

Challenge based learning and sustainability: Practical case study applied to the university

Aprendizaje basado en desafíos y sostenibilidad: Estudio de caso práctico aplicado a la universidad

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ABSTRACT

Challenge-Based Learning (CBL) is a fully collaborative framework, which impacts on learning processes, while attempting to solve real-world problems and challenges in which students find themselves. The approach is collaborative and hands-on with students working with other students, their teachers, and experts in their communities and around the world to develop deeper knowledge of the topics, to take on and solve challenges, to take action, to share their experiences, and to engage in a global discussion about important issues. Based on the problem that we produce twice as much plastic waste as two decades ago, almost half of which comes from OECD countries, and considering that only 9% is successfully recycled, we propose a programme called "Zero Waste". The aim of the programme is to know and analyse the problem of recycling within the University of the Basque Country UPV-EHU, specifically within the Faculty of Business and Economics. The first results show a lack of recycling among students and teachers, a lack of organisation of waste containers, as well as a lack of specific containers for recycling.

Keywords. Challenge-Based Learning (CBL), Recycling, University of the Basque Country UPV-EHU, Zero Waste Programme

RESUMEN

El Aprendizaje Basado en Desafíos (CBL) es un marco totalmente colaborativo que impacta en los procesos de aprendizaje, mientras se intenta resolver problemas y desafíos del mundo real en los que se encuentran los estudiantes. El enfoque es colaborativo y práctico, con estudiantes que trabajan junto a otros estudiantes, sus profesores y expertos en sus comunidades y en todo el mundo para desarrollar un conocimiento más profundo de los temas, enfrentar y resolver desafíos, tomar acción, compartir sus experiencias y participar en una discusión global sobre temas importantes. Basándonos en el problema de que producimos el doble de desechos plásticos que hace dos décadas, casi la mitad de los cuales provienen de países de la OCDE, y considerando que solo el 9% se recicla con éxito, proponemos un programa llamado "Cero Residuos". El objetivo del programa es conocer y analizar el problema del reciclaje dentro de la Universidad del País Vasco UPV-EHU, específicamente dentro de la Facultad de Economía y Empresa. Los primeros resultados muestran una falta de reciclaje entre estudiantes y profesores, una falta de organización de los contenedores de residuos, así como una falta de contenedores específicos para el reciclaje.

Palabras clave. Aprendizaje Basado en Desafíos (CBL), Reciclaje, Universidad del País Vasco UPV-EHU, Programa Cero Residuos

INTRODUCTION

The need for change in traditional learning methods is becoming increasingly relevant. It is an issue that has been of concern for decades. Some authors (Blumenfeld et al., 1991; Blevis, 2010) have stressed the importance of tasks as an element that links student motivation, student cognition, teaching, and learning. We live in a society that is increasingly based on information and communication, which must be reflected in our students and their learning in order to achieve an optimal professional development.

There is, therefore, a continuing need in many education systems to empower students with real skills for their future success, and in no other way than through collaborative problem solving in practical lessons. It is through CBL that we approach this common goal in education.

The implementation of CBL allows students to develop and advance the technology, to lead with industrial advancements; in short, it allows students to engage with learning goals through meaningful contexts.

The Challenge-Based Learning (CBL) allows students to develop tools and strategies to address problems similar to those they may find in the professional development.

Thus, the development of such strategies, and the implementation of educational tools is necessary as one of the main challenges of the transition to digitalisation systems, due to the lack of qualified employees in the companies.

One of the main problems of plastic use in the world is the following: 259 million tonnes of plastic were produced in 2018, compared to one and a half million tonnes in 1950. For this reason, the need for a programme to reduce the use of plastic in the university is raised, which is included in the Sustainable Development Goals of the 2030 Agenda of the OCDE.

The proposed programme aims to promote environmental sustainability linked to SDG 13 (climate action). For this purpose, we propose a programme called "Zero Waste". The aim of the programme is to know and analyse the recycling problem that exists in the University of the Basque Country UPV-EHU, specifically in the Faculty of Business and Economics.

