

Realistic Intelligence and 21st Century Skills in Adapted Learning Environment

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Abstract Today most schools are still using traditional and outdated teaching methods and learning environments. On the other hand, the highly competitive working environments create high level of uncertainty and demand adaptive thinking skills and creativity. Therefore the role and purpose of schools, learning spaces and teachers has to be changed and adapted to the 21st century needs. We developed a 4-step model called “Dynamic and Synchronized Pedagogy”, in an advanced learning environment based on Steelcase Education design, in which students are able to open a window to a world of engagement, motivation, success and deeper understanding.

Keywords: 21st century skills, pedagogy, learning environment, innovative education

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1. Introduction

In 1915 the famous American philosopher and educational thinker John Dewey wrote in his book "The School and Society" that each school should become "an embryonic community life, active with types of occupations that reflect the life of the larger society and permeated throughout with the spirit of art, history and science. When the school introduces and trains each child of society into membership within such a little community, saturating him with the spirit of service, and providing him with instruments of effective self-direction, we shall have the deepest and best guarantee of a larger society which is worthy, lovely and harmonious" [1]. More than 100 years later, the education world is still searching for its path and directions of development.

In a world where advances in technology have led the whole industry to new places and significant achievements, the education industry (We are sorry to call it so, but sadly this is now an industry for all intents and purposes) has not really followed the other areas such medicine, computers, transportation, food, gerontology etc.

In recent years, we have been witnessing the desire to train and professionalize in ways and by means that provide much more than just knowledge. In a world where information is available, the level of knowledge is not the main and essential thing that should serve as the measure of success of education system graduates. Maxwell, for example, criticizes academic institutes saying that "at present academic inquiry is devoted to acquiring knowledge. The idea is to acquire knowledge, and then apply it to help solve social problems. This needs to change, so that the basic aim becomes to seek and promote wisdom – wisdom being understood to be the capacity to realize what is of value in life for oneself and

others (and thus including knowledge, know-how and understanding)" [2].

The idea of differentiating wisdom from knowledge can be found also in the ancient world. Exodus tells us about Bezalel son of Uri, who was asked to plan, design and build the Tabernacle and its furnishings: "And I fill him with the Spirit of God, in wisdom, and in understanding, and in knowledge, and in all work" (Exodus 31:3, Young's Literal Translation). In order to accomplish the task assigned to him, Bezalel must gain wisdom, intelligence, knowledge and performance skills.

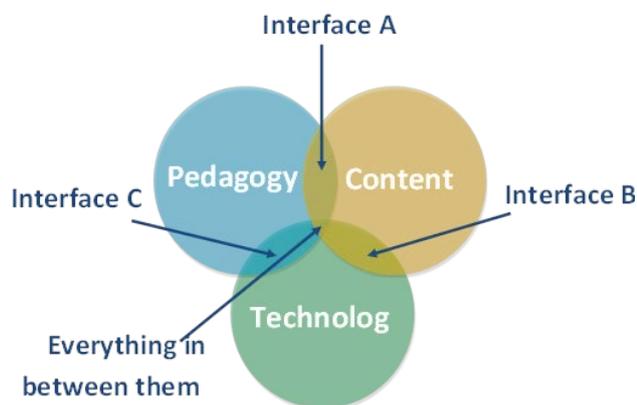
Solomon writes in Proverbs: "The heart of the intelligent getteth knowledge, And the ear of the wise seeketh knowledge" (Proverbs 18:15, Young's Literal Translation). Medieval Bible commentator Rashi explains the concepts as follows: wisdom - what one hears from others and learns, and intelligence - what one understands from his heart out of the things he has learned.

Howard Gardener conceptualizes intelligence as "a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture...intelligences are not things that can be seen or counted. Instead, they are potentials—presumably, neural ones—that will or will not be activated, depending upon the value of a particular culture, the opportunities available in that culture, and the personal decisions made by individuals and/or their families, school-teachers, and others" [3]. We should treat intelligence as a level that is beyond knowledge, understanding and wisdom. Thus, our aspiration is that every adult, teenager and a learning child will gain intelligence. We should strive for a situation where the education system will educate children who as adults will have intelligence, understand things from their heart out of the things they have learned and acquire knowledge, understanding and wisdom within the education system and out of it.

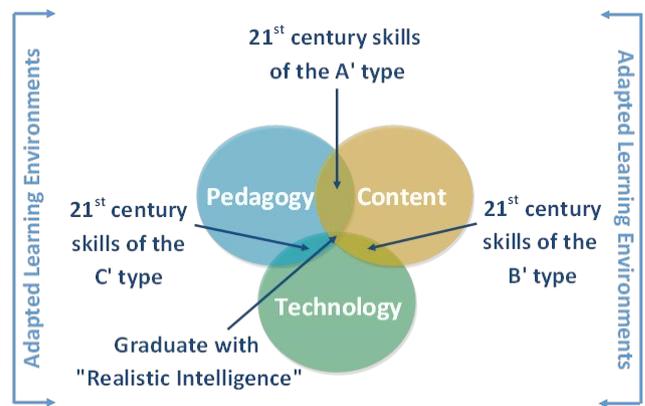
In this article, we will try to explain why nowadays "Intelligence" is a product that the education system should and must impart to its graduates and how this system is supposed to do it. We will go one step further and suggest the term "Realistic Intelligence", a term that expresses our desire to provide graduates with Intelligence and wisdom that connects them to the reality with which they will have to deal at the end of their years-long stay in education system.

