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Original article

Projects with EduScrum techniques in the training of Art Education teachers

Proyectos con técnicas de EduScrum en la formación de profesores de Educación Artística

Projetos com técnicas EduScrum na formação de professores de Educação Artística

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ABSTRACT
A current challenge in Art Education is to achieve collaborative learning, both in knowledge management and in creation. This requires moving to new methodologies such as project-based learning and EduScrum, which emphasize teamwork. The objective of this article is to present the results of the collaborative learning of the students in the creation of a three-dimensional plastic work, through a project, following the techniques of EduScrum, in the subject Artistic Training III in the teaching career in Artistic Education. at the "Marta Abreu" Central University of Las Villas, Cuba, in the 2020-2021 academic year. A dialectical-materialist methodology was assumed that integrates quantitative and qualitative methods, based on a chronological series design with a single group to evaluate the collaborative learning of the students in the five phases in which the creation process was divided. The evaluations were carried out using a rubric created for this purpose. The results of the qualifications formed a time series from which the evolution of the teams was assessed. We worked with an intentional sample of eight students in the 2020-2021 academic year. The progressive progress experienced by the teams in the evaluations of each phase, both from a cognitive point of view and due to its positive impact on motivation, suggest that the collaborative learning of the students was strengthened by carrying out the project using EduScrum techniques.

Keywords: Art Education; EduScrum; Project Based Learning; collaborative work.

RESUMEN
Un reto actual de la Educación Artística es lograr el aprendizaje colaborativo, tanto en la gestión del conocimiento como en la creación. Ello exige transitar a nuevas metodologías como el aprendizaje basado en proyecto y el EduScrum, que ponderan el

trabajo en equipos. El objetivo de este artículo es presentar los resultados del aprendizaje colaborativo de los estudiantes en la creación de una obra plástica tridimensional, a través de un proyecto, siguiendo las técnicas de EduScrum, en la asignatura Adestramiento Artístico III en la carrera de profesorado en Educación Artística en la Universidad Central "Marta Abreu" de Las Villas, Cuba, en el curso 2020-2021. Se asumió una metodología dialéctico-materialista que integra métodos cuantitativos y cualitativos, a partir de un diseño de series cronológicas con un único grupo para evaluar el aprendizaje colaborativo de los estudiantes en las cinco fases en que se dividió el proceso de creación. Las evaluaciones se realizaron mediante una rúbrica elaborada al efecto. Los resultados de las calificaciones conformaron una serie temporal a partir de la cual se valoró la evolución de los equipos. Se trabajó con una muestra intencional de ocho estudiantes en el curso el curso 2020-2021. El avance progresivo experimentado por los equipos en las evaluaciones de cada fase, tanto desde el punto de vista cognitivo como por su incidencia positiva en la motivación, sugieren que el aprendizaje colaborativo de los estudiantes se fortaleció con la realización del proyecto usando técnicas de EduScrum.

Palabras clave: Educación Artística; EduScrum; Aprendizaje Basado en Proyectos; trabajo colaborativo.

RESUMO
Um desafio atual na Educação Artística é alcançar a aprendizagem colaborativa, tanto na gestão do conhecimento quanto na criação. Isso requer a mudança para novas metodologias, como aprendizado baseado em projetos e EduScrum, que enfatizam o trabalho em equipe. O objetivo deste artigo é apresentar os resultados da aprendizagem colaborativa dos alunos na criação de uma obra plástica tridimensional, através de um projeto, seguindo as técnicas EduScrum, na disciplina Formação Artística III na carreira docente em Educação Artística. na Universidade Central "Marta Abreu" de Las Villas, Cuba, no ano letivo 2020-2021. Assumiu-se uma metodologia dialético-materialista que integra métodos quantitativos e qualitativos, a partir de um desenho de séries cronológicas com um único grupo para avaliar a aprendizagem colaborativa dos alunos nas cinco fases em que se dividiu o processo de criação. As avaliações foram realizadas por meio de uma rubrica criada para esse fim. Os resultados das qualificações formaram uma série temporal a partir da qual se avaliou a evolução das equipas. Trabalhamos com uma amostra intencional de oito alunos no ano letivo 2020-2021. Os progressos progressivos experimentados pelas equipas nas avaliações de cada fase, tanto do ponto de vista cognitivo como pelo seu impacto positivo na motivação, sugerem que a aprendizagem colaborativa dos alunos foi reforçada com a realização do projeto com recurso às técnicas do EduScrum.

Palavras-chave: Educação Artística; EduScrum; Aprendizagem Baseada em Projetos; trabalho colaborativo.