In order to carry out the programme, we use the Challenge-Based Learning (CBL) methodology, since the main goal of the programme is to know and analyse the use of plastic in

the Faculty. Therefore, we could improve the environmental problem at the Faculty of Economics and Business.

The research work is structured in several parts: in the second part, it discusses what the CBL methodology consists of and the relevance and the importance it has gained in recent years. The third section explains the importance of this methodology in the university environment. The fourth part explains the methodology used, the fifth part explains the main results obtained, and finally, we will expose the conclusions of the study.

CHALLENGE BASED LEARNING (CBL): CONCEPT AND RELEVANCE IN EDUCATIONAL SYSTEM

Challenge-Based Learning is a learning method based on a real experience, where participants are confronted with a real problem and, after working with other students and teachers, address it; they explore possible options for improvement and come up with a proposed solution, which is finally implemented and evaluated. In fact, it focuses on learning from a general topic and poses a series of challenges related to this topic that the students have to achieve.

There are three basic pillars (Ramírez et al., 2021) on which Challenge-Based Learning is built, as we can see in Figure 1: investigate, engage and act.

Firstly, engage pillar means that learners move from an abstract big idea to a concrete challenge. Secondly, we must investigate, that is, challenge learners develop learning experiences and conduct rigorous research to find sustainable solutions. And, finally, act pillar, where learners develop and implement evidence-based solutions.

The person in charge of coordinating the challenge experience is a facilitator or teacher: an expert in the subject to be addressed, who coordinates the group of participants and is the link between the participants and the organisation providing the challenge. At high schools, the facilitator is the teacher of the subject. Furthermore, the learners or participants may belong to the university, but they may also come from outside the academic sphere: citizens interested in the subject and related to the field of the challenge, students in lifelong learning, employees of the institutions that provide the challenge, etc. The working groups are multidisciplinary, and each member contributes with his or her knowledge and experience to the analysis of the challenge and the formulation of the final proposal.

Figure 1. Challenge-Based Learning, main pillars



Source: Ramírez et al., 2021.

Challenge-Based Learning methodology, therefore, is considered a real way to improve knowledge, skills and attitude. In fact, Smith and Van-Doren (2004, p.1) say, “Professors will find that they can truly make a difference in their students’ transferability of knowledge, skills, and attitudes from the confines of a classroom to their interactions in the broader world”.

There are several studies (Xu and Liu, 2010; Zavirov, 2013; Carrión et al., 2015; Agüero et al., 2019; Gutiérrez-Martínez, et al. 2021) that reveal how the use of this methodology improves student’s results. Communication and expression skills are also improved. Academic development receives important support with the implementation of this methodology, where students complement the academic content with the implementation of real cases. In addition, CBL helps to bring the professional world closer to academy and improves the employability of participating students.

Furthermore, Johnson and Adams (2011) reinforce the idea of using CBL tool to help students to deal with real problems. They used this methodology several times: in 2009, a total of 321 students and 29 professors, from six large North American universities, participated with a total of 17 subjects involved. The results of the study were important on several levels, and a second study was conducted in 2011. This time, there were 19 institutions, ranging from elementary to graduated level, 65 teachers and 1239 students.

According to Agüero et al. (2019), students acquire the necessary skills required by employers. They are given a space to think critically and creatively. The objective is not only limited to the final product, but also the whole process of education and work until the result is achieved. In additions, the use of technology throughout the process is crucial, and allows for a new learning experience.

According to Kohn et al. (2020), students are a very important part of the role they play in these environments, not only in solving problems, but also in the way they solve them, with a strong need for collaboration and multi-perspective dialogue throughout the process. In addition, the lessons taught are usually also focused on providing tools to face a social challenge, from problem identification to solution concept.

There is no doubt that Challenge based Learning builds a true relationship between the academic world and the professional world, fostering a greater ability of students to solve problems (Membrillo-Hernández, et al. 2018).

