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Inclusiveness for All: The Importance of Individualization and Differentiation for Achieving Educational Progress in Children in Kindergarten

Abstract: The publication outlines the importance of individualization and differentiation when selecting and developing educational content, as well as when planning the goals of pedagogical interactions in the kindergarten. The results of a study involving experimental and control groups of 3–4- and 6–7 year-old children are presented; they indicate greater improvement in the progress of children in the group where an individual and differentiated approach had been systematically applied to all pupils.

Keywords: individualization; differentiation; individual educational progress; 3–4 year-old children; 6–7 year-old children.

Inclusiveness for all: the importance of individualization and differentiation

The ideas of differentiation and individualization in pedagogy are as old as the idea of effective tuition. It is related to planning high-value pedagogical interaction that accounts for individual characteristics even in large groups of children. Besides being an overall educational approach, differentiation and individualization can be utilized in practice through various methods, procedures and other pedagogical instruments related to the direct application of a way of viewing the process of learning and tuition that is focused on the child/pupil.

Even in his own time, Comenius spoke of the importance of the individual approach. Vygotsky's "zone of proximal development" theory does not delineate the same "territory" for all children; even at the same age, this "zone" is different for each child.

Contemporary pedagogical research presents some aspects related to drawing attention to the importance of individualization and differentiation in pedagogy while at the same time drawing up some requirements for its proper application.

According to Tomlinson (2014), differentiation and individualization require the use of small sub-groups or individual tasks based on educational content that accounts for the different needs of each child or sub-group. She also states that the targeted use of flexible sub-grouping within the daily or weekly pedagogical interaction schedule, which is planned in accordance with the specific needs of individual children in the group, lies at the heart of quality tuition.

Thus, for example, Kuznetsova & Régnier (2014) use some of the methods of the French educator C. Freinet to apply in practice the principle of individualization in modern educational practices, in the area of foreign language tuition, and they have established a heightened motivation for learning in the participants of the educational experiment they describe. Kratochvílová & Havel (2013) examine the application of individualization and differentiation in Czech primary schools as one of the characteristic features of inclusion. They define the "application of individualization and differentiation" as one of the five basic principles of inclusive schooling (along with communication; cooperation; open-mindedness of teachers regarding the maximum expectation from pupils; respect among the children and the school staff). They also state that "a teacher can differentiate education in terms of content, timing, methodology and organization" (p. 1523) and thus ensure the potential for all children to be able to learn optimally and to achieve their maximum, regardless of their differences.

We are in total agreement with Căprioară & Frunză (2013) who, while uncovering the important role of differentiation and individualization in the tuition and learning of mathematics, nevertheless warn of the possi-

ble risks that might arise when this approach is applied one-sidedly. They point out the importance of teachers being specially trained in organizing this kind of tuition. Furthermore, individualization and differentiation are often related to children's inquisitiveness and it is very important that teachers have a clear idea of how to channel it in the right direction. In this regard it is important to mention Engel & Randall (2009), who reasonably consider that "a teacher who believes the goal of an activity is to complete a worksheet (a common goal in U.S. classrooms) might go about a learning activity very differently than a teacher who believes the goal is to help the child learn more about a given domain (science, literature, etc.)" (p. 189).

Similar to the above, Mircheva (2013) examines the question of "differentiation in education" and its direct connection with "open education", focusing on the possibilities of using differentiation in primary school; however, some of the author's ideas could be adapted and applied in ways specific to children of preschool age. Thus, with the aim of "achieving learning that brings pleasure and satisfies children's interest", Mircheva (2013) also supports the use of a "differentiated methodology that provides a variety of paths to learning" (p. 7).

Taking into account everything written above, *the aim of this article* is to describe the role of individualization and differentiation for the definition of educational goals, as well as for the selection and structure of educational content and its application in pedagogical interaction in order to expand the possibilities for educational progress of children in preschool age. The publication focuses on research in two different stages of interaction with kindergarten pupils: when starting and when finishing kindergarten, i.e. interaction with children aged 3–4 years and 6–7 years respectively.

