



# **Kindergarten Teachers' Implicit Knowledge on Child's Science Participation from Their Experience with 3-4 Years Old Children from Roma Community in Sofia**

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# CHILD PARTICIPATION

Child participation refers to **different degrees of involvement of children** regarding their safety, education, environment and other issues, which directly affect the quality of their life (Woodman, Roche, & McArthur, 2022).

It is often conceptualized as a continuum from **being informed, having a say**, and **influencing a decision** (Franklin, & Sloper, 2005).

It is also acknowledged as being a core of **inclusive science education** (Love, & Horn, 2021) and a right protected by the United Nations Convention on the Rights of the Child (Woodman et al., 2022).

# CHILD PARTICIPATION

However, defining participation in a meaningful and useful way, while **respecting children's maturity and competencies**, is still a challenge.

Especially **in educational institutions** where children spend a significant amount of time and adults are expected to know better, be better and be in charge of them (Checkoway, 2011).

Another obstacle to child participation there is how to determine the “**development norm**” in **inclusive education of non-typically developing children or children from various minorities** in a fair and non marginalizing manner (Love & Beneke, 2021).

# RESEARCH AIMS

This presentation offers part of the research data collected during the international applied research project “Communities for Sciences (C4S) - Towards Promoting an Inclusive Approach in Science Education”, funded by the European Union’s Horizon 2020 research and innovation programme. The C4S project aims to promote inclusive science activities to children and youth in eight different European countries (Spain, Germany, Hungary, Italy, Austria, Belgium, Sweden and Bulgaria).

# RESEARCH AIMS

In Bulgaria the research was conducted by researchers from New Bulgarian University in collaboration with practitioners from Health and Social Development Organization (HESED).

HESED is an organization that works with Roma children and their families living in closed community in the Faculteta neighborhood in Sofia. The organization has developed specific program “Preschool education and care for 3-4 years old children”. This program engages with young children living in compact Roma communities and not covered by the education system and with their parents.

# PROGRAM FOR INCLUSION OF ROMA CHILDREN IN EDUCATION

A large part of the **children aged 3-5 who live in the Faculteta neighborhood** are not covered in preschool education and are raised at home. These children differ significantly from their peers in terms of their **cognitive abilities and fine motor development** (extremely important for children's school readiness) because these abilities and skills are not stimulated and developed. Often the children from the neighborhood **do not speak or hardly understand Bulgarian**, which becomes an additional obstacle for their school adaptation. In the same time there is a need for **parents to acquire skills to stimulate children's development** by using symbolic and developmental games, stimulating expressive and receptive speech and cognitive development, etc..

# PROGRAM FOR INCLUSION OF ROMA CHILDREN IN EDUCATION

- The offered by HESED program pursues three goals:
  - Providing the opportunity for children of Roma origin to enter the educational system and meet the state educational requirements (EQR) for this age.
  - **Early prevention of dropping out of school for Roma children aged 3-4 years** by improving parenting skills and meeting development norms for the respective age, by increasing the cognitive, social, language and motor skills of Roma preschool children and by involving parents in this process.
  - **Increasing parental capacity** by helping parents to provide adequate and effective support in the development process as a prerequisite for the successful development of children and increasing parental satisfaction and security in the process of decision-making and implementation.

# PROGRAM FOR INCLUSION OF ROMA CHILDREN IN EDUCATION

In order to implement its program the organization established and furnished **2 kindergartens inside the neighborhood. Three groups of children are formed: of 3 years old children, of 4 years old children and one mixed from the both ages group.**

To children is offered **full day education and care program.** The pedagogical staff working with each group consists of **one pedagogue** (specialist in preschool education, with methodological professional training in teaching children of the relevant age) and **one or two assistant teachers** (specially trained paraprofessional from the Roma community).

# RESEARCH METHODOLOGY APPLIED

The aim of this research was **to introduce an approach of inclusive science education of young children (ISEYC)** in the work of the educational staff of 2 kindergartens and to evaluate the effect of its introduction. The goal was **to explore the ways teachers stimulated science learning through the use of a participatory learning environment.** The hypothesis on which this approach is based is that engaging teachers in more conscious, purposeful and creative teaching methods that actively engage children to learn science through the use of personal experience with the subject matter will increase children's learning, curiosity and creativity.

# RESEARCH METHODOLOGY APPLIED

In order to explore this hypothesis **mixed methods research** design was developed including **standardized instruments to measure children's learning achievements** along with a **participatory action research** approach to promote and evaluate the process of changes occurred both in teachers and children.