After analysing previous studies, we were able to conclude that the main benefits that students perceived from participating in CBL-based programmes were the followings: leadership, approach to the world of work, improvement of oral and written communication skills, deeper knowledge of the topics covered in the assignments, practical application of concepts and frustration tolerance. In addition, CBL has been shown to be a programme that is easily applicable to different fields of knowledge and scalable to a large number of students, and, therefore, has a significant potential for growth at an international level through its implementation in the world’s most important universities.

CBL APPLIED TO UNIVERSITY SYSTEM: A PARTICULAR STUDY

Environmental Management of Sustainability: Climate Action

The sustainability of any organisation starts with its values. This means operating in a way that, at least fundamental responsibilities in terms of human rights, labour and environment and the fight against corruption are met. For that, this research work will focus on environmental responsibility. Specifically, it seeks to address Principle 8 of the UN Global Compact (Huerta-Estévez, 2023, p. 499), which states: “Companies should encourage initiatives that promote greater environmental responsibility”.

As we know, the 2030 Agenda Plan for Sustainable Development was adopted in 2015. Among the 17 SDGs (Sustainable Development Goals), our goal is to promote environmental sustainability in relation to SDG 13 (climate action).

Climate change is a phenomenon that affects every country and every person in the world. For Antonio Gutiérrez, UN Secretary-General, “it is the greatest systemic risk at the global level for the near future”. Global warming is happening much faster than expected and is becoming one of the greatest challenges facing humanity. SDG 13 aims to mainstream climate change into the policies, strategies and plans of countries, companies and civil society. One of the goals is to manage the transition to a low-carbon economy, which will significantly reduce the risks and impacts of climate change (Pacto Mundial, 2023).

Climate change can be tackled through innovation and long-term investment in energy efficiency and low-carbon development. There are six aspects to tackling climate change: mobility, energy, water, purchasing, infrastructure and waste. We reflect these six aspects in Figure 2.

Figure 2. Relevant aspects to act against climate change



We will focus on the last aspect, waste. Twice as much plastic waste is produced today as two decades ago and almost half of it comes from OECD countries, yet only 9% is successfully recycled. According to a new OECD report (OECD, 2022), the amount of plastic waste produced globally will almost triple by 2060, with around half ending up in landfill and less than a fifth being recycled; this situation is completely unsustainable. There is an urgent need to make the life cycle of plastics more circular. This means expanding national policies and improving international cooperation to reduce environmental impacts along the entire value chain. Circularity and climate neutrality of the plastics industry is possible. This is the main reason to propose our main goal of the work: to know the environmental impact of plastic waste generated at the University, specifically at the Faculty of Economics and Business.

