

INNOVATIVE EXPERIENCES IN THE ASSESSMENT OF ACQUISITIONS AT EARLY AGES

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Abstract: *This article presents the results of a research developed through applying an international assessment tool for development and early education. The study reveals the benefits of using a standardized assessment tool correlated with the current regulatory documents. Starting from the results obtained after the application of the batch of tests, a formative training program was created in which the correlation of the areas of development was investigated, with the indicators of the Fundamental Reference in the Learning and Early Development of Children and the tests of the evaluation tool. The research was carried out during a school year, with the target group being the preschoolers of the Preschool with extended program "Căsuța Bucuriei" no. 11 Brașov. At the beginning of the school year, in the initial assessment, the IDELA standardized assessment tool was applied to a number of 10 groups with a total of 259 preschoolers, then at the summative assessment (at the end of the first semester) the application was resumed to all groups in the experiment, identifying the natural evolution of preschoolers. During the second semester, between the two moments of evaluation (summative and final), the group of preschoolers was divided into an experimental group and a control group. Preschoolers in the experimental group benefited from formative training. Following the collected results, our aim was to offer teachers a complex vision of the level of development and school preparation of preschoolers, using an innovative assessment tool. The IDELA tool (international early childhood development and education assessment of children aged 3-6.5 years), was developed following three years of testing and piloting at international level. The tool drew on a number of existing sources and tools, including the Early*

Development Tool, the Age and Stages Questionnaire, the Denver Multiple Indicator Set Study, the Early Childhood Development Standards from a number of countries where these were available, as well as numerous tools developed and used by Save the Children national teams.

Keywords: *assessment tool; design evaluation experience; early childhood; innovative experiences; research.*

Introduction

The concept of educational process is related to that of "transformation" because it causes a change in time, space and form of knowledge experiences, which, in turn, must cause changes in the individual's behavior or in the structure of his knowledge or mental skills.

The basic activities of the educational process are: teaching, as a logical aspect, learning, as a psychological aspect and evaluation.

Evaluation is a fundamental dimension of the educational process, determining the value of learning results and progress.

Therefore, teaching is justified only if it generates learning, if it motivates the children and involves them in the learning effort, its objectives and the way of achievement being deduced from the learning objectives.

Evaluation, as a regulator of the process, is indispensable for both teaching and learning, moreover, it is intrinsic. Through evaluation, the teacher observes how students / preschoolers learn, helps them to be aware of their own successes or failures, to improve their performances and efforts, evaluates their own activity, develops value judgments about themselves, as an educator, about the quality of lessons, the success or failure of some strategies used.

The IDELA tool is an internationally recognized and validated evaluation alternative that can be used simultaneously with the national tools regulated by the Curriculum for early education in force, the Sheet for assessing the individual progress of the child, before entering primary education, as well as other tools proposed to be applied in the assessment of preschoolers, but also of didactic practices, such as the Reflection Sheet.

Although it appears as a tool to transform learning and teaching, the assessment is shaped, in turn, in relation to their requirements.

Methodology

In the present article we will present a quasi-experimental study based on a standardized international assessment tool - IDELA.

Study objectives:

1) to develop a formative training program in which to correlate the field of development, the dimension of development, the targeted behavior, indicator (from RFIDT) with the item from the international assessment tool aimed at developing children's cognitive capacities;

2) to design a set of activities with formative effects, focused on various directions of children's development in accordance with the evaluation items in the IDELA tool;

3) to compare the intragroup and intergroup effects of formative training, with the effects of children's natural/spontaneous development/evolution, in order to develop children's socio-emotional skills.

Hypotheses:

I1: Preschoolers included in formative training are developing their cognitive abilities to a greater extent than the same category of children who are not included in the program.

I2: Children who are systematically assessed with the IDELA tool are demonstrating superior social-emotional skills than those who do not benefit from this intervention.

Presentation and definition of variables:

An independent variable and dependent variables were identified and formulated.

