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**THE INFLUENCE OF INSPECTORS' LEADERSHIP STYLE ON
MATHEMATICS TEACHING EFFICACY IN ISRAELI PRIMARY
SCHOOLS**

Specialty: 531.01. General theory of education

Abstract
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CONCEPTUAL HIGHLIGHTS OF THE STUDY

Research theme relevance: We live in a time when changes have been happening faster than ever in the history of humanity, and these changes influence all facets of our life, including education. The needs of humans and society are changing in their essence and the level of complexity and success of any organization, including schools, greatly depends upon their ability to deliver inherent knowledge to their clients [49].

The subject of mathematics has a unique status in comparison with others because of its complexity for pupils of all levels – from school to higher education institutions. The efficacy data in the national math test indicates a worrisome failure to reach the targets of the Ministry of Education [56]. A review of data provided by the OECD (Organization for Economic Cooperation and Development) [57], the Central Bureau of Statistics, research organizations in Israel and around the world, and the results of international tests with the participation of Israel in the last two decades reveal that the achievements of Israeli pupils in math are lower than in the developed countries. These findings are repeated consistently in the TIMSS [46] studies which measure pupils' ability in the field of math and science, and Israel is one of the countries whose achievements have significantly decreased in math. In 2007, Israel reached the 24-th place out of 49 states, with 463 points (the average being 466). In the last publication of the TIMSS study on the findings of December 2012, we witness a trend of improvement in the achievements of Israel in Mathematics, a rise from the 24-th place out of 49 countries in 2007 to the 7th in 2012, when Israel accumulated 516 points, whereas the international average was 467 [ibidem]. The Ministry of Education attributes the success of 2012 to the program enacted in 2011 that included additional allocation of resources for mathematics, science and language – academic hours, instruction days, more school instructors, and training apprenticeships for teachers. Nonetheless, the findings of the national Meizav test of 2012 (Hebrew acronym for indexes of school efficiency and growth) indicate a descent in achievements by 20 points in comparison to 2011 [55]. In the OECD reports, it has been found that the Israeli educational system does not manage to improve its achievements [57]. This situation makes our research actual and urges us to find a way to improve the situation. We believe that the key to this problem solution lies in the math teachers' hands. That is why it is important to examine the correlation between teachers' activity efficacy (achievements) in teaching mathematics and the factors influencing it. Among these factors, there are moderating variables - the economic educational indicators (resources, school size, teacher's training, class size), identification with the group one belongs to, motivators, perceived external prestige of the organization, behavioral integration in an organization etc.

There is recognition amongst the public in general, and those practicing education in particular, that a prerequisite for meeting educational goals is improvement of teachers' position, and that the key component influencing the educational system activity and its outcomes is teachers' quality. Nowadays, the job of teachers is more complex than ever and the reasons for this are changes in the pupils' population and the demands advanced to teachers by society.

An important part in improving teachers' position plays the school inspector. The inspector is that who mediates between the Ministry of Education and the teacher. Being perceived as an expert, who is aware of all updates in the educational policies and methodology, the inspector should, first of all, focus on the dissemination of good teaching practices, and only afterwards on monitoring and control. The tendency to fulfill formally their job, by staying in the office and studying reports, aroused much criticism at their address. In the "Dovrat Committee" [55], it was mentioned, on the one hand, the inefficiency of school inspectors and, on the other hand, it was underlined their necessity for schools, offering even some recommendations on how to

improve this situation. In Israel, there was even an attempt to cancel the position of inspectors; but it was not successful and invoked a lot of objections amongst the senior personnel in the Ministry of Education, considering the impact that inspectors might have on the teaching process in general.

Description of the situation in the research field and identification of the research problem. The theoretical and methodological aspects of our research rely on fundamental works in educational management, leadership, pedagogy, and psychology - different theories of human activity and job efficacy, [47], [50], [51], [54]. Valuable theoretical reflections on teachers' professionalization are exposed in the researches conducted by A. Lewin [54] B. Fox [50] R. Witziers R.J. Bosker, M. Kruger [47], N. Ballas [49], etc

E.A. Hanushek, J.F. Kain and D.M. O'Brien [26] examined teachers' activity efficacy and achievements and reached the conclusion that it is impossible to predict pupils' achievements according only to teachers' traditional characteristics (experience, education, and gender). The researchers H.F. Ladd and R.P. Walsh [39] characterize the effect of teachers' attributes over pupils' achievements and their findings indicate that teachers' experience and their education have a significant effect upon teachers' activity efficacy and pupils' achievements. Generally, most of the researchers connect teachers' activity efficacy with such variables as reward, working conditions, commitment, organizational support, citizen behavior, stress, attrition, etc. M. Justman and C. Bokobza [53] recommend to consider these indicators in order to understand the educational phenomena.

Educational leadership impact on the efficacy of education is reflected in the studies of G.A. Yukl [48] B. Bass [15] J. Black [17] U. Fullan [23] J. Hoyle [34], [35] K. J. Murphy [41] D. Hen [27], [28], [29], [30], [31], etc. J. Protivnak [43] N. Ballas [49] and R. Van Dick [45] state that teachers' activity efficacy is dependent on the involvement of inspectors who, monitoring, guiding and coordinating staff teachers ensure student success.

In the Republic of Moldova and Romania, theoretical reflections related to teachers' activity efficacy are presented by S. Baciú [2], V. Andrițchi [1], S. Cristea, C. Cucuș, T. Callo, A. Paniș [4], N. Silistraru [13], L. Ursu [14], M. Braghiș [3] etc.; aspects of *school management* are approached by V. Gh. Cojocaru [8], V. Cojocaru [9], V. Crudu, D. Patrașcu [10]; problems related to didactics of mathematics are exposed in the works of L. Chiriac [6], L. Calmuțchi [5]; *school inspection*: Ș. Iosifescu [12], V. Molan, I. Jinga, I. Negreț-Dobridor, A. Nedelcu, E. Palade etc etc.

Appreciating the value and significant character of the investigations objectified in the works of the authors mentioned above, we should mention that the impact of school inspectors' leadership style on teachers' activity efficacy hasn't been the subject of a specific study, neither in Israel, nor in Moldova. The established premises and the contradictions between the practical necessity of enhancing mathematics teaching efficacy and the lack of a tight cooperation between teachers and school inspectors as part of educational management; the vast financial investment in education and the decrease in the score of Meizav Tests lead to the definition of the **research problem**: *How can we improve mathematics teaching efficacy through the valuation of school inspectors' leadership styles?*

The goal of the research consists in establishing the theoretical and practical foundations for enhancing mathematics teaching efficacy throughout the valuation of school inspector's leadership styles.

Research objectives: point out the peculiarities of educational leadership versus educational management; classify leadership styles and define their characteristics; examine the theoretical frame of teachers' activity efficacy in the process of teaching mathematics; determine the functional dimension of school inspection and school inspector's status; characterize the

variables associated to teachers' activity efficacy in the process of teaching mathematics; structure the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools* and its experimental validation; analysis, interpretation and systematization of research results, formulating conclusions and practical recommendations.

The scientific novelty and originality of the research consist in updating the significance of the terms: school inspector, leadership style, professional efficacy, professional identification etc., in elaborating the theoretical model of hypotheses and determination of correlations between the variables associated to teachers' professional efficacy. **The scientific problem solved** in this research consists in substantiating the theoretical and practical functionality of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools*, through the valuation of school inspectors' leadership style, for the improvement of elementary school teachers' activity efficacy and pupils' achievements in mathematics.

The theoretical significance of the investigation is justified by: the establishment of theoretical aspects related to educational leadership; the determination of educational leadership styles, and definition of school inspector's role in ensuring teachers' activity efficacy in teaching mathematics at primary school level; the establishment of professional efficacy variables and the elaboration of the theoretical model of correlations among variables.

The practical value of the research is argued by the evaluation of variables related to teachers' activity efficacy in teaching mathematics; elaboration of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools*, development and experimental validation of the formative program included in the model; interpretation of statistic data and formulation of practical recommendations.

Statements offered for defense:

1. Educational leadership represents a challenge of postmodern education, due to its formative implications on consolidation and extension of teachers' professionalism, through the deliberate promotion of change and innovation, motivation intensification and support, directed towards carrying out the common educational goals. In this frame the valuation of school inspectors' leadership style appears as a necessity entailing significant effects on teachers' activity and pupils' achievements.
2. School inspectors constitute an important factor in regulating and coordinating teachers' activity. Mathematics teaching efficacy in primary schools supposes, first of all, reviewing and updating the variables of teachers' activity efficacy, according to the requirements of contemporary society and science. The assumption of an adequate leadership style by school inspectors creates opportunities of constructive cooperation between inspectors and teachers and positively influences the quality of instruction in general and mathematics teaching efficacy, in particular.
3. Inspectors should integrate in school practice various activities so as to be in proximity to teachers and principals. The more characteristics of differential transformational leadership style an inspector has, the higher are teachers' activity efficacy and exerting effort at work. The more characteristics of transformational motivational and differential - individualized consideration leadership style an inspector has, the higher is teachers' activity efficacy. Mathematics teaching efficacy depends as well on teachers' identification with team, on perceived external prestige of the team and on teachers' behavioral integration in the team.
4. The integration of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools*, elaborated at theoretical and practical levels, in correlation with the variables of teachers' activity efficacy, factors of school efficacy, principles of

collaboration between inspectors and teachers create the premises for the improvement of pupils' achievements in mathematics.

