Active methodologies mediated by technologies for the development of professional skills in a special modality professional programme

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Abstract

The article presents an action-research programme implemented in the 2019/2020 academic year to carry out the external internships of the students of a Special Modality Professional Training Programme in Auxiliary Operations of Administrative and General Services. Due to the pandemic in 2020, students could not carry out their internships in person in companies to complete their training in the programme. Given the importance that this internship has for the development of their skills and their incorporation into the working world, we proposed its completion in a virtual and synchronous way, using virtual and educational platforms like Genially and the Google Suite tools. In this virtual environment, we recreated a work setting in which they had to connect daily at the established time and perform the functions of an administrative assistant working in the different departments of the company. While the programme was ongoing, we reviewed and adapted the environment based on the results we were obtaining. The objective of this work was to show the effectiveness of active methodologies in the training of students in a special modality professional programme that, together with a Research-Action approach, facilitates the development of the students' work skills while enriching the process and experience of the internship for the teachers involved.

Keywords: Active methodologies, Practicum, administration students, action-research, professional skills, inclusive education;

1. INTRODUCTION AND THEORETICAL FRAMEWORK

One of the objectives pursued by inclusive education is to promote the presence, participation and success of all the students in the locality, including those vulnerable to exclusion, thereby affording students the enriching experience of coming into contact with people from different backgrounds. (Echeita, 2008) The core purpose of such an education is for all students to leave the school system, particularly at the mandatory stage, with fair and sufficient training to continue further studies or move with dignity into the working world (Escudero, 2012). In the design of teaching, from an inclusive approach, we must put into practice strategies that ensure that all learners are able to participate and learn (Simón et al., 2021).

At present, students with disabilities are not always able to complete an internship that suits their skill level, and which would allow them to take up a job. According to data from the National Institute of Statistics (2019), the unemployment rate of people with disabilities aged between 16 and 64 years is 23.9%, while the employment rate in Spain for people without disabilities is 66.9%, compared to 25.9% for people with disabilities. This being the case, it is necessary to continue their training, specifically in their technical and personal skills, preparing them for the demands of the working world. Promoting this process and achieving an inclusive education requires the creation of a safe, welcoming, collaborative and motivating school community, in which each person is valued. With these basic foundations in place, all students will be able to attain higher levels of achievement (Booth & Ainscow, 2011).

To promote the inclusion in society of people who have not completed compulsory secondary education due to difficulties in doing so, we can find various training programmes in the Community of Madrid that facilitate access to the labour market while obtaining a job qualification. One of these is the so-called *Professional Programmes* (resolution of the Vice-Ministry of Education, Youth and Sport (2014), which regulates the organisation of professional programmes for students with special educational needs to be taught on an experimental basis in the 2014/15 academic year). There are two types of programmes: General Professional Programmes and Special Modality Professional Programmes. The first is aimed at students who have undergone out-of-school education because of marginalisation, the risk of social exclusion and/or difficulties in adapting to the school or work environment, and the second is a special programme for students with special educational needs. This seeks to train students to obtain a standardised or supported job. These programmes are planned to be carried out over two academic years and pupils may enter once they have reached the age of 16 and are no older than 21 when they join. It is open to students who do not have a graduate certificate in compulsory secondary education or a qualification in vocational training. A recommendation from the school and agreement from both the legal guardians and the pupil are required. By the time they have completed their training in the Special Modality Professional Programme (PPME in its Spanish acronym), the students should have acquired a level 1 professional qualification according to the current structure of the national catalogue of professional qualifications, promoting job insertion, expanding the students' skills set and opening a path towards further education, etc., so that they can participate in work, social and cultural environments

In the PPME curriculum, we find the modules common to all professional programmes (communication and society module I and II and the applied sciences module I and II) and two specific modules developed by each programme (a basic professional qualification module associated with a specific professional competence, corresponding to the first level of the National Catalogue of Professional Qualifications and another training module in occupational risks (60 hours) and training in the productive environment (160), which amounts to the "Practicum"). These company internships have a total duration of 160 hours.

One of the PPMEs is Auxiliary Operations in Administrative and General Services. This professional programme belongs to the first level of professional qualifications, belonging to the family of administration and management. In Royal Decree 107/2008 of 1 February, which established the

national catalogue of professional qualifications, we find the general competencies that students must develop in this programme: to be competent in the distribution, reproduction and transmission of the information and documentation required in administrative and management tasks, both internal and external. In addition, in their professional career they must be able to effectively carry out elementary data and document verification procedures at the request of management, in accordance with established instructions and procedures. (Royal Decree 107/2008 of 1 February). Here we can say that the main occupations and jobs to be performed are, for example, office assistant, general services assistant, archive assistant, ordinance, ticket seller, etc. We can deduce from this how important the internship is for putting into practice the skills that are expected to have been acquired in a more theoretical way, especially if we consider the personal difficulties that this type of student presents.

