

POSSIBILITY OF WORK PLAN WITH SCHOOL CHILDREN DEFINITIONS ACCORDING TO INITIAL HIERARCHICAL ASSESSMENT OF THEIR TYPOLOGY IN MULTIVARIATE DEFINED COMPETENCES

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Abstract

Purpose - The problem of this study was to identify possible biomotoričkih types of children the same age as defined under the motor composite hierarchy. The aim was to establish the structure types biomotoričkih features children. The study prepared by the models and collect scientifically established material to proposals of adequate program at school that the center sets the content or program. The design and approach - The study was originally designed in a way to obtain a hierarchical relationships of selected skills of children covered by arbitrarily established a comprehensive space dimensions of children. Within such a methodology, defined by the clusters and analyzed their structure. Findings - It is possible to establish a hierarchical composite comprising a Z values selected criterion variables (motor). It was possible to identify clusters for each of the pre-defined hierarchical groups. It was possible to confirm the hypothesis according to which clusters by level (hierarchically defined groups) differ. Limitations and suggestions - Restrictions logical models do not exist, but there are limits to research. Specifically, for complete transparency, we should explore other samples, other variables, other age groups and for both sexes. Practical implications - Based on the results should be set based model making future plans and programs (curricula). Value - Work is methodologically completely original and gives a completely new proposals.

Key words: education, children, capabilities of the hierarchy, types, production plans

Introduction

Didactics and some global settings

Didactic ie. Teaching (acc. To Greek **διδασκω,-ειν**) is a branch of pedagogy that deals with theories, ideas, principles and guidelines that target the successful implementation of the educational process. Pedagogy as science explores education in significantly higher theoretical level than didactics, which is largely practical oriented. Didactic largely used theoretical models developed in philosophy, psychology and sociology, as well as different pedagogical theories and settings, especially theoretical models of teaching and learning. Because of different starting theories and hypotheses, didactic concepts can be mutually disagreement or contradictory. Older didactical concepts were directed towards teaching and teacher, while newer concepts more direct to the student and the learning process. Successful teaching increasingly important to know the characteristics of students and learning styles and adapt them approaches and methods of teaching (Wikipedia, 2014). In terms of development, in all relationships thematization transfer of educational values and tasks, then the main area of activation didactics is the realization and implementation of the implementation of educational objectives in the given conditions. As is well known, in principle, the establishment of the plans and programs through certain procedures in social institutions. General overview of one such situation gave Bonacin and Bonacin (2012), where apparently there are three levels of decision-making. First, a fundamental level is a society that sets the general system of values and accumulated knowledge stored.

Both, ie, knowledge and values forward the next level, which is responsible for evaluation, monitoring and control, and these are social (or state, supranational, ...) institutions, generally at the level of government, ie, the management organized social communities.

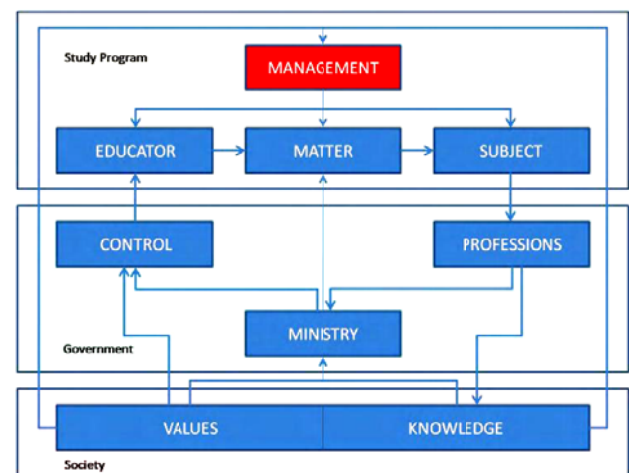


Figure 1. General integral model of education management [Source: Bonacin and Bonacin, 2012]

At this level, they face "efferent" (downward) channels through which society manages the institutions and the transfer of knowledge and values, or "afferent" (upward) by which the higher levels of selective reporting and enabling the enrichment of the knowledge society and the further accumulation.

Operational level specifically implementation of the program, ie, program of study, regardless of whether the program in kindergarten, primary school teaching at the school or program in college. At this level, to integrate the student, teacher, content, and management (owner, director, ...) which are responsible for the quality and quantity adopted. As can be seen, the emphasis of this level is the program of study. So we have a model of society-government program as safe according to the latest efforts in pedagogy and didactics. So in principle, always be the case that, often without the need, defines the overwhelming predominance of a certain category, and are in pedagogy and didactics were sometimes students (child-centeredness), teachers (technocracy), school (institutionalism), state (statism) ... In this sense, many historical considerations expressed basis, depending on the initial position. For example, Germany in the XX. Century brings great news. In fact, in Germany, to the '50s exists conservative policy. It is thought that the talent of differential within individual social strata of society. But as '60. Appears Göttingen educator Heinrich Roth and his anti thesis: Talent is not a static phenomenon that remains once and for all, children can "become gifted 'if they are to provide for the appropriate school offers, and their parents adequate financial support. So it appears that neither talent nor heredity are essentially no natural but are socio-cultural phenomenon. This revision talent became then theoretical basis Education Reform '60 and '70 years. Thus forming three inextricably linked conditions: hereditary traits, actions of social environment and personal activity (Giesecke, 1993; Lubin-Golub and Kozjak-Mikic, 2014). Such and similar thoughts before they led to changes in education in terms of the scientific revolution, because especially in the XX. century appeared an immense accumulation of knowledge, the use of technology but also the destruction of many, and traditional values. By the middle of the XX. Century education is not the meaning that was placed there in the modern world, ie. Until after the Second World War (Polish, 1991). Education is in modern society the most important factor of economic development and the most important element of social change. In the world to understand that education is an essential condition of development and because the two things are connected into a solid whole, which led to the expansion of education in industrialized countries. Continuing Education requires a new structure of the education system and the content of education. Requires a total revision of school curricula and the creation of modern software compliant with the progress of science and culture (Gudjons, 1994). Also, Radovanović et al., 2012 emphasize that technology should enable human and sustainable development and build a knowledge society and describe the key documents for the future development of education: Resolution of the Council of Europe in 1991, followed by the futuristic study of Edgar Morin 'Education for Future' from 2002, followed by a White Paper on Education 'According learning society' the Commission of the European Union in 1995, and

finally the UNESCO World Report „Towards Knowledge Societies“ from the 2005. One must also be added and thinking about the education of personnel, such as Recommendation ... of 2003, or all of the elements of training including permanent training which produce a particular style and quality teachers behavior (Radek and Sorić, 2005; Radovanović, 1997). The modern conception of school have in mind the so-called. Open School, which will organize the educational process on the principles of continuing education and developing skills for learning and values for mediation of various means of information and transfer of knowledge and values of the (Polish, 1991; Vukasović, 2001). When school personnel see a permanent shift, because in addition to general social There are also psychological, pedagogical, social, economic, ethical, legal and other reasons for higher education teachers. In addition to changes in the length of schooling has changed and the content of education, organization and technology education of future teachers. As time comes to accelerating change in all spheres of life and work were incorporated and new facilities in the theoretical and practical training of teachers. Similarly was the Gutenberg machine reproduction of books which certainly led to the crisis, and the third time the same thing happened with the information and means of communication today (Danilović and Danilović, 2011). The authors conclude that any crisis in education emerges as the inability of the education system to adequately adapt to technical and technological changes in society and needs.