Implementation of scientific results: the elaborated didactic tools were implemented in the process of professional training apprenticeships organized in the educational centers of Israeli central district and in the primary schools of the same district, between 2012-2016, as well as in the frame of international scientific conferences, educational journals and didactico-scientific publications from Moldova and Israel.

Approbation of research results: The results of our investigation were discussed and approved during the methodological meetings, chair sittings, and teachers' councils organized in the frame of primary schools and Educational Department of Israeli Central district. The basic ideas were promoted and exposed at different international and national scientific conferences: *Educația din perspectiva valorilor*, Universitatea 1 Decembrie, Alba-Iulia, Romania, 5th Edition, 2013; *Educația pentru dezvoltare durabilă: inovație, competitivitate, eficiență*, 18-19 octombrie, Institutul de Științe ale Educației, R.M., Chișinău, 2013; Scientific symposium on Leadership organized at Levinsky College, Israel, 2012.

Publications: the research results are reflected in 18 publications (8 articles in educational journals, 4 articles at international conferences, and 6 scientifico-methodological publications).

Work volume and structure: introduction, 3 chapters, general conclusions and recommendations, bibliography of 234 titles, 141 pages of basic text, 17 appendixes, 81 tables, 20 figures.

Key-words: school inspector, mathematics teachers, influence, leadership style, efficacy, school achievements, professional identification, transformational leadership, transactional leadership, integration, perceived external prestige.

CONTENT OF THE THESIS

In Introduction, it is elucidated the relevance of the research theme, its theoretical and methodological bases, the grade of the problem solution, the research object, the research goal, and objectives, research methodology; it is exposed the scientific novelty and originality of the work, the scientific problem solved in the research, its theoretical and practical importance, the statements offered for defense, approbation and implementation of research results, as well as the description of dissertation structure, key terms and abbreviations.

Chapter 1. Theoretical highlights on educational leadership from the perspective of school inspection activity exposes a scientific and theoretical analysis of the literature related to our subject, with the purpose to point out the most relevant theories and concepts related to our research. In this frame it was made a theoretical overview on educational leadership and management, here included their peculiarities as related to educational organizations. *Educational leadership* can be understood as a process of consolidating and extending teachers' professionalism by authorizing them to display and exercise their leadership skills [11, p.9]. Among the **basic principles of educational leadership**, promoted at international level are: *ensure a strong partnership between school and external agencies (centers for professional development, higher education institutions, representatives of the associative sector etc.); offer mutual support within leading teachers communities; consolidate teachers' professional culture that offers support and feedback to educational leadership; create opportunities for open debates (values, strategies etc.); elaborate tools for displaying and exemplifying good educational practices; empower teachers to identify the priorities of their professional development; guide towards those educational strategies and methods leading to change and innovation; mobilize organizational leadership towards providing support to educational staff; offer opportunities for building knowledge on the basis of leadership activities* [22, p.11].

The *worthy* functions to be included in the teaching improvement leadership are *planning, organizing, promoting changes, and raising motivation of employees*. Our study focuses on the development of achievements, at both the level of teachers and pupils, under the influence of school inspectors' leadership. In the same context we focused on the classification of leadership styles, underlining their characteristics and those which are the most efficient and productive in the process of leading educational institutions.

According to E. Pajak, educational leadership styles should be divided into: *teaching-learning improvement leadership, transformational leadership, integrative management style, and system leadership* [42]. T.J. Sergiovanni and R.J. Starratt [44, p. 37] mention that *teaching improvement leadership (inspection)* is considered a moral framework in which teachers work together with their colleagues in teamwork, by means of observations, instruction, and feedback. Another group of researchers K. Leithwood, D. Jantzi and R. Steinbach identified four models of educational leadership: managerial, pedagogical, transformational, collaborative, and moral [40, p. 67-90]. In our research we adhered to the taxonomy made by the researchers B.M. Bass and B.J. Avolio [15] and D. Hambrick [25] and L. Hyun-Jung [36, p.65] who identified two main styles of leadership: *transformational leadership* and *transactional leadership*. Table 1.1 exposes the main characteristics of *transformational* and *transactional leadership styles*:

Table 1.1.Differences between transformational and transactional leadership styles

TRANSACTIONAL LEADERSHIP	TRANSFORMATIONAL LEADERSHIP
Leaders are aware of the link between effort and reward.	Leaders arouse emotions in their followers which motivate them to act beyond the framework of what may be described as exchange relations.
Leadership is responsive and its basic orientation is dealing with present issues.	Leadership is proactive and forms new expectations in followers.
Leaders rely on standard forms of inducement, reward, punishment and sanction to control followers.	Leaders are distinguished by their capacity to inspire and provide individualized consideration, intellectual stimulation and idealized influence to their followers.
Leaders motivate followers by setting goals and promising rewards for desired performance.	Leaders create learning opportunities for their followers, motivate and stimulate them to solve problems.
Leadership depends on the leader's power to reinforce subordinates for their successful completion of the bargain.	Leaders possess good visioning, rhetorical and management skills, to develop strong emotional bond with followers.
Leaders often use technical knowledge to determine the change process.	Leaders search for adaptive solutions to engage hearts and minds in the change process.

In the same chapter we reflected the peculiarities of school inspection, school inspectors and teaching efficacy. *School inspection* is a component of educational management, comprised of a mixture of duties, such as instigation, encouragement of professional growth, teachers' development, informed choice, improvement of educational targets, teaching approaches and methods, and the evaluation thereof; the total of all efforts for the teaching improvement by the educational personnel [7] ,[18], [55]. A school inspector is a senior educational employee, whose position description stipulates: *to provide the educational institutions with school or kindergarten teachers; to evaluate and improve the teaching quality and the teachers' activity efficacy in a school; to approve employment of new teachers or get them to resign from the system; to collect, synthesize and supply information, to formulate policy at the state level, and distribute the principles of a proper execution*. The main role of an inspector is perceived as

controlling the school and making sure that the execution of the state instructions is fulfilled in a proper manner [40]. Nowadays, the inspector's role is affected by the trends, documents, and processes taking place in the educational system: the Mandatory Education Law, system decentralization, strengthening the status of local authorities, transformation of authorities and budgets to the local authorities and schools directly, educational standards, attempts to standardize educational targets and purposes. All these aspects set complicated challenges that require changes in the role of inspection and in the evaluation of the educational system [56].

In this frame, the relations between a teacher and an inspector create the foundation for the formulation of an action plan and procedures for a strategy that might improve pupils' achievements in mathematics, through tools that generate the improvement of a teacher's behavior in a mathematics class.

In chapter 2, Methodological frame of inspectors' leadership styles and their influence on mathematics teaching efficacy, we highlighted the aspects of teaching efficacy and the factors associated to it. *Efficacy is defined as the extent to which an employee has achieved the targets related to his job.* These targets determine the question of what the components of an employee's occupation are and how they should be processed into dimensions for describing behavior relevant to the employee's job [49, p. 37-42]. *In education, efficacy is one of the criteria ensuring the quality of the educational process.* In this context, according to the researchers Dm. Patrașcu and V. Crudu [10], it expresses the ratio between educational achievements and educational objectives. Teachers' activity efficacy is therefore a powerful construct with real implications on student achievements and success. It is one of the most predictive factors of teacher success because it affects their motivation, teaching style, approach and support for diverse students. When a teacher has a high sense of efficacy, they will set high expectations for their students and in doing so, will generate positive change in some of the most difficult students [43]. Consequently, we can conclude that teaching efficacy is determined by lots of factors among which the most significant are considered: teachers' activity efficacy, motivators, organizational identification and prestige, professional identification and prestige, organizational commitment and behavioral integration etc. It means that teachers' success or failure depend not only on the teaching methods they use, but on other factors, for example, wish and readiness to work and invest efforts in job efficacy and its success [20].

Considering the factors related to teaching efficacy, we chose as variables with impact on teachers' activity efficacy the educational economic indicators, behavioral integration, inspector's leadership style, organizational identification and prestige, teachers' exerting effort at work [16], [34] etc.

Educational economic indicators: Education, with all its components, is considered by us as an economic product that can be produced, incentivized, subsidized, marketed, and distributed. The indexes of educational inputs are the rendition of financial inputs into educational inputs such as academic hours, class sizes, teaching and administration employees' payment, educational programs, study environments, physical infrastructures, research, and development [53]. That is why we have chosen the variable of Economic Educational Indicators as a *moderator in our study.*

Inspector's Leadership style. The focus of authority and responsibility for promoting pupils' achievements should be cast upon educational leaders, in our study upon school inspectors. *Educational leadership is perceived as a source of influence over study achievements [43]. The character of such a leadership is called teaching-learning improvement leadership, function achieved by school inspectors [ibidem]. In our opinion, a preliminary condition for meeting the targets of education is the improvement of teachers' status and one of the ways to do that is to change inspectors' attitude towards their position, that is to say to determine them to focus*

their attention on the way they lead. As educational leaders, school inspectors are responsible for the promotion of teaching, supervision of learning effectiveness and setting the targets and priorities within the school [27]. Within our investigation, the operational definition of inspectors' leadership style will be measured through a questionnaire that examines school inspectors' leadership styles: *transformational leadership* that motivates through inspiration and relies on organizational and professional identification and *transactional leadership* that motivates through external rewards to zero leadership, or lack of attitude.

Teachers' exerting effort at work: The literature review reveals that working in a team or in an organization is more efficient than working as a single person [33, p. 84]. A team requires to learn working together, get familiar with mutual needs, sharing relevant information and mutual resources with each other, and deal with problems [28]. A mandatory condition for significant teamwork is existence of a common purpose that is clear and agreed-upon to all members, with effort of the team members routed towards work efficacy improvement [16], [19, p. 349-351], [37], [52],.

