

MIXING COOPERATIVE AND COMPETITIVE APPROACHES AS A WAY TO ACHIEVE ACADEMIC PERFORMANCE

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Abstract: *As long as humans have walked the earth, people have depended on making continuous progress accomplished by learning and achieving excellence in every aspect of our lives. Developing new skills and keeping a focused mind on progress is what sets humankind apart. This paper aims to examine the available approaches and outline the benefits of mixing cooperative and competitive-based learning when studying or achieving performance. An overview of them is presented, where cooperation-based learning, competition-based learning, and a mix of both are explained in turns. Past research and findings are mentioned, analyzed, and the benefits and risks observed are taken into account. A series of tests and observations are also made that conclude that both competition and cooperation have downsides, which can be avoided when mixed. The study results show that a mixing of cooperative and competitive approaches is preferred by students and tends to give better results.*

Keywords: *Competition-based learning, cooperation-based learning, education, educational models, interactions, mixing learning strategies, performance, skills, strategies, students, teamwork.*

1. Introduction

Approaching the link between competition and cooperation is essential in establishing the correlation and differences between them and being a familiar concept and debate for several fields such as philosophy, sociology, politics, or

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psychology. The scope is to present a study to establish the relationship between these two social interaction types as strategies for improving learning and linking historical tangents on this research subject.

As a student works on formulating a response to a task, he or she must try to work together and talk to other students. The impact on exchanging ideas between students, working through misunderstandings to reach a typical result, absorbs the content more effectively and reciprocally to get an understanding. The cooperation environment leads to team participation and contributes to multilateral development, thus involving listening between students, exchanging ideas, and contradicting individual approaches. A student can bring his point of view and arguments. Moreover, an important aspect is that students run across different strategies, other styles of thinking, albeit gain experience involving these difficulties with group work.

What is the competition? Firstly, it is a competition between rivals and secondly a competition to outdo yourself. In everyday life, competition leads to an innovative environment, while competition between students is an element that turns potential into success. Competition is a significant element in our lives, so there would not have been so many technological revolutions without it.

Regarding other studies that analyze cooperative and competitive behavior, it can be noticed that these two types of social-human interaction represent two independent dimensions that introduce opposite means and approaches. However, connecting the vectors of both strategies can also involve essential advantages such as:

1. A cooperative environment in which competition takes place can lead to improved educational strategies.
2. Forcing cooperation between two competing parties would mean a product two times more efficient by complementing each other.
3. A strategy to use the cooperative environment for individualistic purposes instead of altruism could lead to crucial personal progress.

2. Overview of the approaches

A. Cooperative approaches

A notable remark given by anthropologist Ashley Montagu [1] is that cooperation is in close contact with society. Moreover, teamwork is vital for an organization, specifying that individuals must have good cooperation skills to be successful.

In the 1960s, the term cooperative learning was new and lacked attention by teachers and students. There was a giant monopoly of competitive and individualistic learning. The main idea of those times was based on social Darwinism. This approach revealed that the situation "dog-eat-dog" world [2] was

a baseline for students and must survive. The myth of "rugged individualism" was one of the most vital ideas for survival in a cooperative environment. Nowadays, cooperative learning is often used in all fields, especially in educational ones. It is a challenge to find an educational element about learning that avoids describing the use and the effectiveness of cooperative learning. So, it can be said that cooperative learning has achieved enough power to destroy the monopoly of competitive learning.

Gillies, Robyn says in his work [3] that cooperative learning is an educational instrument that transforms all the activities and lessons into the learning experience in academic and social scope. This type of learning is about structuring classes into small groups to make them work together, and every member's accomplishment depends on the group's triumph [3]. Approaching cooperative learning, it is not having side-by-side students who discuss individual performance and evaluate their assignments. It is not a "team" in which a single person does all the work, and the rest of the participants accept the job. Cooperative learning is about creating a real connection between persons. A strong interdependence of influences of each member must have a voice and a substantial role. The top part of cooperative learning is that students must work together to build and complete interdependent goals [4] and enjoy them as a group.