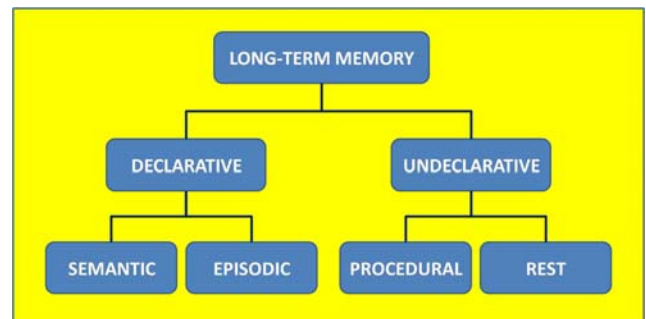


Figure 2. Long-term memory
[Source: Bubić, 2014]

When selecting content appear two groups of theories: a) Traditional (theory of substantive education, functional theory of education, theory of utilitarianism) and b) Modern (Exemplary theory, structuralism and the theory multilateral education). In doing so, we distinguish four stages of planning and programming in the teaching process: 1) The concept of plans and programs, 2) Development of appropriate curriculum, 3) Realization ie. the performance of the curriculum, and finally 4) Evaluation conducted curriculum (Polish, 1991; Vizek, Vidović et al., 2003; Kusić, 2014). In the psychology of learning should recall how to structure our memory. Zarevski (1994) according to Baric (2014) speaks on a) sensory, b) short-term c) long-term memory.

According to Vizek, Vidović et al. (2003) as well as Bubić (2014), there is this pattern of long-term memory described the figure of the third declarative knowledge is therefore something that "is" and the Non-declarative knowledge of "how to" do something. The episodic memory of specific episodes eg. That occurred. The semantic meaning of generalized knowledge of facts but not the context in which they remembered. Procedurally are usually skills, specific forms of experience psychomotor and sensory-motor structures.

The main directions of learning theories

In terms of information theory and a systematic approach to didactics adopt new methods and models of transfers, but there is also the problem that didactics can not be studied only when education is teaching itself is indivisible educational and educational process, and because education is a much broader concept of systematic education school that is sometimes too much cross didactics (Polish, 2001). A big influence on didactic thought had and learning theory. Although each of them has its own peculiarities, however can be rounded more or less five groups ie. Approach to this problem: a) Behavioral Theory (Classical conditioning -> unconditional and conditional stimulus; and operant conditioning -> reinforcement with reward and punishment), b) Theories of social learning, c) cognitive approaches, d) constructivist approaches, and e) self-regulated learning (Vizek, Vidović et al., 2003; Bubić, 2013).

It should be stressed that the psychology of education clearly distinguishes learning (the process by which experience or exercise produce changes in abilities to perform different actions) and teaching (systematic application of generalized patterns of behavior in the classroom to facilitate learning and improve learning outcomes) (Zarevski 2002; Vizek, 2003). In Behaviourism, it is considered that it is possible to draw conclusions about a man on the basis of a careful and competent perception and behavior can also be managed. It can be said that the conditioning of the foundation dealt I. Pavlov. Thorndajk takes up the role of science and measurements to accommodate educational provisions for the education of children. He studied and advocated for operant learning with the law practice and law effect, and trial and error. On a similar track was Skinner who study rewards and punishments, and especially reinforcement. What is important in Thorndike is to learn by association and by analogy, by contrast, on the temporal and spatial proximity. It is close by and Gutrie defining theory of contact because the stimulus and associated response and as such must be considered together (Behaviouristic theory, 2014). With Social theory comes an important work of Bandura with the fundamentals of observational learning, which was later renamed the theory of social learning and then went to the Social cognitive theory. There can be recognized the transformation of pure learning by observing, through reinforcement and finally cognition ie. internal processes subject taught.

Observational learning may be recognized as learning and imitation may be divided into modelling (direct, symbolic, synthesized and Abstract) and vicarious learning (Learning from the experience of others with stage: Focusing on the model, ie retention. Memory, Reproduction, and motivation). Later the Social learning supplemented the information that it is an internal process and not lead to change, because change is purposeful, and management is self-regulation, which tends to self-efficacy (Lubin-Golub and Kozjak-Mikić, 2013; 2014). Watson claimed that if he gave a dozen healthy, well-built baby to be raised in the manner he determines, guarantees that from each of them, randomly, fail to create any type of specialist who opts - doctors, lawyers, merchants, directors, and of course, even a beggar or a thief, regardless of talent, aptitude, ability, call or race of their ancestors (Korać, 2014). It differs sensitization, Habituation, Stamping, Conditioning, observational learning, recognition, and verbal learning. On the other hand however, Hull's theory of learning is linked to the S - R model (stimulus - reaction), ie. It becomes one system - the association of stimulus and effect. He assumes that man is adaptable sensory-motor mechanism with the aim of self-preservation. He sees reinforcement associated with satisfying motives (the concept of reduction drive).

There are mechanisms in humans, automatically adapting reaction mechanisms of self-preservation for the sake of man, and the second mechanism is not automatic as it relates to learning and to slow the formation of habits. In this way, Hull practically explains the motivation of the man (Bubić, 2013; Zuliani, 2014; Behaviouristic theory, 2014). Since the earliest times, it was formed a systematic reflection. So even Johann Amos Comenius (17th century) seeks understanding, not memorization as a learning goal, as well as Jean-Jacques Rousseau, Johann Heinrich Pestalozzi, Johann Friedrich Herbart (18th century). John Dewey in turn, set the child in the center of everything and believes that the purpose of knowledge to adapt the child a world in which he lives, and success lies in the fact that you learn something valuable and meaningful (Polish, 1991; Bubić, 2013; Wikipedia, 2014).

