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PROMOTION OF SOCIAL INTERACTION IN THE CLASSROOM BY EFFECTIVE UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES

531.01 – GENERAL THEORY OF EDUCATION

ABSTRACT
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CONCEPTUAL HIGHLIGHTS OF THE RESEARCH

The actuality of the research. We live in one of the most challenging periods in human history: human knowledge, that has become common knowledge, covers the entire reality of human life. We live in a "global village", where improved means of communication, and advanced technology turns our world into one environment, where all its residents are able to communicate and exchange information with each other in real time. Since the dawn of humanity until today, technology is a mirror of the development of human life in general and human culture in particular. Tracking the close relations between the development of technology and the development of human social life, can teach us a lot about our lives today, the options opened for us and the problems we face. This understanding will help us make responsible decisions related to the essence of our present life. History is interwoven with major milestones, in which the relations between the development of technology and the development of civilization are highlighted: The agricultural revolution, the invention of the printing press and the Industrial Revolution are examples where the development of technology led to a significant change in lifestyle and in the perception of the world.

Technology in education was a debatable topic amongst the society. Experts had their own views on modernizing education and making it technology aided. There were positives as well as negatives to technology in education. But, gradually as technology was embraced by the educational institutes, the educational system has been transformed owing to the ever-advancing technology. Technology and education are a great combination if used together with a right reason and vision. A technical education system exposes the students to the world of employment and work, promotes teamwork skills, and forces planning and dealing with challenges that often require finding solutions "outside the box". Today it is widely believed that the teachers can and should prepare all students to global norms, serve as a central pivotal in various educational reforms, and produce skilled workforce carrying the knowledge to design, maintain or enhance the status of their countries in the global economy [Marilyn Cochran-Smith, 2009 in 11].

With the entry of the educators into the new age, a complete picture emerges where important technologies of interactive and collaborative environments are central, and allow students to demonstrate what they have learned in a variety of ways. The challenge facing policy makers in education is how to keep the rules of the virtual infrastructure connected to

the learning world and to know how to integrate the next generation in activities that promote social interaction, as students today do not learn only through planned teaching, but also through shared social experiences. In the dissertation "Promoting social dynamics in the computerized classroom through integrating the computer in teaching: A case study" [8], levels of social interaction were examined during computerized learning sessions in the classroom. Despite the similarity between students' and teacher's perceptions on encouraging interaction and reciprocal relations in the classroom as well as the perception of the teacher's role in promoting social processes, the teacher found it difficult to implement her theory-based perceptions in practice in the classroom. As a result of the gaps described above in implementation of this approach, the teacher did not fully utilize the new technological tools to promote social processes, resulting in low levels of observed social interaction.

In light of these understandings, it was necessary to examine what are the factors causing the difficulties experienced by the teachers in implementing their perceptions in practice in class, and why do they not see their students' role in the social events that take place inside their classroom. The hypothesis was, that the reason lies in the fact that there is no sufficient training and support for teachers to channel computerized teaching opportunities to the promotion of social processes in the classroom.

Description of the situation in the science field and identification of the research problem. Effective utilization of technological tools is usually addressed in detail with regard to promotion of students' achievements, rather than the promotion of social dynamics in the classroom. The constructivist approach highlights social interaction as the basis for the creation of knowledge; therefore researches focus on the importance of learning environments that encourage this activity: Brooks J.G. & Brooks M.G.[14], Lavie Z.[38], Levin T.[39;40;41], Salomon G.[58], and Savery & Duffy [in 65]. The difficulty of the education system to adjust and to update itself in the paste of global technological changes is well described by Chen D.[16] and Hargreaves A. & Godson I.[30], while the penetration of technology into the education system is discussed by: Collins A. & Halverson R.[17], Dellit J.[21], and Koren [in 26]. As consequence, the relation between technology and pedagogy is analyzed by: Davidovich N. & Suan D.[18], Dede C.[20], Forkosh Baruch A.[25], and Vadmani R.[63], and the role of the teacher in effective use of technology is dealt with in researches signed by: Ben Peretz M.[11], Dresler M. & Colleagues[22], and Gropper S.[29]. Harnessing technology in order to increase social interaction is urged by the researches: Ernst J.V. & Clark A.C.[24], knight & Colleagues[36],

Pineteh E.A.[53], whereas factors enabling successful use of ICT and the obstacles are listed by: Beauchamp G.[10], Byrom E. & Bingham M.[15], Groff J. & Mouza C.[28], Hennessey S. & Colleagues[31], Neal G.[46], Scrimshow P.[80], and Tondeur & collegues[62]. Finally, ways to evaluate the effectiveness of ICT in teaching are suggested by: BECTA[72], and Paiano S.[48]. The Higher Education (HE) institutions of Moldova are characterized by a limited use of digital services, limited ICT integration in their on-campus teaching, and a very low proportion of e-learning courses. Moreover, the provision of formal retraining for teachers from HE Institutions of Moldova for ICT implementation in the curricula is seldom and uncoordinated [35]. Following a case study about the training of trainers organized in the WETEN Karlsson & others [35] state that to assure quality learning process in Higher Education, continuous training of teachers is a priority. The aim of 2011-2013 Project, "Modernization of education in Moldova-preparation of pedagogues and students for e-learning methodology enhances the access to flexible education", was to support reforms in the educational sector and to improve access to education as an instrument of social development through mediation of e-learning methodology as a form of flexible learning. The purpose of the project was to train Moldavian teachers and future teachers, in e-learning, and thus to contribute to modernization of learning of ICT skills. Project 'Education 2020' [76] of the Moldovan Ministry of Education for the years 2013-2020 is built on the assumption that education is the basic factor in the transmission and creation of new universal and cultural values, human capital development, and guidance of national identity and consciousness, in order to promote European integration aspirations. It establishes the objectives and tasks, proposes a vision, and provides direction and development priorities for the short and long term in the education system in Moldova.

The Israeli education system is overloading with computers in the classrooms, however, most educators agree that there is no advantage to the use of computers and technology as long as there is no change in the traditional role of the teacher. In the Israeli "Management Planning and Assessments Folder for the academic year 2013-2014" [74] , the third objective is engaged in adapting the education system to the 21st century [22;11;17;16;46] and refers to a number of influencing key elements on the quality of the teaching- learning-assessing processes in the system. It includes learning in a digital environment, the professional development process [12;63;29; Davis, Preston & Sahin (09) in 31] and the training of the education staff [27;30;72;81;46;56;75;14], the evaluation processes [48; Ames' (92) in 22;15; Kennewell et al (2000) in 62; Savery & Duffy

(96) in 65] and leading reforms and programs while empowering the leading teams [15]. The uniqueness of the ICT plan for the 2014 academic year presented, in relation to the previous plans, is reflected in its emphasis on collaborative work at both school staff level and between the students themselves, using a variety of collaborative ICT tools.

This raises the **research problem** whether social dynamics in the computerized classroom can be promoted through <u>effective maximal utilization</u> of technological tools.

The **aim of the research** is to identify the aspects of the computer's unique potential contribution to promoting social processes in the classroom, and develop a model engaging in maximizing the effectiveness of technological tools and their level of impact on social processes in the classroom. By investigating over time, the following **research objectives** are expected to be achieved:

1. Analyze the teacher's difficulty in promoting social processes in the computerized classroom while Carrying out detailed documentation and reflectively examine the entire process with regard to the theoretical elements at the foundation of this research as well as findings of the process.
2. Examine the opportunities provided by using computers in learning/teaching to promote social processes in the classroom.
3. Compare reciprocal activities taking place within the "computerized classroom" and reciprocal relations in the "classroom maximizing the effectiveness of computers."
4. Define objectives of the change on the levels of interaction the current action research seeks to generate.

Research methodology includes theoretical methods - scientific documentation, analysis, synthesis, and generalization; experimental methods - teaching experiment, observations (of interactions, class arrangements, the given task, and the teacher's activity), interviews, tests, questionnaires, and analysis of official plans.

The scientific novelty and originality is the description of the challenges facing the education field in the 21st century, the examination of constructivism approach to learning focusing on technological perspective and interpersonal views, reinforcement of the importance of social interaction in the process of learning, indication of the connection between technology and pedagogy, analysis of the social aspects of learning environments using ICT, interpretation of the contribution of ICT to quality teaching and learning, investigation of ways to enable successful use of ICT, description, analysis and interpretation of the role of teachers in

integrating ICT into the learning-teaching process, and evaluation of the effectiveness of ICT in teaching.

The scientific problem solved in the investigated area lies in the identification and analysis of the components that allow effective maximal utilization of the technological features integrated into the lesson, specifying the difficulties the teachers have in implementing these elements into practice, thus develop criteria to overcome these obstacles, subjected to reflection and evaluation indicators, for the promotion of social processes in the classroom.

The theoretical significance consists in demonstrating the complexity of the education system to adapt innovation and change; analyzing the process of knowledge construction with regard to the constructivist approach; deducing the obstacles for teachers to effectively implement technology into their teaching strategies, displaying different models for maximal utilization of ICT tools in the learning teaching process, offering indicators to evaluate and reflect on the process.

The practical value of the research stems from preliminarily validation of the assumption that social dynamics in the computerized classroom can be encouraged while effectively integrating ICT. Aspects of the computer's unique potential contribution to promoting social processes in the classroom were identified and the research has also been successful, indicating students' and teachers' attitudes toward effective technology integration and has provided an understanding regarding the gap between teachers' perceptions of technology integration and the difficulties to implement it in practice. Action plans were presented at all levels of the education system: decision makers, schools and teachers.

Main scientific results presented for defense:

1. Related to objective 1

Teachers are essential to the process of implementing technology effectively into the lesson since they have to support their learners as they interact on the one side, and to exploit technology to its maximum in order to enjoy its advantages in the teaching-learning process, on the other. Therefore successful use of ICT involves:

A. <u>At decision maker level</u>: a long term updated and developed policy with comprehensive insights, which is based on an open dialogue with school principals and teachers.

B. <u>At school level</u>: a jointly developed ICT plan correlated with curriculum resources, reliable working infrastructure alongside technical support, time allotted for planning and preparations with refer-

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ence for compensation, and finally an evaluation and reflection on the implementation.

C. <u>At teachers level</u>: investment of time, effort and willingness to acquire ICT skills and change existing teaching strategies**.** Mandatory participation in school subject specific, ongoing annual professional development within awareness to teachers' level of ICT adaption, use of technology based tasks, proper learning environment arrangement**,** use of alternative assessment, and evaluation of the process.

2. Related to objective 2

Applied effectively, technology implementation increases student learning, understanding and achievement, especially with sub-achievers students. It also encourages collaboration and as consequence promotes the social dynamics in class.

