A Cooperation Model Applied in a Kindergarten

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ABSTRACT

The need for collaboration in a global world has become a key factor for success for many organizations and individuals. However in several regions and organizations in the world, it has not happened yet. One of the settings where major obstacles occur for collaboration is in the business arena, mainly because of competitive beliefs that cooperation could hurt profitability. We have found such behavior in a wide variety of countries, in advanced and developing economies. Such cultural behaviors or traits characterized entrepreneurs by working in isolation, avoiding the possibilities of building clusters to promote regional development.

The needs to improve the essential abilities that conforms cooperation are evident. It is also very difficult to change such conduct with adults. So we decided to work with children to prepare future generations to live in a cooperative world, so badly hit by greed and individualism nowadays.

We have validated that working with children at an early age improves such behavior. This paper develops a model to enhance the essential abilities in order to improve cooperation. The model has been validated by applying it at a kindergarten school.

Keywords: cooperation, model, collaboration, essential abilities, interactions.

1. INTRODUCTION

The state of Puebla is a region where some industries have flourished in the past like the textile and rustic furniture. However due to globalization and world competition many textile mills and furniture factories have closed leaving many people unemployed and the regional economy has come down.

The creation of clusters in a region has been extensively validated [1] as a strategy to successfully transcend globally. However this implies for many organizations to compete but at the same time working together, sharing objectives, knowledge, information, and resources, collaborating intensively with related and supporting organizations, which have to do with cooperation.

We have been working with different clusters trying to promote collaboration as a natural tendency on adults. However it is been very difficult to infuse such virtue in their DNA. It is not difficult to conceive that children could have an easier tendency to collaborate with their peers. This could be achieved if they are motivated appropriately to respond more naturally to the virtue of cooperation.

2. DIAGNOSIS

We found that a cooperative behavior is absent in the majority of the firms in the region of Puebla, México. One of the consequences has been the foreclosure of most textile and furniture firms and also because of the lack of innovation and creation of clusters.

Based on questionnaires applied to business consultants we found that even though there is some evidence of improvement in the entrepreneur's cooperative behavior, they tend to work individually and in isolation. Entrepreneurs need to learn to cooperate in a global world, where a national and international cultural competence is necessary for survival.

3. STRATEGY

We usually understand and comprehend the world and the people around us through education. Based on the theory of constructivism which states that knowledge is built on previous experiences, it is very difficult to change the way of thinking and behavior of an adult.

That is why it was decided to evaluate a strategic shift in the way most adults were educated, by developing the abilities of cooperation in children where mental structures are under development. These essential abilities are described next within the context of a cooperative model developed as a framework for this research work.

4. MODEL FOUNDATION

To search for the essential abilities for cooperation, a simple definition of cooperation is proposed here as working together having the same objective, measuring its performance as a collective achievement rather than the traditional individual performance evaluation criteria.

4.1 The essence of the human being

Studies of the human brain for practical purposes have been typically divided in two parts, the emotional and the rational hemispheres. The emotional part deals with sensations and feelings and responds to stimulus instantaneously.

People with the ability to control and handle emotions, but at the same time understanding the emotions of others have more possibilities to live a plain full life. The physiologist Savory considers that emotional intelligence consists of five domains: "knowing your emotions (self awareness), managing your own emotions (self-mastery), motivating yourself (motivation), recognizing and understanding other people's emotions (empathy), and managing relationships (social abilities)" [2].

The rational or cognitive side of the brain analyzes the stimulus to comprehend the events giving them meaning and finding conclusions. It is intriguing that many organizations do not relate with other institutions because they don't trust them mainly because they do not want competitors to know their strategy and the way they manage their business.

This comes from a deformation of the concept of competition. Competition in Latin literally means consensus, not beating others as understood nowadays. There is even a common saying in some Latin-American economies, "if you do not cheat you do not progress". Cheating could provide a short term success in some cases, but not a long term one. This entrepreneurial reasoning must change.

When economic transactions are performed with truth, meaning transparency, responsibility, honesty and justice, an environment of confidence, communication and dialog is created. As a result, love and affection arises, creating a sense of community, where transactions become distributive instead of commutative where reciprocity and solidarity are present to create a reinforcing environment.