Cognitive approaches in turn, essentially combine several previous theories or parts thereof, and put in the foreground cognition and the ability of processing information. Jean Piaget created a theory of cognitive development - and the importance of direct experience with the world, but also the theory of the development of the logical structure which is developed in later works. Also B. Bloom with taxonomy of educational (cognitive, affective and psychomotor) goals (Bubić, 2013). It is interesting, of course, and the Gestalt approach. Gestalt is a German word that literally translates as shape or form. The term Gestalt means unia whole, which has characteristics that are different from its component parts and that can not be reduced to the simple sum of the elements or parts that make up.

It is partly a response to the structuralism of Wilhelm Wundt, and Gestalt psychology has its roots in perceptual theory of Ernst Mach and Christian von Ehrenfels. The founders of Gestalt psychology by German thinkers Max Wertheimer, Wolfgang Kohler and Kurt Koffka. Publication of the book by Max Wertheimer "Experimental investigation of the perception of movement" (*Experimentelle Studien über das Vorstellen und die Bewegungen*), 1912 is considered the beginning of the theoretical psychology that usually do not teach literal elements, the content in front of us, but we learn the relationships between them. The concept of learning insight is another merit of Gestalt theory and its founders. It is a condition when suddenly, unexpectedly understand what until then we did not understand, when suddenly resolve a problem. Insight is a quick response to unplanned interaction situations and environments. (Vizek, Vidović. et al., 2003; Zuliani, 2014; Bubić, 2014; Wikipedia, 2014). Particularly interesting is the fact Tolman behavioral anticipation of cognitive psychology. Kohler in turn, defined the following four stages in the learning process: 1) Preparation (imbalance seen and desired, unsuccessful attempts), 2) Incubation (apparently giving up, stereotyped behavior), 3) Illumination (ie insight. Come in solution, the relationship between the elements are clear and logical), and 4) Verification (checking solutions, the disappearance of tensions). In this group we can include aspects and Dollard-Miller theory of learning characterized dilemma learning, Shutdown, spontaneous return, generalization, discrimination, Gradient reinforcement, The anticipation and answers (Zuliani, 2014; Wikipedia, 2014). Ganji is in turn theory of cumulative learning and skills categories. He claims that he learned abilities rely on each other through the processes of differentiation, memory and transfers.

A child learns cumulative, meaning that prior knowledge condition to a new, more complex. There are five categories of abilities that Gagné jointly called learned abilities, such as verbal information, attitudes, intellectual skills, motor skills and cognitive strategies. In order to acquire higher levels of skills, a child must have previous ones, below. During learning, the acquisition of new knowledge, earlier acquired the ability to spread, applied to new situations (Blau, 2014). In the cognitive approach would tentatively be classified and Djuiev approach that aims to teach students how to think, that, in some ways it functionally learn how to learn and how to think. In such a detection of a changing world, the student faces issues that are not strictly confined to a one subject (subjects are artificial creations created in organizing the education) and the classes are organized through thematic units that are interdisciplinary (classics of pedagogy. John Dewey, 2008). As can be seen, and this has additional points with constructivism, however, regardless of the complexity of the Piaget approach, it should be stressed that in Piaget a constructivism as the constructivists: Knowledge is not transmitted, but builds!

That is why Piaget and Vigotsky essentially the founders of this school. Constructivism as a theoretical concept means building knowledge based on personal experience and is therefore a way of acquiring knowledge is unique for each individual. The aims that students more self-selecting and processing information, and generate hypotheses and make decisions based on their own mental models (cognitive structures, schemes) which organize personal experience. According to constructivism, the instructor should encourage students to independently discover the principles and laws of the amenities that they learn where the information you need to learn previously transformed into a form that is tailored to the level of already acquired knowledge students. One of the most famous pioneers of constructivism J. Bruner who emphasizes that teaching should be (a) based on the experiences and contexts in which students want to and are able to learn, (b) structured so that the acquisition of new knowledge in the range of previously reached able students, and (c) to design a way to bridge the gaps between the acquired and the available knowledge and gaps in already acquired knowledge (Constructivism, 2014). Perhaps one of the last, but not least is the Masters learning model that is based Carol, based on research showing that 95% of students can achieve approximately the same success in learning, if they have available custom learning sources, systematic assistance, monitoring and evaluation, and if they are learning sufficient time. Thought to be demolished separation of students into good and bad, and introduced a division of the students who faster and which are slower to learn. Master's study suggests that all children can learn, when they learn with proper conditions for learning in the classroom. Applying master teaching is based on Benjamin Bloom's theory of learning using the progression. Master's teaching is mainly based on group work in which children learn by working with their colleagues. However, some believe that the masterpiece learning should be based on the own and not on group work with other students. Feedback help students identify what they have learned well and which are not well learned.

For topics that are not well learned they will be granted more time to achieve mastery (Mastery Learning, 2014). Finally, Maslow as a representative of humanistic psychology and personality theories and Humanities started from the fact that people are basically good, or neutral, and not evil, and pshopatologija the result of distortion and frustration of the basic nature of the human body. It found the theory of hierarchy of needs with 5 levels from lowest to highest: Physiological, Safety, Belonging, Respect and Self-actualization (Petz, 2001). Apparently the school in the future to offer more diverse, flexible, creative and open the program that will be coordinated with the needs of man. Information technology will experience a real expansion, a number of "non-school" institutions will be increased. The new school, changing the role of teachers. Now its role is to organize, support, observe, evaluate.

That's why the training of teachers should be seen not only as a pedagogical and social, but rather as a philosophical and sociological question of the modern world, and the emphasis should be placed on programs that will make you and such teachers realize.

The actual level of education and their background

The foregoing review of didactic settings, thorough preparation of plans and programs of instruction, but the approach and theory, as well as memory and learning, opened the question of the definition of plans and programs that will educate children and encourage their development. This is evident in the broadest context of anthropological problem, because it is about people and raising new generations. In this regard, we must stress that there are in almost all (if not all) the anthropological concepts of three levels of which depends the realization of didactic goals. It is above all: a) the social level that represents and defines the social definition from the top - and that's logical management level. In this regard should be given and a certain lack of understanding of many concepts that are offered in the recent past. Thus, for example. Inclusion as a matter of achieving individuality. It is not the essence of modern education inclusion ie. To involve children in the programs but to adapt the program to children. This is especially true because it is obvious that: they are all educated individuals to the society in general and quality. Thus, the highest level is formed (adopted, determined) system of values, and thus in the broadest context of dealing with sociology, of course, with a number of associated disciplines, which gives it a strategic importance. The second level (tactical control in the narrow sense) integrates b) a set of technical and scientific knowledge that is directed towards the global rules and principles based on the previous sociological level, and this level of support. Here sublimate global settings sociological goals ie. A system of values but is also preparing operational value of medium-term goals for the concrete realization.