2. Content, Pedagogy And Technology And 21st Century Skills

In order to understand and get to know the parameters that the teacher and his students will have to deal with on the learning and teaching continuum from preschool, kindergarten, through elementary and secondary schools up to adulthood of the student who studies in high school and in university, we turned to TPACK model proposed by Mishra and Koehler, who argued that "Quality teaching requires developing a nuanced understanding of the complex relationships between technology, content, and pedagogy, and using this understanding to develop appropriate, context-specific strategies and representations" [4]. We were interested in understanding to what extent this model and its implementation as part of classroom learning can indeed exist. We were mainly interested in the existing interfaces between the components of the model: (A) Content – Pedagogy; (B) Technology – Content; (C) Pedagogy - Technology; and (D) everything that the three of them together can offer and produce for learning and teaching.



During our work, we have realized that on theoretical level the model indeed relates to the necessary components for a lesson adjusted to the period and the development of the teaching in 21st century. However, dealing with the interfaces has brought up the need to define the 21st century skills that the student and the teacher are granted in the framework of their joint work within the interface space. Beyond that, we grappled over the issue whether indeed the classical classroom environment allowed the realization of the potential hidden in work in the interfaces described above. The insights generated by the discourse and debate and experience in classrooms around the model led us to propose amendments and additions to the model that looks as follows:



2.1. The Learning Environment

In order to prepare graduates to fit the modern work environments, we have not only to teach them content and provide with skills, but also allow them to get acquainted with the learning environment in which they will be able to express their skills in the optimal manner [5].

In 1510 Italian Renaissance artist Raphael decorated the Apostolic Palace in the Vatican with one of the most famous frescoes in the world, "The School of Athens". Ever since, the fresco has been a subject for many researchers and commentators who suggested that every great ancient Greek philosopher can be found in it [6].



Raphael's "School of Athens"

In his painting, Raphael allows us to take a look at the area in which many various forms of learning occur simultaneously. People of various ages, representing different occupations, study by different methods: they engage in rhetoric, dialectics, philosophy, mathematics, geometry; youngsters and adults discuss these matters together; standing or sitting; in small groups or larger ones; by individual thinking or personal writing, by copying or imitating, around a writing board or a notebook; a whole interdisciplinary and multi-aged world.

This painting gave us the inspiration for creating learning conditions which allow reaching the goals of education system in general and teacher education in particular.

The technological revolution that engulfed the world over the past century led to a dramatic change in our habits – we drive almost completely automated cars and keep all the necessary information on a chip half

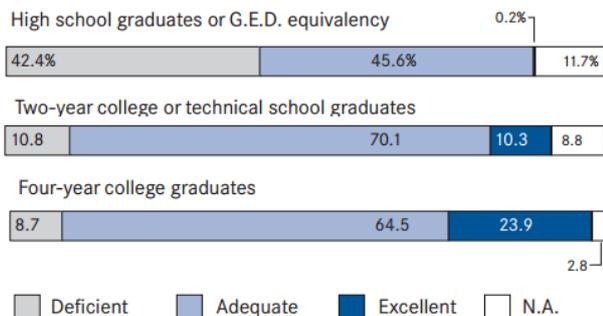
centimeter long. Industrial work has changed as well – designers, architects, engineers, doctors, auto mechanics, etc. use advanced technology in their work. This work is characterized by cooperation, teamwork, the exchange of ideas between disciplines, while solving multidisciplinary problems, the use of critical thinking and the learning through searching and questioning.

To allow such method of work, the environment must permit limitless cooperation and integration. This work is largely characterized by open spaces inviting exchange of ideas anytime, by advanced technologies that allow access to all the knowledge in the world at a click, or by intercontinental discussions held on a touch screen that allows dialogue between people around the world while perusing documents and data which are processed and replaced momentarily.

Compared with these advanced workspaces, educational institutions mostly remain the same as over a century ago. In traditional classroom structure, tables and chairs are arranged in rows and columns facing the blackboard, and the teacher still has the main knowledge. Despite the classrooms called "smart classrooms", with interactive whiteboard and projector, the lesson is still conducted as it always used to be. It is based on a fixed and approved syllabus and takes approximately 45 minutes in which we learn a given topic from a certain chapter and page of the approved book. At the end of the learning process, the teacher has to be satisfied with the taught material and the student with the good enough grade given him as a reward for his ability to repeat in writing or orally the information that the teacher dictated or passed to him.

The situation as described undoubtedly adds to the skill gap which exists in many of today's modern industries. Even graduates with high grades in their studies often still lack basic skills necessary for success in their work. In an in-depth study of the corporate perspective on the readiness of new entrants into the U.S. workforce, over 40 percent (42.4 percent) of employer respondents rate new entrants with a high school diploma as "deficient" in their Overall Preparation for the entry-level jobs they typically fill. Almost the same percentage (45.6 percent) rate the Overall Preparation of high school graduate entrants as "adequate," but almost no one (less than 1/2 of 1 percent—0.2 percent) rates their Overall Preparation as "excellent" [7].

