Dušan   Stojnov
RELATIVISM: A DEMON ROAMING THROUGH SCIENCE

The advocates of the so-called "hard science" view relativism as an extreme, undesirable standpoint. The ill fame of relativism is most frequently explained by the opinion that relativism is striving, in general, for the position where "everything is possible", thus hindering the progress of science and leading to its destruction in the long run. Those opposing relativism, consider relativistic position, in the best of cases, depressing and solipsistic, and, in the worst of cases, extremely destructive. Regarding the fact that such an attitude most often results from the ignorance (sometimes from profound ignorance) of the basic principles of relativistic doctrine, a more elaborate consideration was given herein to the relativistic doctrine: its definitions, opposing other doctrines and diverse orientations. In short, relativism is founded neither upon a view that everything is possible, nor is its application impossible in science, nor are its implications so destructive for science as stated by the opponents of this attitude. In addition, the article considers the issue of harmonizing relativism with multiperspectivism of science. Therefore, the presentation to follow should be taken as an attempt to define relativism more closely and to point out its potentials and the road science can take in the time to come.

Key words: relativism, absolutism, objectivism, universalism, foundationalism, constructivism, knowledge, education.

Slavica   Maksić   &   Mira   Djurišić-Bojanović
MEASUREMENT OF CHILDREN'S CREATIVITY BY TESTS

After over a 50-year permanent development of tests designed to measure creativity and the results they produced, a question is raised if creativity can be measured by tests at all. A special problem are procedures for measuring creative potential in younger children because children, unlike adults, do not possess creative products that are a single reliable evidence of creativity in the real world. The paper considers test reliability and validity in measuring creativity as well as the dilemma: how much justifiable it is to measure children's creativity by tests if it is not clear what they measure and if there is not a significant relationship between creativity scores and creativity in life. Unsatisfactory creativity test reliability and validity does not mean those tests should be given up, the majority of researchers agree. Of the tests of creativity administered in work with the young, the status of Urban-Jellen Test of Creative Thinking – Drawing Production (TCT-DP) is given prominence due to the fact that over the past ten years or so it has been used in a larger number of studies as well as in some studies carried out in this country. In TCT-DP scoring is not based on statistical uncommonness of the figures produced but on a number of criteria derived from Gestalt psychology. The factor analyses of the defined criteria of creativity, applied on samples in various settings, yielded that the test contains an essential factor of creativity – »novelty«.

Key words: creativity, tests, children, validity, reliability.

Djordje   KADIJEVICH
EXAMINING   MATHEMATICS   ATTITUDE
IN A TIMSS 2003 PILOT RESEARCH

Apart from the data on test reliability, the psychometric features of the TIMSS variables are not officially available. It is therefore not clear whether the TIMSS findings capture real educational trends. Being concerned with mathematics attitude, the aim of this research was to determine the psychometric values of a mathematics attitude scale derived from a student questionnaire, and, if these are appropriate, to examine the relation of mathematics attitude to gender and mathematics achievement, and search for gender differences in the applied mathematics attitude indicators. By using a sample of 89 seventh-grade students involved in a TIMSS 2003 pilot research, it revealed the following findings: (a) the representativity, reliability, homogeneity and validity of the applied attitude scale were acceptable, (b) attitude to mathematics was related to mathematics achievement, (c) gender differences in mathematics attitude were not found; and (d) gender differences in the applied indicators were only present for the statement »I need to do well in mathematics to get into the faculty of my choice« where males expressed a higher agreement than females.

Keywords: TIMSS, attitude to mathematics, mathematics achievement, gender differences.

Jasmina   Šefer
THEMATIC CURRICULUM APPROACH

Thematic curriculum combines disciplines and media. The process is problem-oriented and the scenario most often follows the logic of exploring or storytelling. Those two approaches to teaching are appropriate because they fit into interdisciplinary and creative open-ended problem solving through play, as insisted upon by thematic curriculum. The matrix, where seven types of abilities intersect with five types of problems according to their degree of openness, defines well the outcomes of teaching. However, it did not prove to be suitable for planning the majority of activities in thematic curriculum, for it follows with difficulty the process of exploring or storytelling i.e. it disrupts the subject matter coherence of thematic curriculum. Therefore, it is suggested that matrix should be used for disciplinary curriculum planning but for that of thematic curriculum only in exclusive cases. The matrix should be used primarily as a framework for evaluating the distribution of various types of abilities and problem situations in teaching. The logic of

diverse approaches to teaching reflects itself in the manner of planning and organizing the teaching process. Conceptual, visual-graphic, structural and other aids employed during educational process planning should suit the nature of the approach chosen. On the basis of qualitative investigations of educational process, in the present paper considerations are given to various approaches to teaching, development of various drafts for the planning of teaching, and recognition of the logic of storytelling and exploring in thematic curriculum.