It is, of course, other operational level, ie. C) individualization. Obviously, it is very difficult to implement individualized educational programs, but if you are on the previous level (Education) programs are well prepared, then if they realized the material and technical conditions of implementation of educational programs, if they are trained educators and was prepared if the technical and technological means, then remains that the programs conform to specified individuals in the process ie. in principle (though not exclusively) children. With that same confidence Pedagogy now gives children the education process specific kinesiology, mathematics, accounting, etc., etc., that is, areas that are studied in the future may interdisciplinary fields completely different origin than the present. It is obvious that, as in previous levels, and on this ie. There is an operational discipline around that generally gather other disciplines and areas depending on the particular application, and it is always Psychology.

This is especially true because of the need for an individualized approach of the transfer of educational value, ie. Such that is sent to an individual with his or her abilities and capabilities. Then there is the very least of all transfers Queen operating activities - Didactic. At this point, now comes the essence of questions to be asked in this paper. You could tell they consulted many different sources of which are listed only those considered representative for hath understanding the logic of this work.

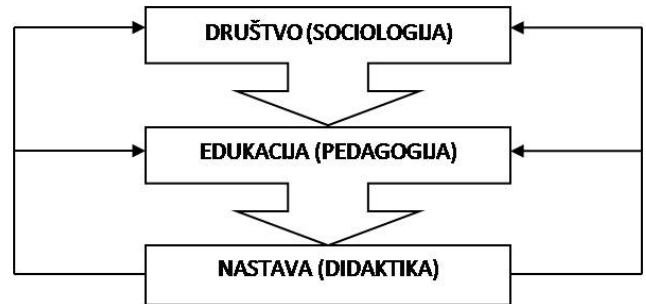


Figure 3. The vertical transfer of educational value and feedback mechanisms [Source: Authors]

The fact is that regardless of starting position, all theories and all approaches to always take into account a small number of basic settings in education, including course features participants in the training. Although according to some theories, as we have seen, it turns out that the genetic capability can drastically change it, unfortunately, is usually not true, so own activity and the environment can not compensate for what is possible at birth is limited. This is easy to prove in a very simple way that the theoretical level leaves not a trace of doubt: If you have two children obviously different abilities for some action, and if you both have for their ability to ideal conditions, and if you both have a maximum personal activity, significantly better results will achieve a child who was in the beginning genetically predisposed better. This does not necessarily mean that a child just everything has to be better than the other, but for a given activity is in principle possible to determine who will have a better result, if all other conditions are equal. It also means that each of them should offer what in what will be a maximum of personal success, and will it be measurable with others as equally successful it is a matter of sociological values of the interaction in the system of values, and not the actual realization of individual potential. Should we then able to introduce "handicaps" as not to get too stressed !? Or should appreciate everyone no matter what his range in an activity!? And since the "tomorrow" for example. The employer (and for myself) to take individuals with more or less the maximum possible capabilities and upgraded it to knowledge, then we need to stop being demagogues and talk to do not care who we are, what we are and what we are. As can be seen, this is not a problem at all didactics or pedagogy in general, but it is a problem that is not solved Sociology evaluation of diversity and individuality, and is a problem "as elegantly pushed

under the cockpit" and forwarded it to the wrong attempt Pedagogy let it to him dangling, and this might psychology and didactics (etc.). But this is impossible, because in the end everything comes back again to the social level and to evaluate ourselves in the framework of the social value system that formally proclaim. Until this is resolved adequately at the level of Sociology (if not beyond - at the level of Anthropology), this paper offers a solution that can mean the basis for future action. The only safe as we have children is just a collection of their features, which can be quite determined objectively, regardless of which direction the children later directed.

Problem subject, the goal and purpose

The paper focuses first grade students of elementary schools in Split and their biomotoričke dimensions. The problem of work is the identification of possible biomotoričkih types of children the same age as defined under the motor composite hierarchy of at least age to the fittest. The aim is to determine the structure of the types of features biomotoričkih children. The purpose of the work is to prepare and collect scientifically established material to draft model of adequate work program in the elementary school, which ultimately aims to individuality.

Hypotheses

In accordance with the purpose, hypotheses are defined for this study:

H0 - There are significant differences in the structure typology between motor hierarchy differently defined groups of children in the first grade of primary school. Within this main hypothesis is possible to define and support:

H1 - It is possible to determine the existence of hierarchically defined groups of children based on the motor parameters,

H2 - There are statistically significant different biomotoričke typology in hierarchically defined groups of children.

Previous studies

Research in general pedagogy and didactics has a huge number, but not those that were directed at taksonomizaciju hierarchically defined groups of children. Therefore, in order to avoid the bullets, here is given only review of those which have a sufficient degree of similarity with the issue treated heard this work. Dewey and Kaplan (2009) investigated whether the identified subtypes of developmental motor deficits: a deficit in gestural performance and motor sequencing, and others with disabilities in the execution of motor skills in balance and coordination. One group showed deficits in motor sequencing, the other showed a deficit in the balance, coordination, and gesturalnoj performance. A third group of children showed serious shortcomings in all areas of motor skills, and the final group had motor deficit compared with other groups.

The Hague (2009) explores how the physical condition has developed over time in the two groups of children: those with a low level of competence of motor skills (LMC), and those with high levels of motor skills (HMC). From the initial sample of 67 children, a group of 18 of them by the HMC or LMC on "Movement Assessment Battery" for children, and were chosen for this study. Eight children (3 girls and 5 boys) made the LMC group and 10 children (4 girls and 6 boys) made the HMC group. Mixed-effect analysis of variance showed a significant main effect for group and for the time, but no group showed no effect of interaction in time. LMC group performed worse than all measures of fitness HMC group, and both groups showed significantly higher levels of physical fitness after a period of 32 months. Conti-Ramsden et al. (1997). Investigating the existence of subgroups of children on the results of a major project which includes 7 year olds children attending language units in England. Cluster analysis revealed robust six subgroups of children with speech difficulties. It is mentioned in the context of other approaches to classification difficulties of language in children. Smyth and Cousins (2003) investigated Coordination developmental disorder (DCD) in adulthood. Discriminant analysis was conducted using six measures of performance is properly classified participants as car drivers and non-drivers. It was concluded that adults retain motor difficulties, and that they may be excluded from the important activities of daily living. Korhonen (1991) explores the subgroups on a sample of 74 Finnish children with mild learning disabilities (LD) and 57 in the control group. The results showed that the obtained general neuropsychological profile subgroup, but some changes were observed and, in accordance with progress in reading.