The independent variable is:

- *the formative training in which the children took part and which included a design of activities for each Development Area (from the Fundamental References in the learning and early development of the child from 0 to 7 years) with the corresponding indicator (from the Fundamental References in the learning and early child development from 0 to 7 years) that correlated with a developmental dimension, a targeted behavior (from the Early Childhood Education Curriculum) and the appropriate item from the IDELA tool.*

In 2011, Save the Children completed a comprehensive analysis of existing child development assessment tools and identified a number of limitations of the existing tools. Many of the available tools were limited in their approach, either targeting only one skill area or a specific age group, and many were based on parent or teacher report rather than direct assessment of children's skills.

Despite the existence of EECD tools in the global space, none of the tools available at that time offered a balance between international applicability, especially in contexts of low-income countries, feasibility and ease of administration and adaptation, and psychometric rigor. Save the Children has started the development and validation process of IDELA.

The dependent variables were influenced by the independent variable and were established from the initial level of the investigative approach. These were:

- ✓ *the level of cognitive development of the preschool child*
- ✓ *the degree of affective and motivational involvement of preschoolers*
- ✓ *the level of socio-emotional development of the preschool child*
- ✓ *the child's level of preparation for school*

Description of the research sample

The research sample consists of 259 children, 160 of them (61.8%) being in the small or medium group, and 99 in the large group. In terms of gender distribution, 126 (respectively 48.6%) are girls and the remaining 51.4% are boys. Demographic and background data were collected, thus only 1.2% (3 children) come from a low economic background, 59.5% (N=154) from an average socio- economic, and more than 39.4% of high average. Regarding the education level of the parents, it is observed that only 175 (N=44) are graduates of secondary education, 71.00% graduates of university studies, and the rest of postgraduate studies.

In the formation of convenience samples, participants were grouped equally in terms of data and characteristics into two distinct groups. In this way, the control group is determined by 145 participants of each age level (small, medium and large group), and the experimental group by 114.

Figure 1. Batch distribution by age level

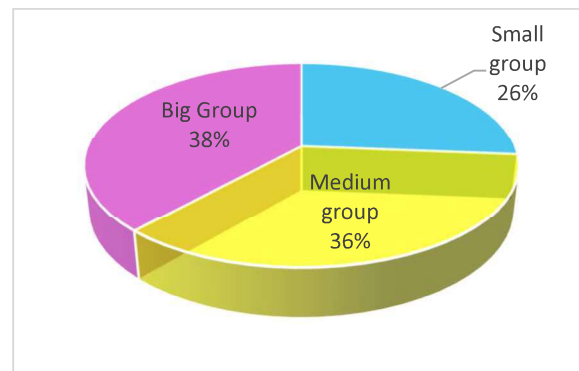


Figure 2. Batch distribution by gender

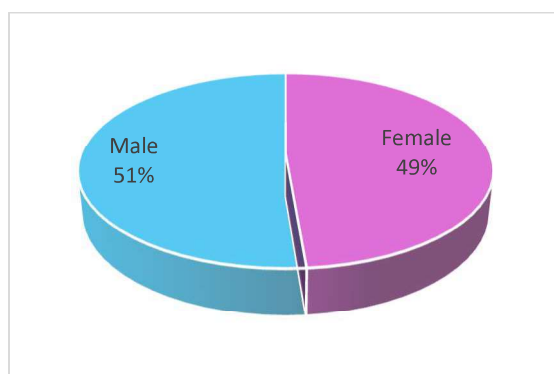
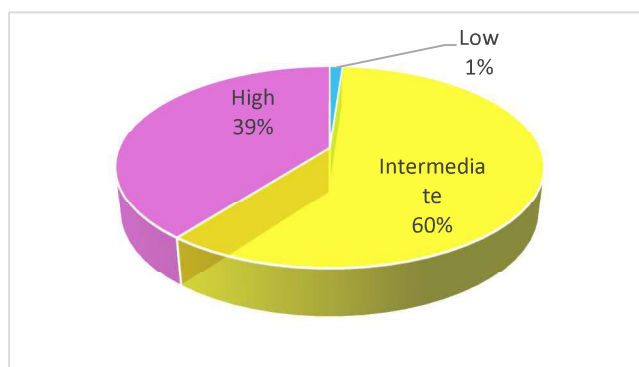


Figure 3. Batch distribution by socio-economic background



Presentation of research tools and investigation procedure

The goal for IDELA was to develop a holistic, rigorous, open resource-like tool that is feasible and easily adaptable to different national and cultural contexts.