Cooperative learning is a teaching strategy that supposes organizing the tasks for small teams, which involve different students with different abilities to improve their understanding of a subject and perform the job together. It is different from cooperative learning because cooperation is an approach in which students impose themselves through interpretation and style, being outlined, primarily individuals. They must take responsibility for their ideas and actions and respect other individuals' choices [5]. Non-identical perceptions differently value cooperative learning. For instance, this approach was tested in lectures, and the results were conflicting. Vreven and McFadden [6] have found that cooperative learning activities are not as successful as discussed. Still, students from a case study by Cavanagh [7] concluded that cooperative learning approaches are beneficial for them because, in this way, they can interact. This matter helps them face and solve issues together, sharing different ideas through individual differences to construct better new perceptions and solutions [8, 9]. Zakaria and Iksan [10] considered that cooperative learning is more effective when students share ideas and cooperate to accomplish educational issues and tasks. Toumasis [11] has studied the effect of cooperative learning with 8th-10th graders that had to analyze and understand mathematical textbooks. He found that working cooperatively helped students create new relations, learn to appreciate, and make use of their mental differences.

Cooperative learning includes five components as presented in [4]: face-to-face interaction, individual accountability, positive interdependence, social skills, and group processing. Nam & Zellner evaluate cooperation as a positive interdependence in learning environments that can bring lots of benefits, improving

group success on doing tasks through mutual motivation and understanding roles. Based on positive interdependence, students must participate in an active way for their group voice. Morton Deutsch [12] has found that the foundation of a group consists of analyzing the group members' joint positions and motivations, which supposes a substantial role for each member of the group, being fully responsible for it. Positive interdependence can mean the positive coordination of mixed minds, which implies a healthy cohesion of a group's abilities. Thanks to this component, group members are focused on positive group goals, and so they are tented to isolate conflicts suppressing them with positive minds.

The face-to-face interaction enables the group members to address significant concerns and challenge their teammates in achieving the milestones and goals. This component facilitates productiveness, feedback, and support in the group [4]. Face-to-face interaction is about helping each other, and why not motivating. So that members challenge each other and promote each other's success. They are trying to help and complete other participants peacefully and actively. The sense of community is created and nourished through accountability and responsibility in these teams. The group's performance is associated sometimes with the weakest member, and for this, the team players help each other and maintain a good stat for the team.

Group successes depend on a series of unique effects on group success, in Slavin's opinion [13]. The group executes the social skills component intended to help weaker persons of that group. Group assignment permits a unique submission for the whole students, and this version balances the notions and helps the vulnerable group members. In 1986, Wall & Nolan evaluated group equity as a vital component for a group's future success, stating that more inequity can induce satisfaction to decrease and conflict increasing. It is substantial to have strong social skills in every cooperative group member because they keep the group united and affirm themselves. Skills include interactive communication, social and group skills such as management skills, joint decision making, loyalty, teamwork, and conflict management. Gillies and Ashman figured out that students taught to cooperate and help each other tend to be more respectful and appreciate other cooperation partners' influence [3]. For better performance of social group interaction, members should be good enough and free to listen to other persons, be objective critics, feel free to share ideas, accept different ideas, and be free to take responsibility for the group failure. To contribute to a team, each individual must have the right skills – in some cases complementary skills or the same, for the project, and in this way, the forehead goals can be reached [14]. Technical skills are required to succeed, but they also need good communication. The assertive approach can assure excellent working and planning in a team. Effective cooperation requires soft skills from its members to ensure compact and substantial group interactions[4]. When group members communicate to make decisions,

receive feedback to know what to develop, what to change, and what to reject. It aims for group effectiveness for better further results. Group processing appears when members can talk about group growth and improve the process in the group [4].

Certainly, cooperative learning strongly depends on groups. A teacher or educator has an essential role in managing cooperation between groups [3]. Cooperative base groups are heterogeneous, and teachers must be responsible for keeping the balance between members and teach needed social skills for stable and practical cooperation. To follow the vital concepts of cooperation, an educator must create the roots of all the components above specified in a group and make them meet, discuss, analyze until the moment when the group members will be ready to do these by themselves.

Teachers can make possible or improve interaction in groups, ensuring students stay near each other. This way, they can perceive each other's words, thoughts, ideas for keeping a constructive verbal and non-verbal dialog. If students can interact with their peers, they can learn to understand each other's thoughts and respectively afford others to understand their thoughts in Gillies' opinion.