Chapter 3, Valuating inspectors' leadership styles in improving teachers' activity efficacy in teaching mathematics has a practical character, includes the pedagogical experiment organized in three steps: ascertaining experiment, formative experiment and control experiment. The objectives of the first experimental step, *ascertaining experiment*, were: to interpret the structural model of hypotheses; to examine the correlations between the research variables; to check the level of indicators related to mathematics teachers' activity efficacy.

Considering the above mentioned objectives, *ascertaining experiment* was organized in three stages. The 1-st stage examined the structural model of hypotheses, the 2-nd concentrated on the study of variables associated to mathematics teachers' activity efficacy and the 3-rd reflected the level of indicators related to mathematics teachers' activity efficacy.

Research population included 111 Jewish and Arab teachers, subject coordinators and instructors of math teaching and 103 pupils. The studied population was a sample of teachers, coordinators, and instructors of mathematics in schools, chosen to represent teachers' population in training apprenticeships' frameworks in eight different PISGA (Teaching Staff

Development, in Hebrew acronym) centers that are strewn throughout the Central district.

The variables of this research had been determined on the basis of a structured questionnaire consisting of 102 questions (See appendix 4). The results of questionnaires served as benchmarks in the interpretation of theoretical hypotheses and correlations between research variables. In this context, the review of theoretical hypotheses allowed the elucidation of mediation level between variables and the correlation test at bi-variables level: the correlation between the independent variable and the mediating variables; the correlation between the mediating variables and the dependent variables; and the correlation between the independent variable and the dependent variables. In the same vein, it was tested the third variable that mediates between the variables explaining the correlation between the independent variable and the dependent variables, which means that the independent variable operates the mediating variable and the mediating variable operates the dependent variable. This technique was confirmed by D.A. Kenny, D.A. Kashy and M. Bolge [38], according to whom the existence of mediation correlation can be established following the dependence criterion: if there is a complete mediation, there is a significant correlation.

The examination of mediation hypotheses included three regression analyses: through regression it may be observed the correlation between the independent variable and the dependent variable; through regression it may be observed the correlation between the independent variable and the mediating variable; through regression it may be observed the correlation between the mediating variable and the dependent variable.

There were tested the following hypotheses: (1) *there is a correlation between teachers' activity efficacy in mathematics teaching and the characteristics of inspector's leadership style*; (2) *there is a correlation between teachers' exerting effort at work and the characteristics of inspector's leadership style*; (3) *there is a correlation between the characteristics of inspector's leadership style and identification (with team, profession and school)*; (4) *there is a correlation between the characteristics of inspector's leadership style and perceived external prestige (PEP) (of team, profession and school)*;

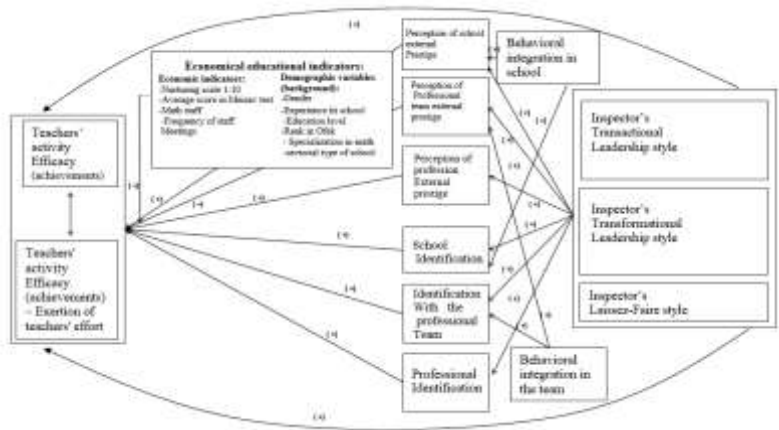


Figure. 3.1. The theoretical hypotheses schema

(5) *identification acts as a mediator between the variables of teachers' activity efficacy in teaching mathematics and exerting effort at work*; (6) *perceived external prestige acts as a mediator between teachers' activity efficacy in teaching mathematics and between professional identification, teachers' activity efficacy in teaching mathematics and exerting effort at work*; (7) *there is a correlation between perceived external prestige, teachers' activity efficacy in mathematics teaching and teachers' exerting effort at work*; (8) *there is a correlation between professional identification, teachers' activity efficacy in mathematics teaching and teachers' exerting effort at work*; (9) *economic indicators of education acts as mediators between teachers' activity efficacy in teaching mathematics, exerting effort at work and inspector's leadership style*. 10) *behavioral integration in the team, and school mediates professional identification, perceived external prestige and inspector's leadership style* [23].

After examining the structural correlations between the research variables, it was established that the variables of organizational and professional identification and perceived external prestige, except identification with school, are directly related to teachers' activity efficacy. Furthermore, they were found direct correlations between inspector's leadership style and teachers' activity efficacy. Considering the validity of hypotheses related to research variables and to follow the evolution of the teachers' activity efficacy in teaching mathematics under the impact of inspector's leadership style, basing on the results of questionnaires, there were calculated the values of dependent variables: the teachers' activity efficacy and exerting effort at

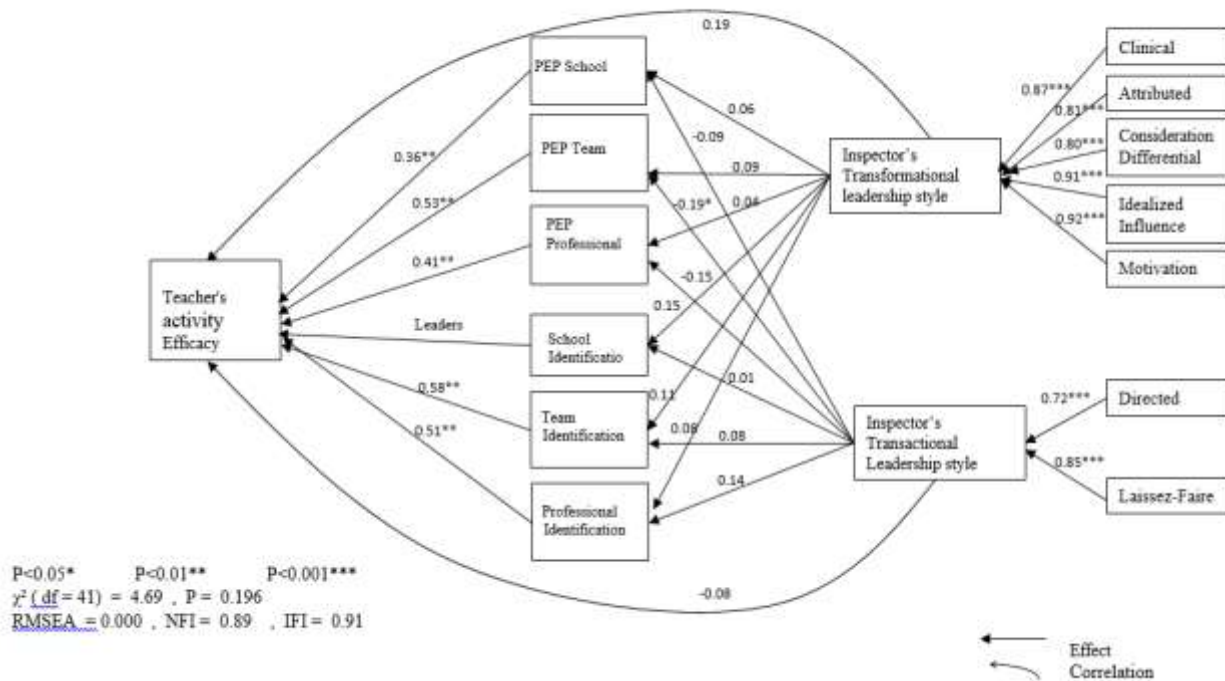


Figure 3.2. Path analysis of the structural correlations between the research variables (Leadership Style, Perceived External Prestige, Identification and Teachers' activity efficacy)

Table 3.1. presents the preliminary results of the examination of concentrated correlations between research variables (dependent, independent, mediating and moderating) research: leadership style, perceived external prestige, professional identification, behavioral integration, the efficiency and performance of teachers at work effort.

Table 3.1. Concentrated examination of primary research findings, theoretical and practical meaning

Hypothesis	Primary findings	Theoretical meanings	Practical meanings
Correlation between teachers' exerting effort at work and characteristics of inspector's leadership style.	Differential transformational leadership style positively correlates with teachers' exerting effort at work	The more characteristics of differential transformational leadership style an inspector has, the higher is the intensity of teacher's exerting effort at work, and the more characteristics of imitational transformational leadership style and intentional transactional leadership styles an inspector has, the lower is the intensity of teacher's exerting effort at work.	That means that the less intentional is inspector's transactional leadership style, the more effort teachers exert at work.
Correlation between inspector's leadership style and identification (with team, profession and school)	In all matters of correlation between identification in all dimensions (team, school and profession) and inspector's differential transformational leadership style, the hypothesis has been confirmed.	The meaning of findings is that differential transformational leadership style rises the sense of identification in all dimensions. Differential and active transactional leadership styles reinforce identification with school in a positive manner.	This fact requires from the Ministry of Education to examine the ways of instructing teachers, principals and inspectors, the key motives being teamwork and identification with school and profession.
Correlation between characteristics of inspector's leadership style and perceived external prestige (of team, profession and school).	In all matters of correlation between perceived external prestige in all dimensions (team, school and profession) and inspector's differential transformational leadership style, the hypothesis has been confirmed.	The meaning of findings is that only differential transformational leadership style rises perceived external prestige; no other style has any effect.	Development of mutual teaching and learning frameworks is recommended to the principals, inspectors, teachers, coordinators and instructors.
Identification as a mediator between the variables of Leadership Style and Teachers' activity efficacy and Teacher's Exerting Effort at Work.	It has been found that Transformational Leadership style in Differential and Imitational dimensions and Transactional Intentional-Passive Leadership styles predict Teachers' activity efficacy.	The meaning is that teachers' activity efficacy and achievements have been found to be in a higher intensity if the inspector's differential transformational leadership style is higher, and in a weaker intensity, if the inspector has more characteristics of transactional intentional and transformational imitational leadership styles.	The educational system is to invest in improving the Identification indexes such as: workshops, learning and support.