Key words: thematic curriculum, logic of storytelling, exploratory logic, logic of arranged systems and categories.

Slavica   Ševkušić
CREATING CONDITIONS FOR COOPERATIVE LEARNING: BASIC ELEMENTS

Although a large number of research evidence speak out in favor of cooperative learning, its effectiveness in teaching does not depend only on teacher's and students' enthusiasm and willingness to work in such a manner. Creating cooperative situations in learning demands a serious preparation and engagement on the part of teacher who is structuring various aspects of work in the classroom. Although there exist a large number of models and techniques of cooperative learning, which vary in the way in which students work together, in the structure of learning tasks as well as in the degree to which cooperative efforts of students are coupled with competition among groups, some elements should be present in the structure of conditions irrespective of the type of group work in question. Potential effects of cooperation are not likely to emerge unless teachers apply five basic elements of cooperative structure: 1. structuring of the learning task and students' positive interdependence, 2. individual responsibility, 3. upgrading of "face to face" interaction, 4. training of students' social skills, and 5. evaluation of group processes. The paper discusses various strategies for establishing the mentioned elements and concrete examples for teaching practice are provided, which should be of assistance to teachers for as much successful cooperative learning application as possible in work with children.

Key words: cooperative learning, group work, interaction, interpersonal relations, students' social skills, interdependence, group processes.

Slobodanka   Milanović-Nahod,   Nadežda   Šaranović-Božanović
Dragica   Šišović
THE ROLE OF CONCEPTS IN SCIENCE TEACHING

The present paper poses essential questions: What knowledge should students attain and what methods should be applied? The authors started up from cognitivistic view of cognition related to: (a) organizing knowledge of science in the form of generalized ideas or major concepts that can be reduced to a large number of information items, and (b) manner of building up students' knowledge into meaningful units as matrices of interrelated concepts. Attention is directed to difficulties emerging in developing cognitive structures related to complex contents of science and methods of concept learning in the teaching process. The results of investigations show that students' mastery of concepts is poor, and the reasons are to be found in the abstract character of contents themselves, lack of ability to interrelate contents within one discipline and between cognate ones, and the absence of establishing relationships between scientific concepts in cognitive structure. An efficient method of presenting scientific concepts was given and explained at three levels, such as macro, micro and symbolic. A model was suggested as a possible method for netting concepts in chemistry at primary school level. Practical recommendations were given to teachers how to assess students' cognitive structure and how to apply appropriate methods.

Key words: concepts, science, fundamental ideas, conceptual levels, planning of teaching.

Branka   Pavlović
CHILDREN'S QUESTIONS AS A BASE OF TEACHING

The paper considers interrelationships between children's questions and teaching and learning in the light of experimental studies on the role and aim of children's questions in *Nature and Society* teaching in the third grade of primary school. The experiment comprising two parallel groups was carried out on the sample of 150 respondents from two primary schools in Šabac during the second term of the academic year 2002/2003. The present paper involves a portion of the results obtained for the type of questions children asked during teaching process as classified by independent observers; average distribution of some types of questions; qualitative analysis of discussions conducted with children after two classes where identical teaching content was presented in groups E and K; qualitative analysis of two interviews conducted with teachers after those classes in groups E and K; observers' general impression of classes in groups E and K. The results showed that teaching based on children's questions encourages children's *proactive attitude* towards learning and leads to its higher *cognitive efficiency* and that children express a high degree of *satisfaction* by participating in thus organized work during classes and *preference of atmosphere* present in the classroom during such classes compared to the atmosphere during classes managed in a traditional way. Communication between children and between teacher and children is less formal, more relaxed and dynamic, which all produces motivational effects on children, makes them more engaged in learning during teaching whose base is in their questions and not in teaching managed by teacher's questions.

Key words: question, teaching, experiment, proactive attitude, communication.

Snežana   Mirkov
CAUSES   OF   LEARNING   PROBLEMS   IN
PRIMARY SCHOOL STUDENTS

Investigations were conducted on learning problems using the sample of eighth-grade students of primary school (N=335). The respondents opted for one or more than seven offered statements related to: insufficient previous knowledge, insufficient studying, teaching contents (extensive, difficult, unintelligible), textbook and teacher's method of presenting the contents. On the basis of the results obtained, one-third of students have problems in mastering teaching contents of foreign language, physics and chemistry, and about one-fourth in mastering those of history and mathematics. All the mentioned causes of problems are present in varying degrees in some school subjects. The causes of learning problems are markedly present in a larger number of school subjects and they are related to some characteristics of teaching contents. Respondents point out, to a large extent, that teaching contents of technical education are uninteresting. In addition, students' responses indicate that it is necessary to improve the method for mastering the teaching contents in various school subjects i.e. methods applied in the teaching process. Subjective causes, as pointed out by students, are connected with some of the subjects they have characterized as the most difficult. Unintelligible textbook is stressed to the lowest extent as a cause of learning problems compared to other causes stated for the majority of school subjects.