# RESEARCH METHODOLOGY APPLIED

The research included:

- **Training of the staff** of 3 pedagogues and 4 assistant teachers that engaged with the application of ISEYC in a) the philosophy, values and knowledge about different levels of children's inclusion in the educational process when teaching sciences and b) method of participatory action research and the role of the teachers as co-researchers
- After the training **teachers were expected to apply some pre-planned experiential learning methods** to the three groups of children.
- In order to facilitate the experiential part of teaching science and stimulate children's learning **different materials, plays and toys were provided** by the project to the three groups of children.

# RESEARCH METHODOLOGY APPLIED

- **Exploration of the performance of teachers** included from the one side, 6 group supervision sessions with the support of one of the researchers during which teachers were able to reflect, evaluate and share between each other their experience of applying ISEYC and to deal with their personal views of how this approach changes children behavior and learning.
- **Pre-, medium and post-measurement of the educational results achieved by the children** when creating an inclusive teaching environment was done. Six sessions with each of the three groups of children were filmed. They were conducted in the beginning, the midpoint and the end of the supervisions of using ISEYC.

# RESEARCH FINDINGS

In this presentation an emphases will be made mainly on the **findings achieved during the reflective supervision sessions with the teachers.**

# Teachers' implicit definitions of good child participation

During the initial training teachers were invited **to create their own, informed from their personal experience from the work with young children, definition of “good child participation”**.

The conclusion made from this effort was that **the notion of “good child participation” is relational one**. It means that it is created in an interaction between teacher and child in which specific environment is created to encourage and support child's active participation in the learning process.

# Teachers' implicit definitions of good child participation

The main features of such environment are:

- Children **to have a choice**. For instance, to have the opportunity to choose between different topics, activities or materials to work with.
- Children **to be aware that they have the right to choose and to express themselves**.
- Children **to feel that they are heard**. According to one of the teachers this way “children will feel more comfortable, their self-esteem will increase and they will often express their opinions. They will communicate more easily with each other.”
- Children **to be aware of their personalities**. “To realize that they are Me, not We.”
- Children **to be aware that they have the right to ask questions and to receive responses** to these questions.
- Children **to recognize their responsibilities** in relation to their toys and to the other children.

# Teachers' implicit definitions of good child participation

Teachers are expected to partner to such children's behavior:

- Teachers **to feel and support the needs** of each child.
- Teachers **to give freedom to children's interests and actions** and to stimulate the skills of each child. "Each child has different skills, different needs. They help us target each child."
- Teachers to create **balance between children's interests and their needs**.
- Teachers **to respect the child** during the learning process.

# Teachers' implicit definitions of good child participation

During the reflection on this definition of “good child participation” in the learning process teachers discovered that they missed the parents in this process. So, they included also the important role of the parents as supports of this culture of relationships also at home.

- Parents to have skills **to listen to their children.**
- Parents **to participate together with them in certain learning activities.** For instance, during the project teachers created additional home tasks in which parents could participate and help children or just appreciate what children did.
- Parents **to respect their children.**
- Parents **to encourage children's creativity and fantasy** instead of doing the home works for them.

# Levels of child participation in the process of science learning

- Teachers identified different levels of participation of children:
  - **Learning by imitating:** In such level the teacher does something or explains some knowledge and after that one or all children repeat it.
  - **Choosing between several topics, materials etc.:** Opportunity is given to the children to choose the topic that they are curious about and through it to teach the material. Or, to follow children's curiosity about certain unexpected /unplanned events and use them as a basis to offer some knowledge to children.
  - **Learning from each other:** One or more children enter the role of a teacher and show to the others how something works or explains something. Especially in cases when a child missed the lesson and needs some support to learn what has been taught.
  - **Learning by discussing and taking group decisions:** Children are encouraged to explain their position and knowledge about certain topic and to discuss between each other these shared positions. When appropriate, they could even take common decisions or conclusions.
  - **Discovering by doing:** Instead of explaining certain knowledge to children teachers encourage them to have direct experience with the objects and through this experience to learn it.

# Levels of child participation in the process of science learning

All these levels of learning of science are applied both in the **structured teaching sessions** and during the **other activities when appropriate** to connect knowledge with the situation from the everyday life (gymnastic, eating, playing in the backyard etc.). It is very pragmatic and flexible approach used by the teachers.