Hypothesis	Primary findings	Theoretical meanings	Practical meanings
Perceived external prestige as a mediator between the variables of leadership style, teachers' activity efficacy and exerting effort at work.	Perceived external prestige (of team, school and profession) is partially mediated.	Teachers' activity efficacy – exerting effort at work -rise when the intensity of inspector's differential transformational leadership style is higher, and when his imitational transformational and intentional transactional leadership styles are in a weaker intensity.	The principals and inspectors are to invest in the improvement of the school image.
Correlation between perceived external prestige and teachers' activity efficacy and teacher's exerting effort at work.	All correlations between the research variables of teachers' activity efficacy, teachers' exerting effort at work and perceived external prestige have been confirmed.	The correlation between school perceived external prestige and efficacy is weaker in relation to the correlation between team and profession perceived external prestige. The same with the variance explained by perception of prestige, whose source is in school (33%), meaning that there are additional factors.	The principals and inspectors are to invest in the improvement of school image thus improving its perceived external prestige.
Correlation between identification and teachers' activity efficacy and exerting effort at work.	In general, it can be said that all correlations between the research variables, teachers' activity efficacy, teacher's exerting effort at work and identification have been confirmed.	Correlation between identification with school and efficacy is weaker being compared with the correlation between identification with team and profession, while the identification with profession is the highest amongst the three.	The principals and inspectors are to invest in the improvement of identification through workshops, learning and support.
Economic-educational indicators moderate the correlation between the variables of teachers' activity efficacy, teacher's exerting effort at work, and inspector's leadership style.	It has been found out that economic-educational indicators do not effect or interfere with teachers' activity efficacy and teacher's exerting effort at work, except for two indicators that have been found to be significant: the indicator of frequency of team meetings and the indicator of the average score in the national tests.	The meaning of the findings is that the higher is the frequency of professional team meetings, the worse is teachers' activity efficacy, and the higher is the average score in the Meizav test, the higher is teachers' activity efficacy and teacher's exerting effort at work.	It is necessary to isolate additional variables that would contribute to the explanation of the dependent variable.
Behavioral integration in team and school as a moderator of correlations between the variables of identification, perceived external prestige, and inspector's leadership style.	The correlation between behavioral integration in team, school and the characteristics of inspector's differential transformational leadership style and active transactional leadership style was confirmed.	The more characteristics of intentional transactional leadership style an inspector displays, the lower is behavioral integration in the team, and the more characteristics of differential transformational leadership style an inspector displays the higher is teacher's behavioral integration in the team and school.	The inspectors are to integrate in various activities of school life to be in proximity to teachers and principals and not to stay only in offices executing procedure and forms.

In the same context we identified the indicators and descriptors of teachers' activity efficacy and exerting effort at work.

Table 3.2. Indicators and descriptors of teachers' activity efficacy and exerting effort at work

Indicators of teachers activity efficacy	Descriptors of teachers activity efficacy
1. A sense of personal accomplishment	The teacher must view the work as meaningful and important.
2. Positive expectations for student behavior and achievement	The teacher must expect students to progress.
3. Personal responsibility for student learning	Accepts accountability and shows willingness to examine performance.
4. Strategies for achieving objectives	Must plan for student learning, set goals for themselves, and identify strategies to achieve them.
5. Positive affect	Feels good about teaching, about self, and about students.
6. Sense of control	Believes (s)he can influence student learning.
7. Sense of common teacher/student goals	Develops a joint venture with students to accomplish goals.
8. Democratic decision making	Involves students in making decisions regarding goals and strategies.
Indicators of teachers' exerting effort at work	Descriptors of teachers' exerting effort at work
1. Self-recruitment	The teachers invest more time in the didactic activities than they are solicited. They allocate much time to prepare materials and to weak pupils.
2. Implication	Teachers involve in inter- and extra institutional activities.
3. Exchange of resources and information	Teachers collaborate efficiently with their colleagues, exchange didactic tools and information.
4. Sense of common teacher/school goals	Develops a joint venture with school to accomplish goals.

To find out the differences, a MANOVA test was conducted, as seen in table 3.3. The teachers' activity efficacy is higher ($M=4.21$) in comparison to teachers' exerting effort at work between the two times. The consensus regarding teachers' exerting effort at work is more intense, the variation coefficient is relatively high ($CV=0.27$) and, consequently, the distribution around the average in the variable of teachers' exerting effort at work is higher than in teachers' activity efficacy ($CV=0.11$). Therefore, the group of examined subjects in the variable of teachers' exerting effort at work is more heterogeneous than in the variable of teachers' activity efficacy.

Table 3.3. Center and dispersion indexes of teachers' activity efficacy and teachers' exerting effort at work

	Index	no	SD	mean	max	min	cv
Control group	Teachers' activity efficacy	51	0.46	4.21	5	3	0.11
	Teachers' exerting effort at work	51	1.03	3.56	5	2	0.29
Experimental group	Teachers' activity efficacy	60	0.57	4.05	5	3	0.14
	Teachers' exerting effort at work	60	0.97	3.54	4	1	0.27

Pupils of both groups were given a series of tests to examine mathematics skills (computing, estimating or approximating with numbers, fractions, and computing with fractions) and geometry skills (geometric properties of angles and geometric shapes - triangles, quadrilaterals, and other common polygons). The differences between the average test score in the control and the experimental groups are negligible, as seen in Table 3.4.

Table 3.4. The pupils' grades

Average score	Number	Fractions	Geometric shapes
Control Group (51 fifth grade pupils)	70	52	48
Experimental Group (52 fifth grade pupils)	69	50	51

The measures interpreted above prove the necessity of conducting an intervention that could ultimately urge the development of teachers' activity efficacy under the impact of school inspector's leadership style, empower the studies of mathematics and, by this, guarantee the achievement of the targets stipulated by the Ministry of Education.

The formative experiment was carried out by means of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools* built on the basis of findings of the theoretical study and in the light of the model received by the Path analysis (Figure 3.2) of research subjects that describe the relationships between the research variables. In this vein the main *objectives of the formative experiment* were: 1. Check the effectiveness of leadership styles and teachers' activity efficacy; 2. Create partnerships amongst different groups of people –inspectors and teachers; 3. Improve quality of teaching and achievements.

The practical elements included a formative program directed towards the improvement of teachers' activity efficacy and pupils' achievements through the valuation of inspectors' leadership styles. We designed a one-year program focused on two groups of samples with many differences in the study contents and workshops between the two groups. In the experimental group, the emphasis was on: *formulating knowledge based on practice and related to the theory as foundation; focusing on studying performed by inspectors, coordinators, and instructors, while carrying out their duties in the educational field (the inspectors, together with teachers, coordinators, instructors, and principals, study, observe lessons, analyze the lessons documents, and supply a mutual learning feedback that promotes achievements);formulating the mutual vision of the instructors, coordinators, and inspectors expressed during discourses; creating common language for all echelons of society; deducing decisions based on the data of feedback from the educational people.*

Our intervention into the experimental group's work was performed with the Design-Based-Research approach [24] that allowed us to make the research more profound and efficient. The research products are the improved and consolidated model of intervention and the detailed information of this process. The Design-Based-Research took place in several operation iterations where improvement is the key component. During and after each iteration the data and evidences of the intervention had been collected, a primary analysis of the findings had been conducted, and necessary changes and improvements had been made.

The control group had undergone a training apprenticeship on the mathematics syllabus, 10 meetings (30 academic hours) and participated in three regional-study meetings of 15 academic hours. The members of this group did not receive, beyond this studying, any further support. The experimental group (the intervention group, where significant changes had been introduced), in addition to the study program of Mathematics including 10 meetings of 30 academic hours and 3 regional study meetings of 15 academic hours (as conducted in the control group), received a



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support consisting in workshops on the subjects of leadership development and effective teamwork including 10 meetings (30 academic hours) and, in addition, a mutual practice experience in schools. Pupils of the experimental group also received additional training, they attended 20 academic hours within 5 meetings that included the active participation of some inspectors (see details in appendixes 12-14).

