
Contributions of Emotional Education Youth's to Improve or Change Teaching Methods

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This paper is intended to emphasize the possibilities to show the influence of emotional education Romanian youth's to improve or change teaching methods to grow up the Romanian economy within teenagers, in spite of all problems related to education, poverty, economic crisis, unemployment, migration, unmet training etc.

On the one hand, it identifies and proposes the approach of a new research regarding the decrease of the following phenomena: the truancy and dropout of Romanian students, the migration of young Romanian people and youth unemployment.

On the other hand, the paper reflects the important role of students and their emotional education as contributions to the improvement of teaching methods and vocational training development during the current economic crisis. We investigate how can students influences the Romanian labour market and the educational system. The

objectives refer to the assessment of the tendencies of Romanian youth involved to create a new future for own country. The results of the research draw attention to the potential loss of our knowledge society.

The paper highlights the new trend influencing the youth labour market and the changes in the interactions between the educational services market and the labour market.

Keywords: *Social Emotional Learning; Continual Improvement; Teaching Methods Change*

Introduction

The paper highlights the new global educational trend influenced by the students [16], the youth labour market and the changes in the interactions between Romanian educational services market and the labour market. [25].

Our expectations are:

- show the importance of appreciations of the students'role in education and labour market; [25]
- demonstrate the differing types of quality tools/techniques attributed to the Japanese .but used by all of us in educational organizations/ companies;[26,29]
- illustrate the applicability of tools and techniques of quality teaching methods improvement using American models;[26,27,31]
- describe individual applications of appropriate quality tools which involve Emotional Education and Teaching Methods Change[26,27,31].

Objectives:

- An appreciation of the students' role in education;

- A continual improvement of emotional education as a type of change that is focused on increasing the effectiveness and/or efficiency of an educational organization ;
- An interpretation of policy and regulatory educational challenges in relation to student's unlimited quality initiatives and emotional education.

Prior work

From the perspective of Teaching Methods Change, we examined the new trend influencing the educational market. [25]. We also discussed the main strategic choices available for the Romanian students to improve teaching methods using emotional education [25, 26]. Numerous research studies support the claim that affect plays a critical role in decision- making and performance as it influences cognitive processes [21, 27, and 28].

Despite this body of research there is insufficient theory within educational pedagogy to recognize and address the role and function of affect [26, 28, 29]. The innovative models and theories that have been proposed to facilitate advancement in the field of educational pedagogy tend to focus on cognitive factors. Consequently, affective cues, which have a significant role, are often misinterpreted or ignored [[26, 28, 29, 31].

We propose several new models for framing a dialogue leading to new insights and innovations that incorporate theories of affect into educational pedagogy [26, 28, 29, 31].

Design/ Methodology

This report presents a map of past, present and future changes to education and training as student's contributions to the improvement teaching methods using emotional education [20, 21, 22, 26, 28, 29, 31].

Defining and Understanding SEL (Social Emotional Learning) [16, 26, 27, 31]

Effective teaching of social and emotional learning must begin with a clear definition and scope of the skills students need to learn. Broadly speaking, SEL refers to a set of skills that individuals need to succeed in schooling, the workplace, relationships, and citizenship. SEL has been defined or characterized in a variety of ways (Humphrey et al., 2011). The term has served as an umbrella for many subfields of psychology and neuroscience, each with a particular focus (effortful control, emotion regulation, prosocial skills, and aggressive behavior problems) and many types of educational interventions.

The scope and focus of SEL frameworks and interventions also vary: some focus on one set of skills (recognizing and expressing emotions) while others are broader, and some include executive functioning or cognitive regulation (e.g., attention skills, working memory) while others do not.

Given these differences in terminology and framing, there is a need for a clear organizing framework for SEL. We present an initial framework here (see Figure 1) that is based on research and developmental theory.

In particular, we draw on “developmental-contextual models,” which view development as taking place in a nested and interactive set of contexts ranging from immediate (family, peer system, classroom, school) to more distal (cultural and political) contexts [31].

At the center of the framework is a circle representing the core domains of SEL skills? Based on our review of research, we group these skills into three conceptual categories: emotional processes, social/interpersonal skills, and cognitive regulation. Emotional processes include emotional knowledge and expression, emotional and behavioral regulation, and empathy and perspective-taking. Social/interpersonal skills include understanding social cues, interpreting others' behaviors, navigating social situations, interacting positively with peers and adults,

and other prosaically behavior. Cognitive regulation includes attention control, inhibiting inappropriate responses, working memory, and cognitive flexibility or set shifting [31].