Key words: causes of learning problems, primary school students, school subjects, teaching contents, textbook, teacher.

Nikoleta   Milošević   &   Dragan   Janjetović
NON-INTELLECTUAL   PREDICTORS   OF   ACHIEVEMENT
IN MATHEMATICS

Findings presented herein are a part of a large international study of primary school final grade student achievement in mathematics and science (*TIMSS 2003)*. Studies were also conducted on the degree of correlation between student family socioeconomic status, mathematical self-concept and achievement in mathematics. Pilot studies, whose findings are discussed, comprised 112 seventh-grade students. "Family socioeconomic status" was defined by variables such as the number of family members, economically disadvantaged/affluent home, and parental educational status. "Mathematical self-concept" was defined as one of the more narrow domains of academic self-concept. "Achievement in mathematics" was measured by the test assessing two dimensions of knowledge of mathematics: *content* and *cognitive skills.* The analyses of partial correlations indicate that the most significant predictors of achievement in mathematics test are as follows: mathematical self-concept, mother's educational status and some indicators of family socioeconomic status (access to the Internet, number of household members, number of books available at home). Concerning the correlation found between family characteristics and mathematical self-concept and achievement in mathematics, the developers of current changes in mathematics teaching should not disregard the findings of this study.

Key words: family socioeconomic status, mathematical self-concept, achievement in mathematics, final-grade primary school students.

Mirčeta   Danilović
POSSIBILITIES   AND   IMPORTANCE   OF   USING   COMPUTER   GAMES
AND SIMULATIONS IN EDUCATIONAL PROCESS

The paper discusses if it is possible and appropriate to use simulations (simulation games) and traditional games in the process of education. It is stressed that the terms "game" and "simulation" can and should be taken in a broader sense, although they are chiefly investigated herein as video-computer games and simulations. Any activity combining the properties of game (competition, rules, players) and the properties of simulation (i.e. operational presentation of reality) should be understood as simulation games, where role-play constitutes their essence and basis. In those games the student assumes a new identity, identifies himself with another personality and responds similarly. Game rules are basic and most important conditions for its existence, accomplishment and goal achievement. Games and simulations make possible for a student to acquire experience and practice i.e. to do exercises in nearly similar or identical life situations, to develop cognitive and psycho-motor abilities and skills, to acquire knowledge, to develop, create and change attitudes and value criteria, and to develop perception of other people's feelings and attitudes. It is obligatory for the teacher to conduct preparations to use and apply simulation games in the process of teaching.

Key words: computer simulation, game, competition, teaching, learning, educational media.

Ljiljana   Miočinović
MORAL EDUCATION: SCHOOL AS A JUST COMMUNITY

The paper discusses Kohlberg's view of moral education, how it was developing and changing over time. Starting from a theoretical postulate that thinking constitutes the essence of morality and from empirical findings of the stage development of moral judgement, in his early works Kohlberg defines moral education as "encouraging the natural course of moral judgement development". As a principal method of work, Kohlberg recommends the encouragement of a cognitive conflict by means of discussing hypothetic moral dilemmas. Criticisms that he is over-intellectualizing moral education, getting

acquainted with a collective upbringing in kibbutzs, active participation in work in schools and prisons and finding that moral judgement and acting in everyday life is a response to the prevailing moral atmosphere of a group, are leading to the changes in moral education goals and development of a new approach known as "just community". Now a group is in the focus of moral education, not an individual any longer, the major area of studies being group norms and expectations. The "just community" approach does not remain only at the classroom level discussing hypothetical moral dilemmas but directly influences the structure of school justice i.e. its rules and discipline, processes they are passed as well as the rights and duties of both teachers and students. Its goal is no longer to develop moral judgement of an individual student but to develop a group as moral community founded upon the norms of trust, participation and collective responsibility.

Key words: moral judgement, moral education, moral atmosphere, just community.