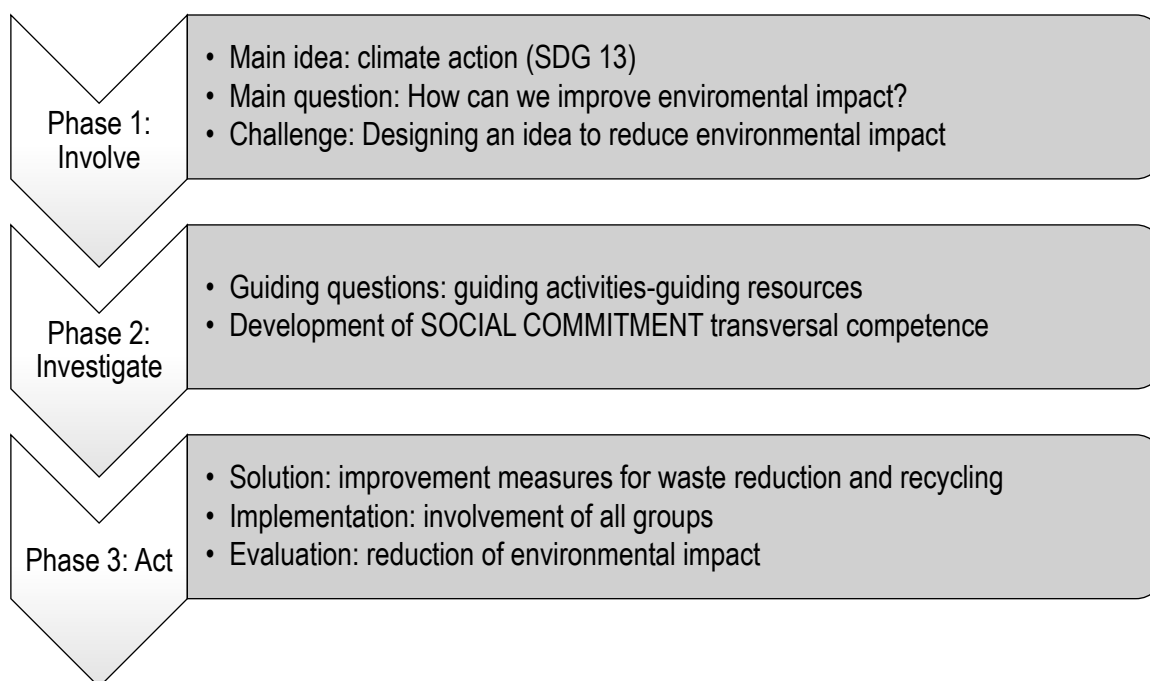
Methodology of the challenge

As part of the I3KD22-36 Erronka on project, we propose a collective challenge for students of the Faculty of Economics and Business (Headquarters), where they can develop and acquire sustainability 'skills.

The aim of the challenge is to promote environmental sustainability in relation to SDG 13 (climate action). The challenge that the students have to face is to analyse the waste generated in the Faculty of Economics and Business (Headquarters) of the University of the Basque Country UPV-EHU, to analyse its composition and to calculate its carbon, water and environmental footprint, that is, a plan to reduce the volume of waste and to know its environmental impact.

For the students, the challenge implies an active participation in the proposed activities and a solution to the problem raised, as well as its implementation. To do this, they must carry out the following steps (Figure 3):

Figure 3. Step forwards of the CHALLENGE



It is important to note that this activity is optional and open to any student with no consequences in terms of assessment. The Deanship offered one free credit to those students who completed the challenge. In addition, we also include some of these personal activities in our subjects, which are evaluated as transversal competences. In this last case, we are working on one of the transversal competences of the Faculty of Economics and Business, *social commitment*.

The development of the collective challenge is planned to take place over several academic years, so that the progress of the research is progressive. As we can see in Table 1, during the first year of the challenge, we have completed phases 1 and 2.

Table 1. Phases of the CHALLENGE

ACADEMIC YEAR	PHASES
2022/2023	Phase 1: main idea, questions, design of the challenge Phase 2 (Research): guiding questions, activities and resources.
2023/2024	Phase 3: improvement measures for reduction and recycling of waste, reduction of environmental impact
2024/2025	Phase 4: involvement all faculty groups

The development of each of these phases is divided into three steps (involve, investigate and act). The first academic year was carried out as follows (academic year 2022/2023):

As we can see in the Table 2, the first step is to involve the people concerned, in this case, university students. To this end, the Aguas Alzola company held a conference¹. The theme of the conference was the eco-design of containers and packaging, which was very useful for the development of the programme. Later, during the investigation stage, we were able to carry out our work using different modalities: two face-to-face sessions for collaborative work, collaborative work and non-face-to-face activities. Six students participated in this second step. For that, we followed five steps: first, we developed guiding questions to a better identify the solution to the challenge. For this, we used the brainstorming technique. Second, we reviewed the questions posed; similar questions were grouped, categorized and prioritized. Thirdly, we made a list of activities and resources to answer the guiding questions. We carried out some activities: Firstly, students had a meeting with the person in charge of sustainability in the Faculty, where they were able to learn first-hand about the Faculty's involvement in this issue; secondly, students made a map of the Faculty showing the distribution of bins to discuss whether the location and type of bins were appropriate, and, finally, students worked on the questions for a survey to be carried out among students and teachers to find out the real awareness of recycling in the Faculty, a survey that still needs to be validated.