Preparation level of workforce entrants



Number of respondents varied for each question, ranging from 401 to 423.
 N.A. selected when company does not hire in selected category.
 Percentages may not add to 100% due to rounding.

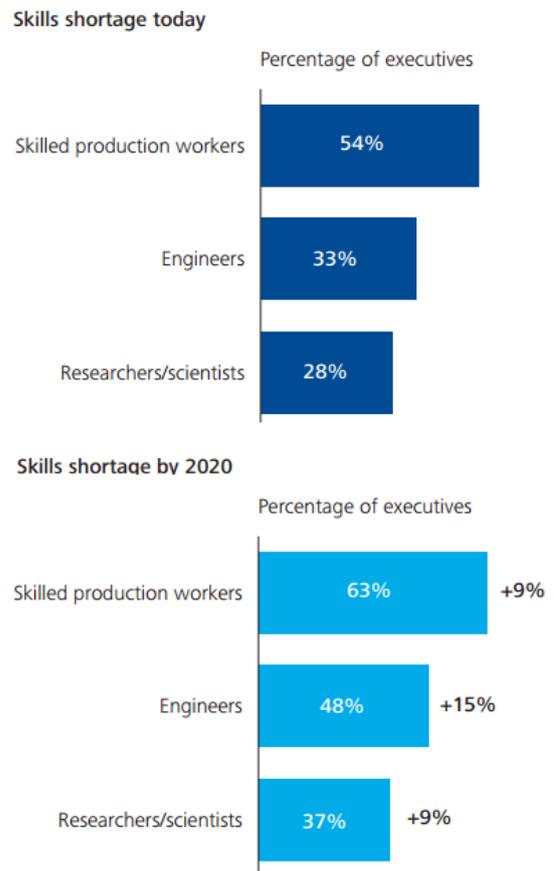
Preparation level of workforce entrants [7]

2.2. 21st Century Skills

In a comprehensive study conducted by the OECD in 2013, it was found that nowadays residents of many Western countries today lack the skills required in the modern labor market. 40% of employers in the countries such as Australia and Japan report that they are unable to recruit employees with the skills that they look for. The research indicates that skills such as data analysis, teamwork and problem solving are as important today as the degrees awarded to the students upon their graduation. The research concludes that OECD countries need to invest many efforts in providing 21st century skills as the basis for their success and prosperity [8].

Another research was conducted in 2015 by The Manufacturing Institute in the U.S and Deloitte in which over 450 manufacturing executives participated suggests that "while the manufacturing industry is facing the need for 3.4 million workers over the next decade, the skills gap is expected to result in 2 million of those jobs going unfilled. When executives were asked what they considered to be the most serious skill deficiencies, technical and computer skills topped the list. It was followed by a lack of problem solving skills, basic technical training, and math skills. Overall, less than half of the manufacturing executives surveyed indicate their employees have sufficient basic employability skills (attendance, timeliness, etc.) and the ability to work well in a team environment" [9].

Skills shortage in different workforce categories: 2014 and 2020



Skills shortage in different workforce categories [9]

After performing a comprehensive search in information sources and various studies and visiting

education and higher education systems in several countries (France, Germany, USA, Finland, Israel), we have formulated in our institution the list of relevant 21st century skills as they emerge from the analysis of interfaces in the model suggested above.

Table 1.

Interface A	Interface B	Interface C
1. Learning through searching and questioning	1. Cooperation on all levels	1. Teamwork
2. Development of curiosity and critical thinking	2. Learning anytime and anywhere	2. Innovative creativity
3. Coping with uncertainty	3. Understanding technologies and using them as an advantage	3. Innovation out of the existing solutions
4. Evaluation, reflection and control	4. Data gathering and processing	4. Problem solving