These three domains of SEL skills are related to short- and long-term outcomes presented on the right side of the figure. These include academic achievement (grades, standardized tests of academic skills), behavioral adjustment (taking others' perspectives, getting along well with other children, solving conflicts, and exhibiting less aggression and conduct problems)[31].

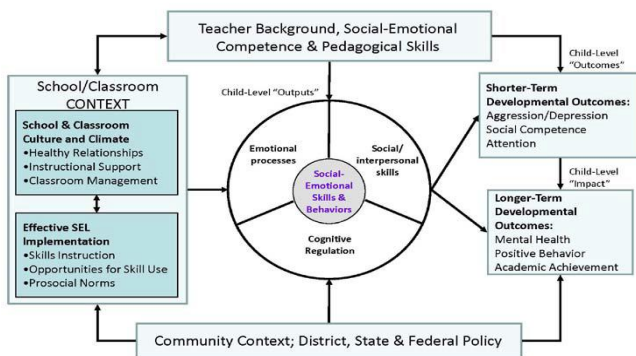


Figure 1[31]: Organizing Framework for SEL

Current Approaches to SEL in Education [16, 17, 26, 27,31]

Based in part on the research that has informed the framework above, the last decade has witnessed rapid expansion in research and programming focused on enhancing school students' SEL skills to reduce behavior problems and promote positive social interactions [27, 31]. This period has also witnessed a growing convergence of developmental science and prevention science in guiding the design and evaluation of SEL and related interventions.

Evaluations of programs targeting SEL skills have shown promising results for students. Most of the evaluations conducted to date have utilized quasi-experimental methods, but a smaller number have demonstrated their effectiveness via rigorous experimental evaluations [17, 31].

A meta-analysis of both quasi-experimental and experimental evaluations found significant positive effects [14, 31]. It included evaluations from 213 school-based, universal primary prevention programs that used a range of reliable and valid measures (including children's self-report, adult report, and standardized assessments) across six outcome categories. In all six categories—social and emotional skills, attitudes toward self and others, positive social behaviors, conduct problems, emotional distress, and academic performance— results were positive, with effect sizes ranging from 0.22 for conduct problems to 0.57 for social and emotional skills. Furthermore, there were few differences in effectiveness according to students' age, ethnicity, or income.

While there is clear evidence that high-quality SEL programming can make a difference, as indicated directly above, effect sizes from the most rigorous evaluations are small to moderate, typically in the range of one-fifth to one-half of a standard deviation (e.g., Jones et al., 2011). Effects are usually larger for high-risk students than for universal populations or low- to moderate-risk students [14, 31].

However, even small effects can have meaningful implications [14, 31]. This may be especially true for the most at-risk students, who appear to need and benefit from such programs the most. Furthermore, short-term effects for these students may translate into long-term effects for themselves and their classmates because research on classroom composition and spillover effects suggest that one or a few disruptive students can impact the whole class [14, 31].

Nonetheless, when it comes to targeting behavioral and academic outcomes, bigger effect sizes are clearly better than small ones, and reports in both research and the media about students' behavioral and academic outcomes highlight the need for greater impact [14, 31].

Characteristics of Effective SEL Programs [6, 12 , 14, 19, 26, 27, 31]

Intervention programs are not all created equal; some programs are more effective than others. Research linking specific SEL program components to outcomes has been rare, but meta-analyses and reviews have begun to identify a set of important issues.

Durlak and colleagues (2011) found that the most effective programs were those that incorporated four elements represented by the acronym SAFE: (1) sequenced activities that led in a coordinated and connected way to skills, (2) active forms of learning, (3) focused on developing one or more social skills, and (4) explicit about targeting specific skills.

Beyond program characteristics, implementation fidelity and quality are also key factors in the effectiveness of SEL programs. Measuring implementation and evaluating its impact on outcomes has been a missing link in the literature on SEL programs and other related prevention programs, due in part to measurement challenges and varying definitions of implementation quality. In their meta-analysis, Durlak and colleagues (2011) found that only 57% of studies reported any implementation data [6, 12, 14, 19, 26, 27, 31].