Some of the groups had better results than others, but the main purpose of this publication, this paper just able definition of subgroups (clusters) that are sustainable and that shows stability, and the ability to forecast the individuals belonging to such subgroups. Marcon (1999) identifies three different preschool models work in an urban school district through a cluster analysis of the responses of teachers in Pre-K Survey beliefs and practices. Children have shown varying degrees of disposal of basic skills in ovisnoati the type of program. Eaves et al. (1994) explore the multidisciplinary data from 166 children with autistic spectrum disorders cluster analysis. This study highlights the important differences between children with autism and emphasizes the relationships between cognitive functions and subtypes of the disorder. Elliot (1990) examines the nature and structure of children's abilities in the light of evidence from test DAS, cognitive test children from 2.5 - 17 years. DAS cognitive battery also delivers a range of targeted composite results: psychological measure of GCA and measures verbal and nonverbal abilities in pre-school level, and verbal, non-verbal reasoning and spatial ability in school level. He criticizes the use of the terms "intelligence" and "IQ" in describing the children's abilities.

Miller and Lane (2000) discuss and focus on the conditions that can be best described as a neurophysiological processes. It should begin to clearly differentiate between what we observe in children, and what do you conclude about the phenomena in the central nervous system. There are currently no operative research needed empirical evidence of neurological or physiological mechanisms elicit these behaviors. In this way it is possible to discover the patterns, which are obvious types. Clark and Paivio (1991) represent a dual coding, theoretical and prescriptive analysis of early education in the "ordinary" and poor areas.

It shows the historical background of two intellectual recluses to eventually come together in a dual coding theory (DCT). Blažević et al. (2007) by Uditax analysis distinct taxonomic structure of the three measurements and the congruence of taxons identified the processes that took place in boys aged 7 under the influence of the transformation process in the classroom. Of the three recognized processes first celebrated children less weight, while emphasizing the lack of development of a certain part of the children in the sample. Another process described is the improved motor realization of children who are biologically better prepared for adaptation, ie. Bony and athletic-developed children. Obese children were singled out in a distinctive collection, but is observed slight tendency of reduction of adipose tissue ballast. It is proposed to carefully consider the plans and programs of work with children ages analyzed, and used whenever possible taxonomic analysis for the definition of types of children. It is obvious that even this simple review clearly showed that the analyzed samples, regardless of their size can almost always, by various criteria, clustering and identify sub-types. It is for this work crucial methodological point.

Methods

The sample

All the subjects covered in this paper are included in the project RH accepted by the Ministry of Science (No. 5-10-219) realized in Split. All the children were no visible morphological, motor and psychological aberration, able to follow regular classes. All were male and measured at the beginning of first grade. No child was not included in sports associations or clubs. The total sample for this study came in cash from 249 boys aged 7 +/- 2 months.

The sample of variables

The sample of variables entered a total of 26 variables of which 14 morphologic, 11 motor and one functional variable. For the assessment of the morphological status of the respondents used the 14 variables which are safe to use according to the IBP, but also that they are able to cover good models of latent dimensions gained in different researches: 1. The height of the body (AVIT), 2. Leg length (ADUN) 3. The length of arms (ADUR), 4. Diameter of the wrist (Hold), 5 knee diameter

(ADIK) 6. Shoulder Width (ASIR), 7 width of the pelvis (ASIK), 8. Body weight (ATEZ) 9th Scope forearm (AOPL), 10. Scope of the leg (AOPK), 11 middle chest circumference (AOGK), 12 of the upper arm skinfold (AKNN), 13 back skinfold (AKNL), 14, skinfold of stomach (MFLA).

For the assessment of motor and functional status of patients was used 12 variables imagined to cover area of primary motor dimensions (coordination, frequency of motion, flexibility, balance, repetitive strength, explosiveness, strength and stamina) to various research: 15. Steps away (MKUS) 16th polygon backwards (MPOL), 17 hand tapping (MTAP), 18 foot tapping (MTAN), 19 bent in sitting foot (MARD), 20. Standing on the bench for balance (Mp20), 21 Long Jump with (MSDM), 22. Throwing balls into the distance (MBLD), 23 Run 20 ms high start (M20V), 24. Raising the hull of lying (MDTS), 25 endurance in higher joint (MVIS), 26 Run three minutes (FT3M) (Bonacin, 2004).

Methods of data processing

Data for this study in accordance with the goal of verifying hypotheses are dealt with on three levels: 1) For elementary access to the data, ie. The parameters of individual variables on univariate level were analyzed and observed indicators of each variable independently of each other - the basic statistics, distribution, Kolmogorov-Smirnov test, Z-values (because of the large volume of these data are not shown), 2) To be able to get a hierarchical structure and therefore in it and the motor differently gifted students, for every student summarized previously calculated with the results for each subject. Thus obtained summary score Z's. Previous numerical reoriented (multiplied by - 1) Z-scores for these variables are less the result of a better result (tests that are measured in time). Then the data (for all 26 variables bio-motor) sorted in descending order to give a hierarchical ranking list with the participants at the very top that is obviously most capable. Gifted by the motor overall performance, and vice versa, those at the bottom are obviously inferior motor. Motor tests were used for the allocation to be seen by the motor skills and morphological involved working biophysical conditions (eg. Biomechanics) because you could understand why someone has such. Adequately run and we have motor and morphological features included. Of course, no other tests would give better results.

These results are the basis on which later build and unknown new knowledge, and skills knowledge of any activity. To emphasize the need to define the various possible plans (which is the goal of the work) as defined pattern can be divided into an arbitrary number (in this case five) subgroups with equal number (approx. 50) of the respondents, and 3) The further steps were treated so defined groups, ie, to determine the types within each group, for each of the previously defined groups were conducted cluster analysis structures distinct taxon (Veldman 1980; Bonacin 2002; Bonacin et al., 2009).

Results

Table 1 presents the average values for each of the 5 groups of entities by motor variables which were used for the definition of the hierarchy. It is noted that the real motor dimensions of the G-01 (fittest) to the G-05 (the weakest) getting worse and worse. Thus one can register to eg. the test long jump with (MSDM - centimetres) takes on the following values (of the G-01 to G-05): 127.61 - 119.74 - 113.91 - 106.48 - 96.72. Also test Throwing balls 200 grams in the distance (MBLD - meters) takes on the following values per group: 12.84 - 11.45 - 9.85 - 9.81 - 8.31. Also coordination test polygon backwards (MPOL - seconds) takes on the following values (of the G-01 to G-05) as measured by "who will quickly": 17.80 - 21.69 - 21.96 - 24.34 - 28.89. From all of this, as well as access to other motor variables undoubtedly follows that the subjects in the sample is actually divided into hierarchical groups according to the motor abilities of the fittest (G-01) to the weakest (G-05) according to all variables that cover a variety of skills and motor dimensions. This result therefore confirms the hypothesis H1, which has been checked and found out: It is possible to determine the existence of hierarchically defined groups of children based on the motor parameters. This is the first auxiliary hypothesis unquestionably proven.