Table 3.5. Activities stipulated by the formative program (inspector/ teachers);

Specific Objectives	Actions-Strategy	
	District Actions	School Actions
01. Elaborate a plan of actions to increase the coverage of teachers' activity efficacy (achievements).		
1. Form a working group for school, inspectors together with the teachers 2. Establish agreed rules of behaviour to provide a safe and productive environment 3. Create a climate of creative learning that encourages initiative 4. Organize workshops for development of team- work instruction skills: Processes of leading change at individual and organizational levels. 5. Fulfillment of personal potential, on the way to achieving organizational targets; 6. Development of teamwork by tutoring		1. Create structures allowing the principal and school leadership teams to devote more time to leading improvement in curriculum and instructional practices 2. Provide the criteria for Mutual teaching feedback, whose purpose is promoting achievement in mathematics, following up on learning processes 3. Provide the criteria for assessing each outcome prior to students undertaking each assessment task 4. Constant and strategy monitoring to determine how best to respond to the class. 5. An action plan for each class - what is going to happen next to tackle any underachievement or risk of under achievement?
02. Creating partnership amongst different groups of people –inspectors and teachers		
1. Define boundaries in which inspectors/teachers and their staff have greater autonomy and flexibility and receive district support. 2. Improve communication and collaboration across human resources and curriculum, and instruction in providing support to school leaders. 3. Develop a system to hold inspectors accountable for working collaboratively with school teachers in order to implement the strategic plan. 4. Develop effective teamwork workshops: tools for building interpersonal compassionate communication; Contents and processes of consolidation of ways of operation for team development and fulfillment of its abilities; Ssolution of team conflicts		1. Establishing agreed rules of behaviour to provide a safe and productive environment 2. Involve students by sharing their data with them from standardized test data to classroom data. 3. Analyze Data - Everyone involved must use data analysis; from administration to teachers. Celebrate your strengths, keep the focus on improvement and draw up plans on how you're going to improve on your weaknesses and implement it. 4. Structure feedback to support further learning 5. Provide an explicit list of learning outcomes at the outset of a unit of work
03. Building foundation supporting study for pupils and teachers		
1. Restructure the role of the inspector to emphasize instructional leadership, and improve teachers' activity efficacy. 2. Establish a leadership team to ensure delivery of high-quality instruction. 3. Provide instructional coherence and support. 4. Incorporate research-based teaching and learning strategies 5. Invest in instruction-related professional learning for principals, teacher-inspectors and district staff. 6. Ensure that school leaders have the training and the capacity to lead change and are not held accountable for doing things they have never been trained to do. 7. Embed ongoing, faculty-led professional learning into a culture of continuous improvement achievements.		1. Create opportunities for teachers to work collaboratively to develop and deliver relevant and rigorous instruction, and ensure that they maintain personal connections with students. 2. Hold schools accountable for: (a) identifying students who are failing to meet standards and developing a system of responsive interventions aimed at closing the gap; (b) supporting guidance and advisement programs that connect every student with a caring adult; and (c) leading the staff in aligning curriculum and instruction to college- and standards. 3. Engage the faculty in offering a curriculum aligned to grade-level

Specific Objectives	Actions-Strategy	
	District Actions	School Actions
04. Identify and promote “good practices” of teachers’ activity efficacy development		
1. Establish a clear focus and a strategic framework of core beliefs, effective practices and goals for improving student achievement. 2. Organize and engage the school board and district office to support each school. 3. Provide instructional coherence and support. 4. Optimize the use of resources to improve student learning. 5. Develop a succession pipeline in collaboration with a teacher and inspector 6. Provide high-quality data that link students’ achievement to school and classroom practices, and assist schools to use data effectively.		1. Analyze a variety of sources of data and work with the faculty to use that information to improve instruction for all groups of students. 2. Ensure that schools receive a variety of data to identify challenges and determine root causes. 3. Use a range of data to identify students who are not achieving at grade-level standards or who are on the point to fail or drop out, and develop tiered interventions to get students back on a trajectory for success 4. Develop multi-level intervention systems capable of providing intensive support to students. 5. Create organizational structures through which the teams of teachers can work together to increase the percentage of students making successful achievements. 6. Construct feedback that promotes learning - models for teacher-pupil and teacher- teacher discourse

Meetings 1-3, included 10 study hours of workshops on the subject of effective teamwork that promotes school achievements (for inspectors and teachers).

Meeting 1 (September): Sharing motivation for participating in the program: A direct encounter between teams. The uniqueness of a regional community seminar, in difference from a school seminar, is in a direct encounter between people from different “fields”.

Meeting 2 (October) mostly focused on tools for building interpersonal compassionate communication (for inspectors and teachers).

Meeting 3 (November) concentrated on the contents and processes of consolidating team development and fulfillment of its abilities: encouraging, setting and achieving targets, to develop trust and willingness to invest, and to set challenges.

Meetings 4-7, (10 study hours) included workshops for developing team-work instruction skills, constructive feedback that promotes learning (for inspectors and teachers); Visits in schools (for inspectors, teachers and pupils: 4 meetings, 12 study hours on the whole).

Meetings 8-10, comprised 10 study hours directed towards learning: improving the achievement of organizational targets (for inspectors and teachers), visits in schools (for inspectors, teachers and pupils - 2 meetings, 8 study hours on the whole), feedback.

Control experiment. After implementing the model above, we used the same research tools as those used during the first experimental step, to test the differences between the level of our research variables in both the experimental and control group. Table 3.6 reflects the results of repeated questionnaires and those of the Meizav test. Considering the data given in table 3.6, the differences between the two time scales are not significant, except the significant correlation between teachers’ activity efficacy and identification with the team at ascertaining stage (Time 1) and control (Time 2) ($r = .495 *$), which means that teachers’ activity efficacy increases at the same time with the level of identification with team.

There were not found out significant correlations between perceived external prestige, teachers’ activity efficacy and exerting effort at work, except the experimental sample, at control stage, when there were found out significant correlations between teachers’ activity efficacy and perceived external prestige ($r = .360 *$). This is explained by the fact that teachers’ activity efficacy increases at the same time with perceived external prestige of the team. At Time 2, in the experimental group, significant positive correlations had been found in almost all indexes.

Table 3.6. The correlation between dependent independent and mediating variables

Variables		Experimental group, R		Control group, R	
		Time 1	Time 2	Time 1	Time 2
Eficacitatea activității	Directional transactional leadership	.005	.304	.008	.063
	Laissez-Faire transactional leadership	.037	-.406*	.268	.243
	Motivational Transformational leadership	-.0	.682***	.320	.320
	Differential Transformational leadership	-.148	.430*	.050	.051
	Identification with team	.250	.709***	.495*	.495*
	Behavioral integration in the team	.241	.360*	.430	.438
	PEP of the team	-.169	.389*	.286	.286
	Meizav test	.095	.438*	.289	.289
	Frequency of meetings	.251	.282	-.085	-.008
Exercitarea efortului la locul	Directional transactional leadership	.055	.240	-.005	.002
	Laissez-Faire transactional leadership	.098	-.402*	.016	.017
	Motivational Transformational leadership	.022	.424*	.038	.038
	Differential Transformational leadership	-.262	.324	-.285	.285-
	Identification with team	.411*	.666***	-.007	.007-
	Behavioral integration in the team	.318	.444*	.005	.238
	PEP of the team	.298	.292	.214-	-.214
	Meizav test	.096	.621***	.290	.290
	Frequency of meetings	.497**	.725***	-.244	-.244

The correlation between teachers' activity efficacy and inspectors' transactional leadership style in the index of corrective intentional passive leadership style had been found in the experimental group at Time 1 ($r=.005$) and at Time 2 ($r=.304$). That means that, although no significant correlation had been found, there is a rise, and, on the other hand, in the correlation between teachers' activity efficacy and inspectors' transactional leadership style in the index of the laissez faire style, a significant negative correlation had been found between the two times, at Time 1 ($r=.037$) and at Time 2 ($r=-.406^*$). After intervention the results of the experimental group show that the more characteristics of transactional laissez faire leadership style an inspector has, the lower is teachers' activity efficacy. Oppositely, in the correlation between teachers' activity efficacy and motivational transformational leadership style, a significant positive correlation was found between the measures - at Time 1 ($r=-.001$) and at Time 2 ($r=.682^{***}$).

Considering the index of differential style, a significant positive correlation was found between the measures - at Time 1 ($r=-.148$) and at Time 2 ($r=.430^*$). That means that after intervention, in the experimental group, the results reflect dependence: the more characteristics of transformational motivational and differential - individualized consideration leadership style an inspector has, the higher is teachers' activity efficacy.

In order to examine the efficacy of economic-educational indicators as moderators of the correlation between the variables of teachers' activity efficacy, teacher's exerting effort at work,

and frequency of team meetings, a MANOVA test was conducted, the results being exposed together with Pearson coefficient in figure 3.4.

From the data given in figure 3.4, it appears that in the control sample, no significant correlations were found during the two measures and the differences are negligible. On the other hand, in the experimental sample, there had been found differences and a significant correlation between the two times.

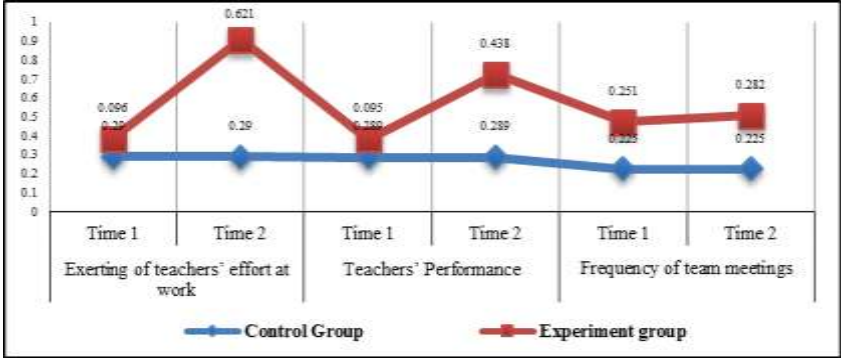


Figure. 3.4. Correlations between achievements in Meizav test and research variables

Unlike Time 1, at Time 2, there were found significant correlations between variables: the higher are the scores in Meizav test, the higher is teachers' activity efficacy ($r=.438^*$) and teachers' exerting effort at work ($r=.621^{***}$).