3. Related to objective 3

Technology can only contribute substantially if it is appropriately embedded in powerful and interactive learning environments established within an advanced, supportive well known pedagogy that is suitable for the 21st century.

4. Related to objective 4

Interpersonal processes have a valuable and substantial impact on the learning process; therefore educational conditions should be created to encourage interaction in the classroom.

Implementation of scientific results was done based on a pedagogical experiment sample of 43 pupils from two classes of six graders, in elementary school in Israel, and through publications and scientific communications.

Approval of research results was performed at meetings of the Department of General Pedagogy and Psychology at Moldova State University, the theoretical investigations provided experimental comparative analysis for the experimental values that appeared in the research. The research results were presented in scientific journals, and national and international conferences: Scientific conference *Integrare prin cercetare şi inovare*. Chişinău, 2013; International scientific conference *Invatamântul postmodern: eficienţă şi funcţionalitate*. Chişinău, 2013; Also attending the conferences: Levinsky College of Education International conference *100 Years of Research Innovation and Discourse in Education, teacher education and Music education*. Tel-Aviv, 2012; The 39th annual conference of IAEA *Educational Assessment 2.0: Technology in Educational Assessment*, Tel-Aviv. 2013.

Publications on the topic of doctoral thesis: research results are reflected in 7 scientific papers: 5 articles in scientific journals of national and

international profile, 2 papers- in national conference (1) and international conference (1).

Volume and structure of doctoral thesis: introduction, three chapters, conclusions and recommendations, bibliography of 119 titles, 7 appendices, 136 pages of basic scientific text, 2 tables, 27 figures.

Key words: constructivism, social dynamics, ICT implementation, advanced pedagogy, effective teacher, learning environments, evaluation of ICT implementation.

Social interaction is the process by which we act and react to those around us. It includes those acts people perform toward each other and the responses they give in return. Social interaction includes a large number of behaviors, and is usually divided into five categories: exchange, competition, cooperation, conflict and coercion.

Social dynamics refers to the behavior of groups that results from the interactions of individual group-members and to the study of the relationship between individual interactions and group level behaviors. In social dynamics individual choices and interactions are typically viewed as the source of aggregate level behavior.

Social processes are the ways in which individuals and groups interact, adjust and readjust and establish relationships and pattern of behavior which are again modified through social interactions. Interaction between individuals and groups occurs in the form of social process. Therefore, social processes refer to forms of social interaction that occur again and again.

A **reciprocal relationship** is one in which each party bears a responsibility for the welfare of the other and, thus, each has certain rights. The stability of the relationship comes from the extent to which those rights and responsibilities are balanced. In some sense this can be seen as a set of fiduciary relationships in which each person has rights because of responsibilities to the other.

DOCTORAL THESIS CONTENT

The **Introduction** presents the timelines of the research and the topic investigated, states the research problem that generated investigation, reveals the actuality and the importance of the problem, defines the purpose of the research, specifies the novelty and scientific originality, highlights the theoretical value of the work and approval of the results, and introduces the thesis components in summary.

Chapter 1 entitled **THE IMPORTANCE OF PROMOTING SOCIAL INTERACTION IN THE COMPUTERIZED CLASSROOM** reflects the origin, evolution and essence of the concept of constructive interpersonal learning being considered in the context of technological environments [7], influenced by challenges and innovations affecting the education field in the 21st century [4;7;30;11;78;33]. I note that no research was conducted to investigate the effect of using ICT in teaching on promoting social interaction between the learners, and there is relatively little discussion of this issue in the literature [2]. Moreover, most of the researches mentioned, examine the impact of using ICT in teaching, on learners of high education such as students in universities and colleges [2]. Therefore it was important to the researcher to conduct her research in elementary school, and examine the social interactions of learners in the ages of 11 and 12 with regard to the use of ICT in the teaching-learning process. Shared learning in a group frame creates, inevitably, relationships and a sense of unity [Hiltz, 1995 in 18]. The social relations that are created inside a learning group comprise an important part of the learning, and eventually affect the results of the learning process. Good social relations enable effective learning dialogue, successful conflict management and increasing involvement of members of the group in the dialogue [Anderson & Kanuka, 1997 in 18]. Children partly construct their knowledge as a form of collaborative meaning-making based on their interaction with others [1]. In this context, constructivism is being analyzed in three perspectives [7]:

I. The philosophical perspective where ideas regarding the nature of knowledge are expressed with emphasize on constructive learning as a social matter: knowledge is created through social dialogue, being a product of social-cultural mediation [Savery and Duffy, 1996 in 65;14]. While reality may exist separate from experience, it can only be known through experience, resulting in a personally unique reality. Humans generate knowledge and meaning from an interaction between their experiences and their ideas. All cognitive activity occurs within the experiential world of goal-

directed awareness, which means, weighing the steps out of earlier experiences: things we learn are built out of our own materials and are given interpretation according to our own construction concepts. The knowledge construction process is central, and the construction of knowledge differs from learner to learner. Moreover, there is no agreed final product since understanding is a process rather than product.

II. The Technological perspective where technology serves as the platform upon which all training and learning processes are made. The more technological means, training and skills, construction of knowledge will be more significant. When knowledge is significant and useful, the learner will make the right connections. Effective use of technological tools enables the construction of personal knowledge and encourages the learner to the process of decision making. According to Salomon [58], there are three conditions for computer activity to support the constructivist learning environment significantly:

A. Transferring a part of the "mental burden" from the learner to the computer, namely, releasing the learner from burdensome activities that are not central for task performance.

B. Useful intellectual partnership between the computer and the learner. The computer encourages knowledge-building activities presented in order to share with others, rather than just practicing or mental-saving activities.

C. Learning is better, when ways of organizing the information used by the learner in his thinking, are similar to those computerized tools are based on. Salomon & Almog [56], devide between two types of technological effects: **effects with technology**, and **effects of technology**. Basic guidelines for the various aspects of social interaction are drawn [58;73;19].

 III. The underlying **psychological basis** of the constructivist approach is learning as an interpersonal process in addition to its being an intrapersonal process, interaction also involves cognitive and emotional messages. Children do not simply mimic everything that is part of the external environment. Developing and learning is an ongoing process which involves interchange between individuals and their surroundings. This makes students, teachers, and the environment in which the students have interaction in, active participants in their learning. Seven characteristics for classroom interaction are introduced [Bar-Tal and Bar-Tal, 1985 in 9], and two reasons are given for the learners need for interaction during the constructivist learning process: **Cognitive Necessity [**45;56;44;38] and **Social sensitivity [**45]. Advantages for social interaction are listed being expressed in

different ways [41;45;38;56]. Two versions to learning as a social interest are explained: **Socially assisted learning**, and **social distributed learning** (person plus) [45;57;56;38;49]. Researchers agree [41;57;38;45] that there is room to encourage and increase the interaction in the classroom.

Instructional principles derived from constructivism are presented in order to define constructivist learning environments [65; Savery & Duffy ,1996 in 65], and several conditions are specified in order to identify a situation as collaborative in nature [Neilson 2002, in 24; Dillenbourg 1999, in 24;66;34;61;58;55]. According to the psychological approach, learners actively construct their knowledge. Learning occurs through the interactions learners have with their peers, teachers, and other experts [64]. These relationships, created by social interactions are a significant factor to academic success. The aim is to advance the collective knowledge and while doing so, to support the growth of individual knowledge [59]. This can lead to the development of the classroom as a learning community which will ultimately lead to better student performance and behavior. With view that using technology will not be indefinite, researches urges to use an **advanced pedagogy** that is suitable for the 21 century [4;63;20;54], distinguishing between the 'pedagogy-driven' and the 'technology-driven' approaches [13]. In light of all this, findings are not surprising. It seems that pedagogy was forgotten while technology invents itself daily. In the words of Salomon [58]: "The computer is indeed a lever for change, but the lever, as levers normally do, is not working on its own. It is inconceivable that a crane hoists objects and moves them here and there just because it has the power to do so? The crane has an operator and the operator has an executable program. Any program is due to a broader vision of what is intended to be achieved by operating the crane". [58, p. 9] This explains the essential role of teachers to support their learners as they interact [Yackel, 2002 in 1;18;63;25] and the steps they should take in order to be effective [78;11]. Since collaboration is one area in which technology consistently appears to improve student learning experiences [24;36], educators are advised by researchers [36;53;69] to continue to use technologies to their advantage since it can help them extend interaction within and beyond the classroom, and thus to increase opportunities for collaborations. Other researchers [Considine et al, 2009; Scharber, 2009 in 53; Cross, 2004 in 53;82] warn that overexposure to social networks, infantilizes learners, affects academic performance, creates misleading impressions about learning, and have negative implications for the way learners socialize online and in the classroom.

Finally, integrating ICT in teaching is discussed distinguishing Israel, Moldova, Britain and the USA, while Israel's and Moldova's education

policies are examined closely. With the changes characterizing the 21st century and in order to prepare our learners for this new world, I believe that a change in the education system is compulsory. Curriculum should be planned as a mean to help students connect with the world around them, understand the issues their society is facing, and prepare them to their jobs that don't even exist yet, using technologies that haven't been invented. Teachers today must be innovators, entrepreneurs, motivators, and mentors, because preparing students for the 21st century isn't just about technology or skills for the global economy. It is also about creativity, cultural awareness, problem solving, productivity, innovation, communication, collaboration, and making their classroom as dynamic as the world around them.

Chapter 2 entitled **EFFECTIVE USE OF ICT FOR EDUCATION WITH REGARD TO THE TEACHING LEARNING PROCESS** provides a theoretical synthesis regarding the penetration of ICT into education and the social aspects of its learning environment [3], examines ways to enable successful use of ICT while considering the teachers' essential role [6], and proposes models to evaluate the effectiveness in implementing ICT in the learning-teaching process [3;5;6] Although ICTs have been utilized in education ever since their beginning, they have not always been massively present [32;50;17]. The role of ICT in education is becoming more and more important, as new technologies create learning opportunities that challenge traditional schools [17]. The central challenge is whether current schools will be able to adapt and integrate the new power of technology-driven learning, for the next generation of public schooling [17;21]. More researches show that teachers are essential in this process [17;21;47;70;51;39;40;37;Koren, 2012 in 27; Raw, 2002 in 43; Pomeroy, 1999 in 43; Kinderman, 1996 in 43; Levin 2012, in 23; Davidson, 2012 in 23]. The gap between the dynamic reality and the static school not only raises the necessity for change, but can also be the doorway to change [Koren, 2012 in 27]. Recognition of this gap and the need to bridge it raised different pedagogical and didactical ideas. The school's recognition in the use of ICT to help pedagogical purposes is its guarantee to success. Dellit [21] presents six aspects of improvement in which ICT can contribute to quality in teaching and learning: **cognition**, **convergence** [Dias and Atkinson, 2001:8 in 21], **alignment**, **data**[Oliver, 2001 in 21], **culture**[Delores 1996:172 in 21], and **pedagogies** [DEETYA 1996:14 in 21; 29;22;80]. Review of the literature shows that in most countries where **innovative pedagogical goals** were set, the ICT program succeeded. However, it is important to indicate that it is not enough to implement innovative teaching strategies; success of the program requires other additional elements,

Dellit [21] highlights an important entity mainly responsible for making it practicable: **the educators.** Tondeur and colleagues [62] support this claim with their research findings about the impact of teacher characteristics on ICT use concerning 'innovativeness', 'attitudes regarding computers', 'intensity of ICT use' and 'gender'. In suggesting strategies for supporting teacher development in the use of ICT, Scrimshow [80] divides them into two main areas: school-based and externally supported strategies.