Cooperative learning makes the use of different techniques, such as TPS, that allow students to approach a problem in a silent mode, putting down thoughts or keeping them in mind and then making students pair up to discuss each other's ideas. This technique is helpful because each student will have at least two theories based on a topic and will not suffer from a lack of arguments. Another technique is Jigsaw, which proposes the students split into two groups: homegroup and expert group. Once selected a topic, they are transferred from a homegroup to an expert group where they form themselves on the indicated topic. At long last, they return to their home group, but in the quality of teachers. Using Jigsaw Technique is the need to train and form teen researchers [15] in science and transform students into teachers, making them understand these differences. This plan of action is an excellent simulation of characters and their influences in science for the sake of the educational community. Timothy Hedeem created a variation called Reverse Jigsaw. The difference between the two is presented in the teaching step. In variation technique, students in teachers' roles do not return to their home groups but are teachers for the entire class.[16]. The other two techniques are the inside-outside circle. Students make rotations to meet a new partner every time to communicate for answering questions or discussing answers from teacher [16] and Reciprocal teaching with clear ideas from its title.

Having these explained, the main benefits of cooperative learning are:

- Students can learn better in groups when they can work and have an honest discussion. This setup facilitates reciprocal help to each other.

- Learning is improved when the medium is collaborative because free speech is promoted and addressed from multiple points of view.
- It allows interaction between students and teachers, and it can be applied to multiple audiences and student levels.
- Their lack of knowledge may less threaten students who learn from other students and, therefore, more comfortable asking questions from a fellow student rather than a professor that can be more explicit thanks to the similarity in thinking.
- Cooperative groups solve problems through interactive discussion among members.
- Weaker students have a great chance to exhibit and develop themselves and learn from the best ones in a group.
- Students can test themselves as listeners and teachers.

A threat among society is the constant evolution of cooperation marks Sharan. For example, managing heterogeneous groups for teachers can be a challenging idea to understand, sometimes stressful. It is a complicated challenge to keep the groups in a good state, explaining some concepts about coordination and cooperation skills. One risk is when the teachers always keep students in the cooperative space. As a result, the teacher may lose control.

B. Competitive approaches

In the Cambridge Dictionary, "competition" is defined as "a situation in which someone is trying to win something or be more successful than someone else." Competition usually preys on one's ambition and pushes him or her to strive to outperform their opponents and, most importantly, themselves. It's a vital constituent informing students into successful people, and it drives our world to a better tomorrow through innovation.

Competition can be classified into two classes: direct competition and indirect competition.

Direct competition refers to a situation in which individuals compete directly against each other to achieve better performance or win a sure reward. A good example would be a group of students who compete to earn the highest grade in a class or a race.

A situation in which an individual does not directly know his competitors and strives to achieve the most remarkable results he can muster is considered indirect competition. In particular, after graduating from secondary school, students apply to college. Only a finite number of seats are available, and the student is accepted only if he or she counts among the best students who apply. This situation may find

two students who do not necessarily compete against each other fighting for the same spot.

One of the problems of competition is that we wrongly think of it as the opposite of collaboration.

Team-based competitions require the people involved to take on challenging tasks, communicate, collaborate, cooperate and work as one. Having more teams trying to achieve the same goal goes a long way in motivating the teams to become more cohesive, collaborate, and develop new ideas. The competition also enhances social and emotional learning. Students gain a better understanding of how to deal with conflicting opinions, statements and mediate internal problems to better their competitors.

Brown, Cron, and Slocum [17] analyze competitiveness in 3 ways: trait competitiveness, perceived environmental competitiveness, and structural competition.

A person's temperament preference towards competitive situations is regarded as distinction competitiveness [18]. Educational psychology regards trait competitiveness as one of the most critical and dominant personality assemblies [19] [20]. Nevertheless, research regarding trait competitiveness in correlation to task performance is plenty, and mixed results were found. Carsrud and Olm [21], while studying entrepreneurs, found that trait competitiveness directly impacts company performance, and Brown and Peterson [22] concluded that sales performance and competitiveness are directly correlated. Other studies, using the work of Helmreich and Spence [23], found that performance is more common with people who desire to excel in challenging tasks and achieve mastery and show low levels of competitiveness.

Environmental competitiveness regards the way a person understands this race. Deutsch [12], Kristof [24], and others have declared that the most critical aspect of competitiveness is how the participant perceives competitiveness in an environment. One of the fields in which perceived environmental competitiveness is regarded as extremely important is education. Although many studies analyze the impact of competition on students in educational environments, none of them focuses on the individual and how his perspective on the importance of a particular competition affects his performance. Most studies analyze competition at a group level, trying to answer if competitive groups perform better than non-competitive groups.