Several studies have shown that the Practicum is crucial to the development of students' professional competencies (Mérida, 2001; Fernández et al., 2001; Zabalza, 2003; Pérez and Gallego, 2004; Villa and Poblete, 2004; Smith and Lev - Ari, 2005; Perez Aldeguer, 2012; Muñoz-Martínez et al., 2021). On many occasions, there is a separation between theory and practice, which makes it even more difficult for these students to access a job. For the students, it takes time and effort to develop professional skills outside the classroom context to which they are usually accustomed. It means being exposed to the eyes of others and showing insecurity, they even have to develop a professional identity to which they may not be accustomed. As Ainscow (2001, p.55) explains, change, especially when it involves new ways of thinking and behaving, is a difficult and slow process. During the internship, it is not only important to develop instrumental and technical skills, but also, and especially so with this group, social skills within a work environment outside a formal context. Improving these skills will help them find work, improve their interpersonal and communicative relationships and raise their self-esteem. As shown in other studies, the pandemic situation has meant a lot of uncertainty for students with disabilities who were waiting for an internship (Muñoz-Martínez et al., (In press).

Active methodologies are a perfect ally for the development of inclusive practices at different educational levels (Muntaner-Guasp, 2022). Gamification, according to Marín and Hierro (2013), is a set of techniques, methods and strategies that applies the attractive elements of games to a non-game environment. It can be applied with the intention of engaging the user, promoting a change in behaviour or transmitting a message or content. From this perspective, we will be able to recreate a meaningful and motivating experience in an environment that favours the repetition of learning and behaviours appropriate to work environments, thus improving the execution and reproduction of what has been learned. We must not lose sight of the importance of technologies promoting equal opportunities among students (Rayón and Muñoz Martínez, 2011). Virtual environments, such as Genially, allow us to prepare a different learning experience than that provided in classrooms. In this sense, gamification in an educational context entails benefits in terms of curriculum design, since it takes something complex and boring and makes it a more engaging way for the student to develop their competencies (Area and González, 2015). It also allows for an interactive experience of the subject, with the student making autonomous decisions in response to the tasks they are given. From this perspective, it makes sense to create activities and environments that develop our students' skills and encourage them to put into practice what they are going to have to do in real life, and more specifically in a work environment, in a more controlled context. In this line we can find companies (game-based learning) dedicated to the creation of situations and work environments that require some practice on the part of workers and thus facilitate their training in the skills that they have to improve.

To properly develop a gamified experience, we have to take into account, as Werbach (2012) suggests, the fundamentals of gamification: dynamics, mechanics and components. The *dynamics* are the concept, the implicit structure of the game, the virtual world in which users interact. The *mechanics* are the processes that take place during the game (challenges, luck, feedback, acquiring resources, etc.) and the *components* are the specific representations of dynamics and mechanics: avatars, badges,

collection points, rankings, levels, missions, equipment, among others. It includes all the elements that the player will encounter.
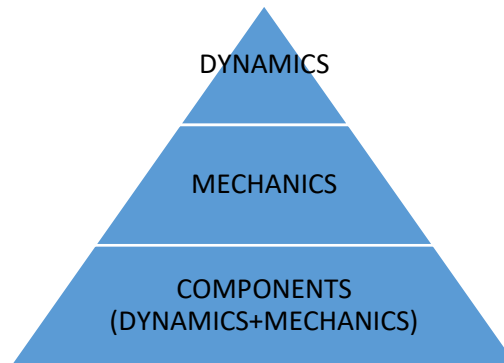

Figure 1. Werbach Pyramid (2012). Adaptation.

One of the most important aspects of gamification, which helps the player to focus on the game and get drawn into it, is the narrative that develops within the dynamics component. Therefore, the narrative must be coherent and consistent in order to guide the player perceptibly forward (Herranz, 2013). In this sense, the students will be immersed in carrying out the different virtual tasks in a similar way to what would be expected of them at a work internship. In addition, the narrative used must label the activities and elements that set the status of the participants and the evaluation systems (Contreras 2017).