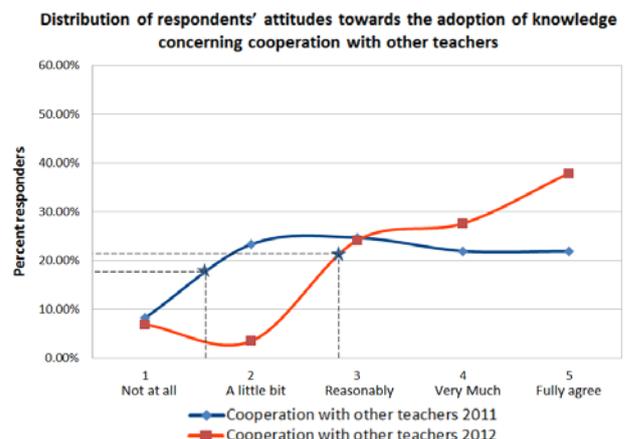
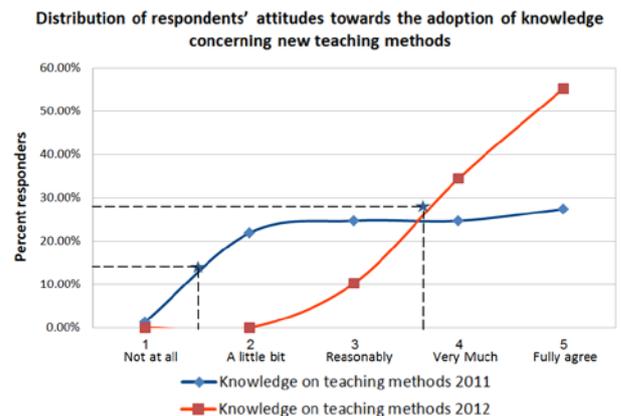
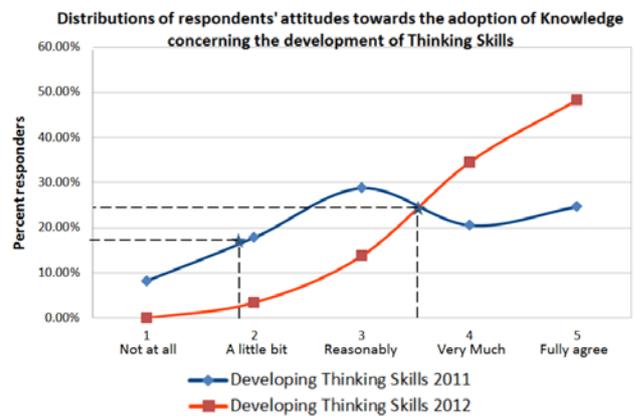
The first insight that comes of our work in the field is that it is not possible to impart a certain skill during a single lesson or teaching one subject, not even for one school year. There is a need to experience and practice the use of one or more skills during all the years of training and learning, at different levels and especially in different situations ranging from early childhood in kindergarten to adult age and beyond, upon the graduation of academic studies and personal professional development in the workplace.

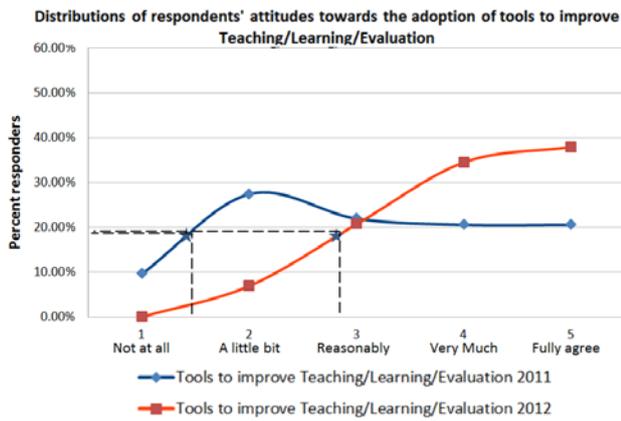
Teaching according to TPACK components (Mishra & Koehler, 2006) or through imparting skills for the 21st century arising from the existing interfaces between the components of the model, does not necessarily impart the realistic Intelligence that we discussed at the beginning of this article. We have had to adjust learning environments and ways of learning and have them simulate future working environments and the conduct in the workplaces, as they are perceived and changed today, in order to allow the appropriate experience of active professional life that the graduates will encounter in the future. Education systems, higher education and teacher education do not know how workspaces will look in 20 years from now, however we are witnessing today that nearly in every field and every area "artificial intelligence" is taking over our lives, ranging from search engines tailored personally for us, to robots that speak our language and play a part in our daily tasks. The response of the education system to artificial intelligence that will allow proper preparation for dealing with its development and transformation should be "realistic Intelligence". The education system, its leaders and teachers, should be familiar with the secrets of technology and artificial intelligence, and adapt in response the teaching and learning methods with the aid of realistic Intelligence model or a model similar to it, in order to train children and teenagers who will become graduates of the system. These graduates will have imparted skills that will help them to deal with the reality that awaits them in the larger and global world, when they complete their studies.

3. Readiness for Change at Teacher Education College

In our institution, it was decided in school year 2010-2011 to provide a required course for all the future

teachers. The course is called "Teach to the Future", it is an integrated course that provides ICT (Information and Communications Technology) tools and advanced technology supporting teaching, and also higher-order thinking tools for confirmation and debate and development of study units that combine ICT tools that enable guidance for imparting of 21st century skills. This course was conducted by the instructors from the College in collaboration with Intel and Appleseeds Companies. At the end of the first year of the course taken by all the future teachers, we have improved the course content and the tools used by the faculty members and the students, and checked after the second year (between 2010-2011 and 2011-2012), using action research, the students' wish to adjust their role as future teachers in advanced high-tech environments. The students clearly expressed their longing for innovative teaching methods, for acquiring advanced thinking skills, tools for improving learning and assessment and also for creating cooperation among teachers [10].





Action research findings as described above indicate a willingness of the students to use advanced technological tools in fulfilling their duties as teachers in the 21st century. The faculty members, who led the change in the college, worked on understanding the processes required to continue promoting this idea among all students and the instructors, also across all areas of instruction taught as part of teacher education.

First, there was a need for agreement that the faculty should progress towards a more fundamental change in the perception of the classroom, the lesson and the teacher's role. Discussions within the team have shown that rather than dealing with every aspect of the Tpack separately (as it is the case in the education system), we have to work on the interfaces between them, and especially understand that the technology has advanced significantly, and it is the differentiating factor that should attract the content based on past knowledge and also the pedagogy which mainly remains in its classic form or is based on local personal initiatives.