In a review of 34 prevention programs with demonstrated positive effects, Domitrovich and Greenberg (2000) found that most included some measure of implementation, but the measures were usually limited and only about onethird of the programs examined the association between implementation and outcomes. Using the limited range of studies that have measured and reported on implementation, Durlak and colleagues (2011) found that implementation quality was positively associated with student outcomes, supporting findings from an earlier review by Domitrovich and Greenberg [6,12,14,19,26,27,31].

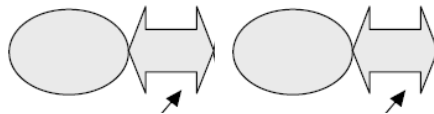
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implementation, but the measures were usually limited and only about one third of the programs examined the association between implementation and outcomes [14].

To understand the need for a novel model, let us first examine the current educational model. The current model, as shown in Figure 2, begins with 'data,' which is a collection of answers to questions that the learner has not yet seen fit to ask or needs to ask. Such data becomes 'information' when it answers a question that the learner cares to ask. For the most part, a teacher, who must somehow motivate the student to care enough to seek the answers found in the data, supplies these questions.

Studying is like 'panning for gold' where the answers are the 'nuggets' buried in a ton of otherwise uninteresting gravel. Once we have our 'nuggets of information' how do we organize them into a 'body of knowledge'? We may think of 'information' as the pieces of an unassembled jigsaw puzzle, whereas 'knowledge' is the assembled jigsaw puzzle. That is, the question-answer pairs are organized into a coherent structure, in the logical and natural order in which new questions arise as soon as old ones are answered[27,31].

The assembled 'jigsaw puzzle of knowledge' reveals a previously hidden picture—a 'big picture,' if you will. Or to put it another way, the assembled 'jigsaw puzzle of knowledge' is a tapestry into which woven many otherwise hidden is and previously unrevealed stories.



Focus of modern day
Educational pedagogy

Figure 2: Old Model: Supports Rule-based Learning

The novel model shown below in Figure 3 goes beyond the current model shown in Figure 2. The foci of attention shifts to the construction of 'knowledge' and to the extraction of meaningful 'insights' from the 'big picture.' When 'knowledge' is coupled with a personal or cultural value system, 'wisdom' emerges. In other words, wisdom allows us to harness the power of knowledge for beneficial purposes. 'Wisdom' affords us the possibility of extracting the stories woven into the tapestry of knowledge. So from 'wisdom' we craft the bardic arts of story making and storytelling. The ancients crafted myths and legends. These were the prototypical stories of their cultures, which were intended to impart 'wisdom.' [27].

A story is thus an anecdote drawn from the culture. A well-crafted anecdote or story has value both as an amusement and as a source of insight into the world from which it is drawn. And the plural of 'anecdote' is data—a collection of anecdotal stories or evidence. This observation closes the loop in Figure 3 [27].

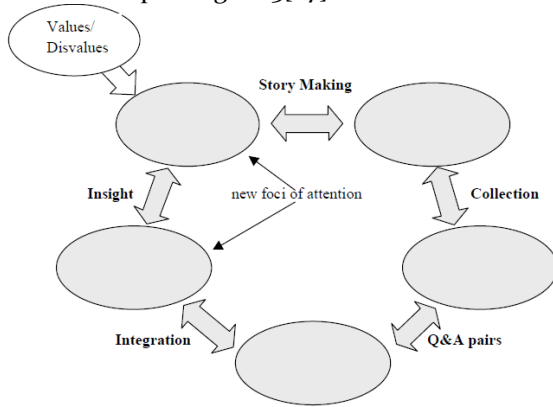


Figure 3 [27]: New Model: Supports Model-based Reasoning

Figure 3 suggests a novel model that, on a fundamental level, supports an improved educational pedagogy. This will serve as a

foundation for the next part of our model—how a learner's affective state should be incorporated into the overall model [27].

Results [21, 22, 25, 26]

There are the follow results:

- to contribute to this vision-building process on ways of addressing emerging competence needs,
- to contribute to the development of imaginative visions and scenarios of the youth's future of learning and working in order to support priority setting for emotional education, training and skilling policies;
- to decrease young people's migration and unemployment.

Implications[21, 22, 25, 26]

New technology in education and labour market; tools and services enhancing learning; open education and resources; assessment, accreditation and qualifications; globalization of education; roles of institutions; individual and profession-driven education; life-long learning; formal education goes informal; individual and social nature of learning, the epistemological and ontological bases of pedagogical methods.

Emotional education is key driver of scientific discoveries.