This study involves an investigative approach that belongs to the experimental family, based on a quasi-experimental model.

Experimental research is a scientific approach to reality with the aim of establishing a cause-effect relationship between two observable and measurable phenomena. The researcher aims to establish this relationship by keeping some conditions unchanged, controlled and varying others, depending on the formulated hypotheses. Due to its rigor, the experiment is considered the prototype of scientific research methods (Deaux and Wrightsman, 1988; Christensen, 2001).

The experiment is, therefore, a method of scientific research into the relationships between various phenomena in a strictly controlled framework, based on the modification of some factors and the constant maintenance of others.

Quasi-experiments are scientific procedures in which the researcher exercises less control over the conduct of the research. If in experiments the

variable is manipulated, in quasi-experiments the manifestation of the variable is observed. If in an experiment, we can increase or decrease the degree of manifestation of a variable, thus obtaining various variations, in a quasi-experiment we have to be satisfied with what nature can make available to us. Also, for quasi-experiments, subjects are selected from pre-existing groups. Quasi-experiments are also called *ex post facto*, precisely because we have already formed groups (McBurney, 1994).

Thus, we designed a quasi-experiment with three repeated measurements on a population of 259 children. The experimental and control groups are equivalent.

The initial application, the baseline of the IDELA tool was carried out at the beginning of the 2020-2021 school year, representing the moment T1, on both groups of preschoolers, that is, on all children in kindergarten. This testing serves to establish the baseline, but also to verify the equivalence of the groups.

The T2 moment involved the application of the IDELA assessment tool to both groups, as the second measurement at the beginning of the second semester. I found that the equivalence is consistent both at the T1 and at the T2 moment.

Between the two evaluation moments we have a natural evolution for all children who attended kindergarten. After the T2 evaluation time, the training and intervention program is applied to the experimental groups throughout the second semester.

The natural evolution on the variables that the IDELA assessment tool measures can be followed between T1 (initial assessment) and up to T2 (stage assessment).

Through the quasi-experiment, we aim to evaluate, in addition to the children's natural evolution, the evolution due to formative training (the independent variable). At the time of T3 assessment (final assessment) the progress in children's development and school readiness due to the intervention should be observed.

During the intervention, it is aimed to stimulate those items that were measured by IDELA through the two measurements that preceded the intervention. The working model is therefore the quasi-experimental model on two groups with pretest (T1) and posttest (T3).

We present here an example of an activity applied within the intervention:

Development field: Socio-emotional development

Development dimension: 1. Interactions with adults and children of similar ages

Targeted behavior: 1.3. He enjoys the company of children at play

Indicators: 195. Identifies as a friend of children from different backgrounds (preschool, home / block, grandparents).

Example:

Enchanted handkerchief

- **Materials required:**
- **handkerchief**
- **large paper scarf**
- ..



Suggestions for carrying out the activity:

- This game can be played both in the classroom and outdoors.
- Children will be appreciated for their good behavior, for the respect they give to each other. The game can be continued in the following days, the children having the opportunity to choose their handkerchiefs (which in a pandemic context are paper, preferably colored) and friends.

During this activity the children will:

- interact on their own initiative with children close in age;
- identify as friends of some children in the group;
- have the opportunity to make friends and maintain friendships with their colleagues.

Analysis methods

In order to verify the previously described hypotheses, the quantitative data collected through the research, we used the statistical mathematical tool, the SPSS version 23 program.