INTRODUCTION

In the Artistic Training subject of the Degree in Education, Artistic Education, at the "Marta Abreu" Central University of Las Villas, Cuba, the process of artistic creation has traditionally been focused on an individualized basis, an aspect that relegates teamwork and It contradicts the needs to achieve an increasingly collaborative learning.

When referring to the current challenges of artistic education, Salido-López (2021) points out that "we are faced with a didactic

perspective in Art Education that values the implementation of cooperative strategies for the acquisition of different types of knowledge" (p. 1433). For this reason, teamwork has been incorporated into the teaching of artistic education, "the idea of creation and collaborative projects as an artistic practice within processes of knowledge exchange in alternative educational environments, have increased their interest in recent times "(Rodriguez, 2016, p. 10).

A change towards collaborative models implies transformations in the teaching-learning process, since "collaborative artistic activity has multiple facets and realities" (Álvarez-Rodríguez and Bajardi , 2015, p. 116).

In the first instance, it is necessary to transcend traditional models and incorporate new forms of collaborative work in teaching. Among these, project-based learning and EduScrum are of great value. The first "because of its potential in terms of the student's role and the collaborative and individualized way in which the student learns" (Hurtado, Leyva and Guerra, 2021, p. 115) and the second, because of its potential "for the management and effective organization of teamwork" (Hurtado *et al.*, 2021, p.115), since it very well defines the schedule and work responsibilities through events and artifacts designed for it.

The objective of EduScrum lies in the solution of a learning task (hence its relationship with Project-Based Learning). Its dynamic is based on the delivery of "learning results iteratively and incrementally, maximizing opportunities for feedback and adjustment" (Delhij, Solingen and Wijnands, 2015, p. 8), which is achieved with the concept of finished that consists of establishing the requirements that the product must meet in intermediate dates until the final delivery. "Incremental deliveries of 'Done' learning outcomes ensure that a potentially good outcome always leads towards achievable learning goals" (Delhij *et al.*, 2015, p. 8).

Another definition is fun; "fun is an important motivator for students and is therefore essential for better learning outcomes. Therefore, students should also indicate what they need to have fun during the work they are doing" (Delhij *et al.*, 2015, p. 8).

According to Delhij *et al.* (2015), the structure of the EduScrum teams is made up of a teacher (owner of the product) and a team of students. One of them, the EduScrum Master, is the team leader. The teacher determines the learning objectives, supervises the work, evaluates and advises the EduScrum Master; the teams work in a self-managed way.

EduScrum goes through a series of events that guarantee its optimal use. These are: the sprints, sprint planning meeting, stand up meeting, tasks, review and retrospective of the sprint. The sprints are the stages in which the process is divided, the rest of the events are contained within each sprint (Delhij *et al.*, 2015).

Furthermore, artifacts are defined as "resources designed to maximize transparency on key information to ensure the success of teams in reaching the 'Done' in the learning objective" (Delhij *et al.*, 2015, p. 19). These are: the product backlog and the worksheet. The product backlog is an ordered list of learning goals and methods that the teacher puts together for the entire process. The worksheet "is a chronological representation of the work of the sprint" (Delhij *et al.*, 2015, p. 19), which opens at the beginning and is updated as the sprint progresses until its completion.

The objective of this article is to present the results of the collaborative learning of the students, in the creation of a three-dimensional plastic work, through a project, following the EduScrum techniques during

the development of the Artistic Training III subject in the teaching career. in Art Education at the "Marta Abreu" Central University of Las Villas, Cuba, in the 2020-2021 academic year.

MATERIALS AND METHODS

A materialistic-dialectical basis was assumed that integrates quantitative and qualitative methods from a methodological design of chronological series, with a single group to evaluate the collaborative learning of the students in five moments that correspond to the five phases in which the study was divided. process of creating the three-dimensional plastic work. These phases are the sprints, according to EduScrum terminology.

The following methods were applied: interviews with teachers and students to verify the methods applied in the teaching-learning process of the Artistic Training subject, before the practical intervention; observation to qualitatively assess the performance of the students and the researcher's diary and documentary photography as a record of the work of the teams. The pedagogical test to measure the collaborative learning of the students in each of the five sprints, using a general rubric created for this purpose as an evaluation instrument. With the results of the evaluations, a chronological series was formed to assess the evolution of the teams in each of the evaluated aspects.

The practical intervention was organized through the integration of two processes, one main and one complementary. The main process corresponded to the sequence of topics of the Artistic Training III subject that addresses three-dimensional plastic. The first topic studies the general aspects of three-dimensionality in plastic arts and the remaining three delve into particular manifestations: sculpture, architecture and crafts. The complementary process was dedicated to the development of the project using EduScrum techniques. In accordance with the objective of this article, the analysis focuses on the complementary process.