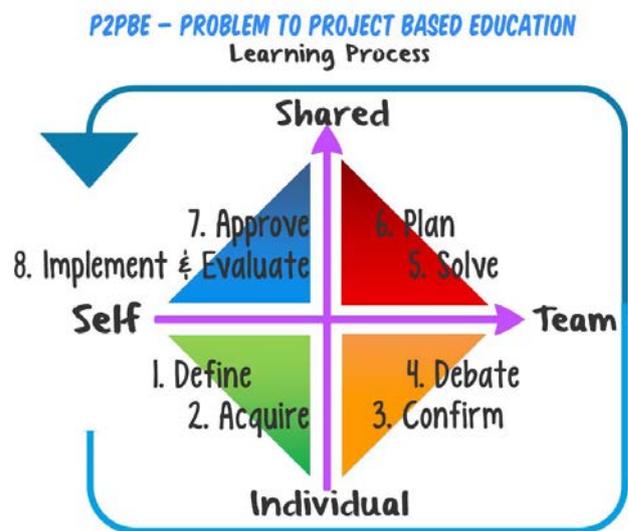
Combining content and pedagogy with technology will bring these two components to the level of development of the technology in use today. Their integration with other dynamic and cooperative learning environment will allow imparting skills other than we have seen to date, mostly compatible with the 21st century skills as outlined above.

These and other insights led the college think tank to suggest a multi-step model that can be applied not only in innovative learning environments, but also in classical ones and within different and diverse disciplines.

3.1. Problem to Project Based Education

The first pedagogical model was introduced at the end of the 2012-2013 school year, and was given the name "P2PBE" - Problem to Project Based Education. This eight-step model combines well-known and familiar learning and working processes. The model includes movement on two main axes: the horizontal axis where the student moves from self-work to teamwork and the vertical axis where the student is requested to move within the framework of his learning from individual outcomes to shared outcomes.

The following are the eight stages of the teaching/learning in initial chronological order that is not necessarily required for continuation of group or individual learning.



Defining the Problem: We believe that the teaching of any subject should begin with definition of a problem that will constitute the basis for learning the subject and understanding its importance. The student faces uncertainty because he does not know yet what he is supposed to learn and what conclusions he will reach. At the defining of a problem stage, the work is individual and each student copes with understanding the problem by himself or with the help from the instructor / teacher.

Acquisition of Knowledge: After understanding the problem, the students move to the acquisition of knowledge stage individually or in pairs by searching computerized or printed databases. At this stage, students will practice collecting and processing information and learning by searching and questioning. The acquired knowledge is individual and has not yet been shared with others.

Confirmation of Knowledge: The acquired knowledge must be confirmed with the aid of the instructor/teacher or with the help of several students. At this point, we begin to move from individual work to teamwork.

Discussion (confirmation and debate): At this stage, team members sit together and discuss the knowledge that each of them has brought. The knowledge accumulated by all the members of the team helps to deal with the defined problem. The team members have to persuade and to be persuaded by developing curiosity and critical thinking.

Solution: The team members reach together the solution or a number of agreed solutions that meet the problem which has been defined at the problem definition stage. This step is the start of producing an outcome or cooperative outcomes of all team members.

The planning: The team members plan the project for implementation of the solution to the problem in creative manner which makes use of existing technologies intelligently and efficiently. During the planning, care must be taken that each member of the team will have a role so the work will be cooperative and complementary.

Agreement: The team members prepare and present a plan and reach an agreement regarding the offered solutions. Presentation of the project will be discussed among all the students and approved by the instructor/teacher.

Implementation and Evaluation: The applied project presentation before all class members ends in comparing outcomes, getting a feedback, and evaluation and reflection following it.

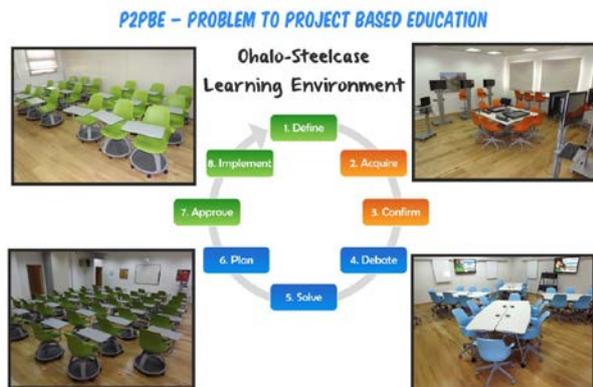
3.2 Implementation of P2PBE Model

The described eight steps are implemented during changing lengths of time chosen by the instructor/teacher and according to the pace of work of the individuals and the teams. The instructor/teacher can choose to implement the entire model or only parts of it as per the sequence that he considers most appropriate for the studied content.

The described model caused the pedagogical thinking team to examine the classroom space appropriate for the model. The immediate and obvious conclusion is that the classic classroom must change its designation and become a dedicated and dynamic learning space adapted for the different stages of the model. In order to be effective, any learning cannot exist in isolated space and therefore additional spaces are required that allow mobility between the stages of the model.