Non-parametric methods were used in the data analysis using the SPSS program, as the data were not normally distributed (symmetry and skewness values exceeding -1 and 1), which required us to apply non-parametric tests.

The preschoolers actively and voluntarily participated in the activities of the formative training, during which the children did not feel any changes in the climate, training conditions or teachers' behavior. The use of the IDELA international assessment tool involved play activity and was integrated into the daily program, it did not overload the preschoolers.

Verification of information is a qualitative procedure whereby data obtained quantitatively in the research phase have been tested as authentic and valuable for the purpose of the investigation.

The verification of the quantitative data was also analyzed from a qualitative point of view, through the observations made during the application of the two instruments.

During the observation of the children during the evaluation, the teacher made findings of a reflective nature, which surprised: the involvement of the children, the emotional state, the motivational level, the extent to which the spirit of volunteerism was manifested, the autonomy in expression and in action.

Results

After analyzing the descriptive indicators of the scales evaluated at the time of pre-intervention-T1, it was observed that only four sub-dimensions were not normally distributed, with high values of symmetry and vaulting: verbal comprehension, number of friends indicated, sorting / classification and size / length . The differences in the N indicator in the table demonstrate the number of missing answers provided by the total number of participants.

A first analysis of the descriptive indicators of the scales evaluated at the time of assessment-T2 indicates that at time T2, which assesses the natural evolution of children in preschool as a result of participation in the normal process of training and education, without introducing the mechanisms of intervention, we already identified a lack of homogeneity in the variables; At this level, it was easy to see from the vaults that most of the participants were at a relatively high level of response, while there were a number of children who at the level of answers offered fewer correct options than the other colleagues. Thus, there are a number of children in the lower left extremity, which triggers the lack of homogeneity and lack of symmetry at this level. It can also be seen how the number of responses marked by 999 (by lack) decreased considerably compared to T1.

Following the analysis of the descriptive indicators of the scales evaluated at the moment - T3, post-intervention, as in the previous case, but at a much higher number of variables, the lack of symmetry and the high level of the vault were observed; Similarly, at the level of the whole group of participants, there are a number of children who are at the lower end, offering fewer correct answers than their peers than the other participants in the study. Another noteworthy fact is that during the post-intervention evaluation, the

number of answers offered increased significantly, with fewer who do not choose to provide an answer to the question.

Assessment of differences between groups in T2

The evaluation of the differences between the control group and the experimental group at the level of T2 time was performed by the nonparametric technique of the Mann-Whitney test, the previously analyzed indicators highlighting a lack of normality for most of the studied dimensions.

After studying the differences at the level of the control group vs. the experimental group, at the time of T2 data collection it is assumed that there is a normal evolution of the skills due to the study program and the activities determined by the typical environment of kindergartens. Although at this level, the assumption was that the groups would have evolved relatively similarly at the level of variables, there were still a number of statistically significant differences, where the significance threshold p is less than .05.

Assessment of differences between groups in T3

In order to evaluate, however, the effectiveness of the intervention performed at the level of the working sample, we performed the same non-parametric statistical technique Mann-Whitney for independent samples; the results are set out in Table 1 as follows:

Table 1. Differences between the two groups in post-intervention data collection

	n		Z	p
	Control 145	Experimental 114		
	M rank	M rank		
Personal conscience	123.57	138.18	-2.50	.01
Size / length	123.78	134.89	-2.04	.04
Sort / Sort	127.01	132.35	-1.70	.08
shapes	129.04	130.76	-.26	.79
Identification of numbers	119.17	138.52	-2.60	.009
One-to-one correspondence	124.41	130.72	-.75	.45
Addition subtraction	115.14	129.42	-1.65	.09
Complete the puzzle	115.79	137.56	-2.61	.009
Number of friends	125.87	121.52	-.59	.552
Emotional awareness	116.39	138.74	-3.02	.002
Empathy	128.94	128.17	-.10	.91
Conflict resolution	115.86	122.69	-.80	.42
Working memory	122.48	130.82	-.96	.33
Head-to-toe game	123.33	134.31	-1.36	.17