The need for the increased application of individualization and differentiation in the kindergarten

The key role of the kindergarten teacher is to discreetly and effectively manage to transform life situations that are important to the child

into pedagogical ones (Engels-Kritidis, 2012), while at the same time provoking and maintaining the child's interest. This endeavor cannot have lasting success without accounting for the individual features and achievements of each child, combined with differentiation and/or individualization of the pedagogical interaction goals. Even from the early stage of selecting and structuring the educational content in a given pedagogical situation, a good kindergarten teacher will skillfully select and set the acquisition of knowledge, skills and attitudes, some of which will reflect the specifics of individual children, or account for the potential of sub-groups within the class at a given time and development stage. In this regard, it is vital not to forget that a complete understanding of the essence of the individualized approach, as well as the principle of individualized educational goals when interacting with children of preschool age (Roussinova et al., 1993), are connected to the provision of more effective options regarding each separate child in the group, as well as to the clear understanding that the above does not concern only (or mainly) children belonging to the so-called "vulnerable groups" (children with special educational needs or difficulties, children of immigrant or minority descent, etc.). Fortunately, the opportunities for the successful application of individualization and differentiation at the preschool age are much greater in comparison to the options within the standard educational process for older children; one of the main reasons for this is the specific nature and, especially, the flexibility of the pedagogical interaction in the kindergarten. The teachers are the ones who can elaborate, reduce or present specific educational content in a way that allows discovery of the optimal or even maximum potential of each separate child or each subgroup (defined and redefined often as per specific criteria, at a given time, in accordance with specific circumstances or aims of the teacher). As well as accounting for the specifics of the educational system used, the kindergarten teacher should also plan several variations of different complexity for the educational content of pedagogical situations, adhering to the principle of the individualization of educational goals even in unplanned interactions with children outside of the normal schedule.

In each pedagogical interaction, the teacher needs to adequately assess which of the already known elements must be brought forward as a basis to introduce the new knowledge/skill/attitude, with regard to the varied educational focuses, in a way that reflects their existence in the real world (Engels-Kritidis, 2012). In a children's group, even one that is structured on an age basis (as is the case in Bulgaria), these stages are different for each child. Thus, not only is the group competence of two separate groups of e.g. 3–4-year-olds, different, but within the group itself there are individual and differential variances which, regardless of their connection to faster or slower development, have to be taken into account. Understandably, it must be noted that in order to successfully apply an individualized approach, especially when it comes to large classes (of 30 or more children) as is the case in the larger metropolitan areas of Bulgaria, it is important that the teacher is deeply familiar with each child's peculiarities.

The pedagogue is the one who, taking into account both the individual characteristics of each child and the group competence as a whole, "ensures" a series of pedagogical situations of increasing complexity that keep each child "awake" at his/her acquired level of mental development by giving him a constant source of "food" to maintain development. The kindergarten teacher should provide scope for the application of children's acquired experience; by individualizing and differentiating the complexity of the presentation, the teacher provides opportunity for comprehension and lays the foundation for the conscious use of the experience in real-life scenarios (Engels-Kritidis, 2012).

The principle of individualization of the educational goals is implemented to ensure "uniformity in the educational strategy and an individual rate of development" and is one of four basic principles of selection and structure of the educational content of the groundbreaking for contemporary preschool pedagogy in Bulgaria "Programme for the Education of the Child from 2 to 7 Years Old" (Roussinova et al. 1993, p. 14). However, to what extent is this principle applied in practice today?

Over the years, pedagogical observation of interactions, even in kindergartens that customarily apply forward-thinking methods and

resources, have focused attention on the insufficient use of individualization and differentiation in the aforementioned aspect. In order to further identify the issue, expert opinions of teachers in the capital and other cities in the country were used; their analysis confirmed that the potential for individualization and differentiation of pedagogical interaction is not used to its full extent.