Structural competition refers to basic situations in which two or more people compete against each other to win some rewards that cannot be enjoyed by all [25]. Most research regarding structural competition took place in simulated settings with groups of people, and mixed results were produced. Mueller [26] found that people tend to set higher goals in a competitive environment, while House [27]

concluded that men set higher goals in direct competition with women. On the other hand, women set higher goals if they work alone.

Studies have theorized that a competitive approach is best used when practical skills are involved [28]. Collaborative and cooperative approaches tend to specialize the people involved in certain aspects of the entire project, while competitive ones give an ample understanding of the whole mechanism. This is probably caused because one person takes on the whole workload and needs to know how every piece works and its purpose in the whole process. As for theoretical skills, cooperative approaches are preferred. More people working together implies that some of them have a clearer understanding than others, and they can share their knowledge with their peers. In sharing, the receiver is not the only one who benefits. The messenger gets to test his knowledge and find holes in his logic to understand the subject better.

When it comes to sports, the competitive approach takes the cake. It is vital when someone needs to push their limits and excel. The thought of winning a prize and being the best at something triggers the adrenaline rush and keeps you motivated in your training.

Nevertheless, some studies [29] do imply that competitions can be dangerous for children. Being part of a competition can create a risk for the participants to experience anxiety, depression and develop a poor sense of worth. Disappointing their teachers and parents may push them away from participating in other events or learning something new. Unjust expectations may put unnecessary pressure on a candidate, so it is best for children to have a close mentor for encouragement and to get them back up after a defeat.

C. Mixed approaches

Johnson & Johnson[30] stated that the two environments of cooperation and competition are very different in terms of learning, but in combination, it offers benefits to students. Following Kohn's [31] analyzes in education, it was discovered that Americans approach differently the term "competition," namely:

- The first opinion is one of "enthusiastic support" which presumes involving as many children as possible in the competition because in this way it fosters character and augments excellence.
- The second opinion sounds "qualified support", can be fun and healthy, regardless of the need to always win or be the number and eliminate competitors by pushing.

According to Kohn, it has been researched for a long time and assumed that the expression "healthy competition" is malicious, it simply harms. This process,

according to Kohn, should improve people's self-esteem and worth. But it is quite the opposite, increasing the chance of self-doubt and reducing the chance of developing as an esteemed person.

Kohn compares competition as "a recipe for hostility," explaining this expression with the fact that it can cause a problem, as one person wins when the other loses. One of the final points reached is the development of lousy relationship intentions or considering the friend as a rival / enemy. Johnson & Johnson [32][33] argue an approximately similar idea that competition has destructive consequences and should not be possible in circumstances where adolescents grow up. Both Kohn and Johnson both say that cooperation and working together are healthy ways of knowing and learning. Thus, one of Kohn's ideas is that educational practices prone to competition should be eliminated. Johnson argues that one factor that would enhance a positive attitude towards the teaching / learning experience is cooperative and non-competitive learning.

Johnson and Ahlgren [34] began contemplating learning approaches, cooperation, and competition. Following the analysis of this experiment, it was found that students were not motivated to learn because of competitiveness, but on the contrary of cooperation. Humphreys and Johnson's study shows that students' cooperative learning was more valued than competitive and individualistic learning. A central idea of these three personalities (Kohn, Johnsons, Ahlgren) highlights the multitude of problems that have a tangent with the adverse effects that the competitive environment can have.

Two different ways of approaching the way of learning are cooperation and competition. Therefore, if combined, Johnson & Johnson came up with the idea that it benefits students. The key to students' intellectual development and opportunities is the correct development of training methods and strategies that encourage both cooperation and competition. The long-standing authorities on cooperative learning, Johnson and Johnson, adopted as a necessity the inclusion of cooperative learning mixed with individualistic / competitive learning. Cooperation combined with competition is a way of working. This strategy combines elements of cooperation with some features, necessary characteristics of motivational competition through inter-group between teams of collaborative students. For instance, in 1995 Wynne came up with an interesting analysis of sports management instructors who should usefully group students into heterogeneous or homogeneous groups. As a result, these groups should be interested in seeking individual results and solving team problems. Therefore, qualify the team and increase some individual positive results. One of the important remarks in history was made by Johnson and Johnson in 1998 [2]. That remark sounds like conditions are an important factor in his research, and competitive or individualistic efforts were the pillars around which his thoughts were. His project focused on a strong idea of showing the need for more work to get results on the conditions in which these two combined are effective. Already in 2004, Tauer and Harackiewicz [14]

discovered that the motivation of the participants was closely related to the combination of the 2 methods of cooperative group learning with the inter-group competition. All the analyzes and ideas led to the fact that the participants' happiness, motivation, and well-being is in direct connection promoted by cooperation and competition.