Table 1. Average values of the motor group criterion variables

	G-01	G-02	G-03	G-04	G-05
MKUS	15.01	15.43	16.01	16.92	17.79
MPOL	17.80	21.69	21.96	24.34	28.89
MP2O	2.12	2.07	1.76	1.45	1.24
MPRR	39.02	38.23	36.48	36.75	33.73
MTAP	21.40	20.04	19.53	18.50	16.88
MTAN	17.04	16.11	16.00	15.30	14.11
MSDM	127.61	119.74	113.91	106.48	96.72
MBLD	12.84	11.45	9.85	9.81	8.31
M20V	4.62	4.81	4.91	5.03	5.30
MDTS	26.70	23.22	22.20	19.54	16.08
MVIS	18.89	10.70	9.40	9.50	6.01
MT3M	478.54	460.06	442.37	428.68	410.20

(G-01 = group of most fittest, G-02 = fittest, G-03 = average, G-04 = motoricoly weakest, G-0 = most weakest)

Tables 2-6 are standardized values within each cluster of five subsamples of the variables to describe taxons. In the group of the fittest in Table 2 show that the obtained three clusters that are based on the values of variables relatively easily be described as: 1) athletic guys in the group, 2) for the group average in everything, and 3) picnics (adipose) for this group. It can be seen that the highest average (64%), athletics has a 16%, 20% and picnics. In the age group ie. G-02, it is evident from Table 3 that the obtained three clusters that are based on the values of variables relatively easily be described as: 1) smaller and less developed children in the group, 2) for the group average in all and 3) picnics (adipose) for this group. It can be seen that the highest average (52%), undeveloped has 38%, and 10% have a picnic. In the medium age group in the total sample, ie, G-03, it is evident from Table 4 that were obtained three clusters that are based on the values of variables relatively easily be described.

Table 2. Average values of the Z variables in clusters (G-1 fittest)

G-01	CL01	CL02	CL03
N	8	32	10
%	16	64	20
AVIT	0.67	-0.43	0.84
ADUN	0.54	-0.38	0.77
ADUR	0.31	-0.40	1.03
ADRZ	0.38	-0.43	1.08
ADIK	0.69	-0.42	0.79
ASIR	0.77	-0.45	0.82
ASIK	0.90	-0.39	0.53
ATEZ	0.06	-0.50	1.55
AOPL	-0.43	-0.26	1.16
AOPK	-0.08	-0.40	1.35
AOGK	0.13	-0.45	1.32
AKNN	-0.86	-0.26	1.52
AKNL	-0.55	-0.24	1.21
AKNT	-0.53	-0.34	1.52
MKUS	-0.81	0.14	0.21
MPOL	-0.82	0.25	-0.15
MP2O	-0.01	-0.07	0.22
MPRR	-0.01	-0.11	0.36
MTAP	-0.37	0.17	-0.25
MTAN	-0.20	0.04	0.02
MSDM	0.91	-0.14	-0.28
MBLD	0.78	-0.33	0.44
M20V	0.76	-0.09	-0.33
MDTS	-0.23	0.11	-0.16
MVIS	-0.01	0.21	-0.67
MT3M	0.41	-0.12	0.05

Table 3. Average values of the Z variables in clusters (G-2 capable)

G-02	CL01	CL02	CL03
N	19	26	5
%	38	52	10
AVIT	-0.84	0.45	0.84
ADUN	-0.65	0.29	0.96
ADUR	-0.77	0.38	0.96
ADRZ	-0.79	0.46	0.61
ADIK	-0.70	0.37	0.72
ASIR	-0.70	0.34	0.88
ASIK	-0.67	0.30	0.98
ATEZ	-0.87	0.26	1.93
AOPL	-0.61	0.14	1.60
AOPK	-0.73	0.23	1.59
AOGK	-0.73	0.18	1.83
AKNN	-0.60	0.06	2.00
AKNL	-0.37	-0.23	2.62
AKNT	-0.53	-0.11	2.59
MKUS	0.18	-0.02	-0.56
MPOL	0.20	-0.18	0.18
MP2O	-0.02	0.01	0.01
MPRR	0.17	-0.07	-0.26
MTAP	-0.35	0.00	1.30
MTAN	-0.04	-0.10	0.67
MSDM	0.37	-0.20	-0.34
MBLD	-0.03	0.05	-0.13
M20V	0.03	0.03	-0.28
MDTS	0.07	-0.04	-0.04
MVIS	0.51	-0.20	-0.90
MT3M	-0.03	0.17	-0.77

And they are: 1) smaller and less developed children in the group, 2) an athletic fit of this group, and 3) picnics (adipose) for this group. It can be seen that the most smaller and less developed (47%), athletics has 31% and 22% of the picnic.

For groups less capable in the total sample, ie. The G-04, it is evident from Table 5 that produced four clusters that are based on the values of variables relatively easily be described as: 1) and low skilled entities, 2) average for this group, 3) wide and big, excitable and adipose for this group, and 4) weak large picnics.

Table 4. Average Z values of variables in clusters (G-3 average)

G-03	CL01	CL02	CL03
N	23	15	11
%	46.94	30.61	22.45
AVIT	-0.65	0.63	0.49
ADUN	-0.58	0.71	0.25
ADUR	-0.66	0.69	0.43
ADRZ	-0.48	0.45	0.40
ADIK	-0.44	0.18	0.68
ASIR	-0.58	0.46	0.58
ASIK	-0.54	0.17	0.90
ATEZ	-0.73	0.31	1.10
AOPL	-0.83	0.46	1.11
AOPK	-0.75	0.25	1.23
AOGK	-0.75	0.44	0.97
AKNN	-0.61	0.00	1.26
AKNL	-0.69	0.19	1.19
AKNT	-0.58	0.15	1.00
MKUS	0.22	-0.22	-0.16
MPOL	-0.14	-0.37	0.79
MP2O	0.12	-0.18	-0.01
MPRR	-0.14	0.01	0.27
MTAP	0.00	-0.43	0.59
MTAN	-0.05	-0.37	0.60
MSDM	-0.22	0.72	-0.52
MBLD	0.13	-0.15	-0.06
M20V	-0.09	-0.51	0.89
MDTS	-0.16	0.11	0.18
MVIS	-0.09	0.43	-0.40
MT3M	0.38	-1.00	0.56

Table 5. Average Z values of variables in clusters (G-4 weakens)