In order to examine, the average score in the national math test, pupils' results were processed in Excel and SPSS programs, and presented in figure 3.14 and table 3.7.

Table 3.7. Pupils' grades

Average score in the test (Time 1 (01/10/2013), Time 2 (13/05/2014))						
	Number		fractions		geometric shapes	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Control Group (51 fifth grade pupils)	70	79	52	65	48	59
Experimental Group (52 fifth grade pupils)	69	87	50	74	51	72

We used two tests for pupils: Time 1 (01/10/2013) and Time 2 (13/05/2014). **Both groups showed a certain rise but** in the control sample, the differences between the average test score and the times are negligible. In the experimental sample, these indicators are significant (See details in appendix 12, table A12.1), and at Time 2, the test scores are higher. Issues in the experimental group (**52 pupils 30 boys, and 22 girls**): Number: Computing (+18 poinst); Number: Concepts of fractions and computing with fractions (+24 points); Geometric: geometric properties of angles and geometric shapes (+21 points). Issues in the control group (**51 pupils 28 boys, and 23 girls**): Number: Computing (+9 points); Number: Concepts of fractions and computing with fractions (+13 points); Geometric: geometric properties of angles and geometric shapes (+9 points). In the experimental sample, pupils' achievements in all test

issues improved. According to the values of the variables measured at two-time points by means of the *Cross-lagged regression analysis* (See details in appendix 12, Figure 3.14), the correlation between the variable of Inspector's leadership style (x) at Time 1 and the variable of teachers' activity efficacy and teachers' exerting efforts at work (y) at Time 2, ($r=.860^{***}$) is significantly greater, than the correlation between teachers' activity efficacy and teachers' exerting efforts at work (y) at Time 1 and the variable of the inspector's leadership style (x) at Time 2 ($r=-.006$), (the confirmation of figure 3.5 is exposed in appendix 12, figure A12.1).

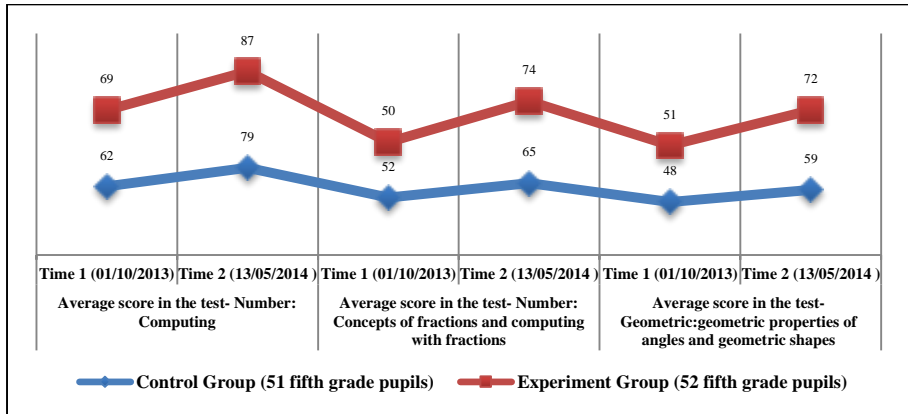


Figure. 3.5. Pupils' achievements in the test

That means that the variable of inspectors' leadership style explains teachers' activity efficacy and teachers' exerting efforts at work by a causal correlation through the mediator variables of identification with a team and the patterns of behavioral integration in a team, the objective being thus confirmed. Consequently the intervention program succeeded in:

1. improving the achievement of organizational targets - definition of tasks and targets setting as a means of increasing efficacy ;
2. increasing trust and willingness to invest;
3. improving the quality of observation and documentation (analysis of lessons on the basis of data through navigators);
4. increasing efficacy aspects of educational workers as related to school - learning motivation, and also the sense of belonging to teamwork;
5. enhancing mutual teaching feedback, whose purpose is promoting achievement in mathematics

The statistic values derived from the pedagogic experiment confirmed **the research hypothesis**: Mathematics teaching will be efficient if:

- a) inspectors exhibit greater personal attention towards teachers, by expressing appreciation, support of their ability and contribution to school;
- b) inspectors integrate in various activities of school life to be in proximity to teachers and principals;
- c) it is emphasized the development of mutual teaching and learning frameworks;
- d) inspectors avoid adopting the characteristics of laissez-faire and passive intentional transactional leadership style, such as avoiding taking a stand, indifference and concession.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The theoretical approach and the experimental valuation of inspectors' leadership styles in the development of mathematics teaching efficacy in Israeli primary schools have confirmed the relevance of the theme, the research hypothesis, certifying the scientific innovation, theoretical and practical value thereof, and the statements offered for defense.

Substantiating the theoretical and practical functionality of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools* through the valuation of school inspectors' leadership style represents the **scientific problem solved** in our research. The synthesis of the research revealed the following significant aspects:

1. It has been proved theoretically and practically that educational leadership is a process focused on the consolidation and extension of teachers' professionalism by authorizing them to display and exercise their leadership skills directed towards influencing pupils to achieve their academic goals. Education leaders have a positive and strong influence over the improvement of teachers' activity efficacy, derived from motivation, commitment to teaching, and implementation of strategies for developing their efficacy. Current interpretations of educational leadership styles point out the tendency of accrediting the differential transformational leadership style that implies support and care towards didactic staff and enhances teachers' activity efficacy and exerting effort at work.
2. A preliminary condition for meeting the targets of education is the improvement of teachers' status and one of the ways to do that is to change leaders and managers' attitude towards teachers, to urge them invest in the function they hold by getting closer to teachers' needs, by getting more involved in the educational process. Learning environment is the most appropriate environment for improving an educational employee's efficacy. In this frame, it has been actualized the concept of educational leadership aimed at innovating, developing, motivating and inspiring mathematics teaching so as to ensure pupils' achievements.
3. The synthesis of theoretical aspects related to educational leadership, teachers' activity efficacy and school inspectors allowed us to determine the indices of teachers' activity efficacy in teaching mathematics: a sense of personal accomplishment, positive expectations for student behavior and achievement, personal responsibility for student learning, strategies for achieving objectives, positive affect, sense of control, sense of common teacher/student goals, democratic decision making, self recruiting, exchange of resources and information, the sense of common teacher/school goals etc. In the same context there have been determined the variables of mathematics teaching efficacy divided into: dependent variables- teachers' activity efficacy and exerting effort at work; independent variable -inspector's leadership style and mediating variables –identification, perceived external prestige and behavioral integration.
4. It has been proved that among all educational leadership styles, the most efficient is differential transformational leadership style. The characteristics of the differential transformational leader are those of a leader displaying understanding, flexibility and interest in stimulating teachers' hidden potential. Differential transformational leadership style leads to a behavior that enhances teachers' activity efficacy and exerting effort at work, at the same time mediating identification, perceived external prestige and behavioral integration. The less characteristics of passive-intentional transactional leadership style an inspector has, the higher is teachers' activity efficacy. The more characteristics of passive-intentional transactional leadership style an inspector has, the lower is teachers' exerting effort at work.

5. The implementation of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools* through the valuation of inspectors' leadership style confirmed the stability of the correlation between the researched variables over time. The variable of inspectors' leadership style explains teachers' activity efficacy in teaching mathematics and exerting effort at work by the causal correlation through the mediating variables of team identification and patterns of behavioral integration in a team.

The **directions of solving the problem** of enhancing mathematics teaching efficacy through the valuation of inspectors' leadership styles are:

1. to promote a school culture that encourages staff achievements;
2. to create partnerships amongst schools, inspectors and teachers;
3. to raise awareness among the correlation between a school inspector's leadership style and teachers' activity efficacy;
4. to create adequate conditions for the development of a caring and committed staff who accept personal responsibility for students' success;

The findings of the current study might constitute a basis for discussions on the subject of inspector's leadership style effectiveness in improving teachers' activity efficacy and exerting effort at work.

Recommendations for inspectors:

- adopt transformational leadership style with differential characteristics;
- leaders' active participation in the school daily practice, encouragement and support of teaching quality, good communication with educational employees and pupils, and a supportive and safe environment for all the partners;
- the inspectors are to allocate more time and energy in creating a safe and open space in the teachers' team as well as trust and openness among educational employees.

for school managers:

- to motivate teachers in executing tasks, investing in work and in improving results;
- to promote a clear practical vision based on the fact that intelligence-results intelligence.

for teachers:

- to promote a psycho-pedagogical discourse directed to the development of pupils' positive attitudes and values towards mathematics, subsequently improving their achievements;
- to improve constantly personal and professional skills.

References

In Romanian

1. Andrițchi V., Galembe S. Comunicarea managerială – factor de motivare/ demotivare a cadrelor didactice din instituția școlară, În: Revista Univers Pedagogic, 2014, nr. 1, p. 61-68.
2. Baci S. Modalități de elaborare a finalităților/competențelor de formare profesională. În: „Univers Pedagogic”, nr.2, 2011, p. 62-64.
3. Braghiș M. Practici de optimizare a parteneriatului educațional la treapta învățământului primar, În: Studia Universitatis, Seria Științe ale educației, 2010, nr. 5, p. 157-164.
4. Callo T., Paniș A. Instrumente utile în profesionalizarea cadrului didactic, În: Dimensiuni ale educației centrate pe cel ce învață, Chișinău, 2011, p. 120-125.
5. Calmuțchi L., Hariton A. Metodologia rezolvării problemelor tipice la matematică în ciclul primar, Chișinău, 2013. 216 p.
6. Chiriac L. Mihălache L. Considerente metodice privind expunerea procesului de modelare. În: Studia Universitatis, 2011, nr. 9 (39), p. 164-177.
7. Codul Educației al Republicii Moldova. Publicat: 24.10.2014 în Monitorul Oficial, nr.634.
8. Cojocaru V. Gh. Calitatea în educație. Managementul calității, Chișinău, 2007, 268 p.