Pope Benedictus XVI [3] states that "The essence of a human being is the perception of an interior impulse to love in a truth way. Love and truth never abandon us completely because they are the calling that God has put in our hearts"

4.2 Relationship with others

Some conditions in organizations that foster cooperation are presented next. In regions or countries where clusters of organizations are present, there are continuous and direct interactions amongst members, building strong linkages. The more frequent the communication and information sharing the better for the advancement of the cluster, which translates into better understanding of each other´s culture, technical language, and face to face contacts, building knowledge which is the basis for innovation [4].

The direct observation of processes and products enrich the creation of knowledge [5]. There must be trust between the parts because of the important information that flows in transactions. For instance, a superior example of cooperation is in place at the Mondragon Cooperative System in the north of Spain [6].

The root of their success is based on the idea of sharing, cooperation, caring for others having "love" as the center of the society. They started with an education program based on trust, collaboration and moral values. The philosophy of the economic activity is based in the concept of "equilibrium", which translates as equilibrium, having the purpose of promoting unity in the diversity in a society. It has three characteristics:

1. Identify the importance of the person and the group.
2. Allowing the existence of different responsibility levels according to capabilities.
3. Considering what it is called "opportunity", meaning placing the events in the present. There is a limit in the size of the organization for the benefits of personal relationships, intimacy, confidence and better communication.

4.3 Education

Communication is the condition which makes education possible. Education presents two complementary aspects, one related with the transmission of information and knowledge, and the other with the interactions of the actors of the process. The foundation of Constructivism is based on the social interactions and the intelligence built around it [7].

According with this perspective the particular worth of a human being is not the capacity to understand the world, but by the constant interpretation of the minds of others manifested by different forms, such as in words, actions, and developments among others. Such capacity let us learn from others and understand our own mind. Constructivism is the predecessor of the cooperative learning [8].

Five elements are required for cooperative learning [9]:

1. Positive interdependence. That means the need to work together.
2. Individual and group responsibility. The group members have common objectives and each member assumes its responsibility.
3. Stimulate interactions.
4. The members of the group have the personal and team abilities required.
5. Group evaluation rather than individual.

5. MODEL DEFINITION

The framework for this research is represented by a model that consists of seven modules. The first module of the model is called "Vocation", meaning the natural tendency, the reason for the existence of something, the inspiration to follow. The natural tendency is to orient ourselves by instinct and reasoning based on our being, believes, qualities, preferences, developing skills to face our lives. The reason of existence is the purpose and in the organization is the common purpose that gives cohesion. The vision must be clear, and specify the purpose of our efforts and everyday work.

The authors believe that there is an intrinsic and continuous search of our vocation. We could say that in a supportive

environment, a vocation is supported by the creator's need to work together.

The second module is defined as the "Values" component. Values represent the foundation and the base of behavior of individuals and groups. They are the guidance and orientation of any process activity, describing the behavior of each person and the relationship with others. Ethical contributions are values that go beyond particular benefits [10]. Benefit values of an organization should be selected by all their members, such as truth, justice, solidarity, generosity, love, and others. The collaboration that each member of the organization perceives of others determines the confidence created in the organization.

The "Organization" element is the third module of the framework for cooperation. It represents the setting where the actors perform, where the vocation and values of the people take action. It is the environment that influences the interactions and their performance. It is desirable to promote collaboration across the entire organization in order to achieve better results.

The fourth module reflects "The Success Factors" of the cooperative model. They represent the key elements that guarantee the cooperation across individuals and organizations. The main success factors have been grouped in two different levels for the purpose of this research.

The first level includes seven factors:

1. Common objectives
2. Principles and rules
3. Common language.
4. Frequent interactions
5. Trust environment
6. Well defined roles
7. Innovativeness

1. Common objectives have to be created because of the need to work together. The common objective has to be something significant, interesting or important.

2. Principles and rules are the signs to indicate the road to follow for personal relations to flow smoothly with minimum conflicts. Frequent interactions create conflicts inevitably. The principles and rules are flexible and apply according with the situations.

3. Common language refers to the communication vehicle used to exchange ideas, thoughts, knowledge, and initiatives in order to have the same meaning for all the participants, going in the same direction as the common objective.

4. Frequent interactions provide the opportunity to know, share, change, implement, create and innovate.

5. Trust environment refers to the sensation of freedom. It is created by the acceptance of each person just as he or she is, having virtues and weaknesses.

