

## El aprendizaje cooperativo en la universidad. valoración de los estudiantes respecto a su potencialidad para desarrollar competencias

*Cooperative Learning at University. Assessment of Students Regarding its Potential to Develop Skills*

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### Resumen

Se presentan los resultados de la implementación de las metodologías activas, concretamente del aprendizaje cooperativo y trabajo por proyecto, y de la adquisición de competencias que genera en el alumnado, como enfoque innovador en la educación; contextualizado en una facultad de educación

Para ello se ha diseñado un cuestionario, con el que son los propios estudiantes los que valoran su aprendizaje siguiendo esta metodología, respecto a los métodos de carácter más tradicional que se ha venido utilizando en la docencia universitaria, basada, fundamentalmente, en la lección magistral.

Se observa, tras el análisis de los datos, cómo la valoración del alumnado en la consecución de estas competencias es significativamente más positiva tras la

implementación del aprendizaje cooperativo por el profesorado, a pesar, incluso, de que el tiempo de dedicación a los trabajos grupales se incremente considerablemente.

Como conclusión destacamos que los estudiantes consideran que no solo aprenden más, sino que su aprendizaje es de más calidad con esta metodología, desarrollando una serie de competencias esenciales en la formación universitaria y muy valiosa también para el ámbito profesional.

**PALABRAS CLAVE:** Metodologías Activas, Aprendizaje cooperativo, competencias, trabajo por proyectos

#### **Abstract**

We present the results of implementing active methodologies, specifically cooperative learning and project work, and the acquisition of skills in students generated as innovative approach in education contextualized in a faculty of education. For this we have designed a questionnaire, with which is the students themselves who value their learning following this methodology, compared to more traditional methods that have been used in university teaching, primarily based on lectures. It is observed after the analysis of the data, how the assessment of students in achieving these competencies is significantly more positive after the implementation of cooperative learning by teachers, although even that the time devoted to group work will increase significantly.

**KEY WORDS:** Active Methodologies, Cooperative Learning, Skills, Project-based Learning.

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## Introduction

The XXI Century university professor must be a competent professional, at least in terms of the three functions to be developed: teaching, research and management.

Although the teaching of university teachers is not sufficiently valued, but is considered a secondary role compared to the researcher, who is rewarded not only financially but with academic prestige and social recognition; in recent years it is reconsidering the importance of this function as a necessary condition for improving university quality.

Numerous published studies that justify the need and importance of the methodological training of teachers in higher education, regardless of the arrival of the so-called European Higher Education Area (De la Cruz, 2003 Torrego 2004, Garcia and González 2005).

In this sense, in some Spanish universities, including the University of Cantabria, they are promoting initiatives to enhance teachers traditionally work of ICEs function, conducting continuing education programs for teachers, focusing on didactic training appropriate to the new competences to be acquired university student and teaching-learning concept that emerges from the EHEA; well as training in new technologies, with a dual purpose, first, it is intended to get the teacher to dominate certain teaching techniques, and secondly, you can teach your students to use and then apply them in their professional development.

The University of Cantabria has, from the year 2004-05, in the Vice President for Quality and Educational Innovation, the "Unit Teaching Support" ([http://www.unican.es/Vicerrektorados/calidad\\_apoyo/apoyodocencia/formacionp](http://www.unican.es/Vicerrektorados/calidad_apoyo/apoyodocencia/formacionp) ). It is a program to inform the Teachers College of pedagogical and technological development needed to boost Teacher, improving academic performance and enhancing educational innovation strategies.

The pedagogical training offered primarily focuses on five major lines or themes: Competence training, learning strategies, assessment procedures, and techniques Virtual

Tutoring Teaching. These issues constitute the area of teacher training module for novice teachers who were certified training through the "Diploma of Teaching Innovation UC".