The project consisted of the creation of a collective work related to one of the three-dimensional plastic manifestations studied in the last three themes of the main process. The type of three-dimensionality and the specific theme of the work was chosen by each team.

The sprints were formed in the sequence: selection and definition of the final work, sketch of the final work, work on the creation process, analysis of the appreciation of the work, elaboration of the final work and finished exercise (figure 1).

Fig. 1- Correspondence between the main and the complementary process *Source:* (Hurtado *et al.*, 2021, p. 115)

For each sprint, the advances that should be obtained in the work of each team were determined; this constituted the concept of finishing each sprint.

We worked with an intentional sample of eight students, who made up the only group that took the subject in the period selected for the practical intervention. For the development of the project, two teams of four students each were formed.

The work dynamics of the teams was organized following the methodology established by EduScrum (figure 2).

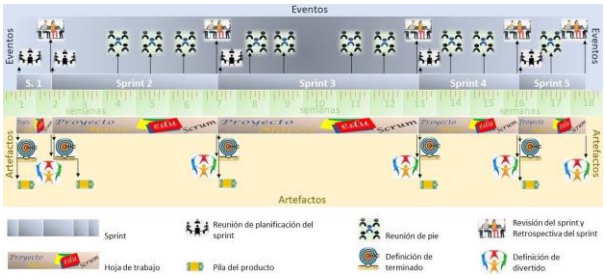

Fig. 2 - Dynamics of EduScrum with events and artifacts
Source: Own elaboration

The planning meeting was held at the beginning of each sprint. The standing meeting was conceived with a weekly frequency, in the first class of each week, in a time of five minutes for each team. In this, a balance was made of the results of the previous week and the pace of future work was adjusted (figure 2).

Each team prepared a worksheet that was posted on one of the walls of the classroom to facilitate access to its update by the members. This was made in the form of a banner, on which a table with five columns was drawn. In the first column, "Stories", the results achieved in the previous sprint were collected: individual and team evaluation, notes on the collaboration between team members and evidence of the tasks completed that served as a guide for the continuity of the work. In the second column, "Acceptance Criteria", the rubric to evaluate the current sprint was included. In the third, fourth and fifth: "Pending", "Busy" and "Done", respectively, the sequence in which the individual work was completed daily during the sprint was written, according to the tasks assigned to each member. Four boxes were added to the bottom of the worksheet: DD, "Definition of Funny"; DT, "Definition of Done"; " Burn Down", for the timeline that confirmed the pace of the team's work and "Impediments", to write the barriers that hindered the fulfillment of the work sequence according to the declared timeline. The teacher checked daily the updating of the worksheet and assessed its content.

To evaluate the sprints, a general rubric was drawn up that was later specified for each sprint, according to its particularities. Its structure contains three components: general aspects, aspects to be evaluated and evaluation categories.

General aspects included:

- Rubric title: Rubric for the evaluation of the sprint (sprint number).
- Subject: Training Artistic III.
- Team members names.
- Evaluation date.

The aspects to be evaluated included: defense of the product, use of support media, dissertation, teamwork, worksheet, technical defense of the product, plastic quality of the product and performance evaluation.

The evaluation categories were: Insufficient (2), Beginner (3), Advanced (4), and Exemplary (5). The indicators of each of these categories were defined for each aspect to be evaluated.

The rubric for each of the aspects to be evaluated is explained below.

The first aspect is the defense of the product that evaluated the link achieved between the sprint topic and the rest of the project contents, as well as the level of hierarchy that the sprint topic acquires with respect to the rest of the project contents (table 1).

Table 1- Rubric to evaluate the defense of the product

	Evaluation Categories _			
Aspects to be evaluated	**Insufficient**	**Beginner**	**Advanced**	**Copy**
product defense	It does not explicitly reveal the sprint topic or does not establish a relationship between the topic and the rest of the project contents.	Although it declares the topic of the sprint, it does not express little relationship with the rest of the contents of the project or the relationship is ambiguous.	It declares the theme of the sprint and relates it to the contents of the project, but it does not take it as the central idea of the presentation.	It declares the theme of the sprint, relates it in an essential way with the contents of the project and expresses it as a central idea.

The second aspect to be evaluated was the use of support means. Here the use of various media during the exhibition was considered, to illustrate the results achieved in the sprint and how these media contributed to the sprint result. Among the means considered were: electronic presentation, sketch of the work, results of the creation process up to that sprint, materials to be included in the work, etc. In this aspect, the quality of the medium presented and its usefulness to illustrate the results of the sprint are evaluated (table 2).