Aim, hypothesis, methodology and design of the research

Before continuing to the hypothesis, it is important to review some basic information on the way preschool education is organized in Bulgaria, where the research took place. In Bulgarian kindergartens, the children are assigned to groups based on age (3–4-, 4–5-, 5–6-, and 6–7-year-olds); for each of those groups, several educational program system alternatives have been developed, comprised of materials for use by the children and books for the teachers. These program systems are directly linked to the expected results as per the country's official educational requirements for preschool education and preparation (Decree № 4 for Early Childhood Education and preparation of children for the primary school, 2000; updated 2005), according to which there are nine educational directions - Bulgarian language and literature; mathematics; social orientation; natural environment orientation; fine arts; sport activity; music; constructional, technical and everyday essential activities; games and play culture.

Aiming to find proof of the importance of individualization and differentiation of educational goals in the process of interaction in the kindergarten, the following research **hypothesis** was formulated: the degree of educational progress of each child with regard to mastering the educational content (defined as an estimated average of the different educational directions) is higher in groups where there is more frequent and wider application of the individualized and differentiated approach, in comparison with groups where this approach is applied via infrequent and inadequate methods and techniques.

This article tries to test the above hypothesis by applying it to two age groups: 3–4 year-olds (first age group) and 6–7 year-olds (fourth age group), i.e. to the youngest and to the oldest children attending kindergarten in Bulgaria.

A psychological-pedagogical experiment was conducted in two kindergartens in the capital city of Sofia; the experiment involved the application of a 12-week experimental educational interaction to a group of 31 children aged 3–4 years, as well as to a group of 30 children aged 6–7 years, for the period of March 1st – May 22nd, 2015. The aim of the interaction was to widen the scope and variety of application of individualization and differentiation by the kindergarten teachers during their work with children. Additionally, children from two control groups were researched for comparison purposes; these consisted of 31 and 32 children respectively, for which the experimental interaction was not applied.

Continuous daily psychological-pedagogical observation of the children by the kindergarten teachers was used as the main research method; this allowed for on-the-fly evaluation of the dynamic process of development of the mental processes and skills, as well as the progress and achievements of the children with regard to mastering the educational content. With the parents' consent, the kindergarten teachers gave expert opinions of each child's success rate by filling out evaluation data cards at the start and after the end of the experiment; the data was used to group and regroup the children in accordance with the criteria and indicators system developed by the author. This article will present the results of the researched experimental and control groups with regard to the indicator *Degree of educational progress of the child toward mastering the educational content as per the official educational requirements for preschool education, defined as an estimated average of the progress in different educational directions* (Bulgarian language and literature; mathematics; social orientation; natural environment orientation; fine arts; sport activity; music; constructional, technical and everyday essential activities; games and play culture). At the start of the experiment, as well as after the end of the 12-week interaction, kindergarten teachers were called upon to distribute the children's names into 5 informal (i.e. only

on paper) separate subgroups according to *each child's degree of success in mastering the educational content*, defined as an estimated average of his/her degree of success in the separate educational directions (see *Table 1*). During instructions, it was stressed that each child should be placed in the subgroup which best fits his/her achievement *at the time of distribution*; the appeal for teachers was to be as objective and impartial as possible. It is important to note that the required qualification for Bulgarian kindergarten teachers is a university degree (Bachelor's at minimum), which includes extremely competent psychological and pedagogical preparation. In addition, the kindergarten teachers who participated in the research have been training teachers themselves for more than 20 years; additionally, they have a wealth of experience with scientific-practical research and projects, so it is definitely safe to accept their expert opinion as such.

Table 1. Subgroups according to degree of success in mastering the educational content as per the official educational requirements for preschool education.

Group 1:	Group 2:	Group 3:	Group 4:	Group 5:
Almost always have difficulties	Frequently have difficulties	Frequently achieve good results	Mostly achieve very good results	Almost always achieve excellent results
(they have difficulty managing without help and are significantly behind the core group)	(they need improvement in lots of cases, but can sometimes achieve their goals with little or no help)	(they need improvement in some non-important or few important aspects, but can mostly manage on their own)	(they only need improvement in non-important aspects)	(almost always without any issues)

The part of the research presented herein can be associated with the following 4 **main tasks**:

1. To have the expert opinion of kindergarten teachers in the experimental and control groups of 3–4 year-old children regarding

- their degree of success in the initial and control stages of the experiment.
2. To have the expert opinion of kindergarten teachers in the experimental and control groups of *6–7 year-old children* regarding their degree of success in the initial and control stages of the experiment.
 3. To measure the degree of educational progress of *3–4 year-old children* and *6–7 year-old children* by estimating the difference in success rates of children between the experimental groups and the control groups.
 4. To apply suitable statistical methods in order to adequately prove and visualize the hypothesized larger degree of progress of children from the experimental groups in comparison with the control groups.

