribution	Goals of the program	Activities	Participants
1st Month Preparation					
-	-	-	Creation of a common pedagogical framework Connection with SDGs Collaboration plan with parents and agencies	Teachers' meetings Defining thematic and common objectives Recording of spaces/media First update for parents	Teachers, families, local authorities
2nd Month First Joint Actions					
People: all human beings can fulfil their potential in dignity and equality	2. Zero Hunger 11. Sustainable Cities and	SDG 2: Promotes food security, healthy diets, and reduced food waste SDG 11: Encourages friendly	Promotion of local and seasonal products, reduction of the ecological footprint. Promotion of sustainable urban	Preparation of healthy meals for the community. Presentation of alternative ways of utilizing food waste (e.g. olive pits) by giving examples of food waste. Cleaning and taking care of the school	Teachers, families, local authorities

	Communities	environments for physical exercise and community gardens	planning, improving public spaces, reducing waste and upgrading transportation in their communities.	surroundings or neighbourhood. Identification of inappropriate spaces for play, sports, entertainment and communication with the local authorities for restoration.	
Planet: to protect the planet and its resources from degradation for present and future generations	1. No Poverty	SDG 1: Supports vulnerable families with access to nutrition education and resources	Participation in campaigns or awareness-raising actions in the local community, such as collecting essential items, organizing information events or promoting social actions, to contribute to combating poverty	Discussion about the challenges faced by a poor family (food, housing, health) and propose simple solutions to improve their daily lives, developing empathy and the ability to find solutions.	Teachers, families, local authorities
	6. Clean Water and Sanitation	SDG 6: Promotes hygiene and access to safe water in schools	Conservation and improvement of water quality and sanitation practices, support of the sustainable management of water resources and community awareness on sanitation and hygiene issues.	Use simple tools to measure how much water they need to wash their hands, water plants or clean a table, comparing the water used and the water saved. Check of the taps and pipes in the school for water leaks and find ways and people to fix the damage	
Prosperity: all human beings can enjoy	3. Good Health and	SDG 3: Prevents diseases through early education	Strengthening bonds between students of	Cross-curricular activities (health, shared play, storytelling)	Teachers, students, families

prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature	Well-Being		different grades Activation of groups with active participation of parents and agencies	Organization of working groups.	
3rd Month Community Actions					
Peace: foster peaceful, just and inclusive societies which are free from fear and violence	16. Peace, Justice and Strong Institutions	SDG 16: Builds trust in health and education systems	Opening up cooperation to the local community Cultivating social skills and ecological awareness	Environmental and cultural actions Creation of common materials (e.g. posters, constructions)	All stakeholders, local community
(End of 3rd Month) Reflection & Celebration					
Partnership: all people in all countries collaborate towards the achievement of the goals taking special care for the vulnerable groups of people	4. Quality Education 17. Partnerships for the goals	SDG 4: Integrates health into early learning environments SDG 17: Engages cross-sector collaboration for systemic impact	Strengthening the sense of continuity Recognition of everyone's efforts Positive completion of the experience	Presentation of actions Creation of a transition portfolio (physical or digital) Final event	Teachers, students, families, organizations

The educational program begins with a series of meetings between teachers, families and representatives of local authorities to design an action plan, which is related to the participants, the thematic areas to be approached and the spaces where the actions will be implemented. They will then create working groups, which, depending on the action, will include children, teachers, parents and representatives of the local government. The educational program will begin with the creation of a common SDGs chain (Actionaid, 2018) by the participants which will include commitments on what each one can do for the SDGs connected with the program (SDGs 1, 2, 3, 4, 6, 11, 16, 17). Each group will create its own chain and in a joint meeting all

the chains will be joined together, as shown in the image below (Figure 2), declaring the beginning of the program.



Figure 2: Creation of a common SDGs chain

The working groups design activities, materials and events that promote the SDGs, ensuring the gradual involvement of children, depending on their age and interests, so that they can experience healthy living and overcoming obesity as a collective and positive thinking experience.