Scientific discoveries are key drivers of economic growth, driving and fueling the economy [25]. Leading economists have identified technological progress as the single most important determining factor in sustained economic growth. While some technologies can be anticipated, especially those that are improvements or new uses of old technologies, there is such rapid change in fundamentally new areas that it is hard to fully understand the implications [25].

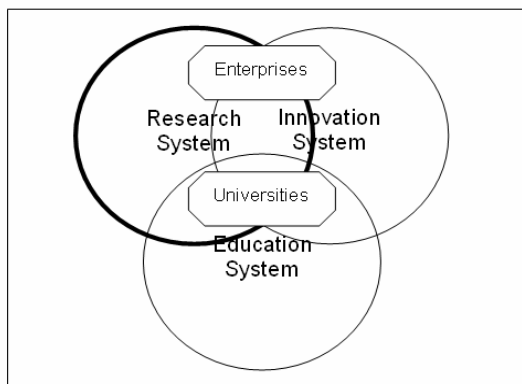


Figure 4 [25]

Examples are the human genome project, the explosive changes taking place in information technology, the growth of nanotechnology, and biotechnology, which has the potential to transform areas as different as farming and computer technology [25].

Background [21, 22, 25, 26, 28]

Providing effective education is important in ensuring well-rounded and competent students who can contribute towards the development of our nation. This study is part of a larger study investigating the effects of an affective-cognitive approach on learning. Since 2009 our small group of teachers, as well as parents, involved in educational process has been started to find solutions for quality assurance problems in education.

- We are now trying to open a new folder with many educational and economical files for improvement Romanian education and economy. The most important files are Emotional Education, Continual Improvement of Educational Organizations and Teaching Methods Change [21, 22, 25, 26].

There is the philosophy of making each students/ future worker responsible for the quality of his or her work.

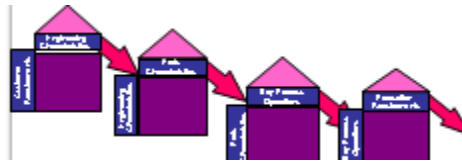


Figure 5[26]: The House of Quality

The QFD methodology has been developed into a continuous process, and it can be applied equally well to educational or manufacturing environments. QFD {Quality Function deployment}[21, 22, 25, 26].

Customers (Students, Employers, Parents, Representatives of political, social, educational and economic environment) Requirements Engineering Characteristics, Parts Characteristics Key Process Operations, Education and Production Requirements. Institutions have a dire challenge in measuring and reading performance requirements from various programs. Blended learning has become a higher choice for several institutions as the numbers of enrolled students increase. This method will result in a higher turnover for students of professionals in the next and upcoming generations. This change will shift the academic role as institutions create opportunities for students on other areas of professional departments other than on-campus based programs [21, 22, 25, 26].

Sustainable development considerations require youth to embrace a range of additional skills beyond the science they have traditionally relied upon to solve engineering and mathematic problems. This will require changes to the way in which education prepares students for professional practice. To meet this demand, the existing content-based curriculum was transformed into an outcome based education curriculum for training engineers [21, 22, 25, 26].

The change has created new teaching demands on engineering and mathematic lecturers with the introduction of new compulsory courses (creativity course, soft skills courses, entrepreneurship,

community involvements etc.) in addition to the increasing engineering subject matter content to be covered [26].

For example, in both Japan and Singapore university teacher training focuses on content and pedagogy (teaching methods) in conjunction whereas in the U.S. teaching candidates often learn little mathematical content, and pedagogy is often taught separately, divorced from the content that teachers will teach. In fact this lack of pedagogical content knowledge (PCK) by U.S. teachers has been shown in study after study. It has also been shown that teachers in Singapore, China, and Japan have high PCK [28]. "Parental attitudes are important but what many people miss is the fact that in the U.S. parents pay tutors for the lack of what their children learn in school while in Singapore and Japan parents pay tutors to improve their children's chances of success on high stakes entrance exams (much like parents pay for SAT tutoring in the U.S.). "But why is this? One reason is that teachers often teach the way they were taught. If you were taught mathematical procedures simply by rote without ever learning why they work it is likely that this is how you will teach. If you were taught in a way that develops conceptual understanding of mathematics, you will more likely teach better. Since Singaporean and Japanese educators were taught in this type of educational system, it is more likely they will teach conceptually. But this only contributes a small amount to their PCK [28].