Individual factors enabling successful use of ICT requires an approach that makes a number of changes together such as: enough time allotted for planning and preparation to integrate ICT into day-to-day teaching, employment of an ICT teaching assistant, an integrated approach to using ICT [80], and **identifying potential obstacles** [28]. In order to enable effective use of ICT in the classroom there is also need for **external support strategies** [49;62;15] alongside **school level strategies** [28;80;15]. These must be in correlation with **legislative factors** [28;62] that have to take in account additional obstacles for economically disadvantaged areas [14]. The supporting strategies need to be given time for preparation and planning [28;62;80;15]. There is also need for an ICT assistant in school [28;62;80;15], in order to support technology itself [28] and a pedagogy specialist to help integrate ICTs into the curriculum [80;15]. Students' characteristics should be taken into consideration, as well as the technology-based project [28;42;46]. The whole process should then be evaluated in order to reflect the effectiveness (or lack of it) of the technology programs [62;15]. The central factor, all researchers agree upon, is teachers characteristic-such as leadership [80;15], and their acquaintance with technological tools [29;28;62;80;15;21].

Studies have shown that the main factor for creating significant contribution of technology to the learning process in school is the number of teachers who use technology wisely [6;29;31]. Therefore, it is very important that investment in technology will also include as integral part- an ongoing annual **teacher training** [29;31] with emphasize on how and when technology is integrated effectively for the achieving of specific pedagogical goals [29]. Dresler & Colleagues [22], provide six elements called TARGET to draw a behavioral profile that is characteristic for teachers implementing the ICT pedagogy at its best, while Beauchamp [10] distinguishes five stages which delineate the transition from beginner to synergistic operator of new ICT. Helping educators to change, is the key to fostering ICT integration, and some researchers have identified educational technology as a catalyst for bringing educational change [77].

The problem [77] is that despite new cognitive approaches to learning

such as constructivism, the education system is stuck in the behavioral paradigm of the industrial age. Therefore researchers propose two main solutions in order for teachers to use ICT effectively in the teaching-learning process: Teachers professional development in terms of both technical competence and classroom pedagogy [12;29;31;10;77]; And time for adjustment [12;29;31;10;77]. In order to evaluate the effectiveness of ICT use, five indicators are presented by BECTA (British Educational Communication and Technology Agency) [72] and include the teaching environment, the teacher, the collaborative classroom, the use of ICT on a regular basis, and faith of all users in the ICT advantages. Finally, Paiano's [48] introduces five models for evaluating ICT integration in the teaching-learning process. With view for the future, new ICT tools are described [45], and resolutions concerning ICT in education are discussed regarding Israel and Moldova. This can be summed up in the following flow chart:
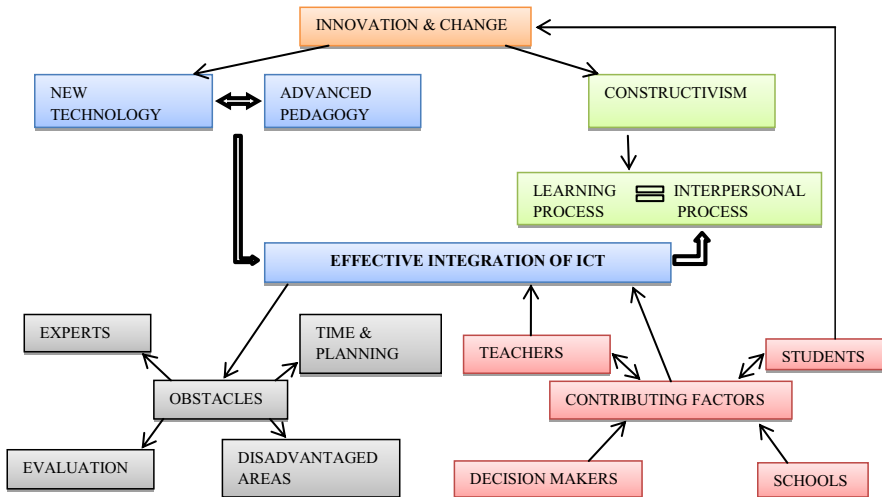

Figure 1. Promotion of social dynamics in the classroom by effective utilization of technological tools

Innovation & change component involves the new conditions for culture and social life that are created rapidly with the development of new markets, new technologies and new communication systems. As a result, the skills and qualifications requires to the job market are changing. Education systems aspire to assimilate innovation and generate a change in schools and thus to give learners the essential tools for life in the society of knowledge. As a result a lot of time and resources are allotted for educational programs integrating ICT.

Constructivism component represents constructivist theories of learning that assume meaning is imposed by the individual rather than existing in the world independently. People construct knowledge and understandings based on what they already know and believe, which is shaped by their developmental level, their prior experiences, and their sociocultural background and context.

Learning process as an interpersonal process component is the basic assumption of constructivism, that is, understanding exists in our interaction with the environment, therefore, the learning content and the learning process cannot be separated. Learning stimulates a variety of internal developmental processes acting only when the child interacts with people in his environment and in cooperation with his peers [64]. Once these processes are internalized, they become part of the achievements of the independent development of the child.

New technology alongside advanced pedagogy component arises by the view that using technology will not be indefinite, therefore, an advanced pedagogy that is suitable for the 21 century, must be used. This pedagogy uses technology in order to create a more profound understanding by means of transferring the responsibility to the learner [64], ICTs can only contribute substantially to the improvement of schooling if it is appropriately embedded in powerful and interactive learning environments [established within] the broader context of (supportive) pedagogy [DEETYA 1996:14 in 21].

Effective integration of ICT component enables the construction of personal knowledge and encourages the learner to the process of decision making. "applied effectively, technology implementation not only increases student learning, understanding, and achievement but also augments motivation to learn, encourages collaborative learning, and supports development of critical thinking and problem-solving skills" [54, p.3].

Obstacles: experts component involves the lack of technical support for teachers and students that must be a reliable and accessible service, and requires cooperation between all parties concerned. Teachers need on-site and on-demand technical assistance with both the technology and the integration of technology into teaching and learning (pedagogy).

Obstacles: time & planning component focuses on developing an ICT school plan, setting up clear goals and defining the means to realize these goals, as a crucial step towards ICT integration. Truly integrating technology into teaching and learning is a slow, time-consuming process that requires substantial levels of support and encouragement for educators.

Obstacles: disadvantaged areas component includes mainly economically disadvantages such as basic electricity that is not sufficient, difficulty in establishing an infrastructure and staff turnover which is often high.

Obstacles: evaluation component refers to the fact that most schools, have technology plans, but many of these plans still lack strategies or tools for determining whether the efforts have had any impact, Tools that will help them reflect on where they are and where they heading with their technology initiatives. [15]

Contributing factors: teachers are an essential **component** in effective use of ICT in order to encourage interaction and turn the learning process into an interpersonal process. ICT loses its advantages when lacking the correct guidance [18]. This is actually a new specialization for the teachers: matching the technology and best use it to empower teaching and learning. Teachers can use the behavioral profile **TARGET**, which presents the characteristic for teachers that are implementing the ICT pedagogy at its best [22]: **T**ask, **A**uthority, **R**ecognition, **G**rouping, **E**valuation and **T**ime.

Contributing factors: decision makers component emphasizes that the policy plan is important but only when teachers are aware of its content. The complex systemic nature of ICT integration, including the role of national policies (macro level) and local school policies (meso-level) should be considered, therefore, the proposed ICT curriculum (macro level) and the actual use of ICT in the classroom should be correlated in order to contribute to the effective integration of ICT.

Contributing factors: schools component include establishing a dialogue based on equality between principals and teachers, and engaging teachers in the development of an ICT plan, while allowing them to reflect on their educational use of ICT [Olson 2000, in 62]. It is especially important for the principal to have a vision of what is possible through the use of technology and to be able to work with others to achieve this vision.

Contributing factors: students' characteristics **component** must be taken into consideration when trying to identify potential obstacles. Teacher's awareness of the way a student will benefit from different learning experiences, contributes to increasing the learning process. Using ICTs in the learning process increases the responsibility of the student for his learning and helps him become a self-oriented student. It also develops unique connections between the teachers and the students as they become active partners in a mutual-sharing relationship. These students are the main benefiters of the effective integration of ICT to the learning process, and they

are also the future innovators which are responsible for future changes. Technology is touching almost every part of our lives. Yet, I believe, that most schools stay far behind when it comes to integrating technology into the teaching-learning process. Many teachers are just beginning to explore the contribution technology offers for teaching and learning. Effectively used, technology will help students acquire the skills they need to survive in a complex, highly technological knowledge-based society. Effective ICT integration must happen across the curriculum, while using advanced pedagogy in order to enhance the learning process. In particular, it must support four key components of learning: active engagement, participation in groups, frequent interaction, and connection to the real-world. Effective technology integration is achieved when the use of technology is routine and supports curricular goals. Furthermore, technology summons social environments for learning, students who work together on project teams, learn to collaborate, communicate, and resolve conflicts. Cooperative learning and character development supports the social and emotional development of students and prepares them for success in the modern workplace.

Chapter 3 entitled **PROMOTED SOCIAL PROCESSES IN THE CLASSROOM: MAXIMIZING THE EFFECTIVENESS OF TECHNOLOGICAL TOOLS** includes an experimental approach to verify the hypothesis that effective maximal utilization of technological tools promotes social dynamics in the computerized classroom, and to identify the aspects of the computer's unique potential contribution to promoting social processes in the classroom while developing a model engaging in maximizing the effectiveness of technological tools and their level of impact on social processes in the classroom [71]. The experiment was carried out comparing reciprocal relations activities taking place within three different classrooms: the traditional classroom, the computerized classroom, and the "classroom maximizing the effectiveness of computers." Seeking to examine the most effective use of the opportunities provided by integrating the computer into the classroom to promote social processes among the students, led the researcher to use the action research methodology, that enabled her to be involved directly in the activity being studied, analyzing existing practice and identifying elements for change and primarily, to improve it [23;60]. In seeking evidence for the effectiveness of the change, and the obligation to look at it from different perspectives, a triangulation of methods was employed [68]. These methods are comprised of: class observations of interactions, monitoring of learners' achievements, analysis of learners' questionnaires, interviews with teachers, an interview

with the ICT coordinator, and external documents containing education policies regarding ICT use in schools, published by formal bodies of decision makers.