Through the actions of the educational program, an approach to sustainable citizenship is implemented for which collaborative actions are developed through democratic processes while at the same time learning is encouraged on a cognitive, emotional and social level. The educational program can be applied in different settings at a local and or national level and approach the different issues in relation to the SDGs in each region. Suggested activities related to the SDGs can be the following:

Health and Well-being Actions (SDGs 3, 4)

- Become acquainted with body parts, physical abilities, feelings and body respect.
- Use of food pyramids and sensory games.
- Information campaign on healthy eating with the participation of a nutritionist. Paediatrician.
- Theatrical activities and storytelling that promote healthy living and well-being for all.
- Preparation of healthy meals in the classroom.
- Creation of a poster with healthy eating instructions.

Food production (SDGs 2, 3, 4, 11)

- Become acquainted with food groups, growing food, local products and gardening.
- Sustainability workshops, in which children learn about growing food and environmental protection.
- Educational visits and collaborations with local institutions.
- Creation of a small garden in the school yard.

All about water (SDGs 3, 4, 6)

- Activities about the use of water, distribution on planet earth, water scarcity, water related ecosystems, water and the human body.
- Experiments about the composition, properties, characteristics, of water and water cycle.
- Educational visits in the nearest water locations.

Collaboration Actions (SDG 16, 17):

- Organization of joint activities with families to support their children on healthy nutrition and physical exercise at home.
- Collaboration with local authorities to organize.
- Invitation of professionals (doctors, teachers, social workers) to participate in the school's actions and support healthy living.

Before the end of the program, schools prepare an information brochure about the actions they have implemented in the form of a fanzine (Actionaid, 2018), as shown in the Figure below (Figure 3), as well as an invitation for the closing events of the program.



Figure 3: Creating an information brochure

The end of the event is proposed to take place in an open space with the involvement of all participants and a dinner under the title 'Healthy Bites for Healthy Lives ' can be organized, in which healthy food dishes can be cooked and served. At the same time, theatrical and musical performances can be presented by children as well as an exhibition with the art works created during the educational program can take place.

Finally, a virtual environment using PowerPoint with hyperlinks can be created which will act as a personal wellness centre for children and families (Figures 4 and 5). The centre includes rooms with activities which families can do with their children at home and offer opportunities for organizing a healthy lifestyle with information about nutrition, physical exercise and activities for stress relief, building confidence and wellness.



Figures 4 and 5: A personal wellness centre

All the activities are suggestions and can be adapted to the needs of the participants. The key to success of the educational program is the active participation and collaboration of all participants. Teachers, families, local authorities and organizations, collaborate to coordinate the activities and jointly design cross-curricular activities connected with healthy living, wellness and sustainability. In addition, teachers collaborate with each other exchanging information about the learning needs of the children. Families actively participate in the activities as assistants or co-organizers, are informed about ways of adopting healthy nutrition habits and chances for physical exercise with their children at home. The organizations involved support and participate in joint actions, offer spaces, logistical equipment, and even volunteers who contribute to carrying out activities, enhancing the value of the learning community.

Evaluation of the proposed educational program is a dynamic and participatory process, focusing on the quality of experiences, the development of skills, the interaction of subjects and the strengthening of the school-community relationship. Its participatory design offers collective feedback with a view to empowering children and improving the educational program. To this end, the groups discuss the course of the actions and co-organise the next phases through reflection and communication. In the different phases of the program, teachers

can use tools and methods such as systematic observation, recording diaries, interviews within the framework of the learning community. The data can illuminate the practices of teachers, feedback processes and good practices, which can strengthen the process of transition to a healthier lifestyle. In addition, at the end of the program, a portfolio can be created for the children who participated, with samples of the children's original works, teachers' recordings, samples from the implementation of group activities, audio recordings, photographs and video recordings from participation in the program. The material offers useful information about the children's learning process, highlighting their abilities, interests and active participation in the activities of the educational program.