If you talk to university educators in Japan and Singapore they will tell you that their students often do not understand mathematical procedures conceptually and many are math-phobic. They do not assume that teaching candidates are prepared to explain mathematics to children in ways that they will understand the underlying rationale behind the procedures. Therefore great care is taken to help teaching candidates to overcome their fear of mathematics, build confidence in their own mathematical capabilities, and understand the intersection of curriculum, content, and pedagogy deeply. If we want to improve how mathematics is taught in the U.S. we need to improve the way teachers

are trained. (See my posts on teacher training in Singapore and Japan to learn more about how teachers are trained.)[28]

"If we want to improve how mathematics is taught in the U.S. we need to improve the way teachers are trained." [28] On the scale of value where are Romanian students now? Maybe they think: The link between design thinking and creativity is emotional education.

Data and method [25, 26, 27, 28, 29, 30,31]

The study was carried out by using the statistical data collected from the Institute of Statistics from USA, Japan, Singapore, EU, and the Reports of World Bank, UN, or EU Commission. We examined to underline the aspects regarding the quality of educational sector from the studied area, both by outlining the major problems and also by finding adequate solutions for a long-term quality improvement of interdependence within another sectors of activity. We involved the important role of emotional education to assure best quality for educational process [25, 26, 27, 28, 29, 30, 31].

The relevant final stage for the study was the analysis and the interpretation of the results obtained, which completed the general image over the quality assurance of educational system, as first step to improve the access of youth to Romanian Labor Market marking the positive and negative aspects with the problems that determine a defective system influenced by factors that are internal and external to the respective region [25, 26, 27, 28, 29, 30, 31].

Using the statistical data available, we have indicated the emotional education as a core between Research, Innovation, Education, Enterprises and Universities.

Affective State: Emotions and Learning

The extent to which emotional upsets can interfere with mental life is no news to teachers. Students who are anxious, angry, or depressed don't

learn; people who are caught in these states do not take in information efficiently or deal with it well (Daniel Goleman, Emotional Intelligence)[24].

In an attempt to install/build/re-engineer the current state of educational pedagogy, educators should first look to expert teachers who are adept at recognizing the emotional state of learners, and, based upon their observations, take some action that scaffolds learning in a positive manner. But what do these expert teachers see and how do they decide upon a course of action? How do students who have strayed from learning return to a productive path, such as the one that Csikszentmihalyi [27] refers to as the “zone of flow”?

This notion that a student's affective (emotional) state impacts learning and that appropriate intervention based upon that affective state would facilitate learning is the concept that we propose to explore in-depth[27].

To prove our point, note that skilled humans can assess emotional signals with varying degrees of precision. For example, researchers are beginning to make progress giving computers similar abilities to accurately recognize affective expressions [facial expressions, and gestural expression [27]. Although computers only perform as well as people in highly restricted domains, we believe that:

- accurately identifying a learner's cognitive-emotive state is a critical observation that will enable teachers to provide learners with an efficient and pleasurable learning experience, and,
- unobtrusive highly accurate technology will be developed to accurately assess actions in less restricted domains [27].

Our own preliminary pilot studies with elementary school children suggest that a human observer can assess the affective emotional state of a student with reasonable reliability based on observation of facial expressions, gross body language, and the content and tone of speech. If the human observer is also acting in the role of coach or mentor, these assessments can be confirmed or refined by direct conversation (e.g. simply asking the student if she is confused or

frustrated before offering to provide coaching or hints). Moreover, successful learning is frequently marked by an unmistakable elation, often jointly celebrated with “high fives.” In some cases, the “Aha!” moment is so dramatic, it verges on the epiphanies. One of the great joys for an educator is to bring a student to such a moment of triumph. But how can computers acquire this same level of proficiency as that of gifted coaches, mentors, and teachers [27]?

The first step is to offer a model of a learning cycle, which integrates affect. Figure 6 suggests six possible emotion axes that may arise in the course of learning. Figures 7a and 7b interweave the emotion axes shown in Figure 6 with the cognitive dynamics of the learning process. In Figure 7, the positive valence (more pleasurable) emotions are on the right; the negative valence (more unpleasant) emotions are on the left. The vertical axis is what we call the Learning Axis, and symbolizes the construction of knowledge upward, and the discarding of misconceptions downward [27].