The school's plan, in order to adapt itself to the 21st century [22;11;17;16;77], emphasizes six operational objectives: Safe web, ICT literacy, Collaborative learning, Activating the ICT integrated teaching in the TLA program, the school portal, and the pedagogical management tool. The school wishes to improve communication, via collaborative tools and the website, between teachers, students and parents, to encourage teachers to use and develop computerized units that involve computer literacy, and to use the school's web site as a platform for sending computerized tasks. Reflection and evaluation [48; Ames' (92) in 22;15; Kennewell et al (2000) in 62; Savery & Duffy (96) in 65] are part of the policy plan of the ministry of education of Israel, but they are missing in the school annual plan and therefore create a gap [62], as consequence the implementation of technology in this school occurs in 'Islands of Innovation' pattern [Avidov-Unger and Eshet- Alkalai (2011) in 12] which encompasses only part of the educational organization. This study focuses on two sixth grade English classes taught by the researcher in the 2013-2014 academic year. In this school teachers followed their fifth grade classes into sixth grade. Therefore, at the time of this study, the teacher had known most of the students for almost 2 years. Baranetz (referred to as "the teacher"), works also as a pedagogical instructor in teachers-training, specializing in ICT implementing for English teachers courses. At the time of the study she had taught in this elementary school for 6 years and in middle school and high school for 12 years. The 43 students (19 boys and 24 girls) in the classroom represented a wide range of academic achievement and classroom behavior. During the year in which this study took place, the teacher met every 6 months with the English teachers of the middle school, where the pupils were intended to continue their learning, to discuss the challenges related to English instructions. The researcher's role as a public school teacher involved the typical full range of challenging responsibilities: contacting parents; conducting after-school activities; teaching small groups; mediating disagreements and feuds between pupils; managing English staff meetings as part of a subject-coordinator duty; participating in English supervision meetings; and doing yard and hall duty. Out of the 20 teachers teaching in school, four teachers were interviewed regarding their teaching characteristics, their use of computers in their classrooms, and the social processes undergoing by their students. All four teachers described themselves using the same personal characteristic: innovative, creative, effective and updated. Three even added that they are not a risk taker

person. Two teachers had limited ICT skills therefore it is not surprising that they were the teachers that integrated technology ineffectively. The two remaining teachers that integrated technology into their lessons effectively had partial or strong background in ICT. It is interesting, considering the fact that all four teachers acknowledged the importance of integrating technology into the learning-teaching process, and also gave the reasons to support it, that only the effective teachers saw in the ICT integration a necessity. As for promoting social interaction using ICT, the two effective teachers harnessed technology to help them promote the dialogue between the pupils in class. Unfortunately, the two other teachers do not believe in the promotion of social interaction in the learning process in general or with the use of ICT. With reference to the skills an effective integrating ICT teacher should have, the answers varied. Although all four teachers agreed that being updated is an important characteristic, only two talked about being innovative. An interesting point Teacher B presents, is that although she does not believe that she should be a risk taker in order to integrate ICT in her lessons; She does believe it is an effective ICT teacher characteristic. Finally, it is encouraging to know that all four teachers participate in teachers' training and hope to develop in the technology field. Two classes of six graders in an Israeli elementary school were invited to participate in the research, involving 43 pupils: 19 boys and 24 girls. In all three case studies, pupils were taught English, according to the curriculum, for a period of eight lessons. At the end of each case study, the pupils were examined on the material they have just learned and their scores were divided into four groups according to the school procedure: low level (scores between 0-46); low-medium level (scores between 47-64); medium high level (scores between 65-83) and high level (scores between 84-100). Pupils were also asked to fill up a questionnaire reflecting on their learning process.

Case study I involved teaching in a conservative way only. There was no implementation of ICT of any kind. Lessons were based on books, and most of the practice was done in the workbook and on the board. The two classes were organized in a conservative way that is, pupils were sitting in pairs according to the following structure:

Figure 2. Classroom Organization Case Study I

Case study II involved teaching using ICT, with no effective maximal utilization of the technological tools: The smart board was used only as a projector board, in other words, the digital books were only projected on the board, and homework or class projects were assigned to word processors only. Each class was organized in groups of six according to the following structure:

Figure 3. Classroom Organization Case Study II

Case study III involved teaching using a variety of technological tools effectively. The smart board characteristics were utilized to their full: The digital books were accessible to all the pupils and pupils were invited to the board to take part in the assignments and homework. Class projects were assigned to different technological tools including shooting self-videos, using smartphones. Each class was organized allowing multiple types of sitting arrangements, and pupils were allowed to change their position during the lesson as shown in the following structure:
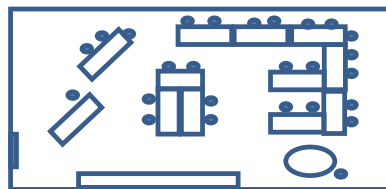
Figure 4. Classroom Organization Case Study III

Applying the model for effective maximal utilization of technological tools in the classroom was carried out according to the methodology discussed by the researcher of this thesis in the second chapter, considering two aspects:

1. The influence of ICT characteristics on the level of socialization and interpersonal interactions in 3 categories:

a. Classroom Organization in **coordinated groups** where small groups working collaboratively [Neilson (02) in 24; Hiltz (95) in 18; Ames' (92) in 22;19;41;58;45;57;39; Bar Tal & Bar Tal (85) in 9; Pea (93) in 52], using means and outcomes, while linking and communicating between

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each other through an "organizational body" in the image of a coordination committee or a moderator. At some point, the class returns to function as one unite organization while dealing with the learning outcomes of the groups in cooperative social climate.

    b. The Learning Task being **divided between group members and correlated with the other groups** in this way, each group is dealing with different aspects related to the class theme, that is, specialization in specific components of the overall theme. The completeness of the learning task is a process that takes place amongst learners and not within an individual. There is an attempt to create a group model while significantly utilizing time. Using artificial knowledge representations (such as hypermedia and databases) allows the learner to finish the learning task at the same context but the objectives are different between each learner. As a result the individual learner designs the quality of the knowledge he acquires and its implications via his own interpretation [Neilson (02) in 24; Ames' (92) in 22;28;42;46;58;19;14] .

    c. The Teacher's Activity is **groups coordinator** as such, he takes part in the learning challenge while dealing with the learning process, without knowing the path and the target to which he is headed with his students. The teacher is a task leader rather than an authoritarian leader [13; Pitler & Yackel, (02) in 1; 54; Raw (02) and Kinderman (96) in 46; Pomeroy (99) in 46], and helps the groups reach a comprehensive conception of the subject by the exchange of information and opinions between groups [Neilson (02) in 24; Hiltz (95) in 18; Ames' (92) in 22;19;41;56;45;57;39; Bar Tal & Bar Tal (85) in 9; Pea (93) in 51]. The teacher is interconnected with organizational and content-related aspects in coordination between individuals [46], groups [Neilson (02) in 24; Hiltz (95) in 18; Ames' (92) in 22;19;41;56;45;57;39; Bar Tal & Bar Tal (85) in 9; Pea (93) in 51] and the whole class.

    2. Estimating the socialization levels in the computerized classroom was carried out using the "Interaction Level Indicator" [8]. This indicator detects the estimated levels of interaction in the classroom, and includes all factors affecting socialization processes under these four categories: classroom organization, learning task, pupils' behavior and teacher's activities. The indicator is designed this way, in order to facilitate the understanding of the separate influences of the computerized learning environment components, on the social dynamics in class. This indicator can assist teachers to get a social situation report, and a feedback to their actions in class [48; Ames' (92) in 22;15; Kennewell et al (2000) in 62; Savery & Duffy (96) in 65] from their students' point of view. Moreover, the indicator also enables

monitoring and feedback for maximal utilization of all the components influencing the promotion of social dynamics in the computerized classroom.

The socializations levels that were found in each case study of the research, in each category, are best displayed in figure 3.1. The final interaction levels which were found in each case study are displayed in figure 3.2.

Measuring levels of socialization included adjusted calculation of the results produced by the "Interaction Level Indicator"[8] as recorded by the teacher on the one hand, and the processing of student responses from the questionnaires on the other. Students' results were similar to the ones produced by the "Interaction Level Indicator"[8] as shown in figure 3.3. Both research tools: the "Interaction Level Indicator" and the questionnaires, show clearly that there is an increasing tendency between case study I and case study II as well as between case study II and case study III. While it is not surprising to see that there is between 71% to 100% increase in socialization processes when initially integrating ICT into the lesson; this research has achieved its purpose by presenting results of another 33% to 35% increase in pupils involved in social interaction while integrating ICT effectively into the teaching-learning process. In other words, the more effective the teacher is in integrating technology into the lesson, the more pupils are involved in social interactions. Integrating technology effectively into the lesson led all the pupils to feel they are enjoying at least some parts of the computerized lessons. The reasons they gave varied: most of them claimed the atmosphere was more fun (37.2%), or the lesson was more interesting (30.2%), they understood more (20.9%), and felt learning was easy and up-to-date (16.2%). No pupil reported that he felt "not good" during these lessons, as opposed to case study I and II. 95% of the pupils described an atmosphere where they "learn more with friends, help each other and cooperate", they emphasized that social interaction during the lesson provides a fun environment for learning. However, there were still pupils who felt uncomfortable with the ongoing talking during the lesson (2.3%). This means that some children prefer working quietly by themselves, and are aware and comfortable with their learning style. Nevertheless, compared to case study II, there is a 25.3% increase in the number of pupils that experienced social interaction as a part of their learning process. With regard to the learners' view of the teacher's activity, in case study I, pupils agreed that social processes were not promoted during the lessons (58%), and class organization affected the social interaction between the pupils (74.4%). In case study II, all pupils stated that, to some extent, the teacher demonstrated a good abili-