5.0 DISCUSSION

Childhood obesity is a growing epidemic which can lead to chronic disease even in the adult life and can have a negative impact on physical and psychological health. It is a complex situation with physiological, hereditary, environmental, and socioeconomic causes. Early intervention to prevent or treat obesity is extremely important for the well-being of children and for developing a positive attitude towards healthy habits in their daily lives. This paper uses the sociocultural framework of Activity Theory for the design and analysis of an educational program which integrates health education into early learning settings and aims to prevent childhood obesity and promote lifelong well-being.

The proposed educational program uses experiential and participatory practices, focusing particularly on the collaboration between kindergarten, parents and local community. Through the emphasis on specific SDGs (1, 2, 3, 4, 6, 11, 16, 17), children learn to connect the educational process with their sociocultural environments and develop skills and attitudes that strengthen their personality and help them to overcome difficult situations with a sense of security and continuity. Similar educational programs have been developed, stressing the importance on the role of schools in the overall health and well-being of students and taking action on improving school meals and increasing physical activity levels among students (CDC, 2014). Furthermore, UNICEF has integrated the issue of obesity in the Nutrition Strategy 2020-2030 and has developed a landscape analysis tool which is used for in-depth analysis of childhood overweight and obesity and helps on prevention and control of these through the proper strategies and set of priorities (UNICEF, 2022). A research review (Faki et al., 2024) stressed the importance of dealing with childhood obesity through a comprehensive approach that includes both prevention and treatment. Family education on developing and maintaining healthy habits is crucial and collaboration with schools is extremely important to create secure environments in which healthy habits adopted will accompany children throughout their lives.

During the design and implementation of the educational program proposed in this paper, contradictions may arise, which constitute a driving force for the evolution of the system and bring about changes in the work of the participants. According to the basic principles of the cultural-historical theory of Activity, contradictions constitute the guiding force for change and development in an activity system. When analysing human activity, four levels of contradictions are distinguished: primary, secondary, tertiary and quaternary contradictions (Engeström, 1987). In the table below (Table 2) we present indicative examples of contradictions from the analysis of the educational program actions.

Table 2: Contradictions from the analysis of the educational program actions

<i>Level of contradiction</i>	<i>Definition by Engeström</i>	<i>Contradictions from the analysis of the educational program actions</i>
Primary Contradiction	“Internal conflicts take place in every element/node of the activity system.”	Subjects: The lack of training on how teachers can adopt differentiated instruction so as to meet the diverse needs of students.
Secondary Contradiction	“Secondary contradictions, which appear as conflicts between nodes/elements of the activity system”	Subjects-Rules: The rules regarding the obligations of the participants during the program, and the different subjects of each group, may create contradictions related to the different composition and participation of the members of each group as well as issues with the limited time for collaboration and coordination.
Tertiary Contradiction	“Tertiary contradictions appear between the objects/motives of a dominant form of activity system and those of a culturally more advanced form of activity.”	Subjects-Learning Community: The family is concerned about the adoption of healthy habits and the role they may play either due to lack of knowledge or limited time which may reduce the sense of continuity for the child.
Quaternary Contradiction	“Quaternary contradictions appear between the activity system under study and the “neighbouring” systems connected to it.”	The interacting activity systems participating in the program (e.g. schools, local authorities) follow different rules for the implementation of the actions, whether it concerns issues of bureaucracy, sponsorship, safety of participants, etc.

The effort to resolve contradictions leads to the creation of a flexible learning environment that reflects the complexity of the learning community and takes into account the multiple interactions of the activity systems in which the participants act. In this context, the challenges at each level of contradiction are recorded and the best solutions are sought. Emphasis is placed

on multi-level cooperation between kindergarten, families and local community, which is a key element for the creation of a coherent, experiential and socially integrated learning framework and leads to the success of the program.

The proposed actions are linked to the concept of active citizenship from an early age, enhancing children's participation in decision-making processes, acceptance of diversity, cooperation and responsibility. This approach offers a holistic educational experience that goes beyond the teaching content and extends to social, emotional and ethical dimensions of learning. In conclusion, the design of the educational program promotes active participation, cooperation and self-regulation, facilitates adaptation to new learning contexts and strengthens children's self-confidence, ensuring a positive attitude towards a healthy lifestyle.