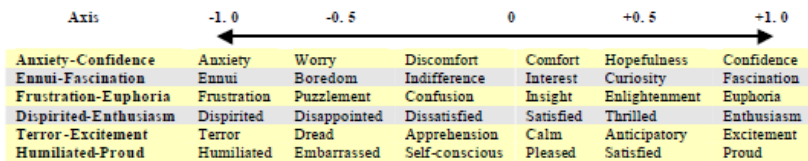


Figure 6[27]: Emotion sets possibly relevant to learning

By using the descriptive analysis of the data, we presented the distribution of the values for the indicators calculated in relation to the standards or the reference objectives established by the National System of Indicators for Education. In addition, by processing the statistical data regarding quality of education, we obtained the necessary information to describe the functionality and the level of performance of the educational system and to examine the evolution in quality assurance of education in time and space [27].

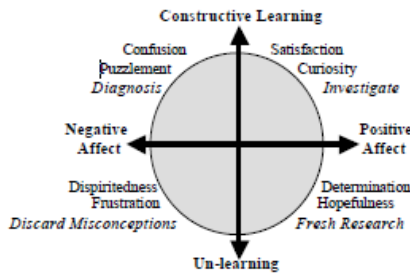


Figure 7a [27]: Four Quadrant model relating phases of learning to emotions

Results and discussions

In either case, they are in the top half of the space if their focus is on constructing or testing knowledge. Movement happens in this space as learning proceeds. For example, when solving a puzzle in *The Incredible Machine*, a student gets a bright idea how to implement a solution and then builds a simulation. If she runs the simulation and it fails, she sees that her idea has some part that doesn't work—that needs to be diagnosed and reconstructed. At this point she may move down into the lower half of the diagram (Quadrant III) into the 'dark teatime of the soul' while discarding misconceptions and unproductive ideas. As she consolidates her knowledge—what works and what does not—with awareness of a sense of making progress, she advances to Quadrant IV. Getting another fresh idea propels the student back into the upper half of the space (Quadrant I). Thus, a typical learning experience involves a range of emotions, cycling her around the four quadrant cognitive-emotive space as she learns [27].

If one visualizes a version of Figure 7a and Figure 7b for each axis in Figure 6, then at any given instant, the student might be in multiple Quadrants with respect to different axes [27].

They might be in Quadrant II with respect to feeling frustrated and simultaneously in Quadrant I with respect to interest level. It is important to recognize that a range of emotions occurs naturally in a real

learning process, and it is not simply the case that the positive emotions are the good ones [27].

We do not foresee trying to keep the student in Quadrant I, but rather to help him see that the cyclic nature is natural in learning science, mathematics, engineering or technology (SMET), and that when he lands in the negative half, it is an inevitable part of the cycle. Our aim is to help students to keep orbiting the loop, teaching them to propel themselves, especially after a setback [27].

A third axis (not shown) can be envisioned as extending out of the plane of the page—the cumulative knowledge axis. If one visualizes the above dynamics of moving from Quadrant I to II to III to IV as an orbit, then, when this third dimension is added, one obtains an excelsior spiral. In Quadrant I, anticipation and expectation are high, as the learner builds ideas and concepts and tries them out. Emotional mood decays over time either from boredom or from disappointment. In Quadrant II, the rate of construction of working knowledge diminishes, and negative emotions emerge as progress wanes. In Quadrant III, as the negative affect runs its course, the learner discards misconceptions and ideas that didn't pan out. In Quadrant IV, the learner recovers hopefulness and positive attitude as the knowledge set is now cleared of unworkable and unproductive concepts, and the cycle begins anew. In building a complete and correct mental model associated with a learning opportunity, the learner may experience multiple cycles until completion of the learning exercise. Note that the orbit doesn't close on itself, but gradually spirals around the cumulative knowledge axis [27].

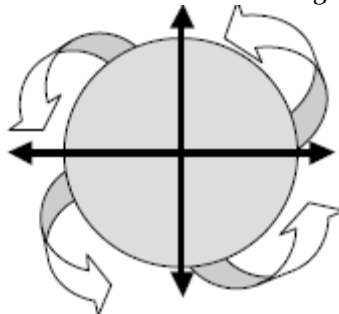


Figure 7b [27]: Circular and helical flow of emotion in Four Quadrant model

On the one hand, the scope of this paper is to present low results of quality educational sector, with implications for Romanian and American youth's mathematics knowledge, and to apprehend the way in which the spatial distribution, mainly deficient, of some general social services, leads to the occurrence of territorial disparities aimed to keep different chances of people [25, 26, 28, 29].