Gamification with special needs children has been addressed in a number of ways. For instance, Grane, & Crescenzi-Lanna (2021) used found that gaming benefits special needs students but also that there is "a lack of knowledge regarding the design of applications for children with functional diversity" (p. 139). An interesting approach is offered by Sitra, Katsigiannakis, Karagiannidis, Mavropoulou (2017) who believe that badges obtained through games are extremely engaging for students with special educational needs. This motivation is also observed by their teachers who perceive certain games as facilitators of learning, especially in mathematics (Mourelatou & Zamfirov, 2017; Keller, Hebeisen, & Brucker-Kley, 2018) or music (Wong, 2021). For some other teachers, most of the effect is originated in extracurricular activities where non-intentional learning is favoured by the lack of anxiety that the academic environment introduces (Sekhri, 2019)

In short, seeking methodologies that develop our students' skills and competencies is to prepare them for the society of the present and future, where, regardless of individual personal characteristics, everyone can form a real part of the world from a realistic, critical, reflexive and autonomous point of view, from which they can face a rapidly changing working world.

The objective of this work was to show the effectiveness of active methodologies in the training of students in a special modality professional programme that, together with an Action-Research approach, enriches the process and the experience of internships and enhances the students' satisfaction.

2. METHODOLOGICAL DESIGN

a. NATURE OF THE RESEARCH AND THE ACTION-RESEARCH MODEL

Taking into account the situation we had to face due to the lockdown and the importance of closely monitoring the daily development of the internships, we considered that the most appropriate work methodology was that of the Research-Action (R-A) paradigm. We took the R-A models proposed by Elliot (1990) and Goyette and Lésasard-Herbert (1988) as a starting point, which follow Lewin's sequence (1946): planning, action, observation and reflection. Taking this approach and applying it to our case, we carry out the following steps that can be seen in figure 2.
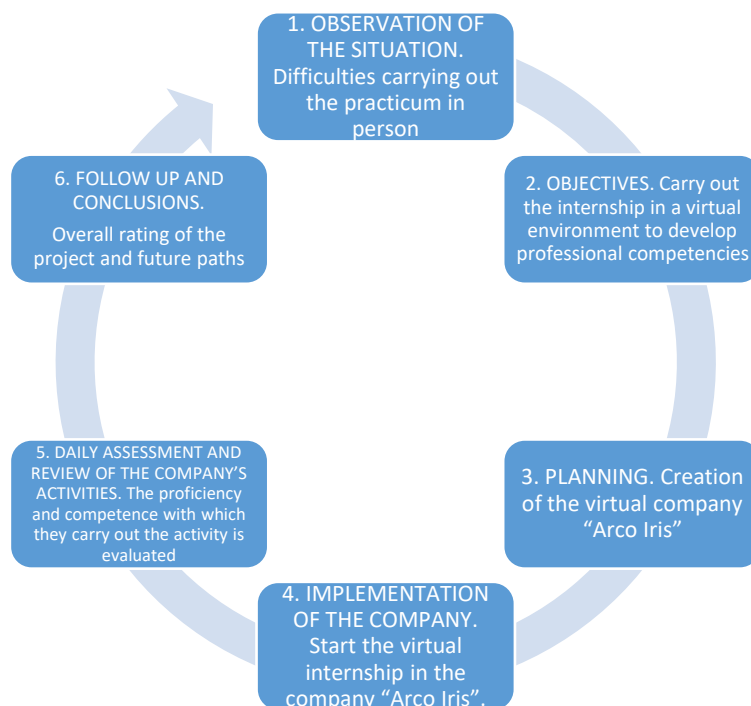
Figure 2. R-A phases and cycles for the company Arco Iris.

First of all, we start from the *observation* of the reality that our students could not do their internships as we had planned due to the declaration of a state of emergency and lockdown. From here, our main *objective* was to set up a virtual company where they could put the professional skills they had been learning throughout their academic training period into practice. From this point, *we planned* the creation of our virtual company with everything required at a technical and methodological level in relation to the learning activities. Once developed, we *implemented* the virtual company Arco iris and started with its activities and daily monitoring, allowing for a daily *evaluation and review*. This daily monitoring of our students' progress was carried out by all the teachers who taught them and allowed them to systematically carry out a daily evaluation of each one detecting difficulties both for the students and in the system itself. From this daily *monitoring*, it was possible to make adaptations for each of the students, adjusting to their personal and professional levels and skills. At the end of the day, the teachers communicated by telephone or online to review what had been done and plan according to the progress made and the purpose of the activities. Similarly, at the end of the internship, a joint evaluation of the entire programme was carried out.

b. PARTICIPANTS

This research involved 11 students of a PPME located in the town of Alcalá de Henares, in the community of Madrid. This programme was carried out in a subsidised private school.

Prior to starting of the company, we contacted all the families to inform them of the situation we were in following the declaration of the state of emergency and to inform them of the measures that we had agreed upon in keeping with the guidance issued by the regional authorities. Given the situation, the families considered that the alternative of carrying out a virtual internship seemed the most appropriate way to proceed and were very happy and excited to see it go ahead. Both families and students signed an authorisation to carry out the process and we also indicated to them that their collaboration was important if progress was to be made, as was the monitoring of the daily tasks and the completion of the activities. We encouraged them to practice further at home.