6. Well defined roles help to achieve their performance, speeding up decision taking and reducing conflicts.

7. Innovativeness is an ingredient to increase and maintain the interest in the common objective. It implies diversity and a variety of ideas, analysis and flexible implementation.

The second level of success factors of importance has to do with the operationalization of the model and include:

1. Balance of interests and needs
2. Common technology
3. Limited group size
4. Training
5. Change adaptation

1. The balance of interests and needs refers to justice and equity among the members of the group.

2. Common technology helps to build knowledge and to align processes. It is a tool to think, criticize, deduct, discuss and infer.

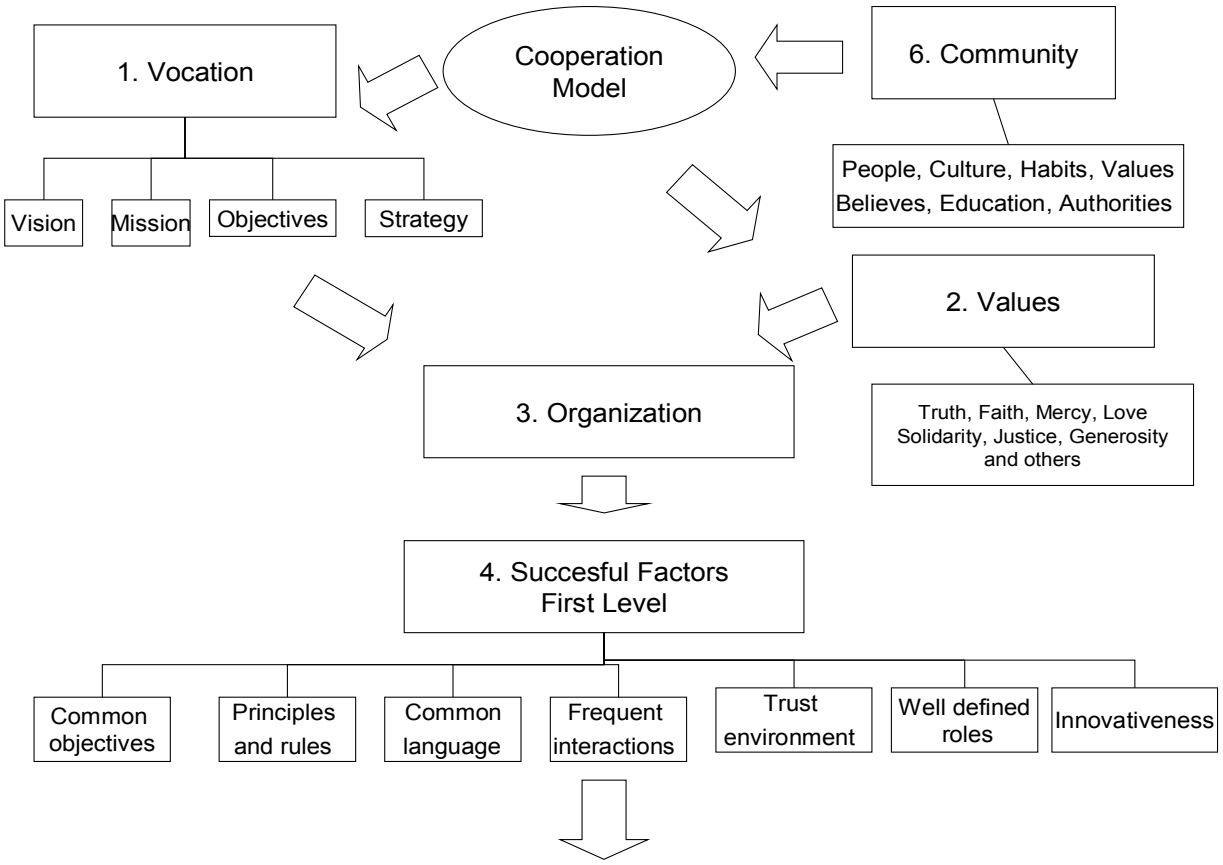
3. A limited group size usually creates a feeling of belonging, identification and integration, which makes it easier and is more effective.

4. Training gives the opportunity to support the achievement of the objective.

5. Change adaptation implies a continuous adjustment to a changing world of scenarios and the capacity to be a leader or follower as needed. In a few words, be ready to change.