Awareness of written letters	126.54	130.90	-.52	.59
Number of foods	112.46	143.79	-3.87	<.001
Number of animals	123.87	131.07	-.97	.30
Identify the letters	74.88	64.40	-1.42	.15
The first letter sounds	103.98	111.85	-.97	.33
Writing	80.56	96.12	-2.02	.04
Verbal understanding	114.96	144.65	-4.64	<.001
Copy form	110.18	155.21	-5.0	<.001
A person's drawing	109.09	137.38	-3.14	.002
Folding the paper	103.77	111.86	-1.10	.27
Jumping	100.92	152.87	-6.46	<.001
Comments on the general interest	134.00	126.85	-.77	.43

Note: $N=259$

The results show that as a result of the intervention, the children who took part in the program had higher scores and more correct answers than those who did not take part in the intervention in most sizes. Only at the level of three dimensions: number of friends, empathy and identification of the letters, higher scores were recorded in the control group. We mention the fact that the differences in scores at these three dimensions are very small, almost insignificant. Marked in bold, the variables are delimited where it is observed how the control group has a higher average than the experimental group.

Assessment of differences in the same group between T2 and T3

To further study whether the intervention was significant in the experimental group, the post-intervention T3 time and the pre-intervention T2 time, we performed the test for Wilcoxon pair samples, also nonparametric. Even if we identified significant differences between those in the control group and those in the experimental group, we will study whether at the level of the same participant-child we have higher results after the intervention to which he was exposed between T2 and T3. The data are shown in Table 2.

Table 2. Differences in the experimental group, in terms of pre- and post-intervention stage

	T2		T3	
	<i>Md rank</i>	<i>Md rank</i>	<i>Z</i>	<i>p</i>
Personal conscience	5.00	6.00	-6.67	<.001
Size / length	4.00	4.00	-4.26	<.001
Sort / Sort	2.00	2.00	-4.02	<.001
shapes	4.00	4.00	-5.34	<.001

Identification of numbers	1.00	1.00	-2.25	.02
One-to-one correspondence	2.00	2.50	-3.77	<.001
Addition subtraction	2.00	2.00	-.53	.59
Complete the puzzle	3.00	1.00	-3.74	<.001
Number of friends	1.00	4.00	-1.00	.31
Emotional awareness	3.00	4.00	-4.16	<.001
Empathy	3.00	3.00	-1.43	.15
Conflict resolution	1.00	2.00	-3.41	.001
Working memory	4.00	3.50	-1.77	.07
Head-to-toe game	3.00	5.00	-9.09	<.001
Awareness of written letters	2.00	3.00	-2.61	.009
Number of foods	1.00	2.00	-7.85	<.001
Number of animals	1.00	1.00	-3.60	<.001
Identify the letters	2.00	2.00	-1.00	.31
The first letter sounds	2.00	2.00	-1.00	.31
Writing	3.00	3.00	00	1.00
Verbal understanding	5.00	5.00	-.55	.57
Copy form	3.00	3.00	-.33	.73
A person's drawing	5.00	6.00	-4.83	<.001
Folding the paper	1.00	1.00	-2.44	.01
Jumping	2.00	2.00	-4.38	<.001
Comments on the general interest	14.00	25.00	-4.14	<.001

Note: $N=259$

The analysis of these differences at the level of T2 and T3 measurement for the experimental group are highlighting significant differences in growth in post-intervention T3 at the level of correct answers compared to the assessment level in T2. The differences are clear in the averages for most of the sub-dimensions (see the colored mark in the table). Significance thresholds indicate that in most cases, we are likely to be wrong by about 1 in a thousand when we say that the intervention program has improved children's cognitive abilities compared to the time of the T2 assessment.