Table 2. Step forwards of the challenge (2022/2023 academic year)

Phases	Modality	Activity
Step 1: Involve	Face-to-face session	Conference Waters of Alzola Topic: Ecodesign of containers and packaging
Step 2: Investigate	Two face-to-face sessions (collaborative work)	Design of the guiding questions: what we should know GUIDE ACTIVITIES (Learning activities, research, experimentation, exploration (how we obtain information)) GUIDE RESOURCES (Web pages, podcasts, movies and documentaries, talks, books)
	Non-presential activities (Collaborative work)	Individual work Team work
Step 3: Act	Final assessment	Learning outcomes
	Assessment	Environmental impact

Once the activity resource had been identified, we carried out a process of searching for information. Fourthly, we made a summary of what we found, on the one hand, and created the basis for the solution, on the other. Finally, we proposed a solution concept.

Main results

The results of the pilot study of this first academic year have been very positive. We present the results according to the three steps taken during the challenge.

¹ Aguas Alzola is a Basque company considered socially sustainable.

Firstly, regarding the first step (involve), to involve as many people as possible and to raise awareness of the problem at hand, the conference was such a success that, the room booked for a hundred people, was not enough. We also had to open another room so that the lecture could be heard in both rooms at the same time.

Secondly, the most relevant questions proposed in the second step (investigate) were related to the amount of waste generated in the faculty, the type of waste is generated (plastic, paper,), the amount of plastic recycled, the possibility of the replacing the type of products consumed. All these questions can be found in Appendix 1.

Thirdly, after the brainstorming, we combined, categorized and prioritized questions. Later, a search for information was carried out through direct observation. Besides, we talked directly to cleaning staff about waste collection and recycling. Finally, we asked to administrative staff about the daily use of the bins and their management. To do this, we made a tour around the faculty and analysed a mapping of waste bins, an identifying the types of bins, any signs identifying each container, the location of each container, the identification of areas of greatest waste generation, and, finally, an identification of the colours of the waste collection bags.

Fourthly, after various working sessions, we were able to conclude that there was a lack of recycling within the Faculty of Business and Economics from the University of the Basque Country UPV-EHU. The main results of this first contact with the programme are the following: firstly, there is a lack of identification of the types of containers used for recycling, which makes it difficult to use them correctly. Many of them do not specify what can be recycled in each of them. Secondly, there is a lack of organisation in the placement of containers. They are placed separately with no apparent logic. We found bins for recycling organic waste, plastic and paper together, but a bin for scraps was missing. However, in other areas of the faculty, there are only organic bins and no bins for plastic or remains, which means that recycling is not taking place. Thirdly, there is a lack of labelling on the bins, which makes it difficult to know what material is being recycled in each bin. In addition, we found a the lack of coloured bags for the correct identification of the containers. There is even an incorrect use of coloured bags, using the same colour for all containers. And, finally, there is a lack of respect for the use of the study rooms, where, even though eating is not allowed, there are organic bins full of all kinds of waste.

Finally, after analysing the situation and the main problems, we propose two different and simple solutions (act). On the one hand, it is important to make students aware of the need for recycling in the faculty. To do this, we propose a talk to first year students about the need for recycling and the correct use of containers. On the other hand, it is necessary to reorganise the waste bins in the Deanship, collecting all the necessary bins for their correct use. It is also proposed that the containers be correctly labelled with images to facilitate their correct use. We also propose a standard use of bag colours to avoid confusion.