Table 2- Rubric to evaluate the means of support

	Evaluation Categories _			
Aspects to evaluate	**Insufficient**	**Beginner**	**Advanced**	**Copy**
support media	Does not use supporting media or uses media that does not illustrate the results of the sprint.	Uses low-quality supporting media that interferes with its usefulness in illustrating the sprint theme or uses it in an ambiguous way to support its exposition.	He uses good quality media related to the theme of the sprint, but fails to use all of its potential to illustrate his presentation.	Uses quality media that illustrates the essence of the sprint theme and uses it creatively in its presentation

The third element to consider was the dissertation that took into account the communicative quality, for which it was considered: diction, clarity of ideas and content mastery. Of these, the most important is mastery of the content, for this reason a student who makes content errors obtains the lowest grade (table 3).

Table 3- Rubric to evaluate the dissertation

	Evaluation Categories _			
Aspects to evaluate	**Insufficient**	**Beginner**	**Advanced**	**Copy**
Dissertation	Makes some diction errors or does not express ideas coherently and makes content errors.	Makes some diction errors or manifests lack of coherence in ideas, dominates the content, although not with depth.	He does not present diction errors, although sometimes he does not express ideas clearly. dominate the in-depth content.	Expresses himself with good diction, clear and coherent ideas, and shows depth in mastery of content.

The fourth aspect was teamwork, focused on collaboration among students; first to obtain the result of the sprint and second for the presentation of said result. As the collaboration to obtain the result occurs throughout the sprint, its evaluation extends

to the entire period that it lasts. In contrast, collaboration on the presentation only happens at the end of the sprint. For this aspect, a joint evaluation was issued considering both manifestations of the collaboration (table 4).

Table 4- Rubric to evaluate teamwork

	Evaluation Categories _			
Aspects to evaluate	**Insufficient**	**Beginner**	**Advanced**	**Copy**
Teamwork	The work is the result of only one student and the defense also focused on a single student.	Most of the students contributed to the final result, although there was no uniformity in the workload. the exposure relapses about one or two members.	They distribute the work among all the members and fulfill their function. They distribute the presentation and organize themselves to present and listen.	They distribute the work among all members and help each other to get better results. They make the exhibition in the form of a debate with respect and coherence.

The fifth aspect to be evaluated was the worksheet, and two elements were considered: timely updating of the worksheet and compliance with the work schedule. The latter is one of the components of the worksheet, which in this research has been identified as the sprint timeline. This aspect is measured throughout the sprint (table 5).

Table 5- Rubric to evaluate the worksheet

	Evaluation Categories _			
Aspects to be evaluated	**Insufficient**	**Beginner**	**Advanced**	**Copy**
Worksheet	The worksheet is out of date and the sprint timeline is not met.	The worksheet is updated, but there are backlogs in the sprint timeline, which take time to recover.	Worksheet is updated, backlogs seen on sprint timeline, but quickly recovered.	The worksheet is updated and no backlogs are seen on the sprint timeline.

The sixth element to consider was the technical defense of the product. Here, the following were taken into account: the level of detail and the social value, both in the elements considered in the creation process and in the appreciation of the sprint product. The level of rigor of the technical language used was also considered (Table 6).

Table 6- Rubric to evaluate the technical defense of the product

	Evaluation Categories _			
Aspects to be evaluated	**Insufficient**	**Beginner**	**Advanced**	**Copy**
Product technical defense	Very few elements of appreciation and the creative process are used. There are errors in the use of terms and definitions or they are applied incorrectly.	The appreciations are limited to the description of the form. The creative process is also addressed, in a formal way. are evidenced impressions in technical language.	The appreciations and the creative process are approached from the formal and the conceptual and the technical language is used correctly.	The appreciations and the creative process are approached from the formal and the conceptual and their social value is recognized. Technical language is used rigorously.

The seventh aspect to be evaluated was the plastic quality of the product. The cleanliness, the use of the format and the level of application of the plastic techniques used in the elaboration of the sprint product were taken into account (table 7).

Table 7- Rubric to evaluate the plastic quality of the product

	Evaluation Categories _			
Aspects to be evaluated	**Insufficient**	**Beginner**	**Advanced**	**Copy**
Plastic quality of the product	Lack of cleanliness, the format is wasted and plastic techniques are used incorrectly.	Lack of cleanliness or improper use of the format. Appropriate technique is used, but mistakes are made in its application	Cleanliness and proper use of the format is appreciated. The appropriate technique is used, it is applied correctly, but harmony is not appreciated.	Cleanliness and proper use of the format is appreciated. The appropriate technique is used, it is applied correctly, harmony and creativity are appreciated.