According to the teachers there are additional aims of all these levels of participation of children in learning science:

- **To empower and develop self-confidence** in them. It is very important as at home the opinions of Roma children are usually neglected and not taken seriously.
- Important **psycho-social skills** to be learned. Teachers share that sometimes for children it is difficult to have their own position, they are shy to explain it in a group of other children, they are afraid to ask questions.
- **To not being afraid of making mistakes** and instead to gather new knowledge and skills from them. It is also an important feature of the learning process in a culture of education that is based on wrong/right answers.

This way the classes of teaching science support **not only the effective acquisition of scientific knowledge but also develop social and emotional skills** in them. Teachers emphasized the **complexity and mutuality of this process**.

# Levels of child participation in the process of science learning

To the authority of the teacher as a model and source of learning **the dynamics in the group of children** are used also to teach children to self-organize and to stimulate the participation in science classes even of the most uncertain and passive children.

An important finding that teachers identify is that **children in age 4 comparing to these of 3 years old more easily self-organize themselves and use the group** as a source of encouragement to learn and participate.

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# Activities inclusive teachers undertake

Teachers identified several activities they undertake when trying to facilitate children's participation in science learning:

- **Observation and monitoring** of the process of children's exploration activities.
- **Encouragement of certain behaviors in children** like self-organization, active engagement, support to each other's learning.
- **Giving attention to each child.**
- **Monitoring the order of performance** of each child.
- **Repetition of the knowledge or task** in order to be understood and learned.
- **Empowerment** of children to take a role of authority and teach other children.

# Teachers' skills applied when encouraging child participation

According to the teachers adults that want to include children actively in the learning have to acquire certain skills in order to be successful in this effort:

- **To explain the complicated things in a simple way** using interactive and experiential methods of teaching.
- To be **patient** and to be **sensitive** to each child's individual capacity to participate not enforcing the child.
- **To pay attention to each child** and **to give equal opportunities** for all of them to actively engage with the subject matter.
- **Creativity and fantasy** to invent different methods and forms of teaching science to children.
- To be able **to give some power to children to run the process** of learning and to support them, to capture the emerging in the group or situation themes and to work with them.
- To be **flexible** and not rigidly to follow the predefined teaching curriculum and material following the interests, capacities and needs of the concrete children.

# Teachers' skills applied when encouraging child participation

- To be brave **to cross the boundaries of traditional** ways of teaching and to challenge themselves.
- **To create and keep the boundaries of the roles** of the pedagogue and the assistant-pedagogue when in the same one or the other **being ready to take leading role when necessary**. For instance in some culturally specific situations Roma assistant-pedagogue could have very important role in the process of learning.
- To be **tolerant to the cultural diversities** and **curious to learn more** about the other culture, attitudes, values and believes.
- To be **competent in the subject matters thought** and able to make **priorities in the teaching process**.
- To be **emotional** and **honest** to the children and their parents.
- **To create a predictable and structured learning environment** for children. For instance, each day of the week is related to the study of specific subject matter (Monday – Mathematics; Tuesday – Reading; Wednesday – Things that happened around us, etc.)

# Teachers' skills applied when encouraging child participation

- **To relate the offered activity to its meaning.** First, the teacher explains what she is doing and why and then children are asked to explain the meaning of certain action themselves.
- To select the **tasks and materials according to children's abilities to work independently** with them.
- To be more **dialogical**. "We try to talk and explain less and use the personal experience of the children in the group more."
- **To tolerate mistakes**, "to create a culture of not being ashamed, not laughing at mistakes and helping each other. Rules are established in the group at the beginning for this".

# Challenges for children's active participation in science learning

During the supervision teachers shared also the main challenges that come from the children themselves and from the context in which they live.

- One of the main difficulties for this group of Roma children from the very poor and closed neighborhood is their **inability to speak Bulgarian language**. Teachers found that children's active engagement in more visual and performative way of reading fairy tales for instance helped children to learn more.
- Another challenge is the **illiteracy and lack of learning skills in their parents** that leads sometimes to neglect of children's efforts and educational success.
- The third challenge is the presence of **learning disabilities, emotional and mental disabilities** in some children requiring additional efforts from the teachers to help them in their learning and participation.

# Challenges for children's active participation in science learning

- Teachers from the **mixed age group** shared that an additional attention that they have to pay when preparing their teaching methods in order to balance the capacities of 3 and 4 years children in a way that tasks are achievable to the 3 years old and still attractive to the 4 years old.
- Teachers mentioned also that it is not easy for so small children to participate because they are faced with their own **feelings of insecurity, impatience, competitiveness** and these of other children from the group. According to the teachers it creates very emotional and complicated atmosphere that sometimes is difficult to handle. The fact that teachers always work in pairs helps a lot in such situations.

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