Being the first time we propose these activities, some of the possible solutions that we have considered have to be validated by the Dean's Office, so we have proposed to implement them in the following academic year, after having been approved by the University. Some of these ideas were an information campaign on recycling through posters in the faculty, the distribution of informative emails to the university community about the new organization of the containers, the creation of a social network promoted by the students themselves to carry out advertising campaigns.

CONCLUSIONS

It is important to emphasise the constant need for the correct use of available materials, such as plastic or paper, among others. As we have commented along this paper, we are using more and more plastic every day, and, although we talk about recycling, it is clear is that we are still far from doing it correctly.

The main aim of this paper is to introduce a waste programme called “Zero Waste”, and to know and analyse the recycling problem that exists within the University of the Basque Country UPV-EHU, specifically in the Faculty of Business and Economics. In order to carry out this work, we applied the CBL methodology, so that students could face a real problem and can work as a team and based on a specific challenge.

After the analysis, we could say that there is a lack of identification of the types of containers used for recycling, a disorganisation in terms of the placement of bins, a lack of identification of containers and a lack of respect for the use of study rooms.

As a pilot test of the “Zero Waste” programme, the results were satisfactory in terms of teacher and student participation. It is true that the results in terms of efficiency (use and recycling of plastic) were very poor. The reality is that there is an urgent need for recycling within the Faculty. To this end, we have proposed two solutions that are very easy to implement: a reorganisation of the waste bins and a talk to first year students about the need to recycle and the correct use of the bins. This is not to say that these were the only possible solutions, but they were the ones that could be implemented quickly and effectively. We are still working on it today. In fact, in the 2023/2024 academic year, there are 6 more student working on solutions to the problem posed and 7 more have joined in February.

As this is a pilot study and we know that the programme will be carried out over several academic years, we are satisfied that we have identified the problem and proposed feasible solutions for the Faculty.

In order to assess the effectiveness of the actions currently proposed and those that may be proposed in the near future, steps are being taken with the Faculty Administrator to weigh the waste generated in order to obtain data on the type and quantity of waste generated at the present time and compare them with those obtained after taking measures to promote recycling.

At the request of the students, a new line of work has been opened up for the 2023/2024 academic year. We will measure the amount of plastic collected in terms of carbon footprint. We will then measure the environmental impact of the faculty, and, be able to make comparisons from one year to the next. In addition, a survey will be carried out; which we will send to teachers and students, to find out their sensitivity of recycling, and to know the shortcomings that exist when it comes to being able to recycle within the Faculty .

The practical implications of this study operate at two levels. The first will be determined by the expected improvement of the transversal competences in sustainability of the students of the Faculty. The second is the improvement of recycling in the Faculty of Economics and Business. If the expected improvement on results were obtained, this experience could be applied to other faculties of the UPV/EHU, and other universities with the same concerns in sustainability-related issues.

REFERENCES

- Agüero, M.M.; López, L.A., & Pérez, J. (2019). Challenge based learning como modelo de aprendizaje profesionalizante. Caso del programa universidad europea con comunica. *Vivat Academia Revista de Educación*, 1(148), 1-24. <https://doi.org/10.15178/va.2019.149.1-24>
- Bleviss, E. (2010). Design challenge based learning (DCBL) and sustainable pedagogical practice. *Interactions*, 17(3), 64–69. <https://doi.org/10.1145/1744161.1744176>
- Blumenfeld, P.C.; Soloway, E.; Marx, R.W.; Krajcik, J.S.; Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, 26(1), 369–398. <https://doi.org/10.1080/00461520.1991.9653139>