According to Morton Deutsch [12] the theory of cooperation and competition is based on two main points:

- The interdependent nature of the goals of the people inside the situation: when both can achieve the goal at the same time (facilitating interdependence) or when only one of the participants can achieve the goal (opposite interdependence). In most life situations, there is a complex interdependence of goals, where both the facilitating and the opposite interdependence coexist simultaneously. But interdependence is a prerequisite, without which conflict will not arise.
- People act in a certain way: cooperation (coordination of actions to jointly achieve goals) and competition (strengthening their position at the expense of infringing on the interests of another).

In the same way, according to Deutsch the law of social relations: The characteristic processes and effects caused by a given type of social relationship tend to cause this type of social relationship. Cooperation will evoke and be provoked by the perception of unity, willingness to help, openness, trust, and friendliness, etc. Competition will be provoked by threats and cunning, limited communication, suspicion, emphasis on differences, etc. According to Deutsch, a conflict can arise in a cooperative and competitive environment. But the environment will influence the course of the conflict and the quality of its resolution. A conflict taking place in a cooperative environment has more chances to be resolved productively, with the achievement of a positive or even maximum positive result (as can be seen from the example of the prisoner's dilemma). The competitive environment can lead to a destructive resolution of a conflict situation. However, rivalry does not always lead to a negative result (which again can be seen in the example of the prisoner's dilemma: rivalry can maximize the gain of one, but only in conditions of loss of the other). Deutsch proposes to create a cooperative environment in a group so that conflicts within it are resolved productively. This is possible if we use the law of social relations. When creating an atmosphere of friendliness and support, with an emphasis on common goals, the participants of interpersonal interaction will help each other in achieving the goal, exchange information useful for the solution, and form positive attitudes towards each other and will also be satisfied with the joint result and their personal contribution to it. Deutsch assumed that the situations of interaction and strategies of behavior in these situations for interpersonal and intergroup (in small and large

groups) conflicts are the same, and they can be considered using identical categories.

The cooperative system of interaction will be characterized by:

- Effective intergroup communication, verbalization of a large number of ideas, and receptivity to them.
- Manifestations of friendliness and mutual assistance, satisfaction with their group. Coordination of efforts and division of labor.
- Respect and responsiveness.
- A feeling of similarity in beliefs and values, trust in-group members.
- Willingness to increase the resources, strength, and capabilities of another member of the group to achieve common goals.
- The conflict is perceived as a problem that must be solved by joint efforts. Limiting the expansion of the conflict. [35]

The competitive environment will have completely opposite characteristics and is based on the possibility of resolving the conflict by strengthening one's own single position and suppressing another, which will lead to escalation.

3. Tested approaches and results

For testing separately each approach and afterward testing their mix, we have analyzed the students' feedback and results in different types of activities. Because self-evaluations and reports are very important to us, we have created some opinion surveys using Google Forms and asked a group of 20–24-year-old students to answer 9 questions. Students were asked their closest learning strategy and the life situations they use or participate with them. To respect the privacy of users' data, we have excluded the need to enter an email address, to collect as many anonymous responses, which are as easy to express from students, as effective for obtaining important and concise results from this experiment. For the introduction of a user in this opinion poll, we made a short introduction in which we explain what the notion of cooperation and competition means, following that the person who expresses his position to approach on his own what impact they would have in the 2 forms, independently and mixed in the learning process. Subsequently, they were initially asked which of these learning environments seems to be the most comfortable for efficiency in the learning process, following the requirement to write at least one advantage and one disadvantage for a cooperative learning environment and a learning environment competitive by allowing them to freely express what these 2 approaches mean and imply for each in an educational environment. For the analysis of the results, the students were asked to express their thoughts on mixing these 2 dimensions, namely what would be the limitations

of sharing competition and cooperation for learning and what qualities they can develop in the future for participants.