The level of curricular completion presented by the students was very diverse, from the 4th to the 6th year of primary education, so the approach taken had to be adaptable to the each of their needs.

Table 1. Participating students in the virtual company Arco Iris

PARTICIPATING STUDENTS	AGE	GENDER	DISABILITY
Student 1	18	FEMALE	Mild intellectual
Student 2	17	FEMALE	Mild intellectual
Student 3	18	MALE	Attention deficit
Student 4	17	FEMALE	Attention deficit
Student 5	18	MALE	Motor and Attention Deficit
Student 6	18	MALE	Mild intellectual
Student 7	18	MALE	Moderate intellectual
Student 8	19	MALE	Moderate intellectual
Student 9	19	FEMALE	Moderate intellectual
Student 10	18	FEMALE	Autism Spectrum Disorder ASD
Student 11	18	FEMALE	Specific Language Disorder SLD

Table 2. Participating teachers in the virtual company Arco Iris.

TEACHERS	AGE RANGE	GENDER	FUNCTION IN THE PPME
Teacher 1	35-45	Female	Programme Tutor, Therapeutic Pedagogy Teacher
Teacher 2	25-35	Female	Specialist teacher in administration. Internship tutor
Teacher 3	25-35	Female	Educational technical assistant

c. CONTEXTUALISATION OF THE PROJECT

The Action-Research approach emerged from the situation we were facing as a result of the pandemic caused by the SARS-CoV 2 virus. In March 2019, a state of alarm was declared in Spain and a lockdown was imposed that lasted until June of the same year. During this time, face-to-face activities were suspended. In our case, this prevented the completion of the training internships by students in the professional special modality programme in Auxiliary Operations of Administrative and General Services (PPMEOSAG).

We were given two options by the Education Administration: postpone the internships to the following academic year without any guarantee that the course of the pandemic would allow this or develop an entrepreneurship project to validate their workplace training internships. During this time, to facilitate the completion of the internships, the number of hours spent in the workplace could be reduced from the usual 160 to a total of 130 hours. Given the diversity of the student profile and the uncertainty surrounding the prospects for their future work experience, it was decided to create a virtual space similar to that of a company. The programme's tutor and the specialist teacher, with the support of the Technical Educational Assistant, developed a virtual company where the students could put the personal and professional skills acquired during their academic training into practice.

The initial questions that arose were: will the students be able to adapt to the use of digital tools and methodologies? Will we be able to put multilevel activities in place that reflect the different capacities of our students? Will they be able to improve their professional skills in the subjects taught? Will they

feel that the experience is similar to that of working in a company? These considerations led to the conclusion that adopting the Action-Research method would improve knowledge about the development and implementation of this innovative project. Given the need for this type of methodology, we opted for a learning environment that also promoted their motivation and self-esteem. To that end, we agreed that a simulation and gamification environment was the optimal way to recreate a workplace experience that was as real as possible and would allow us to monitor their progress on a daily and individual basis as they carried out the various activities of a company.

d. RESEARCH ETHICS

The participants signed an informed consent document which informed them that their data would be used for research purposes and that they had the option of revoking their participation at any time. The confidential processing of data was also ensured. With the intention of maintaining the confidentiality and privacy of the participants, no real names appear.

e. DEVELOPMENT OF THE EXPERIENCE

Having defined the scope of the project, we began the process of creating our company. In the initial phase, we thought about what departments the company should have and opted for those familiar to the students from their Basic Administrative Techniques course: Order preparation, Archiving and communication, Customer service, Office automation and Computer data processing. Thinking of the type of company that would combine all these learning modules and that would be familiar to the students, we opted for a company that worked in the paper sector. This was because the students had carried out some similar activities in the centre itself that could serve as an example for this project. The departments we decided to create were logistics, financial, commercial, marketing, IT support (technical), human resources, administration and management. The company would also have a department in which office equipment and furniture were manufactured and sold. The next step was to name our company. Among the teachers, it was decided to call it "Arco Iris" (Rainbow) because of the numerous rainbows that were drawn during the pandemic and to give our students a sense of tranquillity and positivity.

Once the foundations of the company were laid, we began building it out and created a virtual space on Genially (Figure 1) that made it easier for our students to have visual support similar to that of a company with its departments, offices, spaces, etc.

Figure 1. Image from Virtual company Arco Iris.