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- Carrión, C.; Soler, M., & Avmerich, M. (2015). Análisis de la validez de contenido de un cuestionario de evaluación del aprendizaje basado en problemas. Un enfoque cualitativo. *Formación Universitaria*, 8(1), 13-22. <http://dx.doi.org/10.4067/S0718-50062015000100003>
- Gutiérrez-Martínez, Y.; Bustamante-Bello, R.; Navarro-Tuch, S.; López-Aguilar, A.; Molina, A., & Álvarez-Icaza, I. (2021). A challenge-based learning experience in industrial engineering in the framework of education 4.0. *Sustainability*, 13(9867), 1-25. <https://doi.org/10.3390/su13179867>
- Huerta-Estévez, A. (2023). State development plans in Mexico and their contribution to the SDGs: No poverty, in the 2030 Agenda, in Aguilar-Rivera, N.; Borsari, B.; De Brito, P., & Andrade, B. (Eds.): *SDGs in the Americas and Caribbean Region*. Springer, Suiza, 495-520. https://doi.org/10.1007/978-3-031-16017-2_18
- Johnson, L., & Adams, S. (2011). *Challenge Based Learning: The Report from the Implementation Project*. Austin, Texas: The New Media Consortium. https://www.challengebasedlearning.org/wp-content/uploads/2019/05/CBL_implementation_report.pdf
- Kohn, K.; Lunqvist, U.; Malmqvist, J., & Hagvall, O. (2020). From CDIO to challenge-based learning experiences – expanding student learning as well as societal impact? *European Journal of Engineering Education*, 45(1), 22-37. <https://doi.org/10.1080/03043797.2018.1441265>
- Membrillo-Hernández, J.; Ramírez-Cadena, M.J.; Caballero-Valdés, C.; Ganem-Cordera, R.; Bustamante-Bello, R.; Benjamin-Ordóñez, J.A.; Elizalde, H., & Siller, H. (2018). Challenge-based learning: The case of sustainable development engineering at the technological Monterrey, Mexico city campus. *International Journal of Engineering Pedagogy*, 8(3), 137-144. <https://doi.org/10.3991/ijep.v8i3.8007>
- OECD (2022). *Global plastics outlook economic drivers. Environmental impacts and policy Options*. <https://doi.org/10.1787/de747aef-en>
- Pacto Mundial (2023). *Hitos en sostenibilidad empresarial de 2023*. Pacto Mundial red española. <https://www.pactomundial.org/noticia/hitos-en-sostenibilidad-empresarial-de-2023/>
- Ramírez-Montoya, M.S.; Loaiza-Aguirre, A.; Zúñiga-Ojeda, M. & Portuguez-Castro, M. (2021). Characterization of the teaching profile within the framework of education 4.0. *Future Internet*, 13(1), 91. <https://doi.org/10.3390/fi13040091>
- Smith, L.W., & Van Doren, D.C. (2004). The reality-based learning method: A simple method for keeping teaching activities relevant and effective. *Journal of Marketing Education*, 26(1), 66–74. <https://doi.org/10.1177/0273475303262353>
- Xu, Y., & Liu, W.Q. (2010). A project-based learning approach a case study in China. *Asia Pacific Education Review*, 1(3), 636-370. <http://dx.doi.org/10.4067/S0718-50062016000300005>
- Zavirov, C. (2013). New challenges for the project-based learning in the digital age. *Trakia Journal of Sciences*, 1(3), 298-302. <http://dx.doi.org/10.15178/va.2019.149.1-24>

APPENDIX 1

1. How much waste does the Faculty produce?
2. Who generates waste? Teachers, students, staff?
3. In which areas, is the waste generated? Teaching rooms, study rooms, cafes, outside buildings, toilets,...?
4. What kind of waste is produced?
5. Is the waste generated inside the Faculty or is it brought in from outside (Where does the waste come from?)
6. How many of the laminated paper given by the academies at the entrance of the faculty is recycled? Are they recycled correctly? Do they end up on the floor or in the bin?
7. How much plastic is recycled? How much paper is recycled? How much organic waste is recycled?
8. How can we increase the amount of waste recycled?
9. Is it possible to eliminate the use of plastics in the faculty?
10. Could we replace products with others that are more sustainable and reduce waste?
11. Is there an alternative for their replacement?
12. What are the impacts of waste?
13. How can we raise awareness?
14. Are people aware of the problem of waste?