Finally, the eighth aspect to be evaluated was performance assessment. Individual performance and that of the rest of the team members was considered in terms of the level of acceptance of criticism, self-criticism and the ability to make assertive criticism of the rest of the team members (Table 8).

Table 8- Rubric to evaluate performance assessment

	Evaluation Categories _			
Aspects a evaluate	**Insufficient**	**Beginner**	**Advanced**	**Copy**
performance appraisal	He does not accept criticism; he is not self-critical. Does not make assertive criticisms of the rest of the team members.	He accepts criticism and is self-critical, although he does not present criteria that support it. Does not criticize the rest of the members or does so without foundation.	Accepts criticism and is self-critical. He is critical of his peers. Most of the time it does not expose its own well-founded criteria.	Accepts criticism and is self-critical. He is critical of his peers. expose foundations with successful arguments with own criteria.

The research was put into practice with the knowledge and validation of the national coordinator of the career, as well as other teachers who are members of the national commission where the proposal was presented for approval.

RESULTS

Through interviews with teachers and students, it was found that the subjects Artistic Training I and II, which preceded Artistic Training III, had been taught following traditional teaching. The students also stated that throughout their training process they had never faced Project-Based Learning, nor used EduScrum.

The practical intervention was carried out following the planning illustrated in figures 1 and 2. To carry out the project, one team chose sculpture and the other crafts.

The correspondence between the main process and the complementary process, as well as the type of three-dimensionality that each team chose to carry out their project, conditioned their members to face the study of the content in a different way. For the team that selected the sculpture, when the corresponding topic was taught, it was already going through sprint 2 "Sketch of the final work". Therefore, the content received in the main process served as the basis for working on the sprints that followed. The self-managed knowledge about sculpture, acquired during the following sprints, served as a complement to the knowledge acquired in the main process.

On the other hand, the team that selected the craft had already self-managed a large part of the content when it received this topic in the main process, since the craft topic was the last topic taught in the subject when the team was already passing through the appreciation of the work

Regarding the follow-up to the worksheet, based on the model offered by the teacher,

each team prepared their worksheet. Although each team performed their assigned tasks in the first sprint, the worksheet remained out of date. The students expressed that they had doubts as to whether the update should be done by the Scrum Master or could be done by each member.

Another influencing aspect was the location of the worksheet in the faculty department, where students did not have constant access. Both limitations were resolved by the middle of the first week. First, it was agreed that all team members could and should update the worksheet according to the tasks that they had to accomplish in the project for each sprint. In addition, it was determined which member was responsible for working in each of the boxes on the worksheet. Second, the worksheet was definitely located in the classroom. Once these difficulties were resolved, each student updated the worksheet according to their functions within the team and the assigned tasks. However, updating the timeline took a bit longer, as each student was focused on updating the "Pending", "Busy" and "Done" columns, but it was more difficult for them to synthesize all this information in the update. The timeline. As an alternative to this difficulty, the updating of the timeline was carried out at the stand-up meeting, at which time the entire team was gathered and the teacher was also present to advise on the fulfillment of this task.

Figure 3 shows the team 2 worksheet, at two points in the second sprint. It illustrates how the team was working during the second sprint. The Pending, Busy, and Done boxes show how one student's work influences the work of other students. That is to say, a student can be busy and until he finishes a colleague is with his work pending because it depends on the result he is working on. That the three columns are active means that they have a good rhythm of work.

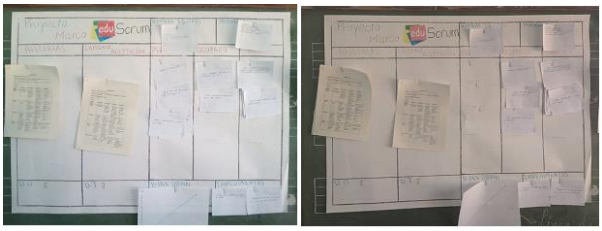

Fig. 3- Team 2 worksheet, in two moments of the second sprint

Regarding the implementation and functioning of the standing meetings, in the first two it was observed that the team members were not critical when assessing the work of their colleagues. To overcome this difficulty, it was necessary to discuss with all the members of each team the need to make an objective assessment of each one's work in order to detect the difficulties and take measures to mitigate them in the future. Although, immediately afterwards it was difficult for them and they issued short judgments and with broken speeches, gradually they were achieving greater depth in the criticism, which turned out to be very valuable and fair already at the height of the fourth sprint.