After designing the virtual environment, we developed the company narrative. This would allow them to get into the role of a worker in a coherent and consistent way from the beginning and be more involved in the virtual experience of the internship. The first step in launching the company was to announce a recruitment drive looking for candidates with experience in the company's industry. The students then had to send a cover letter together with their CV, thus starting the selection process where they received feedback on their application. Once selected, they had a personal interview and signed a contract. The next step they had to take was a course in occupational risk prevention (as would be the case in a real company internship) so they could be hired in the different departments. The first thing they had to do every day was check the agenda where each department's tasks and activities were specified. The activities were designed so that everyone did the same tasks but in a way that was adapted to the profile of each student. As such, we established different achievement levels and each student was informed of what was required of them according to these. The estimated duration of the activities was 6 hours per day, which is equivalent to the internship hours in a company. They had to hand in the work during the standard office hours of 8:30 a.m. to 2:30 p.m. in order for it to count. All the assignments were designed to go through all the departments; however, the most important department was administration, since it related directly to their studies.

To maintain the student's interest, we developed a colour-coded point system for each activity with the employee who obtained the most points at the end of the week appearing in a prominent place on the company access page.

f. DATA COLLECTION AND ANALYSIS

Various techniques were used to collect the data: daily activities performed (various formats), student internship diaries, chats, emails, surveys and interviews.

First of all, we created a google drive document for each of the students with their personal identification details. It was here that they logged their daily activities in the company that we requested, which could also be seen in a colour-coded, numbered box in an accompanying excel sheet. At the end of the working day, the teachers reviewed each activity and if it was done well, they marked it in green; if it was incomplete or incorrect, it was marked in yellow, which meant that they had to do it again. Therefore, visually they were aware of the progress they were making and which sections presented the most difficulties as highlighted by both teachers and students. The total number of activities to be carried out was 73. The activities proposed and reviewed were of varying nature and formats such as Word, Excel, videos, audios, etc.

At the end of each day, students had to complete a google drive survey (google form) where they specified the tasks they had completed. At the end of the internship, this was collated into a document called the Internship Diary, where they reflected on the most representative lessons they had learned.

To improve communication and resolve any issues that arose, we communicated with them through Google Chat and email. Through these chats with the students, we were able to compile a document that served to review, in a systematic way, which aspects of the internship presented the most difficulties for each student.

Every week they were surveyed via Gmail to see their progress and get the students' opinion about the internship process.

Meanwhile, daily meetings were held among the teachers to deal with issues that arose, and at the end of the process, a personal interview was conducted with the PPME tutor.

All the data were collected in the different formats mentioned above: Word, Excel, videos and interview transcripts.

3. RESULTS

The completion of the internship successfully helped the development of professional skills in students. Everyone managed to finish the activities correctly, even those students who did not do it

correctly on the first attempt. After receiving feedback from the teachers, they were able to carry them out. All the students carried out the 73 activities proposed in the virtual company Arco Iris.

The degree of student satisfaction was high from the first week, but we observed a gradual increase until the fourth week when the project concluded. In the first survey, 63.6% of the students rated the company as "very good" and 36.3% as "good". While in the last survey their satisfaction varied from 18.8% good, 63.63% very good and 18.18% excellent.

Chart 1. Evolution of the participants' satisfaction level.
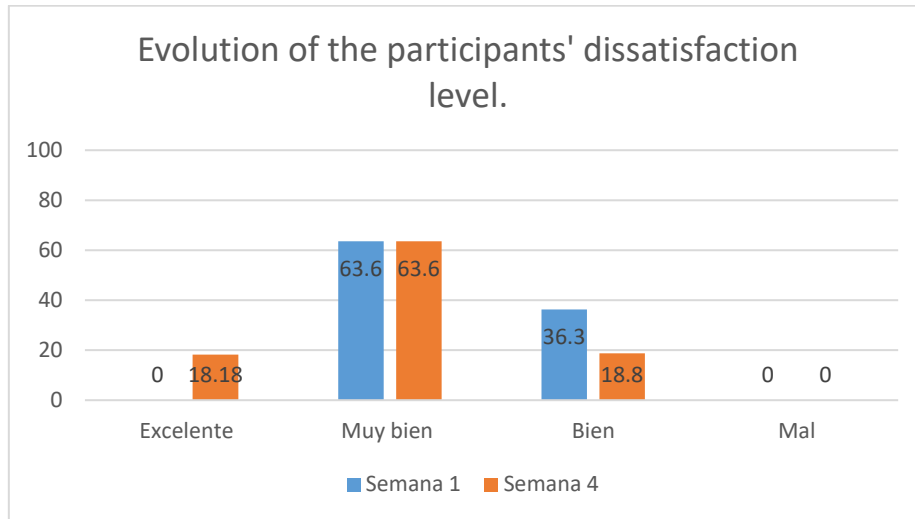
When asked about the grade they would give the internship experience in the virtual company, 8 students scored it between 9 and 10 (Excellent), equating to 72.7% of the students, 3 students scored it with grades between 7 and 8 (Merit), 7 being the lowest grade, equating to 27.2% of the class.