G-04	CL01	CL02	CL03	CL04
N	20	21	3	6
%	40	42	6	12
AVIT	-0.64	0.23	0.11	1.28
ADUN	-0.66	0.30	0.19	1.06
ADUR	-0.67	0.20	0.19	1.44
ADRZ	-0.44	0.24	0.18	0.52
ADIK	-0.83	0.26	0.79	1.46
ASIR	-0.58	0.16	0.82	0.98
ASIK	-0.50	0.23	1.81	-0.01
ATEZ	-0.80	0.10	1.87	1.37
AOPL	-0.76	0.15	0.81	1.61
AOPK	-0.86	0.23	1.21	1.43
AOGK	-0.83	0.13	1.84	1.41
AKNN	-0.33	-0.29	2.39	0.93
AKNL	-0.36	-0.18	3.42	0.14
AKNT	-0.52	-0.23	2.79	1.15
MKUS	0.19	-0.36	0.13	0.57
MPOL	-0.48	0.31	0.40	0.32
MP2O	-0.34	0.32	-0.60	0.29
MPRR	0.03	-0.26	-0.54	1.07
MTAP	0.22	-0.29	1.20	-0.33
MTAN	-0.14	-0.01	1.13	-0.08
MSDM	0.19	-0.07	-0.11	-0.33
MBLD	-0.30	0.21	-0.28	0.40
M20V	0.05	0.15	-0.23	-0.59
MDTS	-0.09	0.00	0.63	-0.01
MVIS	-0.17	0.36	-1.07	-0.16
MT3M	0.20	0.08	-0.29	-0.83

It can be seen that the highest average (42%), and almost as many have low and skilled (40%), large picnic has 12%, and broad and strong adipose entity has 6%. In the group least able to utter a sample. G-05, it is evident from Table 6 that are obtained only two clusters, and then dividing the group into two parts. Clusters are based on the values of variables relatively easily be described as: 1) smaller and more durable children in this group, and 2) bigger and stronger for this group. Smaller was 58%, and 42% larger in the group G-05th

Table 6. Average Z values of the variables in clusters (G-5 weakest)

G-03	CL01	CL02
N	29	21
%	58	42
AVIT	-0.52	0.72
ADUN	-0.40	0.55
ADUR	-0.33	0.45
ADRZ	-0.51	0.71
ADIK	-0.47	0.65
ASIR	-0.43	0.60
ASIK	-0.44	0.60
ATEZ	-0.72	0.99
AOPL	-0.47	0.65
AOPK	-0.65	0.89
AOGK	-0.56	0.78
AKNN	-0.45	0.62
AKNL	-0.40	0.55
AKNT	-0.52	0.72
MKUS	-0.05	0.06
MPOL	0.08	-0.11
MP2O	0.13	-0.19
MPRR	-0.15	0.21
MTAP	0.17	-0.24
MTAN	0.16	-0.21
MSDM	0.14	-0.19
MBLD	-0.30	0.42
M20V	-0.04	0.05
MDTS	-0.05	0.07
MVIS	0.46	-0.64
MT3M	-0.16	0.22

Discussion

Results in Table 1 show the average value formed group G-01 to G-05 in the motor area. We should also point out that it made a univariate analysis of variance (ANOVA) for the composite variable SORT ie. Additive composite motor variables which served to establish the ranking list. Given the nature of these variables, it is clear that almost has to be a significant analysis of variance, and this was the case, and ANOVA indicators for this variable were: SS Effect = 8414.97, df = 4 Effect MS Effect = 2103.74, SS Error = 1020.28, df = Error 244, MS error = 4.18, F = 503.11 p <0.000001. This means that the groups differ significantly in value summation motor composites.

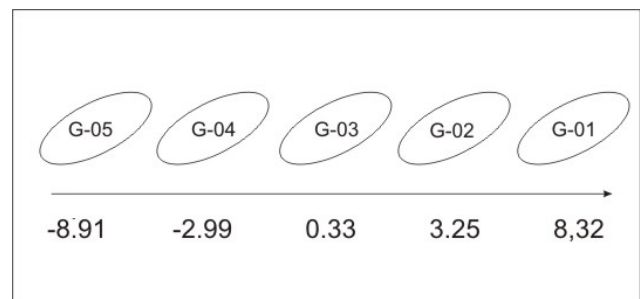


Figure 4. Location of the mean certain groups on a composite additive [Source: The authors]

Results provided in Tables 2-6 show that the hierarchical subgroups defined primarily exists a different number of clusters (taxon), ie, types of children. This is sufficient information that it can accept other auxiliary hypothesis.

It states: H2 - There are statistically significant different bio-motor typology in hierarchically defined groups of children. Of course they bio-motor typologies by different groups, having won the uneven number of taxons (clusters), which means that children vary in their structure interaction capabilities depending on the level of motor dimensions, that is, by theme, ie. Can not and must not argue that it is only quantitatively different when observed motor differently able children (at least up to age). The difference between them is not only in the intensity and the difference is not even possible to just simply and superficially treated in a way that more able children can endure greater efforts and generally quantitatively expressed tasks in the work of the Tourist Board. The matter is much more complex, especially when reviewing the details presented in Tables 2 - 6. For the purposes of this article, clusters are described extremely simple and generally to avoid usurping the already large space for this work, but possibly more detailed look at the results shows us that even the guys who seem to look like each other at different levels generally do not coincide on a detailed typology. Although the accumulated knowledge of the profession in this area even hypothesis affirmative, it is somewhat unexpected that the differences by level (G-01 to G-05) as pronounced. However, by examining the structure of the cluster ie, types became apparent that the structure of a particular group of G-01 to G-05 are different, though no doubt there are some similarities. This proves the main hypothesis which states: H0 - There are significant differences in the structure typology between motor hierarchy differently defined groups of children in the first grade of primary school. The structure typology is so different and does not allow us watching the children in the sample of 249 boys on the way to treat them uniformly and without taking into account the difference typology. According to the results, there are several types (and possibly more than 10), and only on the basis of morphological and motor dimensions. If the involved variables and to assess the sociological status, cognitive status, personality traits, etc., Etc., Would become even more clear that in the samples on a daily basis often frontally observe and treat, as well as to the unique program content, we do extraordinary mistakes, because they do not only that children are different quantitative and abilities, but they and structural typology greatly different. This brings us directly to the deliberations at the beginning of this work on differential programs where you should first define the key capabilities and characteristics of children. Then should establish a typology using the maximum possible inventory variables, surveys, observations, etc., Which describes children, including characteristics, abilities, educational components and values and other important elements of the assessment. Based on these indicators, the sole multivariate sphere to be determined really existent types, and if it is possible to establish monitoring and their dynamics in the school system, and only then tackle the creation of content that will be offered.