The fifth module of the model is comprised of "Performance Indices" with respect to a) human capital, b) profitability and return on investment, c) Innovation and d) growth. The framework can be adapted to any environment to enhance collaboration. For the specific application of the framework to the kindergarten case, the only indexes used pertain to human capital, as one would expect.

The Community module the sixth module and represents the surrounding environment of the organization. It has to do with people and their culture, believes, values, habits, education, and authorities. For the kindergarten case, the community relates to the families of the school children.


1. Vocation
Cooperation Model
6. Community
Vision
Mission
Objectives
Strategy
People, Culture, Habits, Values
Believes, Education, Authorities
2. Values
3. Organization
Truth, Faith, Mercy, Love
Solidarity, Justice, Generosity
and others
4. Succesful Factors
First Level
Common objectives
Principles and rules
Common language
Frequent interactions
Trust environment
Well defined roles
Innovativeness

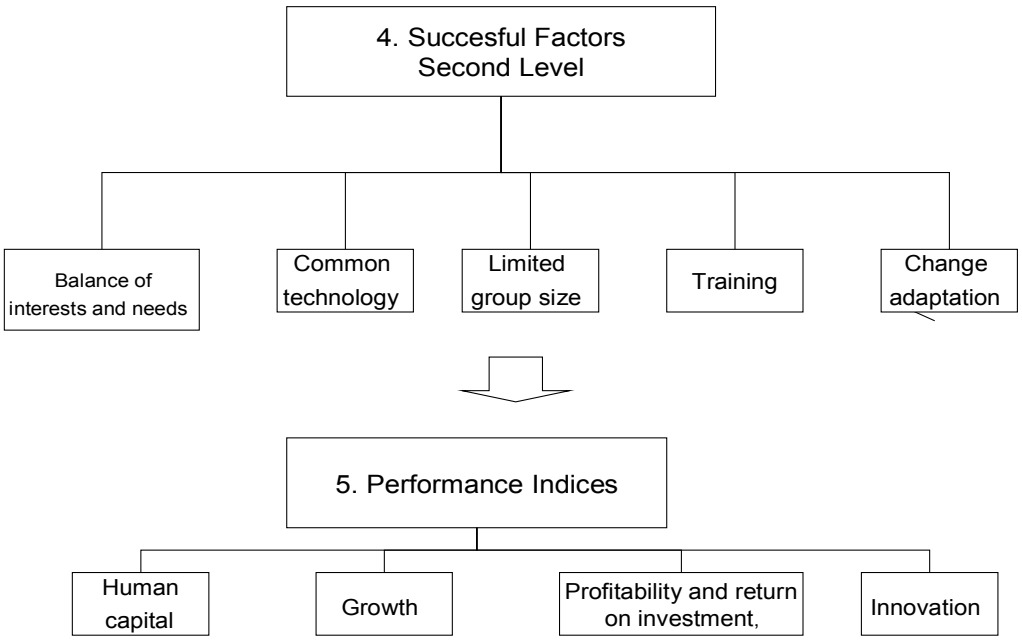


Figure 1. General Model for Cooperation

6. ESSENTIAL ABILITIES

One of the key elements required for cooperative learning according to Johnson and Johnson [9], refers to a disposition of the group members to cooperate. That means, that they have the personal and team abilities required for collaboration. These could be intrinsic to the individual due to cultural heritage or developed by each person as part of the evolution in the pursuit for cooperation to accomplish any vocation.

These abilities has to do with getting along, solving differences, taking decisions, respecting and serving others as we would like ourselves to be treated. With respect to an individual and from the emotional intelligence perspective, we focus in four domains: self awareness, self-mastery, empathy and social abilities.

The cognitive ability is another important one related with the capacity to understand and to learn the need to cooperate, as well as its advantages. The last ability is comprehensive, and is called the ability of cooperation and has to do with generosity, the ability to give unconditionally, as Mother Theresa used to call it.