On the other hand, we present high results of quality educational sector in two educational units where Romanian students are brilliant. That means good jobs for our young people [25, 26].

For example, in both Japan and Singapore university teacher training focuses on content and pedagogy (teaching methods) in conjunction whereas in the U.S. teaching candidates often learn little mathematical content, and pedagogy is often taught separately, divorced from the content that teachers will teach. In fact this lack of pedagogical content knowledge (PCK) by U.S. teachers has been shown in study after study. It has also been shown that teachers in Singapore, China, and Japan have high PCK [28, 29, 30].

The limited repertoire of effective teaching skills of engineering lecturers makes their task especially challenging in light of the higher expectations in terms of student's learning outcomes [25, 26].

Although learning is the expected outcome, teaching is the precursor to learning and thus the importance of teaching and pedagogical methods. What is more critical —the way students are taught has a significant influence on the type of cognitive structures they create and the way they store and structure knowledge they acquire determines to a great extent how flexible they will be when they must use that knowledge[25,26]. The instructional cycle is a process that most effectively occurs at the departmental level in the hands of the faculty who understand the practices, conventions, and methods that their disciplines convey to majors; [9]. Learning goals can be written for

individual courses or for academic programs. They answer two questions: - What do you want students to know by the time they finish a course or a major? This is a question about the content of the course or major and about the relationships between content areas. - What do you want students to be able to do with what they know? We talk about the skills that are important to the course or the major—how students learn and use the content of the discipline to make or report meaning.

Course-based and departmental learning purposes are interactive. There is no one right way to develop learning fulfills. The process can be either top-down (basing course-level goals on learning goals for the major) or bottom-up (inferring program goals from existing course goals). More likely, it will be an evolving combination of the two. Most importantly, student learning goals represent the structure and character of the particular discipline in which they are situated and the collective wisdom of the faculty [25, 26]. After World War II the Japanese adopted 'quality' as a philosophy for economic recovery and, in line with this traditional approach, sought seven tools [26].

Conclusions

All members of our team are actors of educational process as teachers, managers or parents and we try to understand and to grow up the potential of our tooth students and children. This paper is first step but not the last.

Our group takes a look at Group Concept Mapping (GCM) [21, 22, 25] and we applies a structured participative approach to facilitate groups of experts to arrive at a consensus about a particular issue, characteristics of Quality Assurance of Education in the future, regarding to its interdependence with Social Emotional Education, Continual Improvement, Teaching Methods Change, Technological Changes, Innovation and Competitiveness, R& D and revival of Romanian economy [20,21,22,25,26].

As GCM model, this analysis depicts, in the form of thematic clusters, the experts' common understanding of the issue under consideration. We use a structured facilitative multi-step approach including a number of simple and intuitive activities such as idea generation, and sorting and rating of ideas. The research method, by its "hybrid" nature, can easily integrate any qualitative method for data collection and analysis, such as individual interviews, surveys, focus groups or Delphi method [20, 21, 22, 25, 26].

Instruction for academic and social emotional learning should use varied modalities and approaches to reach the different styles and preferences of all learners [20, 21, 22, 25, 26].

That means [21, 20, 21, 22, 25, 26].:

- All educational systems in Europe will be connected in a central system to identify the best students in order to support them no matter their country of origin.
- In Europe (EU) many students will learn with and from each other in international collaborations.
- We will cease to rely on experts as the source of knowledge and curriculum and move towards quality based on use and endorsement through internet systems.

Our models are inspired by theory often used to describe complex dynamic interactions in engineering systems. As such, they are not intended to explain how learning works, but rather to provide a framework for thinking and posing questions about the role of emotions in thinking, teaching and learning.

As with any metaphor, the model has its limits. The model does not encompass all aspects of the complex interaction between emotions and learning, but begins to describe some of the key phenomena that need to be considered in metacognition.

These models go beyond previous research studies not just in the range of emotions addressed, but also in an attempt to formalize an analytical model that describes the dynamics of a learner's emotional

states, and does so in a language that supports metacognitive analysis[27].

Acknowledgements

This material is based upon work supported by the National Science Foundation under Grant No. 0087768. Any opinions, findings, or conclusions or recommendations expressed in this material are those of the author(s) and does not necessarily reflect the views of the National Science Foundation. We are also grateful to Deputy Dean Mariana Stefanescu, PHD Professor of Politehnica University, Bucharest, for her assistance in the preparation of this manuscript.

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