The implementation of the described dynamic learning model required in our institution a redesign of the learning spaces, which were planned and processed together with Steelcase Education from USA (Grand-Rapids, Michigan).

In the pictures presented below around the diagram of the dynamic pedagogical model appear the different stages of the model and our recommendation for adjusting them to the planned spaces. The advanced technology that takes into account the pedagogy and content is expressed in chair and table design and in their use and also in the accessories and fixtures accompanying the space itself. The combination of different technologies allows dynamic learning/teaching adjusted to the space. The spaces allow switching from individual and self-learning to cooperative team learning within short periods of time and even immediately, without interruptions, while using technologies that do not require unnecessary connecting and disconnecting, everything is done in a pleasant, comfortable, aesthetic and interactive environment.



The stage of presentation and definition of the problem is primarily frontal (upper left corner) in rows and columns, or in small or large circles. The way of sitting allows rapid transition from individual work to group work (in pairs or more).

Knowledge acquisition stage takes place in space that is well-equipped with advanced computer technologies and capability for multi-optional display of information (upper right corner). Here, too, the learning environment allows

individual or group work. Information acquired by learners can be displayed on two-sided monitors as a pair work, or on all screens in the classroom. Each student can also take initiative and present his findings on the interactive whiteboard in the front of the learning space. The classroom is supported by Media:Scape of Steelcase Company and by software such as Radix for sharing and multiple display options.

The discussion stage, proposing the solution and the project planning take place in learning environment that includes Verb collection of classroom furniture by Steelcase company which we chose to place in the form of X (lower right corner), to enable group discussions as well as inter-group ones. The learning space includes both personal and group mobile erasable boards which can be placed on the classroom walls and also on the table or on mobile stands which can be moved between the different tables.

The agreement stage is the last stage in the process in which the implementation of the proposed plan is discussed (lower left corner), group reflection is held as well as extended plenary discussion and group and class self-evaluation regarding the individual learning and group work.

During the 2013-2014 school year, we investigated together with Steelcase Company the satisfaction of about 120 students in the new learning space. We examined their perception of the various spaces, the added value to the learning, their motivation to learn and mainly the acquisition of advanced skills (of 21st century) in the new learning environment in comparison to the classic one. We also examined the same parameters from the point of view of the instructors [11].

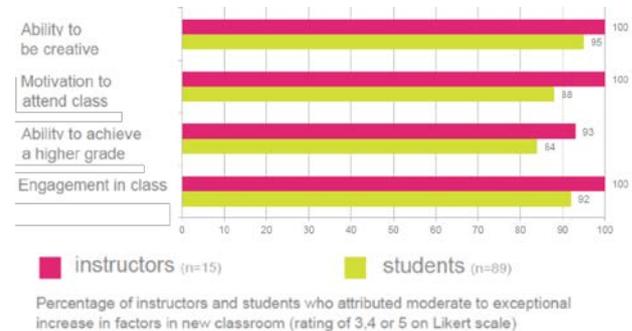


Table X - the percentage of instructors (in red) and the percentage of students (in yellow) who graded the increase in factors, rating 3, 4 or 5 on Likert scale.



The difference between the mean composite standard and the mean composite current scores is highly statistically significant for both sections using a paired t-test, p<0.001

Table Y - the difference between the mean composite standard (classic) and the mean composite current component (new).

The study results indicate that over 10% of respondents, instructors and students feel that the new spaces increase the sense of creativity, motivation and engagement in learning in comparison to learning in classic classrooms which were included in the study. At the same time, the respondents stated that the new spaces helped them to experience new skills that were not available to them in classic classrooms. Among others: cooperation, focus, involvement, movement and a sense of experience (Table Z).

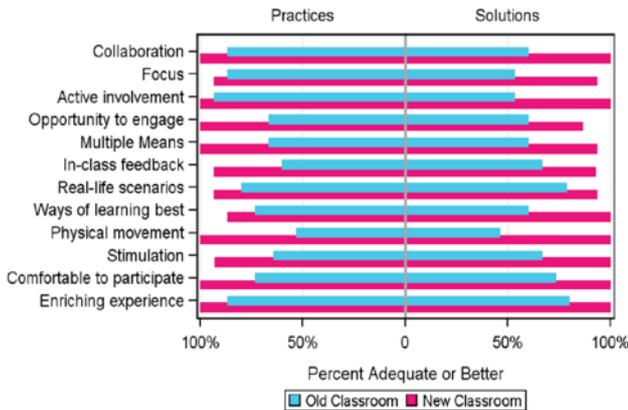


Table Z – The gap between the new learning spaces and the traditional classrooms regarding the skills included in the questionnaire.