Another difficulty was that, in the first standing meeting, the students did not present evidence of the work they had done; this, together with the fact that the worksheet was out of date, made it very difficult to evaluate the fulfillment of the tasks. It was then decided to direct the students to present the products they had obtained as evidence of the work carried out.

Next, the results of the evaluation of collaborative learning are discussed, illustrating with examples. The analysis is carried out by aspects to be evaluated, according to the rubric. The level reached by the team in the aspect evaluated in each sprint and its evolution throughout the development of the project with EduScrum techniques are indicated.

Defense of the sprint product: the lowest scores were obtained in sprint 1. The difficulties detected consisted of not relating the sprint topic to the rest of the project. That is, they saw the product of the first sprint as an isolated result and not as part of the project. Specifically, when defending the selected manifestation, they did not have an advance representation of the result they intended to achieve, but limited themselves to defending the manifestation from a theoretical and general point of view.

In the second sprint, this difficulty eased, but there was still a lack of relationship with future results. The mitigation consisted in the fact that they necessarily had to represent a work and this forced them to rethink the theoretical foundations. For example: team 2 chose motifs from Egyptian sculpture, which allowed them to finalize the sketch. On the other hand, the lack of relationship with the rest of the project was due to the fact that they did not take into account its guiding function in the scope of the future results until the work was completed. This team declared idealized materials. They were going to make a sculpture and declared to put sea water stones in the eyes (which evidently represents the Egyptian mummies very well). But they did not take into account that these gemstones, of course, were not within their reach and then they had to redefine the sketch.

In the third sprint dedicated to the construction of the work, the teams, due to the difficulties encountered in the first and second sprints, had to rethink the results in order to make them feasible. For example: the team that selected the sculpture had to change the materials to incorporate those that were available to them. But this caused that, from an Egyptian sculpture, planned in the second sprint, they had to change to a popular contemporary art sculpture.

A similar phenomenon occurred in the handicraft team, of silver and gold threads declared in the sketch, they had to change to white and yellow, respectively, although they did not change the fundamental theme of the work, which was the "dream catcher".

From the fourth sprint both teams reached the exemplary category (table 9).

Table 9- Time series for product defense

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Product Defense _	Team 1 (craft)	Insufficient	Beginner	Advanced	Copy	Copy
	Team 2 (sculpture)	Beginner	Advanced	Advanced	Copy	Copy

Support media: the media used by both teams were *PowerPoint presentations* and images of three-dimensional manifestations of universal art. In the first sprint, as in the previous aspect, the lowest grades were obtained. In the first place, the images were scarce, little varied and on many occasions did not correspond to the selected theme. As for the presentations, a lack of harmony and aesthetics was observed to express ideas. As the sprints progressed, progress was observed in the presentations used by the students. In addition, they incorporated other media such as sketches and materials.

Team 2 brought the sketch in the form of a drawing and also presented it in 3D, through an image made with the Adobe Photoshop application. This team achieved the category of Exemplary in sprint 4. The highest category reached by team 1 was "advanced" because it did not achieve a balance between the theoretical arguments that defined their work and the use of images produced by them (whether they were photographs or drawings) to illustrate the results at each moment (table 10).

Table 10- Time series for the means of support

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Me-god of support-me	Team 1 (craftsmanship)	Beginner	Beginner	Beginner	Advanced	Advanced
	Team 2 (sculpture)	Beginner	Beginner	Advanced	Copy	Copy

In the dissertation element, both teams reached the advanced category from the first sprint; although, on occasion, a lack of clarity was observed in the ideas to explain the results achieved in the product of the sprint and how to give it continuity in future sprints. This difficulty was completely removed by the fifth sprint (table 11).

Table 11- Time series for the dissertation

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Dissertation	Team 1 (Craft)	Advanced	Advanced	Advanced	Advanced	Copy
	Team 2 (sculpture)	Advanced	Advanced	Advanced	Advanced	Copy

In the teamwork aspect, the difficulties were concentrated in the fact that some students were late in fulfilling their duties and this caused others, who depended on such results, to also fail to fulfill the assigned tasks in the required time. Another indicator that affected this aspect was that, although each member correctly complied with the exposition of the part that corresponded to him, the debate between them was not encouraged. It was positive that the tasks were assigned according to the potential of the members of each team, so as to contribute to obtaining better results. As the sprints progressed, progress was observed in work organization (table 12).

Table 12- Time series for teamwork

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
team work	Team 1 (Craft)	Beginner	Beginner	Advanced	Copy	Copy
	Team 2 (sculpture)	Beginner	Advanced	Advanced	Copy	Copy

In the worksheet, obsolescence and lack of organization were observed during the first sprint, a difficulty that was gradually resolved in the following ones. The usefulness of this resource to organize the tasks and increase the responsibility of the members in the fulfillment of their functions was verified. In addition, the tendency to execute was avoided. In this aspect, both teams behaved in a similar way (table 13).