ty in controlling the technological tools in the lesson, but noted that she was helpless when there was no internet connection. Again, pupils reported that the teacher, while integrating technology, is more understandable (44.73%), interesting (21%) and seems enjoying the lesson as well (23.6%). Again, in case study III, all pupils stated that the teacher demonstrated a good ability in controlling the technological tools during the lesson. They also added that she speaks less (9.7%), and makes them feel that learning is a game (19.5%). Moreover, the teacher was described as "more supportive" (56%) [18; Pitler & Yackel, (02) in 1;54; Raw (02) and Kinderman (96) in 46; Pomeroy (99) in 46] and "relaxed" (26.8%), since, as one of the pupils explained it best: "there are no discipline problems because this way it is easy to keep the class in order".
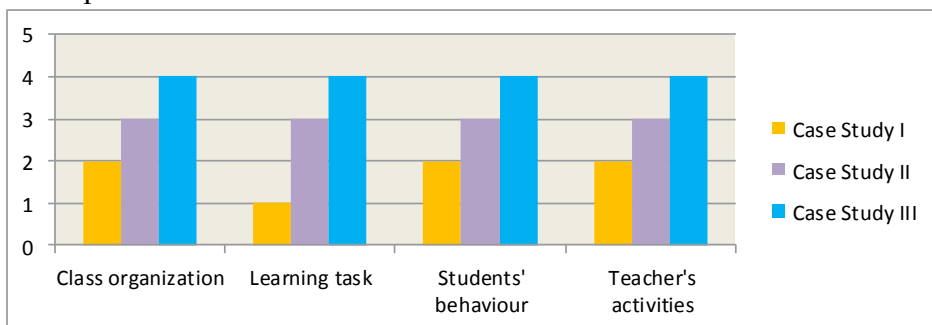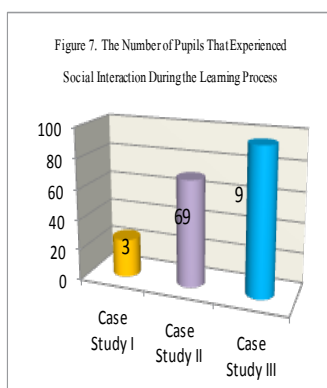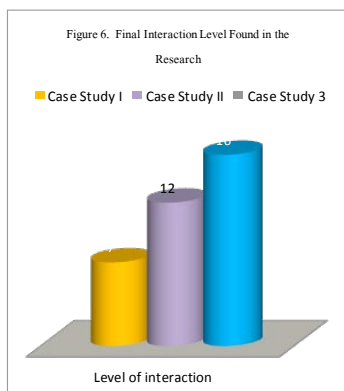

Figure 5. Estimated levels of socialization in each case study based on four categories


As for students' achievements, they are best displayed in the following figures for each case study:

When comparing the scores of case study II to the scores on the exams in case study I, it appears that although the percentage of pupils

who scored med-low or low level went up by 2.4%, which means that with regarding to the exam in case study I, there are more pupils in this level, the percentage of pupils who scored high level grades went up by 11.6%, while the percentage of pupils who scored med-high level grades went down by 27.8%. This means that when teaching while integrating technology into the learning process, and allowing social interaction in the classroom, one cannot ignore the obvious result that more than 60 % of the pupils scored high level grades. The transition of most pupils was from med-high level to high level grades in the exam. These pupils' learning difficulties have not been addressed while using technology ineffectively. Introducing technology into the teaching process has changed the pupils' ideas about their learning. More pupils

Figure 8. Division of Students Into Levels According to Their Test Scores-Case Study I

High Level
Med-High Level
Med-Low or Low Level

6.9%
39.5%
53.6%

Figure 9. Division of Students Into Levels According to Their Test Scores-Case Study II

High level
Med-High Level
Med-Low or Low Level

9.3
65.1%
25.6%

Figure 10. Division of Students Into Levels According to Their Test Scores-Case Study III

High level
Med-High Level
Med-Low Level

4.6
65.1%
30.3%

enjoyed the lessons and were aware to the fact that these lessons involved more social interaction as opposed to the lessons they experienced in case study I [Koren (12) in 27;53;63;24;54;72;43;36;46;66]. The involvement of technology in the learning process and the opportunities that were opened for social interactions in case study II, led 100% of the pupils to realize that interaction is important to the learning process [Davidson (12)in 27; Ames' (92) in 22;46;26;55; Pomeroy (99) in 46;34; Ernest (98) in 1; Anderson & Kanuka (97) in 18;65; Savery & Duffy (96) in 65; Hiltz (95) in 18;64], and that technology has great influence on the social interaction between the pupils [Koren (12) in 27;53;63;24;54;72;43;36;46;66], alongside with class arrangement [79;8;9]. When comparing the scores in case study III to the scores on the exam in case study II, it appears that although the percentage of pupils who scored high level remained the same, the percentage of pupils who scored med-high level grades went
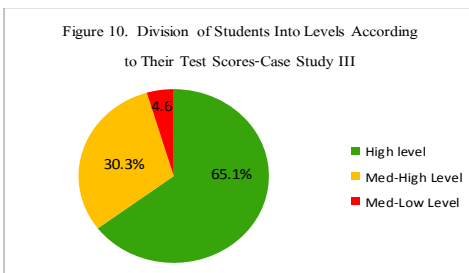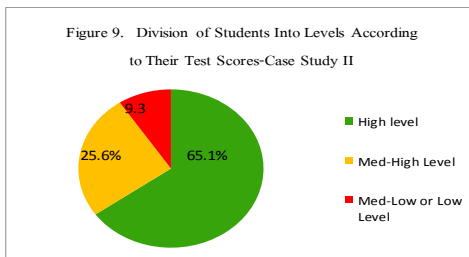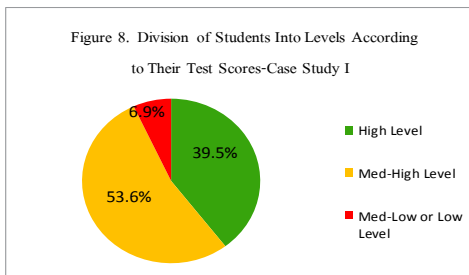
up by 5.4%. Moreover, the percentage of pupils who scored med-low level grades went down by 4.7%, while **no pupil** scored the low level grades, as seen in the following figure:
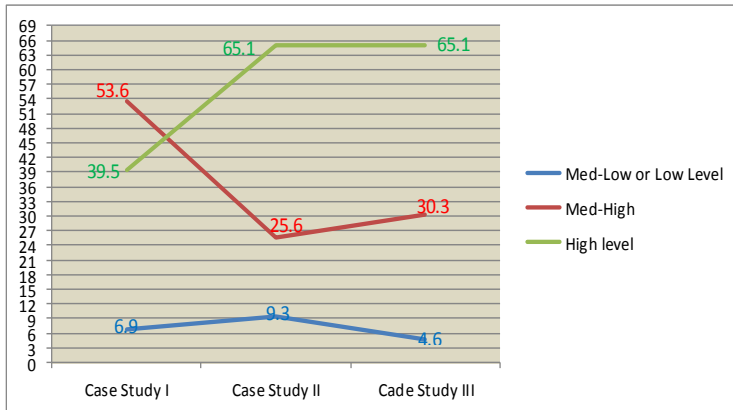

Figure 11. Segmentation of Students Grades in Case Study I , II and III respectively

When teaching while effectively integrating technology into the learning process and allowing free social interaction in the classroom, the satisfactory result is that most of the pupils scored high level grades and no pupil scored low level grades. The transition of most pupils was from low-med level to med-high level grades in the exam. This means that the side effect of effectively implementing technology and promoting social interaction is the academic promotion of sub-achievers students. Integrating technology effectively into the teaching-learning process is reflected in the pupils reaction to the social processes promoted in class. According to the pupils, technology influences these social processes [Koren (12) in 27;53;63;24;54;72;43;36;46;66] in three dimensions:

1. Technology "forces" pupils to work together. Pupils' working in collaboration is an enjoyable learning activity and hence more pupils take part in the learning process, as one of the pupils noted: "when it's more fun, kids want to participate more" [Davidson (12)in 27; Ames' (92) in 22;46;26;55; Pomeroy (99) in 46;34; Ernest (98) in 1; Anderson & Kanuka (97) in 18;65; Savery & Duffy (96) in 65; Hiltz (95) in 18;64].

2. Technology used effectively encourages a great deal of talking, brainstorming and exchanging ideas [46].

3. Technology used effectively involves peer teaching or as one of the pupils indicated: "I don't need the teacher all the time, when I have a problem I ask my friends or if I make a mistake, the computer corrects me" [46].

The research showed that effectively integrating ICT, can improve student performance as measured in test scores. Critically, this improvement was not global, and 65.1% students who scored high level grades, did not show reduced numerical outcomes. However, students who scored Low, or Med-Low level grades, were able to improve their achievements. This research has also added further understanding of the complexity of the environment being described. A dialectical analysis [67] was formed on the final results of the experiment. These results were subject to inclusion and allowed final conclusions and further recommendations.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

This research has shown that while using effective maximal utilization of technological tools, social interaction processes are encouraged as well. Moreover, there is also an increase in learners' achievements; this is especially true regarding sub-achievers learners. In light of this, conclusions are drawn in three levels, for decision makers and schools use, as well as for teachers who intend to progress towards effective maximal utilization of technological tools. The recommendations however, add the pedagogical aspect that involves all three levels of participants as well as the learners themselves.

1.1 Educators are obliged to cope with the changes and innovations undergoing in the world and influencing the education field.

1.3 The learning process being an interpersonal process emphasizes the importance of encouraging social interaction, manifested with the use of the constructive learning approach. Therefore, advanced pedagogy suitable for the 21st century should be integrated seamlessly into the curriculum.

1.4 Teachers are essential in effectively integrating ICTs into the lesson. They must be more imaginative, using teaching methods that are more appealing to learners. If technologies are used effectively, an increase in interaction during the teaching-learning process will be shown. Unfortunately, findings show that teachers fail to make the correct connection between technology and pedagogy.

2.1 In the education field, ICT has an incredible potential in promoting interaction and learning, but it is challenging to integrate it properly into the teaching-learning process.

2.2 Using ICT effectively contributes to the quality of the teaching-learning process in six aspects: cognitively, pedagogically, culturally, and

as an enhancing factor for convergence, alignment, and data. The obstacles in integrating ICT effectively are **lack of time** for preparation and planning, the **non-existence of technological and pedagogical experts** in schools, and the lack of **evaluation** of the process. The factors enabling successful use of ICT can be explained in four levels: legislative factors and external support strategies given by **decision makers**, **schools**' strategic plans, **students**' characteristics that must be taken into consideration, and the **teachers**: their characteristics and their acquaintance with technological tools.

2.3 Teachers can intensify the obstacles they are facing, by participating in technological and pedagogical professional developments, as well as being given time for adjustment, and

1.4 models for evaluating their effectiveness of ICT integration.

3.1 Findings suggest that there are recognizable factors and obstacles that influence the effectiveness of ICT-use by the teachers:

3.2 Decision makers' level (mainly short-term policy plans), school level (reliable infrastructure, technical and pedagogical support, time allotted for planning and preparation, updated ICT school plan that includes evaluation and reflection).