Also it's worth mentioning the aspect of the general interest that the child showed during the evaluation. In this way, after the intervention, the child showed a higher attention to the instructions received, had confidence in carrying out the activities, did not let himself be distracted and increased his focused attention, showed concern and dedication to the task, increased pleasure and the motivation to achieve the problems, but also the interest. In

general, compared to the time of the Q2 assessment, the child showed a significantly higher interest and concern.

Conclusions

The presented quasi-experimental research facilitated us to build on the performance and maturation of preschoolers in order to prepare for school, with the help of the IDELA evaluation tool, in the conditions where we intervened through formative training and evaluated the effects. The particularities of children's progress on the following components were explored: self-awareness, sorting and length differentiation skills, shape classification and visual-spatial skills, mathematical skills, emotional awareness, empathy, ability to manage conflicts, language skills and sports skills, obtaining a series of data that validated the research hypothesis.

The differences between the two researched groups (the experimental group and the control group) revealed in the studies and observed in the children's behavior during the activities were highlighted at the level of relationships with those around them, interaction with colleagues, the way in which they are proactively involved in class and how it behaves in the evaluation stage.

During the initial assessment in both groups of preschoolers, a slight reluctance of the children and a lower level of engagement was observed. This is due both to the new way of assessment for preschoolers and to the need to become familiar with the items of the instrument and the proposed tasks. The intervention plan carried out in the experimental study contributed beneficially to alleviating these aspects, and the differences observed at the behavioral level, in the children's reactions and in their emotional state at the final evaluation were visibly improved. These improved aspects have significantly increased the number of correct answers.

We have found that children's progress is greater in terms of expressive vocabulary and oral comprehension. Reading materials and activities resulted in significantly increased literacy scores.

Therefore, following the research, the presented hypotheses were validated and according to the analyzed results we can say that preschoolers included in a formative training develop their cognitive capacities to a greater extent, unlike the same category of children who are not included in the program and the children who are systematically assessed with the IDELA tool demonstrate superior socio-emotional skills to those who do not benefit from this intervention.

Recommendations for teachers:

The IDELA tool is recommended to be used by teachers:

- by selecting concrete strategies for structuring activities to develop groups of children with diverse abilities and to meet the individual needs of many of the children in their groups.
- to improve the efficiency and quality of the school preparation process and to raise awareness of children's level of preparation upon entering primary school.
- to transform their teaching practices in an appropriate manner in order to adapt the development to the school-type activity
- for a better knowledge of the children and for adapting the requirements to the individual and age characteristics of the children.
- to develop a network to share practices and create opportunities to improve early learning experiences for all children.
- for creating opportunities to contribute to the preparation of children for school and the successful transition to primary education.

It is recommended to use formative training based on IDELA:

- by correlating the items in the tool with the development areas and indicators in the RFÎDT.
- adapted to the specifics of each group and contain a balanced number of activities for each field.
- individualized for children with developmental delays or disabilities and early integration to benefit from learning opportunities that are still very limited and must be expanded.

Recommendations for managers and decision makers:

- Adaptation of the Idela tool to the national curriculum documents in force: Curriculum for early education, Sheet for assessing the individual progress of the child, before entering primary education and Fundamental references in the early learning and development of the child from birth to 7 years
- Given the results in the area of literacy and numeracy, future adjustments of the instrument are recommended which could focus on making more frequent reading materials and educational toys available, as well as the continuous encouragement of reading activities with children.
- IDELA should be adapted to each age level. In the research it was applied to each group separately with the expectation that the maximum scores would be obtained at the end of the large group
- It is recommended to develop a program aimed at accelerating school readiness in three directions:
 - preparing children for school
 - preparing school for children
 - preparing families for school

- If the sample sizes were expanded to assess the impact of each domain and the instrument benefited from adjustments focused on certain aspects (such as toys and reading materials and reading and reading activities) the intervention based on this instrument would facilitate increased attendance at kindergarten and would contribute to the child's development and better preparation for school.
- The tool could serve as a source of information and inspiration for future policies and programs aimed at expanding access and improving the quality of early education for all children in Romania.

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