Taking this teacher training as a framework for this work, it must be stated that the authors, in addition to receiving training in various courses also teach courses within the unit offered by the Teaching Support. The result of this interest in college teaching methodology have been able to implement different teaching strategies, learning and assessment with our students over the past five courses. On the other hand, having participated in an R + D + I of the Spanish Ministry of Education (call 05-08) in which the opinion of the faculty four Spanish universities regarding different aspects of the EHEA is collected, we have known what degree of knowledge, use and importance given to various methodological strategies, the use made of ICT, or the importance it attaches to the evaluation of the program and the organization of the subjects, as part of teaching (Guerra González y García-Ruiz, 2010; Garcia Guerra Gonzalez and Alvarez, 2010).

The result of our research and our teaching experience, we make a strong commitment to active methods as the most appropriate for adult education, not just academic. In this sense, and because of the characteristics of this publication will focus our analysis based on our experience in the implementation of Cooperative Learning and Project work with students of the degree of Teaching (Early Childhood Education), Faculty of Education University of Cantabria, in the last five years.

## **COOPERATIVE LEARNING AS PROPOSED METHODOLOGY**

University teaching has traditionally been characterized by masterly exhibition class and in one direction, in which the teacher transmits some content orally, often increasingly supported by new technologies, and with little participation by students. However, this technique is still used and is likely to remain in the new university system, because if used properly and in combination with other strategies can achieve the desired results. Moreover, many experts are working on the development and proper implementation of new teaching methods, which certainly contribute to the success of the teacher's work (Gairín et al .., 2004, Garcia 2005, Mayor 1998, Medina, 2001; Méndez, 2005, Sanchez 1998, Torre and Gil, 2004; Troiano, 2000; Villar, 2004; Zabala, 1999), it seems a conception assumed by

most that the successful implementation of the teaching methodology is the combination harmonic of different strategies, which must be consistent with the interests and needs of students.

From our understanding of teaching, there is no optimal teaching method with which to achieve the best results, but each teacher must adapt their teaching to different situations, different groups of students to the different materials ; ultimately be to adapt their teaching to the student's way of learning. Therefore, since there are different ways of learning, the teacher must find the best way to communicate the fundamental contents and teaching those agreed skills. We agree with De la Cruz (1999 and 2003) when he states that each method should be adjusted to different factors to achieve excellence, factors such as the objectives, characteristics of students, the demands of the course, the personality of the teacher, the physical and material center and classroom climate conditions.

Regarding the change required of teachers, we should emphasize the need for a process of reflection on the role traditionally has assumed the teacher. In this convergence process acquires the new teaching approaches (tutoring and personalized student attention, monitoring and evaluation of the non-contact activities, coordination between classroom and non-classroom ... teaching), representing direct implications for teaching methodology (Zabala, 2000 and 2003; Mayor, 2003). That is why we considered the knowledge and use of other technical or methodological strategic to ensure the teaching - learning in which the student has to be the fundamental axis around which turn the design curricula each curriculum.

Our contribution in this paper aims to present the cooperative learning as an appropriate methodological approach in university education, which is not to say that other proposals should be rejected, such as the Portfolio, Problem Based Learning, Lesson or Participatory Magistral but can be supplemented. It is therefore necessary to consider the advantages of cooperative learning, from Cuseo (1996) to the teaching, learning and assessment, compared to other methods:

1. Promotes active student involvement in the learning process.

2. Capitalize the ability of groups to increase the level of learning through peer interaction.
3. Promotes independent and self-directed learning.
4. facilitates the development of the ability to write clearly.
5. facilitates the development of oral communication skills.
6. Increase student satisfaction with the learning experience and promotes more positive attitudes toward the study material attitudes.
7. allows the preparation of students as citizens.
8. allows to develop leadership skills.
9. prepares students for the world of work.

Johnson and Johnson (1989) state that can be achieved five essential elements: positive interdependence; face to face interaction; individual responsibility; social skills and self-group processing.