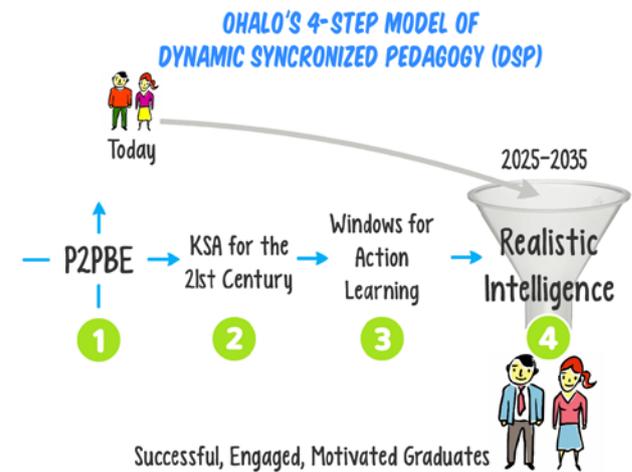
We found that innovative learning environment undoubtedly supported the implementation of innovative pedagogy which we wanted to use in order to train new teachers and others to fit better to what is expected of them in the 21st century. Although it is an innovative and dynamic learning process, we have found that from pedagogical point of view, an experience in continuous, interactive and multi-disciplinary learning is also required. Therefore, although the model and the space are suitable and improve learning outcomes, we have decided to keep developing the pedagogical model and a different learning space which will allow to make learning and teaching continuous, integrative, interactive and multi-disciplinary, when the goal has been to develop pedagogy which will allow cooperation and interactivity between the areas in one space during the continuous learning and teaching.

The advanced model is called Ohalo model for dynamic, continuous and synchronized pedagogy. Its main purpose is to provide the new student in the education system with the skills that are independent of time and place and that permit the future graduate of the education system to be

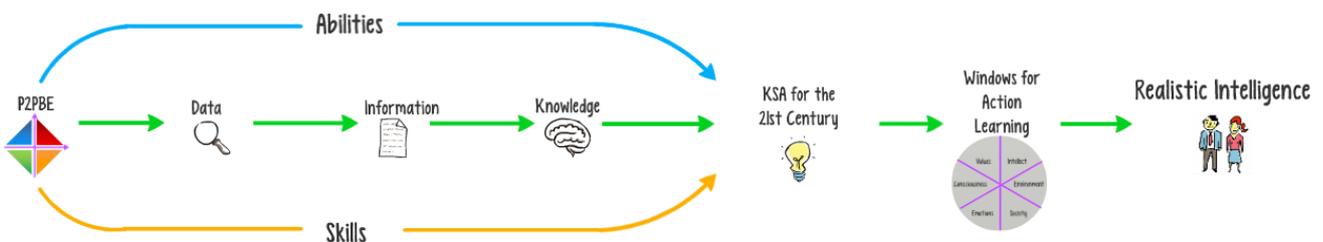
successful, highly motivated, with insights and awareness of social involvement. The teaching and learning model can actually allow the graduate of the education system to continue being relevant to the economy and the labor market also 20-25 years after graduating from school, by cognitive flexibility and ongoing adaptability to changing work environments.

4. Model of Dynamic Synchronized Pedagogy (DSP)

The model is divided into four main sections: (1) The model of the eight steps P2PBE-Problem to Project Based Education as presented above; (2) Imparting flexible and adjusted 21st century skills based on KSA (Knowledge, Skills, and Abilities); (3) Learning and teaching spaces adapted to the groups of the studied subjects; (4) Exploratory experience for internalizing the learning up to the level of the personal consciousness – Realistic Intelligence.



The model itself, which includes four main components, has been thoroughly clarified among those interested in teaching in order to allow students and student-teachers understand what is expected of them at every stage of learning and also every stage of the components of the model has been described in detail, which will enable the students to reach the required depth in working and thinking of this kind.



4.1. Creating the Database: P2PBE to Data

The Ohalo 8 stages model P2PBE produces data at any time, and any new data directly affects the existing data. Creating data continues in accordance with the movement of the model on time axis and activity axis of the learning groups while the students move from the individual

learning level (definition of the problem, knowledge acquisition) to the team level (confirmation, discussion). The data obtained is not sufficiently clear to the student and sometimes causes him confusion which makes continuing of his work and understanding difficult and also takes him out of the desired focus. We have created two steps that are designed to help students use relevant data only and focus on the problem they have to solve:

(1) Bucketing - creating baskets which are relevant to conceptualization group existing in the disciplinary field; (2) Attribution – transferring the data to baskets and attributing them to the disciplinary concepts described in the previous step.

4.2. Transition from Data to Information

At this point, the data is going through the refining process - the separation process of data composition based on the relevance to the disciplinary concepts based on higher-order thinking. The actions at this stage allow turning data into information needed by the student for further learning: (1) Providing meaning - an explanation of the data and understanding it in depth; (2) Putting in context – referring the content which is suitable and relevant to learning and to the defined problem; (3) Verification of facts – separation between validated facts and non-validated data; (4) Categorization and organization - grouping according to categories to different issues related to studied topic; (5) Drawing conclusions - formulation as precise as possible of the insight resulting from the data before turning it into part of the information that will be available to the student for the continuation of the process.

4.3. Transition from Information to Knowledge

In order to become knowledge, information must be voluntary, deliberate and spontaneous. The students should bring themselves to a situation in which they consciously want to use the knowledge, aiming for a clear goal for which the use of information is necessary. From this moment, the information has to be used spontaneously and in circumstantial context. Therefore, the student has to check: (1) Relevance - check the context and relevance of the information to the defined problem; (2) Applicability – whether the information can be applied or it remains purely on the theoretical level, and whether it is appropriate and can be implemented. (3) Producing meaning - answering the question "why?" will enable the student to understand the meaning required to be learned. (4) Internalization - understanding the connection to the previous knowledge and its attribution to the existing patterns or conventions.