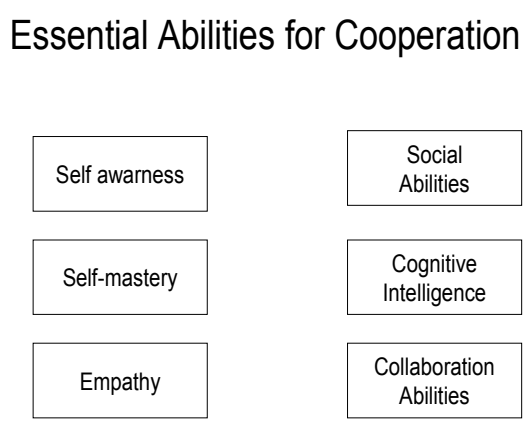


Figure 2. Essential Abilities

7. APPLICATION OF THE MODEL

The cooperation model was applied in a kindergarten mainly because their vocation and values are in line with our definition of cooperation. So we decided to work with children to prepare future generations to live in a cooperative world.

The Public Secretary of Education in México (SEP) created the Educational Program for Kindergartens in 2004, which is based on competences, such as knowledge, skills, attitudes, social abilities, and values that children acquire through the learning process, evaluating the performance under different circumstances.

Even though collaboration is mentioned in the fundamental purposes of the SEP program which are the essence for the development of competencies list, collaboration itself as a competence is not in the list. We propose to include specifically learning to work in collaboration, as one of the competences in the field of Personal and Social Growing in the aspect of interpersonal relationships.

7.1 Development fields

According to SEP [11], there are six development fields where these capacities need to grow:

1. Personal and social growing.
2. Language and communication.
3. Mathematical thinking.
4. Knowledge and exploration of the world.
5. Artistic expression and appreciation.
6. Physical development and health. [11].

The same way medical doctors use a treatment to cure a patient; we decided to carry out a comprehensive treatment to improve the essential abilities to enhance cooperation. The treatment consists of applying didactic situations in the six development fields just mentioned.

For each didactic situation a standard format was used to facilitate processing of the information. The format included the name of the didactic situation, its purpose, the capacities to develop, the development field, the didactic sequence, aspects to evaluate, aspects to think about and materials to use.

7.2 Didactic Situations

The prior knowledge of the children has to be known in order to develop the didactic situations, since we learn building over past experiences. One desired quality of the didactic situations is to be a real one or a problem that the children have at the moment.

The history of the community, values, believes, customs, sayings, myths, authorities, food, and culture could be topics included in the didactic situations. They should be developed for the following areas: social development, affective, willingness, intellectual, physical and sexual health, moral and spiritual. The didactic situations have to be designed and organized in a way that cooperation is highly required. An effective way to instill cooperation is to implement it in common situations at home or at school.

When the didactic situation is complex and is related to several activities, it is recommended to classify it as a project. As an example, we develop a project starting with a didactic situation of "the lost dog". We began with a history of the dog, and then different teams were organized. The next day the search for the dog took place and a report was presented. A homework that included the parents was assigned to keep looking for the dog. The teacher showed a picture of the dog with the news that it had been found. Letters to thank the people involved in the search were dictated by the children. The project gave them the opportunity to organize themselves, take decisions and cooperate.

Another way to organize the didactic activities is by having a workshop. Here a space is conditioned and an activity like painting could be planned. In our case, we selected to work with a farm. The animals of the farm have to be painted. The children organize themselves to paint a different animal. Then the children are free to work. They children are encouraged to work things in cooperation with the guidance of the teacher.

We have developed the concept of "Needs Detector". Every person has a detector and has to be used every day. We practiced with them at school and at home. They have to say what needs are detected in the exercise. The idea is to sensitize the children of the needs around them. They must be aware of the existence and problems of their young fellows and fellow citizens.

Another concept is the "Union Vehicle". At the start a didactic activity or a new day, we can ask the students who is going with you in the vehicle to work together this new adventure.

The didactic activities have to be designed and applied taking into consideration the four pillars of "Education Learning: the Treasure Within, The report to UNESCO of the International Commission of Education for the XXI Century2, presided by Jacques Delors [12]. The four pillars are: Learning to know, by creating the interest and curiosity to learn and how to ask; learning to do, by practicing cooperation; learning to live together, by organizing teams listening and interacting frequently; and learning to be, developing all the students potentials.

7.3 Teachers Participation

The teacher´s roll in kindergarten is of vital importance. He or she has to know the previous knowledge that the students have before entering school. Based on previous knowledge and the improvements that each student has on the six development fields, the teacher plans the work in weekly biweekly classes.