The results, presented in numerical format based on the establishment of grades to the association of children with the separate subgroups defined by teachers at the appropriate moments during the research, were subjected to statistical processing using the SPSS 19 software.

Table 2. Distribution of 3–4 year-old children and 6–7 year-old children in Experimental Groups and Control Groups in accordance with their association with the subgroups based on degree of success in mastering the officially-required educational content – estimated average of all directions, in Initial Stage and Control Stage.

N ^o	Subgroup Description:	3–4 year-old children Experimental Group		3–4 year-old children Control Group		6–7 year-old children Experimental Group		6–7 year-old children Control Group	
		Initial Stage	Control Stage	Initial Stage	Control Stage	Initial Stage	Control Stage	Initial Stage	Control Stage
1	Almost always have difficulties	7	2	4	3	2	2	0	0
2	Frequently have difficulties, but have often shown they can achieve good results	11	9	12	12	4	3	8	5

3	Frequently achieve good results	5	8	7	7	6	5	9	11
4	Mostly achieve very good results	4	3	2	4	12	8	11	12
5	Almost always achieve excellent results	4	9	6	5	6	12	4	4
	Total children in the group	31	31	31	31	30	30	32	32

The first examined null hypothesis, correlating to the *research hypothesis*, is the following: the degree of progress of separate 3–4 year-old children toward mastering the educational content is not larger in the experimental group in comparison to the control group.

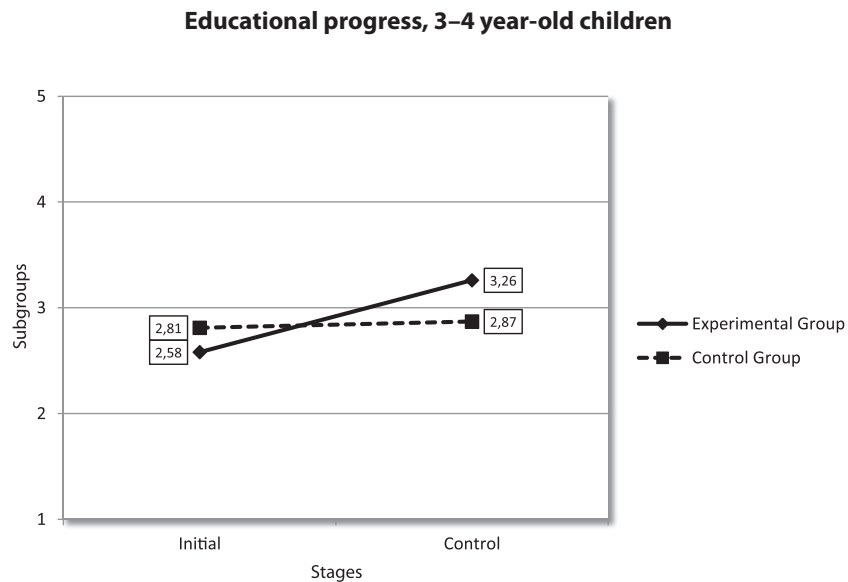
In order to check the null hypothesis, the following statistical methods were applied:

1. *Student's t-test* method for checking statistical hypotheses regarding difference between two average values from paired samples (to compare the estimated averages of the experimental and control groups, separately for the initial and control stages).
2. *Student's t-test* method for checking statistical hypotheses regarding the difference between two average values from independent samples (to establish the statistical significance of the change in the experimental and the control groups separately).