4.4. Imparting Skills and Moving to Action Spaces

At this stage, the student has acquired the knowledge he needs with the teacher/mentor and he can and should, using basic tests, check himself and place the studied knowledge in desired context in different situations that he will encounter on his way. Knowledge, abilities and qualifications form together the set of skills needed by the student in the learning process.

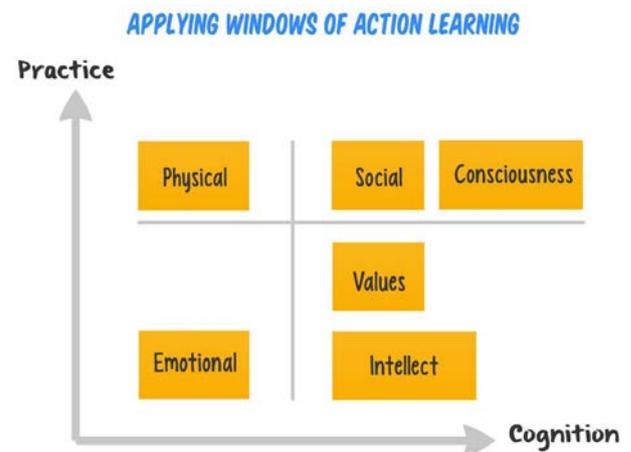
4.5. Integration of the Studied Material into the Conscious Mind: Windows of Action Learning to Realistic Intelligence

The transition from the level of knowledge and its implementation using skills and abilities to the level of Realistic Intelligence requires the implementation of learning within action spaces that will allow the internalization and integration into the self-consciousness:

(1) Physical space - the environmental stimuli that affect the student, his life spaces (climate, topography, objects, environment, etc.), and various people with whom he comes into contact; (2) Emotional space - expression of mental state, mood, inclinations, temperament and personality of the student; (3) Intellectual space - mental activity which contributes to the love of learning and acquiring knowledge for attaining wisdom and intelligence; (4) Value space - the standards of the student, based on his worldview with respect to the issues of justice, morality, truth, trust etc.; (5) Social space - the various groups that affect the student in terms of history, worldview, economic status, his personal development environment, education, contribution to the society etc.; (6) Consciousness space – the experiences that affect student's logical processes and his decision-making process resulting from the insights – realistic constructionism in which the studied material is implemented within the environmental context.

Action spaces can be endless and given to the discretion of the instructor or teacher/mentor, they should exist during the period of learning through different spaces tailored to the personality and the activity of the student. They have to be: (1) Experiential - the students should feel the occurrence which will express the diverse powers in their personalities (cognition, emotion, mind, subconscious, etc.); (2) Rational - actions taken should promote the goals of students in the context of the defined problem; (3) Implementable – an integration of knowledge, skills and abilities of the students into implementation actions in the relevant context.

The action spaces are characterized on the coordinate system in which implementation ability and practice are functions of cognition level. The goal is to reach high implementation level as a function of high cognition. The learning reaches internalization and the deepest consciousness for the general good and the good of the society and up to the level of the state and the humanity. This is the situation in which learning has become an inseparable part of the personal and mental consciousness of the student.



5. Application of Dynamic Synchronized Pedagogy

We apply these models in our college. At the end of 2014, we developed a unique learning space, which was

given the working title – the "Complex of the Future". In this 350 sq. m. complex that includes in a single large space a number of learning spaces, the pedagogical model P2PBE is implemented with all its stages and extensions for ongoing and continuous learning. The complex is virtually divided into areas with varying functionality, where instructors can decide in advance the nature of the activities that they wish to hold in parallel or by cooperation: (1) Frontal area – for defining the problem, preliminary discussion and presentation of the project; (2) Technological area – for acquiring knowledge in immediate or continuous manner; (3) Discussion area – for rhetoric and discussions, as well as for offering solutions and project planning; (4) Guiding and directing area – for approval and qualification with guidance in small and heterogeneous groups; (5) Imparting areas – for teams whom the instructor is interested to provide enrichment; (6) Quiet region – for a short-term and timed recess for instructors or students, for conducting short meetings or personal conversations with the students.



"Complex of the Future"

Photo: Ohalo College of Education

The space can include two main scenarios: (1) The same course for several groups - in this mode the instructors divide the work between them when each instructor is responsible for a different aspect of learning; technological expertise, leading discussions, leading and training small groups, imparting etc.; (2) Various overlapping courses - In this mode the instructors coordinate between them which parts of the lesson or the course are conducted together and which separately, as the

outcomes of learning can be common to the students from different grades or disciplines.

Within the learning process outlined above, the combination of unique pedagogy which has been developed in our institution and which integrates unique learning complex developed together with Steelcase company for the college, can undoubtedly develop among the students the Realistic Intelligence (as opposed to developing artificial intelligence) which will assist the teachers that we train to educate our children in various areas, or the graduates of various disciplines, to face the reality and real life awaiting them as they exit school to the world of the unknown which awaits us all.

Our college is currently working on the development of additional action spaces, which will enable the students who study in them to experience a combination of additional challenging and complex skills, which will be needed by the future generations.

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