In our proposed methodology has been chosen to complement the cooperative learning project work as a strategy that gives meaning to the performance of the students along the course. It is proposed to learn from the implementation of a project, jointly, in which the proposal is based on solving a problem in terms of a plan, in which students have to identify what, with whom, for what how, complementary measures to achieve resolve, expected results, etc. how, risk factors to consider

The project was to make the development of a program for pre-primary education, also called the "Project", in which all elements of a work project adapted to this educational stage would be collected following the specific phases of a project: development or purpose, preparation or planning, implementation and evaluation (Ibáñez, 2008; Muñoz and Zaragoza, 2011; Parra, 2011 and Vizcaino, 2008). This whole process of project work is organized around organizing teams of cooperative work, following the above guidelines.

On the other hand, the formation of S. XXI, both university and in the compulsory stages, characterized by the appearance of a concept, "skills", if it's not new, has been a revolution

in both educational systems, by representing the relevance to the formation throughout life. Compulsory and post-compulsory education should be free people, committed to society, competent professionals in their professions, ie, not only cultural values and knowledge are transmitted, but a set of values, attitudes, skills, necessary transmitted citizens for life beyond academia. This is achieved with skills training, to which we devote the next section.

### **SKILLS TRAINING IN COLLEGE.**

Continuing with the previous approach, we believe that the University is to form responsible citizens active part of society. Which implies that, although professional training should not be the only type of training received at this institution, we believe it is essential that skills training is appropriate to the current job market. Therefore, there must be a continuous flow of information between the university system and the business system.

In a previous work (García, 2008) we analyzed the convergences and divergences between the education system and production system, in which we highlighted that although labor demand is satisfied by the education system, the lack of training itself is evidence some personal skills, and the ability for teamwork, leadership, initiative, commitment, etc.

Numerous literature sources and investigations are being carried out to detect this new demand. As an example we can cite a study by the University of Granada (Martínez, 2002), which highlights that employers sorely lacking in the preparation of college a number of not just academic skills such as the ability to integrate , adaptation to change, versatility, mobility, availability, involvement and commitment to his job and the company.

Cajide and others (2002) conducted a study to see to what extent the skills acquired at the University respond to the skills required by employers, highlighting lack some social skills such as teamwork, communication skills and know how to establish relationships .

Also interesting is the work of "The Agency for the quality of the university system of Catalonia" (2003), in which it is discovered that the Catalans graduates "suspended" in a

series of competencies or skills required by companies such as management skills, the ability to express themselves, both orally and in writing, leadership skills, decision making, critical thinking and creativity, in addition to more instrumental skills, such as languages and IT.

Finally we refer to the most sought after skills for employment, according to Seeliger y Conde consultancy specializing in executive search, among which as most demanded skills in the business environment include:

- Easy to hope for position, sociable, proactive, you know transmit energy project that will develop.
- Leadership enough to select, motivate and manage your team with a clear attitude of caring about others and their improvement as professionals and as people.
- Open, transparent, easy relationship at all levels, which stand out for their communication skills.
- Self-sufficient, able to make decisions for yourself.
- With initiative and creativity to bring new ideas and suggestions on improving their areas of responsibility.
- With discretion, reliability, integrity and honesty.
- With international profile, language skills and willingness to travel.
- Make it a personal, family balanced and professionally speaking.

According to Lobato (2006), skills that college students develop after work autonomously achieve successful competition are learning to learn, critical thinking competence, competence in self-motivated, competent to communicate effectively and correctly, competition the appropriate use of ICT competence in creative problem solving and competence in working collaboratively and cooperatively to know.

Similarly said Apodaca (2006) that the powers that develop college students through group work, and competencies classified as social order, would be the task-related strategies, such as ask questions, seek clarification, verify understanding, focus group at work, drawing



from ideas of others, to give information or ideas, follow instructions, regular working time, practice active listening and summarizing. On the other hand more powers linked to relationship strategies are developed to recognize the contributions of others, check for consensus, properly expressing disagreement, encourage others, to express support, inviting expression, reduce stress, mediate conflicts, express feelings and show appreciation.

As for the skills we consider important to develop studies of Education, we have a firm commitment to those not only will they help students achieve academic success in their studies, but also, they will help to unfold in a way more effective and successful in his later career, such as verbal communication, the ability of the synthesis, analysis and reflection on the information received, constructive criticism, involvement in different tasks, the capacity for autonomy and initiative .