To find an interdependence between students' responses, we asked them to tell us how often they are involved in events related to competitiveness and cooperation. Students prefer to participate more often in cooperative environments with a gap of 13.9% compared to competitive. Whereas, in the competitive environment, 32.6% of students occasionally go to such events. Results are summarized in Fig. 1a and 1b. The result of this experiment was somewhat expected by us. For the choice between the 3 variants, the most voted was the Mixing of competitive and cooperative approaches - 48.8% (fig. 3). Regarding competitive learning, most participants wrote that this approach is the most stimulating method of learning and that it offers a person the best way to express themselves (about 80%), while 20% considered that competition is the more efficient multilateral own development method. On the other hand, most participants (65.3%) also gave arguments against competitiveness.

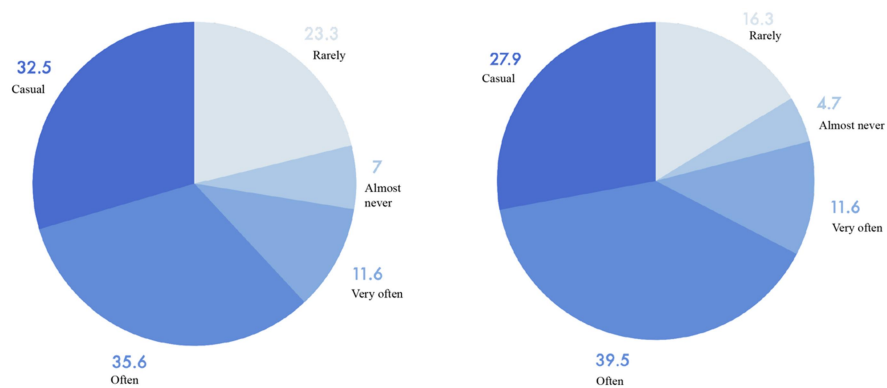


Fig. 1. a) Frequency of competitive activities, b) Frequency of cooperation activities

For example, 87.3% said that competitions can easily provoke conflicts of interest between participants, and others said that it can become a big disadvantage for shy people thus they risk not being able to express themselves.

As for the cooperative learning method, the strong points were about teamwork and the impact of the team on each member. This leads to socialization, group integration, development of social skills, and positive interdependence of members. Among the downsides, about 90% alluded to the inequality of forces in a group, which can provoke conflicts and limit efficiency quite a bit, because the weakest will rely on the most diligent or their integration would involve costs, great time, and performance.

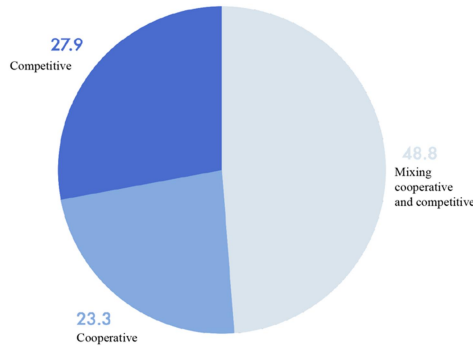


Fig. 2.

We mention that however the methods of cooperation were more preferred by the users than the competitive ones (53.5% vs 46.5%) (fig. 3). The most interesting part occurred when the survey participants had to express their opinion regarding the combination of the 2 learning models, thus managing to examine which approach has a greater weight in the selection of the best approach. Therefore, any limitations that may arise consist in differentiating members due to the competitive factor, which implies intimidation of less productive members or the risk of losing control of competitiveness to the detriment of cooperation. However, it was found that the participants largely appreciated the effects of combining the 2 educational procedures, as 62.7% emphasized the qualities of teamwork, 21% highlighted the quality of leadership and responsibility, and the rest were positive due to the social skills that maintain such an environment, such as: generosity, mutual help, friendship, or inspiration.



Fig. 3. Competition vs Cooperation

Another method by which we chose to analyze students' behavior in different strategies for learning and solving tasks was the team projects, in which we also participated, and we could observe the impact of the 3 strategies on the results inside. It is about 2 projects in the team that we had at college, which involved modern technologies, namely machine learning and web development. Obviously,

the diversity of knowledge played a significant role in these projects, and from the beginning, we tried to analyze the behavior of the participants in the process of learning and solving the project tasks. An important thing to specify was that in the first project, the participants had the opportunity to choose their project team individually, while in the second project, they were chosen randomly, which meant a greater challenge for team members to impose themselves in the project with new people. These 2 projects focused on the cooperation between the team members to complete the assignment, the second stage was the competitive process where the best projects were analyzed and evaluated. From the beginning, the members of all the teams were informed about these 2 stages, which made the mixing of the 2 strategies remain equally strong throughout the project. In addition, to validate the idea of mixing competition and cooperation in the learning process, participants were asked to give feedback and grades to teammates at constant intervals related to involvement and contribution to project development. Likewise, the participants in the projects were asked to express what they like and what they do not like in cooperation with colleagues and later. In this way, we have analyzed the discussions within the teams and feedbacks that were given at the end of the project to establish the results and conclusions on the efficiency of the combination between the cooperative and competitive approaches.