The type of activities, their complexity, their sequence, the materials to use, and the scenarios, are part of the responsibility of the professor. The organization of the class, rules, discipline, an environment of trust, and spaces is also part of the job. That is why the teacher´s compromise with the concept of cooperation is crucial. The benefits of developing the contents of the activities, the materials and contexts to perform are important for the success of this idea**.**

7.4 Information and communication technology

The advancement of information and communication technologies has opened the doors for new ways of learning. The internet has changed our society having information and knowledge at hand. The Public Secretary of Education in

Mexico (SEP) [13] has developed a web page as a platform for the schools to get in touch and exchange experiences. It also provides material to be used in classes.

The challenge here is to use the videogames, movies and digital materials in a way that cooperation is needed to reach common objectives. The time and frequency used of these technologies have to be limited, since they have repercussions in the oral language and non verbal communication skills. In the long run, it could diminish the abilities to relate with others, having less empathy and social abilities. Supervision of the context of the materials is a must.

7.5 Guidance of the application of the didactic situation

The following section provides guidance for the application of each didactic activity.

Name of the didactic situation. The teacher asks students how much idea they have about the subject. The objective is to create an environment of trust and a common language.

Purpose. The teacher explains the main purpose of the activity, with common objectives and instructions.

Didactic Sequence.

1st Step. Definition of teams and roles (states the rules, establish the responsibilities, balance of interests, size of the teams).
To define the teams we used the Puzzle Aronson Technique [7].

2nd Step. Preparation of material (creativity and innovation).

3rd Step. Doing the activity (confident environment, frequent interactions, adjustment to change, and innovation).

4th Step. The teacher asks questions about the points to think about.

5th Step. Knowledge building (Create a drawing representing the activity just developed. Put it in a wall of the classroom together with the other didactic activities).

8. EXAMPLES OF DIDACTIC ACTIVITIES

The main purpose of the activities is to promote the spirit of collaboration. Some of the activities designed for this research are:

- Knowing my team
- Let´s go buying
- The hospital of collaboration
- Using wastes
- Travel to the universe
- Play fair
- The great firemen team

Each activity is evaluated in general terms using a standard format represented in Figure 3. Each student is evaluated using the format shown in Figure 4. The activities have been validated with experts in childhood education and pedagogy, as well as by the principal and teachers of the school.

Date :
NAME DIDACTIC ACTIVITY: _____
TEACHER:_____

SUCCESFULL FACTORS:
THEY WERE PRESENT

COMMON OBJECTIVES:	YES___	NO___	SOME (explain)_____
PRINCIPLES AND RULES:	YES___	NO___	SOME (explain)_____
COMMON LANGUAJE:	YES___	NO___	SOME (explain)_____
FREQUENT INTERACTIONS:	YES___	NO___	SOME (explain)_____
CONFIDENT ENVIRONMENT:	YES___	NO___	SOME (explain)_____
WELL DEFINED ROLLS:	YES___	NO___	SOME (explain)_____
INNOVATION	YES___	NO___	SOME (explain)_____
BALANCE OF INTERESTS AND			
NEEDS	YES___	NO___	SOME (explain)_____
LIMITED SIZE	YES___	NO___	SOME (explain)_____
TRAINNING	YES___	NO___	SOME (explain)_____
COMMON TECHNOLOGY	YES___	NO___	SOME (explain)_____
KNOWLEDGE FORUM	YES___	NO___	SOME (explain)_____
CHANGE ADJUSTMENT	YES___	NO___	SOME (explain)_____

Figure 3. General Didactic Activity Evaluation Form

DATE:_____
STUDENT NAME:_____
DIDACTIC ACTIVITY _____
Scale technique:
Scale of Likert:

1=I Totally disagree
2= I disagree
3=I am Indifferent
4=I agree
5=I Totally agree

SELF AWARNESS:	:___:___:___:___:___:
	1 2 3 4 5
SELF-MASTERY:	:___:___:___:___:___:
	1 2 3 4 5
EMPHATY:	:___:___:___:___:___:
	1 2 3 4 5
SOCIAL ABILITIES:	:___:___:___:___:___:
	1 2 3 4 5
COGNITIVE INTELLIGENCE:	:___:___:___:___:___:
	1 2 3 4 5
COLLABORATION ABILITY:	:___:___:___:___:___:
	1 2 3 4 5

Figure 4. Student Activity Evaluation form

9. PRELIMINARY RESULTS

A small kindergarten was selected as our research laboratory. Teachers follow a closed companionship with their students. The successful factors of the cooperation model mentioned in the Section 5 are present in general in all the activities developed during the school day. The teacher was trained in the application of the didactic activities and in the use of the evaluation forms. A group of seven children between four and five years old was chosen to implement the research. At such age, children already have self awareness.