Conclusion

This paper examines the opportunities typology definitions of children at the entrance to the school system, ie. At the age of approximately 7 years. The problem is located in the space Physical Education, and specific growth and development assessment motor dimension, although it is exactly the same and the same model could be applied in any field of educational assessment of children's sizes, which only depends on the objectives and selection of variables to describe children. Home working assumption was that the motor dimensions children can sublimate in a hierarchical composite, or a ranking list which will serve for definition group, which was the first auxiliary hypothesis is confirmed. It is also assumed that children differ in the hierarchy of motor dimensions, leading to different clusters by hierarchically defined groups, as well as other auxiliary hypothesis is confirmed. Finally, the fundamental objective of the study was to examine whether the definition of groups with hierarchical levels of motor leads to the differential structure bio-motor typology is established, which is a main hypothesis is confirmed. This proves that the children should not be perceived in terms of particularly pronounced similarities, but on the contrary of all individuality. In this sense, it is literally impossible to prepare in advance to tens of thousands of individual programs for each child that will appear in the school system in the following years, but it is possible to define the content, ie, plans and programs based on the principle of the algorithm, so that there are different elements in common skeleton (nor are the same for all children) and various subroutines with various tasks that are activated with different combinations of parameters for different goals work in or out of school in different conditions. It seems that this way of thinking a great outlet for diversity to be found in today's real-world education. What is important in all of this is that such a dynamic algorithm was expanding and was able to absorb more and more variations, ie, children with different features, characteristics and abilities. We must not forget when we estimate the children in 7 (or any) year that one subspace and evaluation and education, and he was especially dynamic category and really requires algorithmic secured in based on capacity assessment and the current state entities. One can go a step further and set up a task to practically apply this model !? And it is relatively easy to solve. "Classes" is not formed by accident as far or as some kind of ghetto-ization, but the people would be formed according to the program that corresponds to a certain typology of children. The child should be tested when entering the educational system, ie. The school in all possible dimensions. Based on this model and on the basis of the data obtained in accordance with the logic of each school area formed to the level of the program for each area eg. the advanced, general and reduced. Thus one child went eg. a reduced program of physical, general program of art and advanced mathematics. It is emphasized that the number of hours in principle would not be different

in levels. All other local affairs could be resolved by examining the objectives of each educational program, level of education and interests of the child. It would enable a real and not only declarative optimization of content regulation didactic process, and it is modern and intentions are moving towards content optimization and program as the central idea. It should first define programs exclusively dependent on the types of children since then reached the maximum prerequisites for their development. When they start school (if not sooner) measures all children to "all features" and each type should get their program. Specify of this is possible only in a way that it is an individual program for each child, but some findings suggest that although every child is an individual for himself, based Applications typology tremendously satisfying individual needs, at least in part for the charge institutions. Further increasing the precision of the program aimed at individual inevitably expanding process and the parents and the other participants in the children's development (parents, religious institutions, be sports and other associations, media, street etc.). Without the inclusion of other impacts and the further detailing to maximize uniformity and lack of spirituality and therefore the properties of the individual personality. This is possible because the hierarchy among children there must be a defined summarizing individual abilities and typology, and operation and manifests itself depending on the area such as child superior basketball to the basketball court to be hierarchical at the top while perhaps in the art to serve the low in the hierarchies. A child can be hierarchically high positioned in P.E. and low in math. The value of such positioning in the sociological sense is formed depending on the need of society for the work that is characterized by a certain set of skills and characteristics, as well as socially conditioned transfer habits, skills and knowledge which are

formed by upbringing and learning. In this context, the talent is desirable ("ideal") circuit characteristics and capabilities required for a particular area. For example, one can have 215 cm and surely will be a top basketball player if all else has at least average (because there are few with 2.15 and more) but if you have 185 cm - meet the minimum height requirement for basketball but such has a lot more (in thousands) which means that everything else must be incorporated in the "ideal circuit" and plus a high level of intensity possible. So, in this case, as children under everything else they have to be highly expressed and ideally integrated into the circuit. When you have a better ideal circuit is one that can meet the increasing intensity of both learning and performance. This means that the higher level of intensity can realise what you know and what depends on the accumulation of training and so on. In the literature it would be a number of books read (picture book) but it does not necessarily mean a complete understanding of the content, ie. the essence. The math is elementary numerical meaning to deal with such numbers. Recognized by nature (counting steps and similar items, house numbers) but not versed in their deeper meaning and connections between numbers and operations to potentially arithmetic. That would be equivalent to a child who will grow over 2 and 10 or to read hundreds of books as the apparent abilities or very pronounced features, but a row in the immediate area and the quantity for a deeper understanding of the essence of the necessary structural reorganization that qualitative material both in basketball and in literature and mathematics. This is a structural reorganization of a systematic education. The way in which this might best be achieved just typed formation programs. for the realization of such programs do require the appropriate conditions under which each type (any) child can get facilities that suit him.

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MOGUĆNOST DEFINICIJE PLANOVA RADA SA ŠKOLSKOM DJECOM SUKLADNO INICIJALNOJ HIJARARHIJSKOJ PROCJENI TIPOLOGIJE NJIHOVIH MULTIVARIJANTNO DEFINIRANIH SPOSOBNOSTI

Sažetak

Svrha - Problem ovog rada je bila identifikacija mogućih biomotoričkih tipova djece istog uzrasta definiranih prema kompozitnoj motoričkoj hijerarhiji. Cilj rada bio je utvrđivanje strukture tipova biomotoričkih značajki djece. Svrha rada je priprema i modela i prikupljanje znanstveno utvrđenog materijala radi prijedloga adekvatnih programa rada u školi koji u središte postavlja sadržaj, odnosno program. Dizajn i pristup - Istraživanje je originalno dizajnirano na način da se dobiju hijerarhijski odabranih sposobnosti djece koje pokrivaju arbitrarno utvrđen cjeloviti prostor dimenzija djece. Unutar takve metodologije, definirani su clusteri i analizirana njihova struktura. Nalazi - Bilo je moguće utvrditi hijerarhijski kompozit sastavljen od Z vrijednosti odabranih kriterijskih varijabli (motoričkih). Bilo je moguće utvrditi clusterne za svaku od prethodno definiranih hijerarhijskih grupa. Bilo je moguće potvrditi hipoteze prema kojima se clusteri po razinama (hijerarhijski definiranim grupama) razlikuju. Ograničenja i prijedlozi - Ograničenja modela logički ne postoje, ali postoje ograničenja istraživanja. Naime, za potpunu transparentiju, treba istražiti druge uzorke, drugim varijablama, drugim uzrastima i za oba spola. Praktične implikacije - Na temelju rezultata treba postaviti moguće temelje modela izrade budućih planova i programa (curriculumuma). Vrijednost - Rad je metodološki potpuno originalan i daje posve nove prijedloge.

Ključne riječi: edukacija, djeca, sposobnosti, hijerarhija, tipovi, izrada planova

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