Social network tools and procedures for developing entrepreneurial skills in PhD programmes

D5.3 (WP5): Report on the development results of the pilot actions

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Document Information Table

Contract number:	723360
Project acronym:	prodPhD
Project coordinator:	CIMNE
Document Responsible Partner:	UC3M
Deliverable type:	Report
Document title:	Report on the development results of the pilot actions
Document ID:	D5.3
Dissemination level:	Public (PU)
Filename:	D5.3
Status:	First version

Authoring & Review

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EXECUTIVE SUMMARY

Deliverable D5.3, 'Report on the development results of the pilot actions,' aims to monitor the pilot actions carried on by the partners to test the entrepreneurship courses proposed during the project. The pilots consisted on the collaborative development of entrepreneurship projects, using the 'learning by doing' methodology and materials developed in WP3, and were implemented by using the customized social network platform and collaborative work tools developed in WP4.

The evaluation of the pilot actions was carried out using surveys directed towards the students of the courses, and technical staff. As two pilot actions were organized, two surveys were distributed: one to the students of the first demonstration action (July 2022) and one to the students of the second action (January 2023). In the case of technical staff one survey was distributed at the end of the second pilot.

The results show that the course improved between the first and the second pilot. However, there are still some issues to address. Some students find it difficult to compaginated the course with their PhD duties. The partners tested the possibility of designing shorter seminars that might be easier for the students to fit in their schedules. As students' satisfaction with the seminars was high, this might be a possibility for future courses at the PhD level.

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1. INTRODUCTION

This report presents the assessment of the pilot actions implemented in Work Package 5. The document describes the assessment methodology and the results of the evaluation considering the perspectives of students, and technical support.

In particular, prodPhD used pilot actions to deliver and demonstrate a social network-based training methodology that will include the necessary teaching guidelines and specific 'learning by doing' materials for entrepreneurship training, as well as the required prodPhD Online Training Environment, integrating customized collaborative work and social network solutions. The outcome of the prodPhD project will be openly offered to the higher education community.

Aiming to know the ideas and thoughts of all parts involved in the actions, were developed for each of the target groups:

- Students: PhD candidates participating in the first and second pilot actions and main stakeholders of the project.
- Technical support: as the platform was a crucial project implementation, technical staff were asked about the functioning, technical issues and suggested improvements of the collaborative tools and the platform for future editions or similar projects.

The methodology of the surveys is shown in Section 2, and the results of all surveys and questionnaires are shown in Section 3. Finally, Section 4 concludes highlighting the main results and take-aways of the course evaluation.

2. METHODOLOGY

2.1. Students evaluation

The course was tested by two different groups: one that completed it in July 2022 and another one that completed it on January 2023. In the meantime, and considering the results of the first group's satisfaction survey, the partners updated the course and adapted the dynamics of the modules.

Therefore, two with the same structure were conducted: the first one was sent to the participants of the first pilot and the second one, which included three new questions on the length of the course, was sent to the students of the second pilot.

The survey was made up of eight sections (seven in the case of the first group). The first section included practical information, whereas the other seven sections included questions for evaluating the course from different perspectives. The sections of the student survey are shown in Table 2. The complete questionnaire is also available in Appendix 1.

Table 1: Sections of the students' survey

Section number	Content	Number of questions per section
Section 1	Introduction: aim, duration, consent, and instructions	N/A
Section 2	General satisfaction	1 question – 7 parts
Section 3	Particular aspects of the course	1 question – 15 parts
Section 4	Skills	1 question – 19 parts
Section 5	Course content	1 question – 15 parts
Section 6	Collaborative tools	5 questions
Section 7 (2nd group)	Length of the course	3 questions
Section 8	Other comments (removed from results as there were no answers)	1 open question

The survey was sent to all the students that participated in the pilots and gathered two responses in the case of the first group, and five in the case of the second one.

2.2. Partners evaluation

The partners participating in the pilot were asked to complete a brief written questionnaire about the course. The technical staff received a short survey with open-ended questions to evaluate the pilot, find solutions to improve the course for next editions, and share their experiences with stakeholders.

The questions for technical support are shown in Table 2:

Table 2: Technical staff questionnaire

Questions for technical support
Did the platform behave as expected?
Was there any technical problem? Which one?
Which aspects of the platform can be improved? How?
Did the students report any incidence? Which one? Was it solved?