3.3 Teachers level (personal characteristics, ICT skills, ongoing participation in professional developments, teachers working in cooperation).

1.4 Findings also suggest that applying the proper didactical methodology for effective integration of ICT, such as the technology based task, the class organization, the use of alternative assessment and considering learners' characteristic, can promote social interaction between the learners.

1.5 Technology has its advantages. It "forces" pupils to work together, it encourages brainstorming and exchanging ideas, and it involves peer teaching. Analysis of the data shows that when implementing technology effectively into the lesson, there is an improvement in achievements, especially with the weak pupils in class.

I believe that ICT can only contribute to the teaching-learning process if it is appropriately embedded in powerful interactive environments within context of pedagogy, therefore an advanced pedagogy that is suitable for the 21st century must be used. This pedagogy should provide alternative ways of teaching, which learners select as they engage in their educational experiences. Other researches, as well as the present research, have shown that setting innovative pedagogical goals will eventually lead to successful ICT programs. The assumption that social dynamics in the computer-

ized classroom can be encouraged while effectively integrating ICT, was preliminarily validated using three case studies. Aspects of the computer's unique potential contribution to promoting social processes in the classroom were identified and the research has also been successful, indicating students' and teachers' attitudes toward effective technology integration and has provided an understanding regarding the gap between teachers' perceptions of technology integration and the difficulties to implement it in practice. However, the exposure to the complexity of teachers' personalities, significant differences in their attitudes, their personal background and technological capabilities, as well as their various ways to struggle with changes they are exposed to in the education system, convinced me that there is no general model that can be developed for teachers to follow for the sake of engaging in maximizing the effectiveness of technological tools and their level of impact on social processes in the classroom. It remains an open issue how to design a standard model that will meet the needs of the various and unique teachers and their students.

RECOMMENDATIONS

Decision Makers' Level
- The education policy must be constantly updated and developed.
- Teachers should take part in developing the education policy.

Schools' Level
- Schools must provide high standard infrastructure and quality technical support.
- Schools should allot time for planning and preparation including compensation for it.
- Schools should be able to issue an ICT plan developed and updated jointly by the staff.
- Schools have to evaluate and reflect on the process including mapping levels of teachers' skills.

Teachers' Level
- Teachers must be encouraged to acquire ICT skills.
- All teachers must participate in school subject, specific, ongoing, annual professional development.
- Teachers should understand where they are in terms of their level of ICT adaption.
- Teachers should be able to invest in time, effort, new learning and willingness to change existing teaching strategies. Five factors controlled by the teachers, must be taken into consideration:

- The technology based tasks.
- Class arrangement.
- The use of alternative assessment.
- Considering learners characteristics.
- Using advanced pedagogy that is suitable for the 21st century.

REFERENCES

1. Akkus R., Seymour J. and Hand B. Improving Dialogical Interaction in Classrooms through Improving Teacher Pedagogical Practices: Impact on Students' Scores. Paper presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Reno: University of Nevada, 2007, p 45-54.
2. Baranetz E. The Importance of promoting social dynamics in the computerized classroom. In: Studia Universitatis Moldaviae, 2014, nr 5(75), p. 83-91.
3. Baranetz E. The Role of effective use of ICT for education, with regard to the teaching learning process. In: Studia Universitatis Moldaviae, 2014, nr 5(75), p. 92-94
4. Baranetz E. Postmodern education: effective use of ICT in the teaching learning process. In Materialele, Conferintei stiintifice international. Chisinau: Universitatea De Stat Din Moldova, 2014, p. 382-384.
5. Baranetz E. The Role of effective use of ICT for education, with regard to the teaching learning process. In Rezumate ale comunicarilor. Conferintei stiintifice.Chisinau: Universitatea De Stat Din Moldova, 2013, p. 125-127.
6. Baranetz E. How to enable successful use of ICT. In: Didactic Pro, 2013,nr 4(80), p. 9-15.
7. Baranetz E. Constructive learning process as an interpersonal process. In: Didactic Pro, 2012, nr 5-6(75-76), p. 30-35.
8. Baranetz E. Promoting social dynamics in the computerized classroom through integrating the computer in teaching: A case study. M.A. Dissertation in education, University of Derby, 2002. 92 p. [Hebrew]
9. Bar Tal Y. & Bar Tal D. Interaction in the Classroom: Social- Psychological Analysis. Interaction in the Classroom. Ed. Bar Tal D. Tel Aviv: Open University, 1994. P. 7-14. [Hebrew]
10. Beauchamp G. Teacher Use of the Interactive Whiteboard in Primary Schools: towards an effective transition framework. In: Technology, Pedagogy and Education, 2004, vol.13(3), p. 327-348.
11. Ben Peretz M. Policy-Making in Education A Holistic Approach in Response to Global changes. New York: Lanham, 2009. 192 p.

12. Blau I. and Peled Y. Are Teachers Open to Change? Laptop per Teacher, laptop per Student- Preliminary Results of a Comparative study. In: Chais Conference Book to ICT Studies Learning in the Technological Age. Raanana: Open University, 2012, p. 35-44. [Hebrew] Retrieved December 4, 2012, from: http://portal.macam.ac.il/ArticlePage.aspx?id=4776

13. Brithaupt T.M., Fisher L.S., Gardner J.G. Raffo D.M. & Woodard J.B. In: Merlot Journal of Online Learning and Teaching, 2011, Vol 7 nr 4, p. 515-524.

14. Brooks J. G., & Brooks M. G. Towards Constructivist Teaching, Jerusalem: Branco Wiess Inst, 1997. 136 p. [Hebrew]

15. Byrom E. and Bingham M. Factors influencing the Effective Use of Technology for Teaching and Learning: Lessons Learned from the SEIR TEC Intensive Site Schools. In: SEIR-TEC at SERVE Associated with the School of Education, University of North Carolina at Greensboro, 2001, p. 1-27. Retrieved September 5, 2012, from: http://www.seirtec.org/publications/lessons.pdf

16. Chen D. "Between vision and logic: on change and innovation strategies in Education". In: Chen, D.(Ed.), Experimental Schools: The Workshop for Educational Innovation. Tel Aviv: Ramot Tel-Aviv University press, 2006, 280 p. [Hebrew]

17. Collins A. & Halverson R. Rethinking Education in the Age of Technology: The Digital Revolution and the Schools. New York: Teachers College Press, 2009, 146 p.

18. Davidovich N., Suan D. Pliers can grip: On the importance of social learning atmosphere supporting the computerized teaching. Production: Education and its surrounding Yearbook 2010. Vol 32, 2010. Tel Aviv: Seminar Hakibutzim, 2010. p. 37-59. [Hebrew]

19. Davidson R. A Teaching-Learning Model in the Computerized Environment. Mofet Institute, 1998. [Hebrew]

20. Dede C. Theoretical Perspectives Influencing the Use of Information Technology in Teaching and Learning In: International Handbook of Information Technology in Primary and Secondary Education. Cambridge: Harvard University Press, 2007. P. 43-62.

21. Dellit J. Director. UNESCO (2001) Report of the Seventh UNESCO-ACEID International Conference on Education, Using ICT for Quality in Teaching-Learning Evaluation Processes. South Australia, 2001 p. 56-66. Retrieved December 2, 2012, from: http://unesdoc.unesco.org/images/0012/001285/128513eo.pdf

22. Dresler M., Sela L., Katz Sade Chen H., Amsalem B., Tal E. Incorporating ICT pedagogy at its best- what is TARGET? In: Eureka, 2010, Vol 30. p. 1-7. [Hebrew] Retrieved December 3, 2012, from: http://www.matar.ac.il/eureka/newspaper30/index.asp

23. Elliot J. Action Research for educational Change, Buckingham:Open University Press, 1998. 152 p.

24. Ernst J.V., Clark A. C. Collaborative Information and Multimedia to Assess Team Interaction in Technology Teacher Preparation In: Journal of technology Education, 2011, Vol 22, nr 2, p. 53-70.

25. Forkosh Baruch A. Qualitative Online Learning- What is it? In: Alonet, 2011, nr 9, p. 1-4. [Hebrew] Retrieved April 8, 2012 from: http://sites. levinsky.ac.il/alonet9/

26. Garrison D.R. & Anderson T. E-Learning in the 21st century: A framework for research and practice. London: Routledge/Falmer, 2003. 167 p.

27. Glasner A. (Ed.) The "Arrow Head" and the "Warm Hand": Narratives Concerning ICT and Teacher Education. Mofet, 2012. 172 p. [Hebrew]

28. Groff J. & Mouza C. A framework for addressing challenges to classroom technology use. In: AACE Journal, 2008, Vol 16, nr 1, p. 21-46. Retrieved September 2, 2012, from: http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=EJ805720&ERICExtSearch_SearchType_0=no&accno=EJ80570

29. Gropper S. Technology in Service of Pedagogy. In: Eureka, 2010, Vol 30, p. 1-7. [Hebrew] Retrieved December 3, 2012, from: http://www.matar.ac.il/eureka/newspaper30/index.asp

30. Hargreaves A. and Goodson I. Educational Change Over Time? The Sustainability and Nonsustainability of Three Decades of Secondary School Change and Continuity. In: Educational Administration Quarterly, 2006, Vol 42, nr 1, p. 3-41.

31. Hennessey S. Harrison D. and Wamakote L. Teacher Factors Influencing Classroom Use of ICT in Sub-Sahara Africa. In: Itupale Online Journal of African Studies, 2010, nr 2, p. 39-54. Retrieved September 2, 2012, from: http://www.cambridgetoafrica.org/resources/Hennessy%20etal_FINAL.pdf

32. Hepp K. P., Hinostroza, S. E., Laval M. E., Rehbein L. F. Technology in Schools:Education, ICT and the Knowledge Society. Washington, DC: World Bank, 2004. 94 p. Retrieved December 2, 2012, from: www.worldbank.org/education/pdf/ICT_report_oct04a.pdf

33. Herzelya Conference Education in the 21 century, policy document handed to the prime minister and the minister of education. Herzelya, 2010. [Hebrew]

34. Jonassen D. Designing constructivist learning environments. In: Reigeluth C. (Ed.) Instructional design theories and models: A new paradigm of instructional theory. NJ: Lawrence Erlbaum Associates, 1999, Vol. II, p. 215-239.

35. Karlsson G., Hellstrom M., Holotescu C., Grosseck G., Dumbraveanu

R. Are we ready to move towards a new type of teacher training? In: eL&mL 2011: The Third International Conference on Mobile, Hybrid, and On-line-Learning, IARIA, 2011, p. 36-39. Retrieved March 22, 2012, from: http://independent.academia.edu/CarmenHolotescu/Papers/1367658/Are_We_Ready_to_Move_Towards_a_New_Type_of_Teacher_Training_Case_Study_The_WETEN_Project

36. Knight A., Almeroth K., Mayer R. & Chun D. Observations and Recommendations for Using Technology to Extend Interaction. In: Pearson E. & Bohman P. (Eds.) Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications. Chesapeake,VA: AACE, 2006, p. 299-306. Retrieved from: http://www.editlib.org/p/23029.