9. Cojocaru V. Comunicarea managerială-element al culturii pedagogice la managerii contemporani. În: *Învățământul superior din Republica Moldova la 85 de ani. Materialele conferinței științifice naționale cu participare internațională*. Chișinău, 24-25 septembrie, 2015, p. 50-60.
10. Crudu V., Patrașcu Dm., *Calitatea învățământului în instituțiile preuniversitare*, Chișinău 2007, 378 p.
11. Ionescu Gh. Gh., Cazan Emil, *Management*, Editura Universității de Vest, Timișoara, 2007.
12. Iosifescu Ș. *Management educațional pentru instituțiile de învățământ*, Institutul de Științe ale Educației, MEC, București, 2001.
13. Silistraru N., Golubițchi S. Impactul competențelor pedagogice în formare a cadrului didactic. În: *Interacțiunea metodelor în învățământul superior. Ghid metodologic*. Chișinău, 2011.
14. Ursu L., Rusuleac T. Formarea inițială a competențelor profesionale ale cadrelor didactice pentru învățământul primar prin lecțiile de laborator. În: *Tradiție și modernitate. Dialogul generațiilor. Materialele conf. șt.-practice naț. cu participare internaț. Vol. I. Chișinău, Tipog. UPS „I. Creangă”, 2014, p. 3-8.*

In English

15. Bass B.M. et al. *Leadership and Performance beyond Expectations*. London: Free Press, 1985, p. 195-207.
16. Bergami M., Bagozzi R.P. Self- categorization affective commitment and group self- esteem as distinct aspects of social identity in the organization, *British Journal of Social Psychology*, 2000, Vol. 39, p. 555-557.
17. Black J. Managerial Behaviors and Job Performance, *Journal of international business studies*, 1991, V. 22, p. 99-114.
18. Collins J., O'Brien N. *Greenwood dictionary of education*, Westport: Greenwood Press, 2003, 598 p.
19. Colman M. *Dictionary of Psychology*. Oxford: Oxford University press, 2001, 878 p.
20. Dipaola M.F. Organizational citizenship of faculty achievement of high school students. *The University of North Carolina Press*, 2005. *The High School Journal*, 88(3), p. 35-44.
21. Dutton J.D., Dukerich J.M., Harquail C.V. Organizational images and member identification, *Administrative Science Quarterly*, 1994, Vol. 39, p. 239-263.
22. Frost D. From professional development to system change: teacher leadership and innovation, *Professional Development in Education (special issue on Teacher Leadership and Professional Development)*, nr. 38 (2), 2012. p. 74-82.
23. Fullan M. *Leadership and sustainability: System thinkers in action*. Corwin Press, 2005, 136 p.
24. Goleman D. *Emotional Intelligence*. New York: Bantam Books, 1995, 352.
25. Hambrick D.C. Top management groups: A conceptual integration and reconsideration of the 'team' label, In Staw B.M., Cummings L.L. (Eds.) *Research in organizational behavior* Greenwich, Connecticut Press, 1994, p. 171-214.
26. Hanushek E.A., Kain J.F., O'Brien D.M., et al. *The market for teacher quality*. Cambridge, Mass, National Bureau of Economic Research, 2005, <http://www.nber.org/papers/w11542>, (Visit: 15.06.2007, 03.04.2012).
27. Hen D. The Correlation between the perception of a school inspector's leadership style and teachers' activity efficacy (achievements), amongst education personnel in the field of math teaching in Israeli Primary schools. In: Publication Israel Carmel College, 2014; <http://mcd.org.il/site/wp-content/uploads/2015/08/Abstract-dalia-hen.pdf> (Visit: 02.05. 2014).
28. Hen D. Effective team-work analysis of math teachers in primary school, *Academy of Sciences of Moldova and the Institute of Education Sciences, Educatia pentru dezvoltare durabila inovatie competitivitate eficienta*, 2013, Materials of International Scientific Conference October 18 to 19. 2013, p. 451-457.
29. Hen D. How can teachers' activity efficacy (pupils' achievements) be improved? – In: Publication Israel Carmel College, 2014; <http://mcd.org.il/site/wp-content/uploads/2014/09/How-can-teachers-performance-pupils-achievements-be-improved-Dalia-Hen-2014.pdf> (Visit: 12.04. 2014).
30. Hen D. Leading the process of change in education, In: *Arta si educatie artistica, revista de cultura, stiinta si practice educationale*, No 2(24), 2014, p. 451-456.
31. Hen D. Positive attitudes and values of pupils towards the subject of mathematics in Primary school, as valuable in the promotion of achievements, in: *Education from the perspective of values*, 1 December 1918 University, Alba-Iulia, (Romania), V-th Edition, October 2013, p.239-242.
32. Hen D. Relations between decentralized leadership, intervention, involvement and inclusion of parents in Primary Schools, *Acta et commentationes* ISSN 1857-0623, 2013, p. 108-118.
33. Hoegl M., Gemuenden H.G. Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. In: *Organization Science*, 2001, Vol.12 (4), p. 435-449.

34. Hoyle E. Teaching: Prestige, status, and esteem. In: Educational Management and Administration, 2001, 29(2), p. 139-152.
 35. Hoyle J.R. Leadership and the force of love: Six Keys to Motivating with love. Thousand Oaks, Corwin, 2002, 136 p.
 36. Hyun-Jung, L. The role of competence-based trust and organizational identification in continuous improvement, Journal of managerial Psychology, 2004, Vol. 19(6), p. 623-639.
 37. Kahn R.L., Wolfe D.M., Quinn R.P., Snoek J.D., Rosenthal R.A. Organizational stress: Studies in role conflict and ambiguity. New York, 1964, Wiley, Ch. 2, p. 11-35.
 38. Kenny D.A., Kashy D.A., Bolger N. Data analysis in social psychology. In Gilbert, D., Fiske, S., & Lindzey, G. (Eds.) The handbook of social psychology, New York, NY: McGraw-Hill, 1998, Vol. 1, p. 233-265.
 39. Ladd, H.F., Walsh, R. P. Implementing value-added measures of school effectiveness: Getting the incentives right. Economics of Education Review, 2002, (21).pp. 1-17, Vol. 24, No.5, p. 539-556.
 40. Leithwood K., Jantzi D. Linking leadership to student learning: The contribution of leader efficacy. In: Educational Administration Quarterly, 2006, p. 112-129.
 41. Murphy J. Principal Instructional Leadership, Advances in Educational Administration, 1990, p. 163-200.
 42. Pajak E. Identification of Supervisory Proficiencies Project, (Final report, University of Georgia), Alexandria, VA: Association for Supervision and Curriculum Development, 1989, p. 28-31.
 43. Protivnak J. Supervision Modalities Developmentally Appropriate for School self- evaluation? A comparative analysis of practice in primary schools in England and Finland, British educational research journal, 2003.
 44. Sergiovanni T. Leadership. What's in it for schools? Routledge, Falmer. London and NY, 2001, 146 p.
 45. Van Dick R., Wagner U. Social identification among school teachers: Dimensions, foci and correlations. In: European Journal of Work and Organizational Psychology, 2002, Vol. 11(2), p. 129-149.
 46. TIMSS-R, 2012, <http://timssandpirls.bc.edu/timss2011/international-results-mathematics.html> (Visit: 10.12.2012). (Visit: 10.12.2012).
 47. Witziers R., Bosker R.J., Kruger M.L. Educational leadership and student achievement: The elusive search for an association. In: Educational Administration Quarterly, 2003, 39(3), p. 398-425.
 48. Yukl G. Leadership in Organizations, 5-th Edition, Upper Saddle River, NJ: Prentice-Hall, 2002, 542 p.
- In Hebrew**
49. Ballas N. Indicators related to the issue of teachers and teaching in the education system, 2008.
 50. Foxs A., Herz Leiserowitz R. Principals' Thoughts of Changes in Their School: Activist Schools in Israel. Studies in Administration and Organization in Education, 17, 1990. p. 75-104.
 51. Fridman J. Self-managed School as an intelligent. In: Wollensky A., Friedman, J. (eds.): Self-Managed Schools: An inter - national. Jerusalem, Israel, Ministry of Education, 2003. p. 57-88.
 52. Gilat G.A Stakeholder Approach for studying the Effect of Organizational and Professional Perceived External Prestige on Compassion, Generosity, and Altruism. Ilan-Bar University , Israel, 2006. 170 p.
 53. Justman, M., Bokobza C. (Eds.) Indicators of Education in Israel: Guidelines and recommendations for the rejuvenation of Israeli indicators. Israel Academy of Sciences, Jerusalem, 2010, <http://education.academy.ac.il/Admin/Data/Publications/Indicators-web.pdf> , Visit: 15.03.2012.
 54. Lewin A. Programs in the technological age In: Education for the twenty-first century, Chen, D. (Ed.), Ramot Tel - Aviv University, 1995, 584 p.
 55. Ministry of Education Israel. National education program: that every child deserves more. Task Force in promoting national education (Report of the „Dovrat Committee”, January 2005. 318 p.
 56. RAMA -The National Authority for Measurement and Evaluation in Education, 2012, http://cms.education.gov.il/educationcms/units/rama/mivchanimbenleumiym/timss_pirls_2011.htm
 57. <http://www.oecd.org/korea/39279389.pdf> (Visit: 17.11.2012) OECD -Organization for Economic Co-operation and Development. Improving School Leadership: Comparative report, Final report. Dublin: OECD, 2007, 121 p.