The results of the statistical analysis show that during the control stage there is no significant difference between the experimental and control groups ($t = 0.67$, $p = 0.507$). The change in the Control Group is statistically insignificant ($t = 0.81$, $p = 0.423$), while in the Experimental Group there is a statistically significant change ($t = 0.629$, $p = 0.000$) that can be clearly seen in Fig. 1. Although no statistically significant difference is registered between the experimental and control groups in the control stage ($t = 1.17$, $p = 0.246$), a fact that appears to confirm instead of rejecting the null hypothesis, is the statistically significant change in the Experimental Group children, along with the fact that they start from

lower values in the initial stage and go on to overtake the Control Group in the control stage, is at least a partial confirmation of the alternative (re-search) hypothesis.

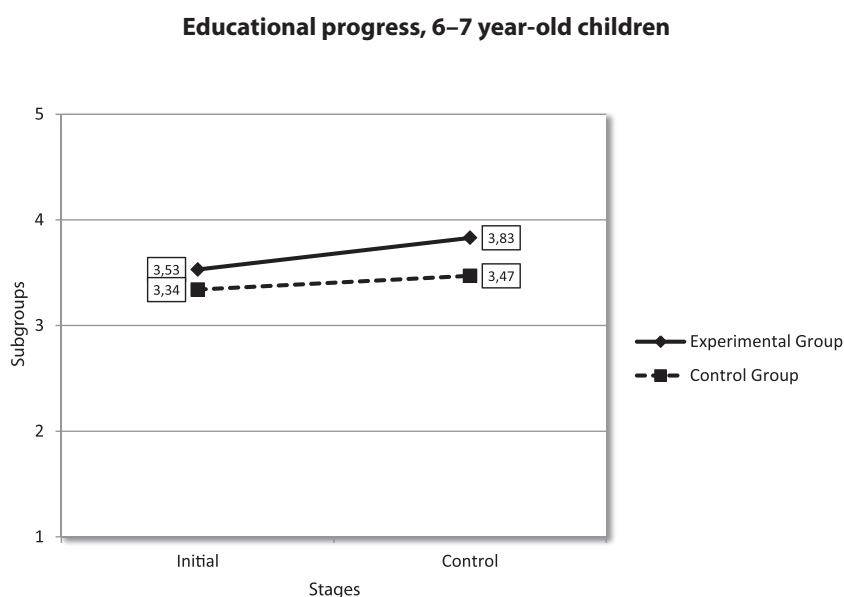
Fig. 1. Differences in the degree of success between the experimental and control groups of 3–4 year-old children during the initial and control stages.



The second null hypothesis to be examined is the following: the degree of progress of separate 6–7 year-old children toward mastering the educational content is not larger in the experimental group in comparison to the control group.

The examination of the second null hypothesis was made using the same statistical methods used to check the first hypothesis; the results are visualized in Fig. 2.

Fig. 2. Differences in the degree of success between the experimental and control groups of 6–7 year-old children during the initial and control stages.



The results of the statistical analysis show that, even though the Experimental Group starts from a higher value, during the initial stage there is no significant difference between the experimental and control groups ($t = 0.69$, $p = 0.495$). In both groups there is a significant change (Control Group: $t = 2.10$, $p = 0.044$; Experimental Group: $t = 3.53$, $p = 0.001$); however, the change in the experimental group is bigger than in the control group, which is evident in Fig. 2. Even though in the control stage there is no significant difference registered between the experimental and control groups ($t = 1.31$, $p = 0.196$), which appears to confirm the null hypothesis, the greater degree of progress of the Experimental Group children is at least a partial confirmation of the alternative hypothesis.

We thus tried to prove and visualize the positive difference in the degree of educational progress of individual children in groups where an

individualized and differentiated approach is actively applied in pedagogical interactions. The reasons why the change during the control stage for both age groups, though evident, is not statistically significant, are most probably related to the limited number of children observed. A sample that is at least three times larger and includes more children from all age groups processed together is expected to alter the picture and outline a statistically significant connection.

This publication outlined the importance and potential of the enhanced application of individualization and differentiation in pedagogical interactions within the kindergarten; this reasoning was supported by the pilot research results presented herein. Different aspects of this issue will be examined in more depth in upcoming publications by the author.

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