REFERENCES

- Action Aid (2018). Planet 2030-Activity Guide. Retrieved from https://actionaid.gr/sites/default/files/2022-05/PLANET2030_2018.pdf
- Barab, SA, Evans, M., & Baek, E.-O. (2003). Activity theory as a lens for characterizing the participatory unit. In: D. Jonassen (Ed.). *International Handbook on Communication Technologies V2* (pp. 199-214). Mahwah, NJ: Lawrence Erlbaum Associates.
- Centers for Disease Control and Prevention. Putting Local School Wellness Policies into Action, CDC (2014). Atlanta, GA: US Dept of Health and Human Services, Retrieved from <http://www.cdc.gov/healthyschools/npao/pdf/SchoolWellnessInAction.pdf>.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge University Press.
- Daniels, H. (2011). An Approach to Notions of Subject Position and Discourse in Activity Theory. In C. Kanes (ed.), *Elaborating Professionalism: Studies in Practice and Theory* 5,167-182. Netherlands: Springer.
- Engeström, Y. & Sannino, A. (2021). From mediated actions to heterogeneous coalitions: four generations of activity-theoretical studies of work and learning, *Mind, Culture, and Activity*, 28(1), 4-23.
- Engeström, Y. & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges, *Educational Research Review*, 5, 1-24.
- Engeström, Y. (2015). *Learning by expanding: An activity-theoretical approach to developmental research*. Second edition. Cambridge: Cambridge University Press.
- Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen & RL. Punamääki (Eds.), *Perspectives on Activity Theory*. Cambridge: Cambridge University Press.
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.

- Faki, I. Sekouli, E., Katsaras, G., Karachrysafi, S., Papamitsou, T. (2024). Treatment and prevention of childhood obesity, *Archives of Hellenic Medicine*, 41, 6, 740–747.
- Kohut, T., Robbins, J., Panganiban, J. (2019). Update on childhood/adolescent obesity and its sequela, *Current Opinion Pediatrics*, 31, 645–653.
- Leontiev, A. N. (1981). *Problems of the development of the mind*. Moscow: Progress.
- Ministry of Education, (2024). Curriculum "Active Citizenship Actions"» of Kindergarten, Elementary, Middle and High School (in Greek). Retrieved from: <https://act.digitalschool.gov.gr/wp-content/uploads/2024/11/energospolitis.pdf>
- Penteri, E., Chlapana, E., Melliou, K., Filippidis, A., & Marinatou, Th. (2022). Curriculum for Preschool Education – Expanded Version (2nd Edition, 2022 IEP). In the context of the Project "Upgrading the Curricula and Creating Educational Materials for Primary and Secondary Education" of the IEP with MIS 5035542 (in Greek).
- Plakitsi, K., Stamoulis, E., Theodoraki, C., Kolokouri, E., Nanni, E., Kornelaki, A.C. (2018). Activity theory and the natural sciences: A new dimension in STEAM education (in Greek). Athens: Gutenberg.
- United Nations Regional Information Center. (2017). Retrieved from <https://www.unric.org/en/>
- UNICEF (2020). UNICEF advocacy strategy guidance for the prevention of overweight and obesity in children and adolescents. New York: UNICEF.
- Tomlinson, C. A. (2001). *How to Differentiate Instruction in Mixed-Ability Classrooms*. 2nd Edition. U.S.A.: Association for Supervision and Curriculum Development.
- Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
- World Health Statistics (2024). Monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organization. Retrieved from: <https://iris.who.int/bitstream/handle/10665/376869/9789240094703-eng.pdf>
- Yamazumi, K. (2009). Expansive Agency in Multi-Activity Collaboration. In A. Sannino, H. Daniels & K. Gutierrez (eds). *Learning and Expanding with Activity Theory* (pp. 212-227). Cambridge: Cambridge University Press.
- Yuksel H.S., Şahin F.N., Maksimovic N., Drid P., Bianco A. (2020). School-Based Intervention Programs for Preventing Obesity and Promoting Physical Activity and Fitness: A Systematic Review, *Int J Environ Res Public Health*, 17, 1, 347.