A social map was created with the teacher before applying the model, relating each student with the rest of the group. The social map will be revised at the end of the year to evaluate the performance of the group and of each student.

Student	Self mastery	Self awarness	Empathy	Social abilities	Cognitive intelligence	Cooperation abilities
1	=	=	+	=	=	+
2	+	+	+	+	+	+
3	+	=	=	+	+	+
4	+	+	+	+	+	+
5	=	=	=	=	=	=
6	=	+	=	+	+	=
7	+	+	+	+	+	=
TREND	+	+	+	+	+	+

Figure 5. Preliminary Results

Eight didactic activities were applied having most of the successful factors present. The students had the opportunity to develop their cooperation abilities. The results of well planned and familiar situations are notorious; where they could identify real life situations, which made them understand better their reactions, learn about themselves, making a simpler effort to work together with their peers, improving their abilities.

To analyze the results, we applied a nonparametric statistical method known as "The Sign Test". Nonparametric tests are used in the social sciences when values are difficult to quantify. "They are particularly useful in making inferences in situations where doubts exist about the assumptions that underlie standard methodologies" [14].

The Sign Test is a particular Hypothesis Testing based in the binomial distribution where the answer could be success (+) or failure (-). The sign test is just the binomial test with p=1/2.

We defined the Null Hypothesis as follows:

Ho: The essential abilities of the children in the kindergarten after applying the model decreased and worsened (failure).

The alternative Hypothesis:

H1: The essential abilities of the children in the kindergarten after applying the model increased and improved. (Success).

The number of students is seven.

The number of abilities is six.

The total essential abilities measured were 7 x 6 = 42.

Since we need to check if the abilities improve, we used a one-tailed test. The null hypothesis that we wish to reject will be:

$$Ho: P(+) \leq P(-) \quad (1)$$

The alternative Hypothesis is: $$H1: P(+) > P(-) \quad (2)$$

The decision rule. First, we disregarded all tied pairs meaning results that neither improved nor got worse. And let n equal the number of results that are not ties.

n= total number of +´s and -´s (3)
+ Abilities improved = 28
- Abilities worsened = 0

n = 28 + 0 = 28

Let α represent the approximate level of significance desired.

α = .025

The Test Statistic T equals the number of + "plus"

T = 28

The value of y corresponding to α, is called t

The rejection region of size α corresponds to values of T greater or equal to n-t.

For n larger than 20 the following approximation is used.

$$t=1/2(n+w\alpha.\sqrt{n}) \quad (4)$$

$w\alpha = -1.96$

$$t=1/2(28-(1.96x\sqrt{28})) \quad (5)$$

t= 8.814

n-t = 28 - 8.814 = 19.185

T = 28 > 19.185

So the null Hypothesis Ho is rejected and the Alternative Hypothesis H1 is accepted.

H1: The essential abilities of the children in the kindergarten after applying the model increased and improved. (Success).

The results of the sign test proved and confirmed that in general the cooperation abilities improved. In some cases some abilities did not improve, but in any case the abilities got worse.

We revised the social map at this point of the research and found that through the activities, the children started to know each other better and adjusted to the group. There has been more integration in the class even though the compatibilities among them remain the same.

The topic of cooperation opens many possibilities for different ways of working with the students, having different projects, research, workshops, games, and any other activity that reinforces cooperation.
.
We need to start working at home with their families, so that we know the values being taught to their children. Their support in homework, and to receive training and guidance in order to develop at home the key successful factors such as a trust environment built with acceptance and love. This is the main purpose behind this work. To do so, we have sent a questionnaire asking for this possibility. A more ambitious plan

in the future is the school for parents, to learn from other parents, from experts, to learn basic teaching skills, all with the purpose of helping their children to transcend in true happiness.

10 CONCLUSIONS

We firmly believe that cooperation, collaboration and sharing are basic values that need to be present in society if we wish for this world to change for the well being of humanity. The efforts of several organizations to reverse the trend of individualism and selfishness are promising. We are excited about the preliminary results with children and we are in the process of establishing a similar construct for higher levels of education.

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