Chart 2. Score given by participants to the virtual enterprise.
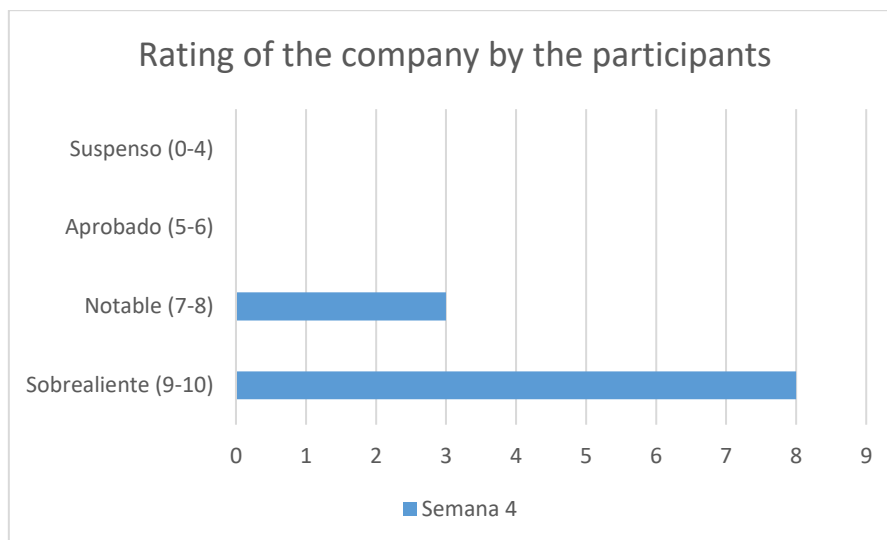
Creating a virtual environment in which to do the internship resulted in a similar experience to that of an in-person internship. We can take this from the comments in the surveys, like this one given by student 5: *At the beginning of the week I was nervous, but as the week went on, I got more confident because everything was quite easy.* Likewise, another student expresses similar levels of nervousness at the start of the virtual internship to those expressed at the start of in-person work experience: *Good, although I am a little nervous* (student 9); also: *Happy to start the internship and a little overwhelmed by the newness* (student 4).

They felt like they were working in a company thanks to the narrative, dynamics and activities created: *I felt like an employee in a company, the activities were very well done, very good work* (student 7). We could even see that they were putting in more effort: *I felt quite good, but very tired because I am not used to getting up at eight* (student 2). A similar comment was made by student 4: *I felt quite overwhelmed because there was a lot to do throughout the day but also happy because I am learning new things;* as did student 5 in saying: *Very good, a little overwhelmed with the assignments.* Despite the difficulties they experienced, they solved them successfully and this made them feel happy and satisfied with their work: *I felt very good because I like the company, I am very happy* (student 6).

The activities all produced similar levels of satisfaction, as shown by student 5 when asked which activity they like most: *I would not know how to choose, since we are doing everything we studied.* They felt that they were putting what they had learned in the different departments into practice. However, it should be noted that they most enjoyed the activities that helped them to get more involved in the role of the worker through role playing and where the teachers reinforced the narrative of the company by creating characters that were recorded.

4.   CONCLUSIONS

We can take away a number of findings that we consider important from this virtual work experience. We begin by sharing some of the limitations that we encountered, and it is worth highlighting, for example, the difficulties inherent in the period of lockdown due to SARS-CoV 2. It was taxing for some families and participants; however, being able to focus on an activity and daily work methodology helped them to concentrate and think about other issues as they themselves expressed in informal conversations. That being said, for most families it was not an overexertion, in fact, they were very aware of their children's routines and work, even stating that they were excited every day to see what activities or situations their children had to face. However, some families could not monitor the internship due to personal and work circumstances, resulting in situations where a student did not show up for "work" and the tutors had to call them until they got into the daily routine that a job entails. That is, the support and monitoring of students in daily progress was more difficult as it had to be done from a distance, making it difficult to learn on some occasions.

Creating a virtual company in which only methodological changes can be made so that students can obtain their job qualification level made it difficult to carry out multi-level activities on many occasions and made their development more complex for the teachers themselves. This reminds us that, although all students had access to the Internet, it is an aspect that we have to keep in mind for the future if we find ourselves in a similar situation, as not all students may have access to it.