37. Langer E. J. A mindful education.In: Educational Psychologist, 1993, Vol. 28, nr 1, p. 34-50.

38. Lavie Z. Challenges in Education Towards a More Open School. Tel Aviv: Poalim Library, 1996. 417 p. [Hebrew]

39. Levin T. Curriculum in the Age of Technology. In: Chen D. (Ed.) Education in the 21st Century. Tel-Aviv: Ramot- Tel-Aviv University, 1995. p.86-73. [Hebrew]

40. Levin T. and Nevo Y. The future elementary school as a reality of life. In: Tsachar, S. (Ed.) Current school: from being complex to challenging future. Jerusalem: Ministry of Education, Culture and Sport, 1997, p. 6-41. [Hebrew]

41. Levin T. From Linear Curriculum to Learning space: Why and How? In: Sharan, S.(ed) The Innovative School: Organization and Instruction. Tel Aviv: Ramot, Tel Aviv University, 1998, p. 149-184. [Hebrew]

42. Levin T. and Wadmany R. The Voice of Students and Teachers in the Process of integrating ICTs in the Classrooms. In: Learning in the Age of Technology: Chais Conference for Learning Technologies: Open University, 2006, p. 217-223. [Hebrew] Retrieved September 10, 2012, from: http://telem.openu.ac.il/hp_files/chais/papers.html

43. Mellar H., Kambouri M., Logan K., Betts S., Nance, B., and Moriarty V. Effective Teaching and Learning Using ICT. London: National Research and Development Center for Adult Literacy and Numeracy, 2007. 71 p.

44. Mevarech A. R. & Light P. H. Peer-based interaction at the computer: Looking backward, looking forward. In: Learning and Instruction, 1992, Vol. 2, p. 275-280.

45. Mevarech Z. & Hativa N. (ed). The Computer in School. Jerusalem & Tel Aviv: Shoken Publication, 1996. 247 p. [Hebrew]

46. Neal G. Student reflections on the effectiveness of ICT as a learning resource. In: Paper prepared for presentation at the AARE Annual Con-

ference Parramatta. Victoria University, 2005, p. 1-23. Retrieved September 10, 2012, from: http://www.aare.edu.au/data/publications/2005/nea05582.pdf

47. Oliver R. Creating Meaningful Contexts for Learning in Web-based Settings. In: Proceedings of Open Learning, 2000. P. 53-62.

48. Paiano S. How to evaluate the effectiveness of ICT in teaching. In: Journal of e-Learning and Knowledge Society,2011, Vol. 7. nr 1, English Edition p.41-47. Retrieved September 3, 2012, from: http://www.je-lks.org/ojs/index.php/Je-LKS_EN/article/view/486/491

49. Pea R. Practices of Distributed Intelligence and Design for Education. In: Salomon G. (ed) Distributed Cognitions. New York: Cambridge University Press,1993, p. 47-87.

50. Pelgrum W. J., Law N. ICT in Education around the World: Trends, Problems and Prospects. In: UNESCO, Fundamentals of Educational Planning series, 2003, nr 77, 138 p. Retrieved December 2, 2012, from: www.worlcatlibraries.org/wcpa/ow/02d077080fcf3210a19afeb4da09e526.html

51. Perkins D.N. Person Plus: a distributed view of thinking and learning. In: Salomon G. (ed) Distributed Cognitions. New York: Cambridge University Press, 2003, p. 88-110.

52. Pernsky M. Digital Natives, Digital Immigrants. In: On The Horizon, 2001, Vol. 9, nr 5, p. 1-6. Retrieved November 11, 2012, from: http://www.marcprensky.com/writing/prensky%20--%20digital%20natives,%20digital %20immigrants%20-%20part1.pdf

53. Pineteh E.A. Using virtual interactions to enhance the teaching of communication skills to information technology students. In: British Journal of Educational Technology, 2012, Vol. 43,nr 1,p. 85-96.

54. Pitler H., Hubbell E.R., Kuhn M., & Malenoski K. Using technology with classroom instruction that works. Alexandria, VA: Association for Supervision and Curriculum Development, 2007, 244 p.

55. Richardson V. Constructivist Pedagogy. In: Teachers Collage Record, 2003, Vol. 105, nr 9, p. 1623-1640. Retrieved March 11, 2012, from: http://www.users.muohio.edu/shorec/685/readingpdf/constructivist%20pedagogy.pdf

56. Salomon G.& Almog T. Educational Psychology and Technology: A Matter of Reciprocal Relations. In: Teachers Collage Record, 1998, Vol. 100, nr 1, p. 222-241. Retrieved March 11, 2012, from: http://giddet.psicol.unam.mx/giddet/biblioteca/basica/psychology_technology_salomon.pdf

57. Salomon G. & Perkins D. Learning in Wonderland: What Do Computers Really Offer Education? In: Kerr S. (ed) Technology and the Future of Schooling: Ninety-fifth Yearbook of the National Society for the Study of Education, 1996, Part II, p.111-130.

58. Salomon G. Technology and education in the age of information. Haifa and Tel Aviv: Zmora-Bitan, 2000, 198 p. [Hebrew].

59. Scardamalia M. & Bereiter C. Computer support for knowledge-building communities. In: Journal of the Learning Sciences, 1994, Vol 3(3), p. 265-283.

60. Stenhouse L. An Introduction to Curriculum Research and Development. London: Heinemann, 1975, 248 p.

61. Strommen E. F. & Lincoln B. Constructivism, technology, and the future of classroom learning. In: Education and Urban Society, 1992, Vol. 24, p. 466-476.

62. Tondeur J., Van Keer H., Van Braak J. and Valcke M. ICT integration in the classroom: Challenging the potential of a school policy. In: Computers & education, 2008, Vol. 51, nr 1, p. 212-223. Retrieved September 10, 2012, from: http://www.sciencedirect.com/science/article/pii/S0360131507000498

63. Vadmani R. Intelligent use of the Internet to leverage learning and teaching Processes. In: Multidisciplinary thinking in humanist education, 2011, nr 6, p. 81-82. [Hebrew]

64. Vygotsky L.S. Mind In Society The Development of Higher Psychological Processes. USA: Harvard University press, 1978, 159 p.

65. Wilson B. Ed. Constructivist learning environments: Case studies in instructional design. New Jersey: Educational Technology Publications, 1996, 252 p.

66. Wilson B.G. & Lowry M. Constructivist Learning on the web. In: New Directions For Adult and Continuing Education, 2000, nr 88, p. 79-88. Retrieved April 11, 2012, from: http://educ3041.pbworks.com/f/Constructivist+learning+on+the+web+-+Wilson+and+Lowry.pdf

67. Winter R. Learning from Experience: principles and practice in action research. Lewes: Falmer press, 1989, 201 p.

68. Woods P. Researching the Art of Teaching: ethnography for educational use. London: Routledge, 1996, 208 p.

69. Yang S.H. Using blogs to enhance critical reflection and community of practice. In: Educational Technology & Society, 2009, Vol. 12, nr 2, p. 11-21.

70. Zhao Y. & Cziko G. A. Teacher adoption of technology: a perceptual control theory perspective. In: Journal of Technology and Teacher Education, 2001, Vol. 9, nr 1, p. 5-30.

INTERNET REFERENCES

71. Baranetz E. Promoted social processes in the classroom: maximizing the effectiveness of technological tools. Israel, 2014. Retrieved: September 11, 2014 from: http://mcd.org.il/site/wp-content/uploads/2014/09/PROMOTED-SOCIAL-PROCESSES-IN-THE-CLASSROOM.pdf

72. BECTA (British Educational Communication and Technology Agency). Retrieved June 21, 2012, from: www.becta.org.uk

73. Ben Zvi N. (chairman) Education team report of the Knesset committee for Science and ICT. Jerusalem, 1998.[Hebrew] Retrieved June 21, 2012, from: http://www.knesset.gov.il/docs/heb/infocom/final106.htm

74. Management Planning and Assessments Folder for the academic year 2013-2014. Israel: Pedagogical Administration, Ministry of Education, 2013. 474 p. [Hebrew] Retrieved December 2, 2013, from: http://meyda.education.gov.il/files/minhalpedagogy/matana_2014.pdf

75. Moldova ICT Summit 2011, recording of an interview with Mr. Gil Taran. Retrived January 12, 2013 from: http://www.youtube.com/watch?v=g9FtUJrWlHw

76. Moldova's Ministry of Education. Education 2020: Strategy Development Sector For The Years 2014-2020. Moldova, 2013. [Romanian] Retrieved March 3, 2014, from: www.edu.md

77. Newhouse P., Trinidad S., and Clarkson B. Quality Pedagogy and Effective Learning with Information and Communication Technologies (ICT): a review of the literature. Western Australian Department of Education. Perth, 2002. Retrieved: December 8, 2011 from http:// www. eddept.wa.edu.au/cmis/eval/ downloads/pd/litreview.pdf

78. OECD-Organization of Economic Co-Operation and Development. Creating Effective Teaching and Learning Environments, first results from TALIS. Paris, 2009, 240 p. January 11, 2012, from: http://www.oecd.org/education/school/43023606.pdf

79. Rosenstock L. A 21st century education. Project-based Learning at High Tech High. [video podcast] Retrieved December 3, 2012, from: http://www.youtube.com/watch?v=6rv_rmJYorE

80. Scrimshow P. Enabling Teachers to Make Successful Use of ICT. British Educational Communications and Technology Agency (Becta), 2004, 45 p. Retrieved September 2, 2012, from: http://dera.ioe.ac.uk/1604/

81. Slovak Aid-Academia Istropolitana Nova. Modernization of education in Moldova-preparation of pedagogues and students for e-learning methodology enhances the access to flexible education, Project No. SAMRS/2011/04/04, 2011-2013. Retrieved March 15, 2011 from: http://www.ipp.md/pageview.php?l=en&id=589&idc=180

82. Wintour P. Facebook and Bebo risk "infantilizing" the human mind. In: The Guardian, 2009. Retrieved March 27, 2012 from: http://www.guardian.co.uk/uk/2009/feb/24/social-networking-site-changing-childrens-brains

ADNOTARE

Baranetz Efrat, **„Promovarea interacţiunii sociale în clasă prin utilizarea efectivă a instrumentelor tehnologice de informare şi comunicare”,** teză de doctor în ştiinţe pedagogice, Chişinău, 2015.