Analyzing the feedback given by project colleagues, we noticed that the results were relative, based on the quality of cooperation between team members, recording the opinions in Table 1. Students who had more experienced and responsible teammates had a healthy cooperation and fully appreciated this. However, unbalanced teams were a major problem that affected the performance indicators of the two policies. 91% of colleagues were enthusiastic about the occasion, having a good emotional state to repeat this experience, and 9% were skeptical about repeating such an opportunity.

Table 1. Advantages and disadvantages of mixing strategies

Advantages	Disadvantages
A way to improve yourself	Misunderstanding between co-workers
Efficient	Not everyone works enough
Competing for prize/grades	The desire to be the best can be harmful
Improving social skills	Slowed process
Gaining experience, motivation, and inspiration	Fear Environment for conflicts
"A new way of thinking" means a reasonable balance between cooperative and competitive styles	Strong individualism can occur because of competition

One important observation that must also be noted in this scientific paper happened during one of our university classes. During one laboratory of Software Project Management, the students were asked to pair into groups and work as a team. The assignment given consisted of playing CodeCombat [36], a well-known game in which you advance in levels by coding different "fighting" instructions to a simulated warrior. There was a limited time and the group who advanced most level would receive a bonus.

After the amount of time allocated passed, each team submitted a screenshot proving the level they reached and was asked how they approached the assignment. Once the answers were given, three working methods could be observed. Two groups of students worked together as a team, collaborating and cooperating, one group of students tackled the task by competing against each other and seeing who achieved the greatest result, and one last group combined collaboration and cooperation with competition.

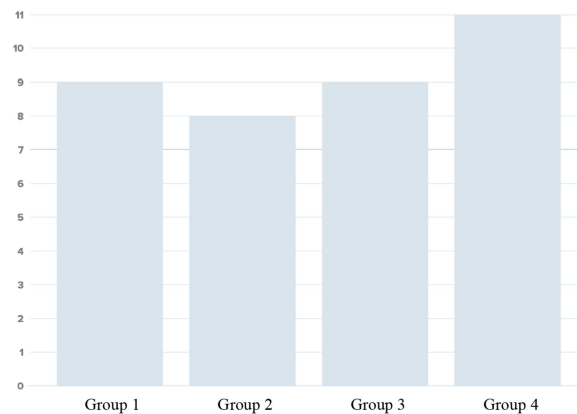


Fig. 4. Code Combat Competition: Number of levels reached

As shown in the chart above, the fourth group which mixed cooperation with competition managed to achieve the highest level in the assignment. The strategy used was to divide the group into sub-groups of 2 students, who cooperated by dividing tasks, and start a friendly competition to see which group could reach the highest level.

4. Conclusion

To summarize, cooperation learning is an interesting and valued approach and is based on those 5 essential elements, but it can become very challenging and difficult for teachers or leaders in groups and that is why it must be correctly managed by all cooperation members.

Competition itself is not bad, but the attitude one takes towards competition defines the outcome. While winning may give an adrenaline rush, failure is one the best teachers. Competitive learning is a great approach in any area if the risks of demotivating students are taken into account and actions are taken to minimize the effects of losing. Competitiveness helps to have a higher motivation within a group so that members have stronger tendencies to impose themselves for the development of the connected group and to react positively to various challenges.

Although there is an increased probability that a conflict will arise in the combination of the two methods, the appropriate regulation of mutual interaction can produce remarkable results in a qualitative environment. It is able to strengthen competitive positions in a vector of cooperation. By combining cooperativity, decreasing competition, firstly it benefits the diversity of the learning environment, secondly, it offers the chance to discover hidden talents in those who are good in the cooperative or competitive environment.

Critical to the success of cognitive development is the result that mixing learning styles leads to happiness, motivation, well-being and maintains the energy of the environment to be better and more productive. To control the sphere of influence between cooperation and competitiveness, the teacher must operate as an open-minded referee.

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