Practicing virtually with PPME students led to a series of reflections for the future of the programme. Given the good results of this internship, the virtual company will be put back into operation when they have to go to the face-to-face internships in the companies. It gives us a much more realistic picture of the work competencies acquired and how the student will function in a real work environment. This has encouraged us to make organisational changes to our internships. First, the group of students will be split in two, one group will go to the company in person while the other group will remain in the centre doing the virtual internship. This will allow us to dedicate more time to those students who need more help, so they can develop and carefully put into practice the different skills that will be required of them, but in a simulated environment and with closer monitoring. This will make it easier for students who may have more difficulties in developing work skills to have a more satisfactory first work experience. Secondly, splitting up the internships will allow us to double the amount of time we spend reinforcing concepts, competencies, proficiency, etc. These are key aspects for people who need specific support.

The virtual internship allowed the teachers to assess the true level of the students' knowledge as well as their reactions to stressful situations, thus allowing them to identify which type of centre is most suitable for them to carry out their internship so that it results in a satisfactory experience. In fact, it should be noted that there was an increase in student satisfaction and professional image. Students

are not usually in high demand from companies due to a lack of awareness of the students' real abilities. Being able to do a virtual internship allows them to improve and deepen their learning by adjusting them to their real skills, improving their self-esteem and personal and professional self-knowledge.

5. BIBLIOGRAPHIC REFERENCES

Ainscow, M.; Hopkins, D, Southworth, G. & West, M. (2001). *Hacia escuelas eficaces para todos. Manual de formación para equipos docentes*. Editorial Narcea.

Area, M., & González, C. (2015). De la enseñanza con libros de texto al aprendizaje en espacios online gamificados*. Educatio Siglo XXI*, 33 (3), 15-38. DOI: 10.6018/j/240791

B.O.E. Núm.44, de 20 de febrero de 2008. Real Decreto 107/2008, de 1 de febrero, por el que se complementa el catálogo nacional de cualificaciones profesionales, mediante el establecimiento de siete cualificaciones profesionales de la Familia profesional Administración y Gestión. https://www.boe.es/eli/es/rd/2008/02/01/107

Booth, T. & Ainscow. M. (2011). *Index for Inclusion.Developing learning and participation in schools* (3ª ed.). Editorial CSIE.

Contreras Espinosa, R.S. (2017). *Gamificación en escenarios educativos. Revisando literatura para aclarar conceptos* (pp. 11-17). En Experiencias de gamificación en el aula. Contreras Espinosa, R.S. y Eguia, J.L: Editores. Instituto de Comunicación de la Universidad Autónoma de Barcelona. https://ddd.uab.cat/pub/llibres/2018/188188/ebook15.pdf

Echeita, G. (2008). Inclusión y exclusión educativa. Voz y quebranto. *REICE - Revista Electrónica Iberoamericana sobre Calidad, Eficacia y Cambio en Educación,* 6 (2), 9-18. https://www.redalyc.org/pdf/551/55160202.pdf

Elliot, J. (1990). *La investigación acción en educación*. Madrid: Morata.

Escudero, J.M. (2012). La educación inclusiva, una cuestión de derecho. *Educatio Siglo XXI*, 30 (2), 109-128. https://revistas.um.es/educatio/article/view/153711

Fernández, M. D., Malvar, M. L. & Vázquez, S. (2001). El prácticum en Pedagogía: Una ocasión para el desarrollo de competencias personales y profesionales. En L. Iglesias, M. Zabalza, A. Cid y M. Raposo (Coords.). *Desarrollo de Competencias Personales y Profesionales en el Prácticum. VI Symposium Internacional sobre el Prácticum*. Editorial Unicopia.

Goyette, G. & Léssard-Hebert, M. (1988)*. La Investigació-acción. Funciones, fundamentos e instrumentación.* Barcelona: Laertes.

Grane, M., & Crescenzi-Lanna, L. (2021). Improving the Interaction Design of Apps for Children with Special Educational Needs. Journal of Educational Multimedia and Hypermedia, 30(2), 139-164. https://www.learntechlib.org/primary/p/213817/.

Herranz, E. (2013) *Gamification*. Madrid: Universidad Carlos III.

Instituto Nacional de Estadística (2019). El empleo de las personas con discapacidad. https://www.ine.es/prensa/epd_2019.pdf

Instituto Nacional de Estadística (2019). Vida laboral de las personas con discapacidad. https://www.ine.es/prensa/vlpd_2019.pdf

Keller, T., Hebeisen, A., & Brucker-Kley, E. (2018). *Integration of children with special needs in mathematics through virtual reality International Association for the Development of the Information Society*. https://eric.ed.gov/?id=ED600589

Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues 2*(4), 34-46.

Marín, I. & Hierro, E. (2013) *Gamificación: el poder del juego en la gestión empresarial y la conexión con los clientes*, Barcelona: Empresa Activa.