After reading the above data, we believe our proposal to pose training skills through cooperative learning and project work, which is supported by the results obtained during these years and that we present.

### **SKILLS TRAINING IN THE COOPERATIVE LEARNING AND WORK PROJECTS: KEY FINDINGS FROM THE POINT OF VIEW OF STUDENTS.**

As already argued, during the last five years, we have been working with students of the degree in the Faculty of Education at the University of Cantabria, in the course of Teaching Early Childhood Education; I use cooperative learning as a methodological strategy, combined with project work. Naturally, throughout the different courses, implementation of this methodology has resulted making changes in the program of courses, assessment, the use of resources for the development of classes ... A despite the problems encountered, we have to move because the results obtained, both in the academic performance of students, as in the climate generated in the classroom, or the relationship established with the students, were worth it.

Among the various techniques of cooperative learning, we have opted for the application of two of the best known, the puzzle and group research, which is described below:

Technique "puzzle" or "puzzle" of Aronson (1978): The teacher divides or fragments the subject studied in many sections as members make up the working group. Each student is responsible for reading the text. Then meet in "expert groups" with students who have read the same text, to share information. Finally, students return to their home groups to draw together all the material.

- Technique "Research Group" Sharan (1980): Students choose sub unit or subject you have to study in class. Each sub-group divides into individual tasks within the group. Students research the subtopics together and then present the results to the entire class. This technique had its development in project preparation for kindergarten stage, raised in the course.

Since the aim of this publication is not addressing the process of implementing these techniques, we will present the results obtained after its implementation. To obtain these results, a questionnaire was designed, through which students had to assess the extent to which certain skills after the course, depending on the techniques used. The questionnaire was adapted from SEESQ (Students Evaluations of Educational Quality), developed by Marsh, HW and Roche, L.A. (1970) of the MacArthur Universidad Westem Sydney, Autralia; and Social Competence Questionnaire prepared by Torbay, Muñoz de Bustillo and Hernandez (2001).

The questionnaire consists of 25 items in which the value of students grade 1-5 according to a series of statements. As mentioned, students should value the achievement of a range of skills raised, both by the methodology used in the subject, as in others in which it has worked with other more traditional techniques such as the Master Lesson.

Each year, at the end of the courses students completing the questionnaire, which were obtained 416 responses from students, from the 2006-07 academic year 2010/11 to the course.

The skills poses work with these student groups have been proposed in line with those skills or competencies that we consider essential in university undergraduate education, and at the same time, facilitate the acquisition of other more specific that would be acquired in postgraduate, and previously raised as demanded by companies to their employees. Therefore, the skills that have worked in the classroom and the students expressed their opinion in the questionnaire are:

- Verbal Communication
- Synthesis
- Analysis and reflection
- Constructive Criticism
- involvement
- Autonomy
- Initiative

After the analysis of the answers, we can anticipate how year after year the work done and the results are satisfactory. Here are the relevant data:

Verbal Communication arises in the classroom as a fundamental skill in training every teacher, as voice becomes his most prized tool. Therefore, it devotes special attention to each and every one of the activities of the working groups, both in the classroom and beyond, providing a range of strategies and skills to improve it, but above all, offering opportunities to practice it.

If we take into account what is the trajectory of the students occupying our classrooms, we think that the language, oral communication, has been enhanced and is considered as a fundamental aspect in the curriculum of kindergarten, but unfortunately, in compulsory schooling oral language is relegated to the background, gaining importance in written language. Also in High School and the Vocational Training is given more importance to the written language, so our university students seen in forced to make oral presentations to their peers, without any prior experience, and of course, without any preparation times. In

this sense, and Loscertales Escalona (2005) indicate that students consider their oral communication skills as one of the competitions in which they feel less secure, especially in "ease of ease and addressed an audience" and "connection to the public. "

Therefore not surprising that more than 90% of students who responded to our questionnaire considered to have improved communication Verbal working in cooperative groups. There is also 8% of students considered to have developed this skill through a more traditional learning.