ADNOTARE
Halfon Hen Dalia

**Influența stilului de leadership al inspectorului școlar asupra eficacității predării
matematicii în școlile primare din Izrael,**

teză de doctor în științe pedagogice, Chișinău, 2016

Structura tezei: introducere, 3 capitole, concluzii și recomandări, bibliografia cuprinzând 234 titluri, 141 pagini de text de bază, 17 anexe, 81 tabele, 20 figuri.

Publicații la tema tezei: rezultatele cercetării sunt reflectate în 18 lucrări științifice (8 articole în reviste internaționale, 4 comunicări la conferințe internaționale, 6 publicații științifico-metodice).

Cuvinte-cheie: inspector școlar, învățător, influență, stil de leadership, eficacitate, predare, performanțe școlare, identificare profesională, leadership transformațional, leadership tranzacțional, integrare, prestigiu extern perceput etc.

Scopul cercetării: Stabilirea fundamentelor teoretice și praxiologice ale eficacității predării matematicii sub impactul stilului de leadership al inspectorului școlar.

Obiectivele cercetării: delimitarea particularităților leadership-ului educațional versus managementul educațional; clasificarea și definirea stilurilor de leadership specifice inspectorilor școlari; examinarea cadrului teoretic privind eficacitatea activității învățătorilor în predarea matematicii; stabilirea dimensiunii funcționale a inspecției școlare și statutului inspectorului școlar; caracteristica variabilelor asociate eficacității activității învățătorilor în predarea matematicii; structurarea *Modelului pedagogic de eficientizare a predării matematicii în clasele primare din Izrael* și validarea lui prin experiment; analiza, interpretarea și sistematizarea rezultatelor cercetării, formularea concluziilor generale și recomandărilor practice.

Noutatea și originalitatea științifică a cercetării sunt obiectivate de actualizarea semnificației conceptelor de inspector școlar, stil de leadership, eficacitate didactică, identificare profesională etc; elaborarea modelului teoretic al ipotezelor cercetării și determinarea corelațiilor dintre variabilele eficacității profesionale a învățătorilor.

Problema științifică soluționată în lucrare constă în fundamentarea teoretică și științifică a funcționalității *Modelului pedagogic de eficientizare a predării matematicii în clasele primare din Izrael* prin valorizarea stilului de leadership al inspectorului școlar pentru intensificarea eficacității învățătorilor claselor primare și performanțelor elevilor la matematică.

Semnificația teoretică a cercetării constă în stabilirea reperelor teoretice privind leadershipul educațional; determinarea stilurilor de leadership educațional; argumentarea rolului inspectorilor școlari pentru asigurarea eficacității activității învățătorilor în predarea matematicii la nivelul ciclului primar; relevarea variabilelor asociate eficacității predării matematicii în clasele primare, precum și structurarea modelului teoretic al corelațiilor dintre ele.

Valoarea aplicativă a investigației rezidă în identificarea corelației dintre variabilele eficacității profesionale a cadrelor didactice; structurarea *Modelului pedagogic de eficientizare a predării matematicii în clasele primare din Izrael*, elaborarea programului formativ stipulat de model și validarea lui prin experiment; interpretarea valorilor statistice obținute experimental și formularea recomandărilor practice.

Implementarea rezultatelor științifice Rezultatele cercetării au fost aprobate în cadrul conferințelor științifice, simpoziunelor și revistelor științifice și au fost testate în instituțiile preuniversitare din Izrael în perioada anilor 2012-2016.

ANNOTATION

Halfon Hen Dalia

The influence of inspectors' leadership style on mathematics teaching efficacy in Israeli primary schools

Doctoral thesis in the field of Pedagogy, Chişinău, 2016

Thesis structure: introduction, 3 chapters, general conclusions and recommendations, bibliography of 234 titles, 141 pages of basic text, 17 appendixes, 81 tables, 20 figures.

Publications: the research results are reflected in 18 publications (8 articles in educational journals, 4 articles at international conferences, and 6 scientifico-methodological publications).

Key-words: school inspector, mathematics teachers, influence, leadership style, efficacy, school achievements, professional identification, transformational leadership, transactional leadership, integration, perceived external prestige etc.

The goal of the research consists in establishing the theoretical and practical foundations for enhancing mathematics teaching efficacy throughout the valuation of school inspector's leadership styles.

Research objectives: point out the peculiarities of educational leadership versus educational management; classify leadership styles and define their characteristics; examine the theoretical frame of teachers' activity efficacy in the process of teaching mathematics; determine the functional dimension of school inspection and school inspector's status; characterize the variables associated to teachers' activity efficacy in the process of teaching mathematics; structure the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools* and its experimental validation; analysis, interpretation and systematization of research results, formulating conclusions and practical recommendations.

The scientific novelty and originality of the research consist in updating the significance of the terms: school inspector, leadership style, professional efficacy, professional identification etc., in elaborating the theoretical model of hypotheses and determination of correlations between the variables associated to teachers' professional efficacy. **The scientific problem solved** in this research consists in substantiating the theoretical and practical functionality of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools*, through the valuation of school inspectors' leadership style, for the improvement of elementary school teachers' activity efficacy and pupils' achievements in mathematics.

The theoretical significance of the investigation is justified by: the establishment of theoretical aspects related to educational leadership; the determination of educational leadership styles, and definition of school inspector's role in ensuring teachers' activity efficacy in teaching mathematics at primary school level; the establishment of professional efficacy variables and the elaboration of the theoretical model of correlations among variables.

The practical value of the research is argued by the evaluation of variables related to teachers' activity efficacy in teaching mathematics; elaboration of the *Pedagogical model for enhancing mathematics teaching efficacy in Israeli primary schools*, development and experimental validation of the formative program included in the model; interpretation of statistic data and formulation of practical recommendations.

Implementation of scientific results: the results were approved in the frame of international scientific conferences, educational journals and didactico-scientific publications in Moldova and Israel and were experienced in secondary institutions of Israel between 2012-2016.

АННОТАЦИЯ

Халфон Хен Далия

Влияние стиля руководства школьного инспектора на эффективность преподавания математики в израильских начальных классах, диссертация на соискание учёной степени кандидата педагогических наук, Кишинэу, 2016

Структура диссертации: введение, 3 главы, общие выводы и рекомендации, библиография из 234 источников, 17 приложений, 141 страница основного текста, 20 рисунков, 81 таблица. **Публикации по теме диссертации:** результаты исследования отражены в 18 научных работах (8 статей в специализированных журналах, 2 статьи в национальных научных сборниках, 10 тематических докладов на международных и национальных конференциях и 3 национальные премии).

Ключевые понятия: школьный инспектор, стиль руководства, влияние, эффективность работы учителей, успеваемость учащихся (тест по математике), экономические показатели в сфере образования, трансформационное руководство, транзакционное руководство, интеграция. **Область исследования:** Общая теория образования

Цель работы: определение теоретических и практических основ развития эффективности преподавания математики в начальных классах под воздействием стиля руководства школьного инспектора.

Задачи исследования: подчеркнуть особенности руководства и управления в области образования; классифицировать стили руководства и определить их характеристики; разъяснить специфику эффективности работы учителей в процессе преподавания математики в начальных классах; определить особенности школьной инспекции и статуса школьного инспектора; разработка и экспериментальное обоснование *Педагогической модели развития эффективности преподавания математики в начальных классах под воздействием стиля руководства школьного инспектора.*

Научная новизна и оригинальность диссертации объективируется в обновлении значение терминов: школьный инспектор, стиль руководства, профессиональное исполнение, профессиональная идентификация и т.д., в разработке теоретической модели гипотез и определение корреляции между указателями профессиональной эффективности учителей математики. **Актуально-значимая научная проблема, решённая** в данной области, состоит в обосновании теоретической и практической функциональности *Педагогической модели развития эффективности преподавания математики в начальных классах под воздействием стиля руководства школьного инспектора*, для улучшения эффективности учителей и достижений учащихся в области математики.

Теоретическая значимость работы оправдана определением теоретических аспектов, руководства и управления, стилей руководства, и разъяснением статуса школьного инспектора в обеспечении профессиональной эффективности учителей в процессе преподавания математики в начальных классах, и разработка теоретической модели соотношений указателей профессиональной эффективности.

Практическая значимость: разработка и экспериментальное обоснование *Педагогической модели развития эффективности преподавания математики в начальных классах под воздействием стиля руководства школьного инспектора* и и разработка практических рекомендаций.

Внедрение научных результатов. Результаты исследований были утверждены в рамках научных конференций, симпозиумов и научных журналах и были протестированы в доуниверситетских учреждениях Израиля в период 2012-2016 гг.

HALFON HEN DALIA

**THE INFLUENCE OF INSPECTORS' LEADERSHIP STYLE ON
MATHEMATICS TEACHING EFFICACY IN ISRAELI PRIMARY SCHOOLS**

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HALFON HEN DALIA

**INFLUENȚA STILULUI DE LEADERSHIP AL INSPECTORULUI ȘCOLAR
ASUPRA EFICACITĂȚII PREDĂRII MATEMATICII ÎN ȘCOLILE PRIMARE DIN
IZRAEL**

SPECIALITATEA: 531.01. Teoria generală a educației

**Autoreferatul
tezei de doctor în pedagogie**

CHIȘINĂU, 2016