Table 13- Time series for the worksheet

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Worksheet	Team 1 (Craft)	Insufficient	Beginner	Advanced	Copy	Copy
	Team 2 (sculpture)	Insufficient	Beginner	Advanced	Copy	Copy

In the technical defense aspect of the product, the greatest difficulties were observed in the first two sprints. The most affected team was 1, which worked on crafts and had not yet received the theoretical content of this manifestation of three-dimensionality. However, it stands out as positive that they were able to self-manage the necessary content from the bibliographic review. For this team, the analyzes focused on the form, avoiding the concept; however, from sprint 3 they were able to focus more on the conceptual aspect and link it to the formal aspect, achieving better results in technical defense. Both teams manage to reach the exemplary level at the height of the fourth sprint when they explicitly recognize the social value of the created work (table 14).

Table 14- Time series for the technical defense of the product

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Product technical defense	Team 1 (Craft)	Insufficient	Beginner	Advanced	Copy	Copy
	Team 2 (sculpture)	Beginner	Advanced	Advanced	Copy	Copy

The plastic quality of the product was evaluated from the second sprint, which was where the creative aspect of the work began with the elaboration of the sketch. For team 2, the self-managed knowledge about the creative processes, whether from the sketch or the specific work, served to consolidate what was learned in the main process. For team 1 it meant a greater demand in the investigation of the creative processes, in correspondence with each sprint.

In the product of the second sprint, together with the knowledge acquired by each team, according to the demands of the subject, the prior knowledge that the students of the Artistic Training I subject had about drawing was important. second sprint, both teams obtained the exemplary qualification. Team 2 maintained that rating during the four sprints evaluated in this aspect. Team 1, facing the process of creating a craft for the first time in sprint 3, went down to the advanced category. With the self-study and the teaching of topic 4 on craftsmanship in the main process, already in sprints 4 and 5 this team is qualified as exemplary.

The cleanliness, the use of the format and the level of application of the plastic techniques observed in the products of each sprint showed that teamwork enhanced the creative capacity of the students. With a correct distribution of tasks, each student contributed their knowledge in the part of the process that they felt most prepared for and acquired new skills by observing and supporting the work of their classmates (table 15).

Table 15- Time series for the plastic quality of the product

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
Plastic quality of the product	Team 1 (Craft)		Copy	Copy	Copy	Copy
	Team 2 (sculpture)		Copy	Advanced	Copy	Copy

In the evaluation of the performance in the sprint, initially the little experience of the students to face situations, such as having to offer critical judgments towards their classmates and being self-critical, influenced. This condition was reflected in the functioning of the work teams, so it was necessary to reflect on this issue. The professor explained that the more spontaneity there was among the members of each team, the more solid its structure became, guaranteeing the quality of the product of each sprint. This deficiency was attenuated in sprint 2, although the tendency was maintained in some students not to criticize the rest of the students in the team. This criticism, at times, was very evident, because it manifested itself in the updating of the worksheet. In sprint 3 they already dared to criticize, but sometimes they lacked justification. For sprint 4 and 5 the ratings were exemplary. A manifest potentiality in this aspect of the rubric is that it provided maturity to evaluate work results and their processes within a group (table 16).

Table 16- Time series for performance

		sprint				
		sprint 1	**sprint 2**	**sprint 3**	**sprint 4**	**sprint 5**
performance appraisal	Team 1 (Craft)	Insufficient	Beginner	Advanced	Copy	Copy
	Team 2 (sculpture)	Insufficient	Beginner	Advanced	Copy	Copy

DISCUSSION

The EduScrum and Scrum methodologies are emerging methodologies that with the present century have been gaining a place in classroom practices due to the advantages they represent for student learning and teamwork self-management; aspect that allows you to link them with other trends such as flipped learning and problem-based learning (Mariño, Cardozo and Alfonzo 2021) or project-based learning as is the case of this research.

The results achieved are encouraging and coincide with those reported by other researchers who have also applied the Scrum or EduScrum methodologies.

The monitoring of the development of the teams, based on the systematic review of the worksheet, the monitoring of the standing meetings and the application of the evaluation rubric, showed that the EduScrum had a positive influence on the collaborative learning of the team members. students. These results coincide with those reported by Onieva (2018), who highlights the value of "online portfolios as evidence of the tasks performed" (p. 524) and of self-assessments and peer assessments, which, when carried out systematically, allow a more `realistic and fair' appraisal" (p. 518).