The ability to summarize information, or extract the essential from the secondary, is necessary in every student, regardless of the methodology used in the classroom. From the experience with our students, their perception regarding the achievement of this synthesis capacity indicates that improvement by working with cooperative learning groups, in the opinion of 95% of the students surveyed. However, 10% of these same students also believe that ability can be developed with the traditional teaching.

Considering the capacity of analysis and reflection as the ability to discuss, think, review, reconsider and grow an idea before making a decision, it is necessary to consider the fact that working in a group and having to meet targets previously established faculty, requires the development of this capability individually. The teacher should be a guide, facilitator, companion of student learning, what it requires is also doeth them the information from different sources, to complete the proposed activities. This means starting the synthesis capacity, previously presented, and analytical skills and subsequent group reflection to perform the work assigned in the best way possible. 92% of students who have worked with this methodology believe that has developed its capacity for analysis and reflection, compared with 8% who believe that they can also develop through more traditional methodologies.

We understand constructive criticism to the ability to position other interventions when they are opposite or different from their own, bringing their vision and enhancing the result. The cooperative group work necessarily requires the juxtaposition of different views, different opinions, so it is essential to listen to others, namely exposing one's ideas in the

best way possible and know how to negotiate and reach agreements that benefit all. Each member of the group must take into account that each and every one of the interventions must be respected, so this capability is not constructive criticism that disparages or override other inputs needed. The response of students to this question indicates that 93% believe that this capability is enhanced by cooperative learning, but also feel that can be improved through other more traditional teaching strategies, as 17% of respondents.

All Teamwork requires involvement of all its members to get the best results. By implication we mean the ability to provide feedback and ideas on different activities, engaging in its development until the end. In order for students to engage in assigned tasks and in learning subjects that teachers need to establish clear objectives, consensually with their students. In cooperative learning methodology, especially, it is required that each and every one of the group members are committed and involved from the constitution of the groups. The work of teachers is very important here, because sometimes the students' motivation decreases along the way, which means that the degree of involvement decreases. This work to accompany the groups to create a positive social climate in the classroom and ongoing contact with the groups is essential to maintain the level of involvement. Our students report that the ability of involvement is best developed through cooperative learning (for 98%). Also involvement in learning can be achieved through more traditional methods, for 15% of the students surveyed.

In previous pages we have addressed the changing role for teachers involves the new university system. But we must not forget what brings change to the student. This shift to an active, responsible, independent learners who have acquired a number of socio competencies that we presented above, requires an effort by teachers, who not only change their methodological approach, but has to make the student change with it. Our commitment to Cooperative Learning is further strengthened when we can still see how easy that change, both teachers and the students. This change requires the student to be an independent student in the learning process, understanding Autonomy's ability to solve activities using their own resources, without resorting to the immediate assistance of the teacher. Escribano (1995) demonstrated how Autonomous and Cooperative Learning is

necessarily united in the university system, and so consider our students, since more than 91% say they have enhanced this capability with the cooperative methodology. However, also 30% of them feel that this ability can be improved through more traditional methods.

The college student has to develop the capacity of initiative, if it really is an independent and active learner. The initiative is seen as the ability to initiate, carry out and solve various tasks. In our case, cooperative work groups require all members to develop this ability to achieve the best results in an effective way, and so they face in each of the activities to be performed. 80% of students considered that this ability is greatly improved with this group work.

## Conclusion

Improving the quality of university teaching necessarily require a change in attitude of university teachers, which is facilitated by the teacher training programs being developed by universities today. Moreover, the process of teaching, learning and assessment required by this new university system should focus on developing skills that facilitate socio comprehensive training, as demanded by today's society.

Once we know what are the skills that businesses demand of graduates are active methodologies and propose the most suitable to achieve, taking into account what the changes involved both teachers and students. That is, a new teacher, more focused on student learning is required than mere transmission of content; more aware of the difficulties that students in the learning process on the results of the evaluation of content.