Structura tezei. Teza este constituită din introducere, trei capitole, concluzii generale şi recomandări, 136 de pagini de text de bază, adnotări în limbile română, engleză şi rusă, bibliografie (119 surse) şi 7 anexe. În textul tezei sunt inserate 2 tabele şi 27 de figuri.

Publicaţii la tema tezei - 7 lucrări ştiinţifice: 5 articole în reviste ştiinţifice de profil, naţionale şi internaţionale, 2 comunicări la conferinţe naţionale (1) şi internaţionale (1).

Cuvinte-cheie: instrumente tehnologice, predare-învăţare asistată de calculator, constructivism, interacţiune/dinamică socială, implementare TIC, pedagogie avansată, profesor eficient, mediu de învăţare, evaluarea implementării TIC.

Domeniul de cercetare: Teoria generală a educaţiei.

Scopul cercetării este de a identifica aspecte ale potenţialei contribuţii unice a computerului în promovarea dinamicii sociale în clasă şi în dezvoltarea unui model de angajare în maximizarea eficienţei instrumentelor tehnologice şi a nivelului de impact a acestora asupra dinamicii sociale în clasă.

Obiectivele cercetării: analiza dificultăţilor cu care se confruntă profesorul în promovarea interacţiunii sociale în clasa computerizată prin documentarea detaliată şi examinarea reflexivă a întregului proces în baza elementelor teoretice, precum şi a descoperirilor rezultate din cercetare; examinarea oportunităţilor oferite de utilizarea calculatoarelor în procesul de predare-învăţare pentru promovarea dinamicii sociale în clasă; compararea activităţilor de învăţare reciprocă care au loc în cadrul „clasei computerizate” şi a relaţiilor reciproce în „clasa care maximizează eficienţa utilizării calculatoarelor”; determinarea obiectivelor schimbării la nivelul interacţiunii, promovată de cercetarea actuală.

Noutatea ştiinţifică şi originalitatea constă în descrierea provocărilor cu care se confruntă domeniul educaţiei în secolul al XXI-lea, examinarea perspectivei constructiviste asupra procesului de învăţare cu accent pe perspectiva tehnologică şi viziunile interpersonale, consolidarea importanţei interacţiunii sociale în procesul de învăţare, indicarea legăturii dintre tehnologie şi pedagogie, analiza aspectelor sociale ale mediilor de învăţare care utilizează TIC, interpretarea contribuţiei TIC la procesul de predare şi învăţare calitativă, investigarea modalităţilor care permit utilizarea cu succes a TIC, descrierea, analiza şi interpretarea rolului cadrelor didactice în integrarea TIC în procesul de învăţare-predare, precum şi evaluarea eficienţei TIC în procesul de predare.

Problema ştiinţifică soluţionată în domeniul ştiinţific constă în elaborarea, argumentarea şi proiectarea unui model de utilizare eficientă a TIC în clasă, în scopul sporirii interacţiunii sociale.

Semnificaţia teoretică constă în demonstrarea complexităţii procesului de adaptare a inovaţiei şi schimbării de către sistemul de învăţământ; stabilirea obstacolelor pentru ca profesorii să pună în aplicare mai eficient tehnologia în strategiile lor de predare, cu prezentarea modelelor diferite pentru utilizarea maximă a instrumentelor TIC în procesul de predare-învăţare; stabilirea indicatorilor pentru a evalua şi a reflecta asupra procesului.

Valoarea practică a cercetării rezultă în validarea preliminară a ipotezei conform căreia interacţiunea socială în clasa computerizată poate fi încurajată prin integrarea eficientă a TIC. Rezultatele cercetării, identificarea obstacolelor şi diferitor criterii pentru utilizarea maximă a instrumentelor TIC în procesul de predare-învăţare şi accentuarea importanţei sporirii dinamicii sociale în cadrul acestor lecţii pentru promovarea reuşitelor academice pot fi folosite de către profesori, formatori şi conceptori ai cursurilor de dezvoltare profesională şi de curriculum în domeniul educaţiei.

Implementarea rezultatelor ştiinţifice s-a efectuat într-o şcoală elementară din Israel, în care cercetătoarea activează în calitate de cadru didactic şi ca formator şi au fost prezentate în cadrul conferinţelor naţionale şi internaţionale.

ANNOTATION

Baranetz Efrat, *"Promotion of social interaction in the classroom by effective utiliza-tion of information and communication technological tools"*, thesis of doctor in pedagogy, Chisinau, 2015. The research has pages of core text, including introduction, three chapters, conclusions and recommendations, annotation in Romanian, English and Russian, key words, references (119 sources), 7 appendices, 136 pages of main text: The basic thesis is presented in 7 scientific papers. There are also enclosed 27 figures and 2 tables.

Key-words: technology integration, social interaction, constructivism, technology and pedagogy, ICT in education, effective use of technology, computerized classroom, learning environment, evaluation of ICT use.

The field of research: General Theory of Education

The aim of the research is to identify the aspects of the computer's unique potential contribution to promoting social processes in the classroom and develop a model engaging in maximizing the effectiveness of technological tools and their level of impact on social processes in the classroom.

The objectives of the research: examination of the opportunities, provided by using computers in learning-teaching processes, to promote social processes in the classroom; un-derstanding and describing the teacher's difficulty in promoting social processes in the com-puterized classroom based on the theoretical background; definition of the objectives of the change on the levels of interaction the current action research seeks to generate; comparison of reciprocal activities taking place within the "computerized classroom" and reciprocal rela-tions in the "classroom maximizing the effectiveness of computers."; carrying out detailed documentation and reflectively examine the entire process while creating contacts both with theoretical elements at the foundation of this research as well as findings of the process.

The scientific novelty and originality of the research: the description of the challenges facing the education field in the 21st century, the examination of constructivism approach to learning focusing on technological perspective and interpersonal views, reinforcement of the importance of social interaction in the process of learning, indication of the connection be-tween technology and pedagogy, analysis of the social aspects of learning environments using ICT, interpretation of the contribution of ICT to quality teaching and learning, investigation of ways to enable successful use of ICT, description, analysis and interpretation of the role of teachers in integrating ICT into the learning-teaching process, evaluation of the effectiveness of ICT in teaching.

The scientific problem solved in the investigated area consists in the elaboration, the argumentation and projecting of a model to effectively use ICT in the classroom in order to promote social interaction.

The theoretical value of the research: consists in demonstrating the complexity of the education system to adapt innovation and change; deducing the obstacles for teachers to ef-fectively implement technology into their teaching strategies, displaying different models for maximal utilization of ICT tools in the learning teaching process, offering indicators to evalu-ate and reflect on the process.

The applied value of the research lies in innovation and optimism of the practice of implementing ICT effectively into the lesson in order to promote social interaction. Results of the research, exposing the obstacles and the different criteria for maximal utilization of ICT tools in the learning teaching process, and pointing to the importance of promoting social dy-namics in these lessons in order to promote academic achievements, can be used by teachers, teachers' instructors professional development courses planners, and curriculum planners in the education field.

The implementation of the scientific results was realized in elementay school from Is-rael and through presentation at conferences and publication of scientific articles in several international and national academic magazines.

АННОТАЦИЯ

Баранец Ефрат, ***Развитие социальной активности у учащихся за счет эффективного использования информативных и коммуникативных технологий***, докторская диссертация по педагогике, Кишинев, 2015. Исследование имеет 136 страниц основного текста, в том числе введения, три главы, выводы и рекомендаций, аннотации на румынском, английском и русском языках, ключевые слова, библиография (119 источников), 7 приложения.Включает в себя 27 рисунков и 2 таблицы.Основные выводы представлены в семи научных работах.

Ключевые слова: технологическая интеграция, социальное взаимодействие, конструктивизм, технология и педагогика, ИКТ в образовании, эффективное использование ИКТ, компьютерная грамотность, обучающая среда, оценка внедрения ИКТ, межличностное обучение, социальное взаимодействие.

Область исследований: Общая теория образования

Целью данного исследования является выявление уникальных аспектов потенциального вклада компьютера в продвижении социальной динамики в классе и в разработке модели занятости, чтобы максимизировать эффективность технических средств, и их влияние на уровень социальной динамики в классе.

Задачи исследования: изучить возможности, предоставляемые за счет использования компьютеров в обучении / преподавании для продвижения социальной динамики в классе, понять и описать трудности учителя в продвижении социальной динамики в компьютерном классе, руководствуясь теоретическими принципами, определяющих цели изменения на уровнях взаимодействия. Текущее исследование направлена на получение взаимного сравнения деятельности, осуществляемой в "компьютерном классе" и взаимоотношения в "классе в котором максимизирует эффективность компьютеров", что делает подробной документации и рефлексивное рассмотрение всего процесса путем создания связей между теоретическими элементами, которые находятся в основе этого исследования и результаты научных исследований.

Научная новизна и оригинальность состоит в описании задач, стоящих перед образованием в XXI веке, изучая конструктивный взгляд на обучение с акцентом на технологической точки зрения и межличностных видений, усиливая важность социального взаимодействия в процессе обучения, что свидетельствует о связи между технологией и педагогикой, анализ социальных аспектов учебной среды с использованием ИКТ, вклад ИКТ в интерпретации преподавания и обучения качества, процедуры расследования, которые позволяют успешно использовать ИКТ, описание, анализ и интерпретацию роли учителей в интеграции ИКТ в процессе преподавания и обучения, и оценки эффективности ИКТ в преподавании.

Научная проблема решена и заключается в разработке, аргументации и создания модели эффективного использования ИКТ в классе, в целях повышения социального взаимодействия.

Теоретическое значение состоит в демонстрации сложности процесса адаптации инноваций и изменений в системе образования; установки препятствий для учителей, чтобы осуществлять более эффективную технологию в своих стратегиях обучения, представляя различные модели для максимального использования ИКТ в преподавании и обучении; установление показателей для оценивания и рефлексией над этим процессом.

Практическая ценность исследования состоит в предварительном проверки гипотезы, что социальные динамики в компьютерном классе можно стимулировать путем эффективной интеграции ИКТ. Результаты исследования, идентификация препятствий и различных критериях для максимального использования ИКТ в преподавании и обучении и подчеркнуть важность повышения социальной динамики в этих уроках по развитию академических достижений могут быть использованы учителями, тренерами и разработчиками курсов по персональному развития для разработчиков куррикулума в сфере образования.

Внедрение научных результатов осуществлялось в начальной школе в Израиле, где исследователь работает в качестве преподавателя и в качестве тренера и были представлены на национальных и международных конференциях.

BARANETZ, EFRAT

PROMOTION OF SOCIAL INTERACTION IN THE CLASSROOM BY EFFECTIVE UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES

DOCTORAL THESIS ABSTRACT IN PEDAGOGY