As one of the results emerging from the implementation, it was evidenced that the presentation of the finished product of each sprint can interfere with the guiding function of said intermediate product for the achievement of the results of the rest of the sprints and of the project as a whole. For this reason, it is suggested that in future applications attention be paid to this particular to prevent students from committing this flaw.

Obtaining higher categories in the evaluation, as progress was made in the sprints, showed improvement with the application of EduScrum. The results obtained in the observation and monitoring of the process suggest that the systematic control of the process, both by the teacher and by the members of the teams, positively influences the results of the qualifications.

The progressive transit through the sprints evidenced the strengthening of teamwork, results that coincide with those reported by Onieva (2018). As happened with the results of Onieva (2018), at the beginning the students had difficulties in dividing the tasks, so that these fell more on some students than on others. With the follow-up of the worksheet, fundamentally, and the stand-up meetings, as a summary of the work carried out, which evidenced the list of tasks, those responsible and the fulfillment of said tasks, it was possible to unite teamwork and establish a balance in the performance of the members.

As for the Scrum Master, there were difficulties in understanding their role within the team, which is not about directing (as is traditionally done in projects), but about provoking reflection to achieve cooperative work. At the beginning, in both teams, the Scrum Master tried to replace the work of his colleagues, as reported by Onieva (2018), the attenuation of this difficulty was achieved by following the suggestions of the reports of Onieva (2018), from the action of the teacher that led to the debate between the Scrum Master and the rest of the team members to achieve the participation of all in the achievement of creative work.

The progressive improvement of the quality of the products presented in each of the sprints, showed that the application of EduScrum positively influenced the cognitive resources and the skills achieved by the students and their possibilities for innovation. The students subjected to the study showed flexibility in their ideas that allowed them to innovate according to the availability of materials to replace those

included in the initial sketch that were not available.

Regarding motivation, it was observed that the students were more motivated than in previous years, which coincides with the results achieved by Martín (2020), by Timkyw *et al.* (2020) and by Onieva (2018), when comparing the application of EduScrum with the traditional methodology. It was also possible to verify the high quality of the works presented, which, coinciding with Onieva (2018), may be favored by the motivation achieved by the students.

Regarding the definition of fun, the students stated that, although at the beginning it was a little difficult for them to get rid of the traditional methodology, among all the members of the team they managed to include fun within the work, incorporating aspects such as music or moving the place from work to locations such as cafeterias or parks, so that the environment conducive to a more favorable climate than the classroom. This behavior was observed in the majority, except for one student who found it more difficult to let go of the traditional. These results are higher than those presented by Kuz , Falco and Giandini (2018), who report that only half of the students who participated in the work, according to the Scrum methodology, recognized that the fun aspect had positively influenced their grades.
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The students were also able to link the definition of fun to the performance of the team members, in what they called "chain", due to the transmutation of roles that the students experienced within the same sprint. The chain consisted of distributing the tasks, so that at each stage a different student led their completion and the rest supported their work; In addition, they appointed a supervisor who was the one who felt most prepared to carry out this task, but he was not the one who executed it. This was for the purpose of giving another student the opportunity to train in what he felt least prepared for. When he concluded his task and passed on to the other member, then the one who supervised the product could correct some errors because he mastered the previous task better and went on to carry out his own, which in the same way was trained in what he felt most insecure about, with the confidence that another colleague, later, would rectify errors, in addition to having him nearby during the work to consult some doubts.

Chain example in sprint 4:

Student 1. He had finished with a grade of 5 points in the Language of Plastic Arts subject, so he felt prepared for the appreciation of the work.

Student 2. He had skills for modeling, since he has work experiences in his father's craft workshop, so he felt prepared for the process of creating the sculpture.

Student 3. Although he received training in plastic arts, he had concluded the Language of Music subject with 5 points. As the appreciation of sculpture included elements of music. This student was motivated to contribute to the appreciation related to this topic.

Student 4. Scrum Master promoted the debate and organization of the process, as well as being present and supporting all the tasks, as well as preparing the final sprint report.

Another positive aspect of the applied methodology was its impact on the direct promotion of all students, a result that coincides with those obtained by Timkyw, Bournissen and Tumino (2020). The eight students in the sample passed the final exam in the ordinary call.

In this investigation, given the small size of the sample, it was not possible to apply an

inferential statistic that would corroborate, in a stronger way, its validity. However, the progressive progress experienced by the teams in the evaluations of each of the sprints, both from a cognitive point of view and due to its positive impact on motivation, suggest that the collaborative learning of the students was strengthened with the integration of the project-based learning and EduScrum, as a complementary process to the teaching-learning process through which the subject is traditionally developed.

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