Mérida, R. (2001). El Prácticum: un complejo espacio de formación. En L. Iglesias, M. Zabalza, A. Cid y M. Raposo (coords.). *Desarrollo de Competencias Personales y Profesionales en el Prácticum. VI Symposium Internacional sobre el Prácticum*. Editorial Unicopia.

Mourelatou, K., & Zamfirov, M. (2017). Special needs teachers' perceptions on the educational digital game the "four forces". *Open Journal for Educational Research, 1*(2), 75-90. https://doi.org/10.32591/coas.ojer.0102.03075m

Muntaner-Guasp, J., Bartomeu Mut-Amengual, B., & Pinya-Medina, C. (2022). Active Methodology for the Implementation of Inclusive Education. *Revista Electrónica Educare, 26*(2), 1-21. https://doi.org/10.15359/ree.26-2.5

Muñoz Martínez, Y., Domínguez Santos, S., Madarova, S., de la Sen Pumares, S., & García Laborda, J. (2021). Prácticum Inclusivo: Creando redes de aprendizaje y colaboración entre los estudiantes, los maestros y la Facultad de Educación. *Revista Interuniversitaria De Formación Del Profesorado. Continuación De La Antigua Revista De Escuelas Normales*, *96*(35.3), 205-224. https://doi.org/10.47553/rifop.v96i35.3.89093

Muñoz-Martínez, Y., Gómez, P., Gómez, M., & San Martín, C. (In press). The impact of the pandemic on young people with intellectual disabilities participating in a university training course for employment in Spain. *The Journal of Continuing Higher Education.*

Pérez & Gallego (2004). Formación inicial de profesores de ciencias en Colombia: un estudio a partir de programas acreditados. *Ciencia y Educación*, 10(2), 219-234. https://www.scielo.br/j/ciedu/a/WHgCmsKTLY5z8nMCJt3QYPv/?format=pdf&lang=es

Pérez Aldeguer, S. (2012). Una forma creativa de mejorar la evaluación y clasificar las prácticas en la educación musical. *REICE. Revista electrónica Iberoamericana sobre Calidad, Eficacia y Cambio en Educación* 10 (2). p.148-158. http://hdl.handle.net/10486/661420

Rayón, L., y Muñoz Martínez, Y. (2011). Tecnologías de la información y la comunicación y la igualdad de oportunidades: contenidos necesarios para la formación del profesorado. *Revista Iberoamericana de Educación/ Revista Ibero-americana de Educação*, 56(4), 1-10. https://rieoei.org/historico/deloslectores/4529Munoz.pdf

Resolución de la Viceconsejería de Educación, Juventud y Deporte, por la que se dictan instrucciones relativas a la organización de los Programas Profesionales para alumnos con necesidades educativas especiales que se impartirán con carácter experimental en el curso escolar 2014-2015. https://www.ecmadrid.org/es/pdfs-revistas/doc_download/3153-instrucciones-27-mayo-2014-organizacion-de-los-programas-profesionales-alumnos-n-e-e-curso-experimental-14-15

Sekhri, A. (2019). Participation in extracurricular activities: A boon for children with special needs. *Journal on Educational Psychology, 12*(4), 37-44.

Simón, C., Muñoz-Martínez, Y., and Porter, G.L. (2021) Classroom instruction and practices that reach all learners. *Cambridge Journal of Education*, 51(5), 607-625. https://doi.org/10.1080/0305764X.2021.1891205

Dominguez-Santos, S., Muñoz-Martínez, Y., García Laborda, J. & Cruz Serrano, M. C. (2022). Active methodologies mediated by technologies for the development of professional skills in a special modality professional programme. World Journal on Educational Technology: Current Issues. 14(4), 1106-1119. https://doi.org/10.18844/wjet.v14i4.7646

Sitra, O., Katsigiannakis, V., Karagiannidis, C., & Mavropoulou, S. (2017). The effect of badges on the engagement of students with special educational needs: A case study. *Education and Information Technologies, 22*(6), 3037-3046. https://doi.org/10.1007/s10639-016-9550-5

Villa Sánchez, A. y Poblete Ruiz, M. (2004). Practicum y evaluación de competencias. Revista Curriculum y Formación del profesorado, 8 (2), 1-19. https://recyt.fecyt.es/index.php/profesorado/article/view/42122

Werbach, K. y Hunter, D. (2012) *For the Win: How Game Thinking Can Revolutionize Your Business*, Philadelphia: Wharton Digital Press.

Wong, M. W. (2021). Fostering musical creativity of students with intellectual disabilities: Strategies, gamification and re-framing creativity. *Music Education Research, 23*(1), 1-13. doi:https://doi.org/10.1080/14613808.2020.1862777

Zabalza, M. A. (2003). *Competencias docentes del profesorado universitario. Calidad y desarrollo profesional*. Editorial Narcea.