Thus the role of the teacher changes from knowledge transmitter to facilitator of learning through active and participatory learning. By the students are required to be responsible for their learning, in the sense of initiative, make decisions about their learning, engage in teamwork with other students, in short, to be autonomous. This requires the implementation of what we call active methodologies since we agree with Weaver (2009) when he says that teaching in college is basically traditional, dominated the exhibition method, and further notes that according to the work of Garcia Valcárcel (1991 and 1992), the "interactive"

model (what we have called active methods), influence more favorably on student learning versus expository.

Of the various methods we have opted, like Leon and Cans (2005), for Cooperative Learning as that most suitable to form in these socio competencies that students should acquire. Throughout these years of implementation with students, adjustments in the syllabi at times, even in the areas in which they operate, of success and failures with different proposals for activities, we can reaffirm our commitment to Cooperative Learning. The project work also led to increased motivation for students, improved autonomous and responsible work, and an improved ability to search for information.

The response we have received from our students over the years shows that this methodology is able to improve the acquisition of certain basic skills in their university education, such as oral communication, the ability of the synthesis, analysis and reflection, constructive criticism, involvement with the task force, autonomy to improve their learning and ability to take initiative.

At the same time we have discovered a number of advantages achieved through the implementation of cooperative learning, such as the greater involvement of students in the learning process, increasing the level of learning through cooperative group work, the enhancement of learning independent and self, developing the ability to write clearly and oral communication, developing leadership skills. We also have seen an increase of greater satisfaction among students and a positive attitude to the subject, as well as preparing students as citizens and professionals in the world of work.

Finally, we present some proposals to improve the application of this methodology, the result of analysis and reflection that this experience has allowed us. This requires overcoming some obstacles we have encountered in this implementation, as is the high number of students enrolled in our courses (approximately 85); bad arrangement of furniture in the classroom with tables and chairs fixed to the floor; fragmentation of

teaching time in one-hour sessions of class; little or no experience of students in cooperative group work, etc.

To overcome these drawbacks we consider the work of Escribano (1995), which proposes some ways to facilitate teaching in small cooperative groups, from which we have adapted our methodology for greater efficiency:

1 Sort the seats, so that the groups can be located in a circle. In our case this is not possible because the tables and chairs if they are not anchored to the ground, are so many that it is very difficult to move, as there is no free space in the classroom. The change we made was to request the use of two adjoining classrooms for students to have sufficient space, while teachers can move from one to another during the group work sessions.

2 Organization of the instructional time in sessions over 3 hours. We consider it necessary to have sufficient time to facilitate reflection and discussion following the different activities in the classroom. In our tradition established faculty class sessions lasting an hour, but have managed to group them so that all groups they had at least one session of two consecutive weekly hours.

3 Expectations and ground to establish the start of work rules. As mentioned above, our students have little experience in cooperative work, although they work in groups, in which each member is a task that is eventually delivered to the teacher assigns. To improve this situation raises a number of rules to be considered by the members of the groups, and clearly states what goals to achieve in the course so that all students are contrasting what your expectations and assess whether it worth the effort.

4 Security, creating a positive social climate in the classroom. The climate of the class group and its relation with teachers is crucial in this methodology. To improve this we have chosen to allow the formation of groups by the students, although they were sometimes forced admission of new members. It is important that students feel safe with their peers and teachers, so we have tried to extend the hours of tutoring and the contents of these tutorials.



5 persons for the composition of small groups (3 to 5, always odd). Also we mentioned earlier we have numerous numbers of students, so we have chosen to create groups of 5-7 members.

6 Cooperation versus competition or individualism. This is one of the most important for the success of this methodology, and especially to ensure the socio-occupational skills training in the aforementioned aspects. It is essential to adapt the work in university classrooms to work as professionals in the business, so teamwork, cooperation should be enhanced and therefore, it is necessary to provide students with as many experiences as possible.

To conclude this work we should elude Delors and to emphasize that our primary purpose is to help our students to learn, to know, to know how to do, namely be and above all, a team player.

And in our efforts to improve every day, continue to lead the classroom various teaching strategies, combined with collaborative learning, not only ensuring the success of the academic performance of students, but the process of teaching and learning, making the student in the real protagonists of their learning.

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