Stevan   Krnjajić
THE TEACHER UNDER STRESS
Empirical records consistently point to the fact that the phenomenon of stress is characteristic of service professions, especially of teacher's. Although stress in teachers is a problem of public interest, it is still a relatively new field of empirical investigations. Data available show that stress in teachers can have negative effects on school as an organization, teacher professional achievement, his/her and his/her family psychosocial status. The most frequent symptoms of a prolonged professional stress are anxiety, depression, frustration, unfriendly behavior towards students and colleagues, emotional weariness, and extreme tension. Health and psychological problems cause, most frequently, the reduction of self-esteem, job dissatisfaction, job resignation, absenteeism, and wrong decision-making. In an attempt to call professional public attention to negative effects of stress on the outcomes of teacher work, we have analyzed four important aspects of stress teachers experience in their everyday work: (a) definition and measurement of stress, (b) distribution and sources of stress (problem behaviors in students, poor working conditions, lack of time, poor school ethos), (c) teacher personality traits (sex, age, work experience, locus of control, job satisfaction, intention to resign, absenteeism), (d) strategies for overcoming and reducing negative effects of stress (direct action techniques, palliative techniques).

Key words: stress, stress sources, stress symptoms, stress distribution, strategies for stress overcoming, teacher, school.

Nataša   Lalić
ADMINISTRATION OF PUNISHMENT IN SCHOOL
Giving consideration to punishment, one of the inevitable elements of school discipline, always reactivates the issue of punishment administration and its effects in school setting. Punishment is administered by a beforehand-determined intention, its general and final goal being the attempt to make a child change his/her behavior so as to more successfully take part in school life. The issue of how much it is justifiable to administer punishment, as a way of directing child's behavior, is not only raised in professional discussions but occurs as a personal dilemma with parents, teachers and all those involved in child upbringing. The definition of punishment contains certain incompatible elements in attitudes, which is reflected in punishment administration within different social contexts. Based on the analysis of research results, the paper discusses all the elements the teacher should be well acquainted with, influencing the effectiveness of punishment. The effects of punishment administration depend, among other things, on the type of punishment, way in which a person experiences and perceives punishment and the way of administering it. Prior to punishment administration, as a means of directing child's behavior, factors influencing successfulness of punishment should be established: *consistency* in punishment administration, *postponement* of punishment, *intensity* of punishment, *explanation* for punishment administration, *nature of interrelations* between a child and a person punishing him/her.

Key words: punishment, negative reinforcement, school, teachers, students.

Vera   Spasenović
PEER ACCEPTANCE/REJECTION AND ACADEMIC ACHIEVEMENT
Considerations of the nature and role of peer relations in child development indicate that peer interaction is an important factor in developing social and cognitive competences. Peer relations not only influence current but also subsequent academic, behavioral and emotional development. Accepted students more often display better academic achievement, whereas the status of rejection is coupled with academic difficulties and lower academic achievement. Peer rejection is a relatively stable characteristic that can be used to predict difficulties in the years to come, such as repeat of a grade, early drop out, unjustified absences, adaptability problems etc. It is considered that correlation between academic achievement and peer group status is mediated by student social behavior at school. The quality of peer relations and academic achievement are mutually influential i.e. peer acceptance serves as a social resource that facilitates academic achievement, but academic achievement has effects on student acceptance. To help students who display difficulties in social relations, various intervention programs have been well thought of so as to contribute to interpersonal efficiency promotion. Concerning interdependence of social behavior, peer status and academic achievement, it is reasonable to expect that positive changes in behavior, frequently leading to the change of rejection status, will produce, directly or indirectly, positive effects on academic achievement too.

Key words: peer relations, acceptance/rejection, academic achievement, intervention programs.

Dušanka   Lazarević   &   Dragan   Janjetović
VALUE ORIENTATIONS OF STUDENTS, FUTURE NURSERY-SCHOOL TEACHERS: STABILITY OR CHANGE

Results are presented of investigations on value orientations of students, future nursery-school teachers, as manifested by preferences of certain lifestyles. The aim was to examine if there is *stability* or *change* in the desirability of some lifestyles in three generations of students of Higher School for Nursery-School Teacher Training. Examinations were carried out on preferences of the following lifestyles: *hedonistic, utilitarian, altruistic, aesthetic, orientation to power and social standing, cognitive, self-realization and Promethean activism*. The obtained results indicate a certain stability in student value profile throughout the study period but also certain changes. In the value profile of future nursery-school teachers *self-realization* emerges consistently in the examined generations as the most desirable and accepted lifestyle. Then, the tendency to gradually decline was found in *aesthetic, utilitarian, cognitive, altruistic, Promethean, hedonistic and orientation to power and social standing* lifestyles of which the last one consistently occurred in three generations as the least desirable lifestyle. Changes were manifested in the increasing desirablity of *utilitarian lifestyle* from the first to the third generation as well as in gradual decline of desirability degree in *self realization* and *aesthetic lifestyles*. Also, the trend of increasing agreement between lifestyle students prefer and their current lifestyle was noticeable.

Key words: value orientations, lifestyles, students, nursery-school teachers.