3. RESULTS

3.1. First pilot survey (July 2022)

The survey tried to gather information about the students' perceptions of the course. The first questions were related to their general feelings and ideas about the course. As the number of respondents is low, the graphs show the individual answers of the students. In the first pilot, one of the students answered all the questions with a very low punctuation while the other found the course more interesting. The second student stated that he/she benefited from the course and learned with the modules.
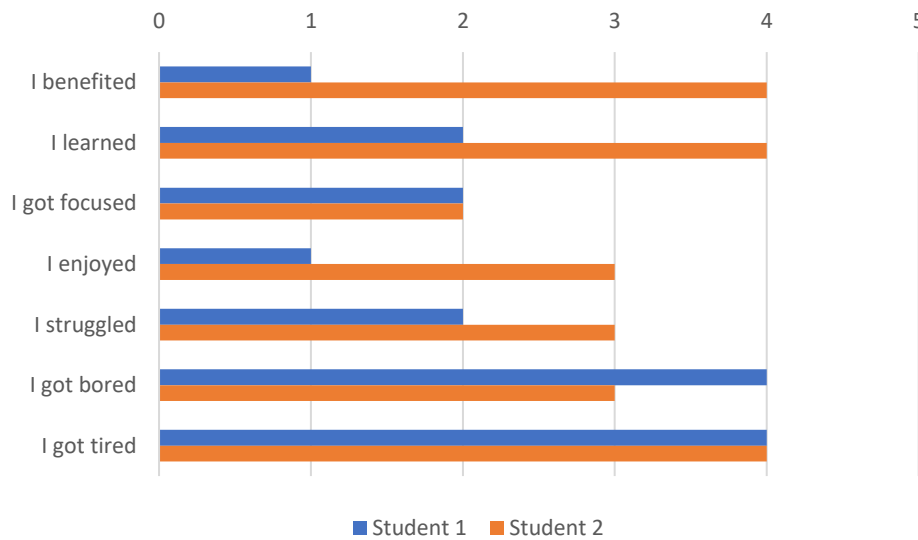

Figure 1: General satisfaction (Likert scale 1 to 5) July 2022

Answers in the second section where similarly different between the students: one of them choosing very low punctuations for all categories while the other one selecting relatively higher numbers. As the second student stated that he/she would prefer synchronous lessons, the second pilot added a synchronous seminar to test the response of the students to this format.
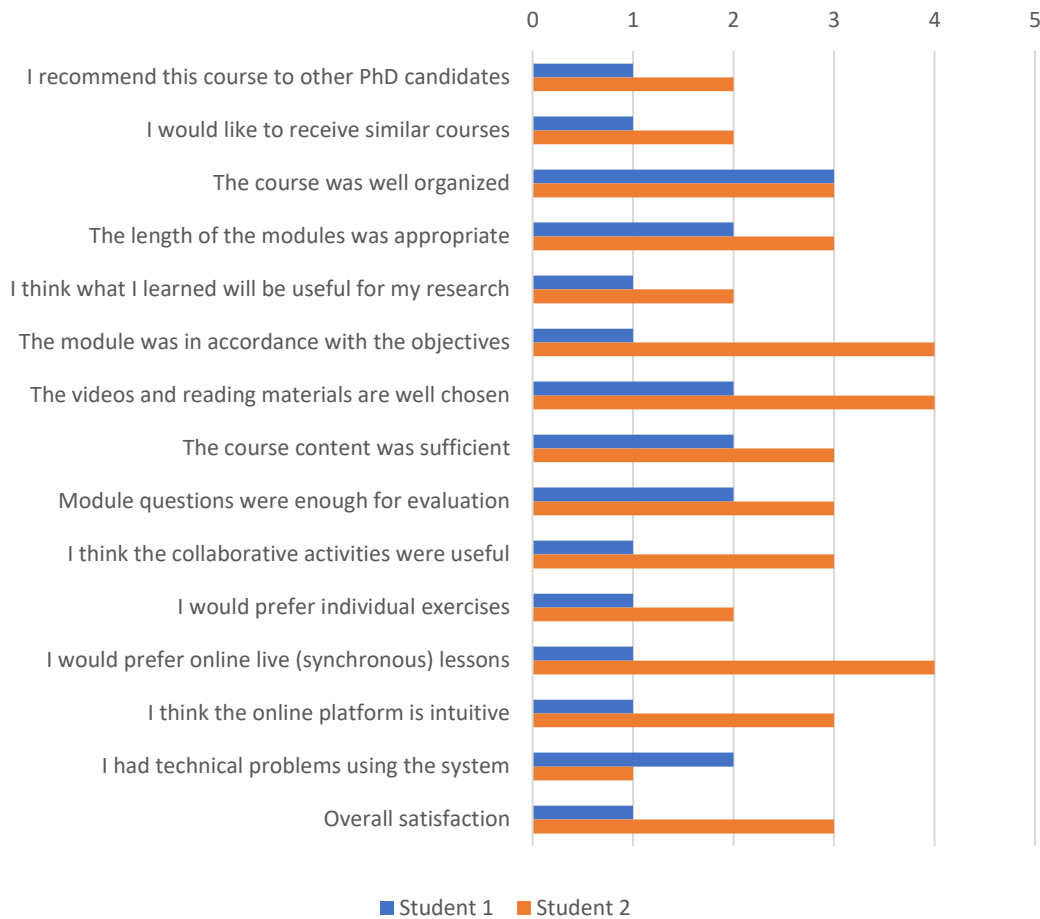

Figure 2: Particular aspects of the course (Likert scale 1 to 5) July 2022

The digital entrepreneurship course was designed to give the students a general idea about entrepreneurship but it is more associated with some skills such as project development and IT competences. Therefore, the students were given a scale from 1 to 4 and a Not Applicable option they could use for skills that might not be relevant for this module.

Although project development skills have a higher punctuation (in the case of the second students), it is still low. The second pilot tried to implement changes in the course to better address the relevant skills of the module and provide the students with a deeper understanding of entrepreneurship.
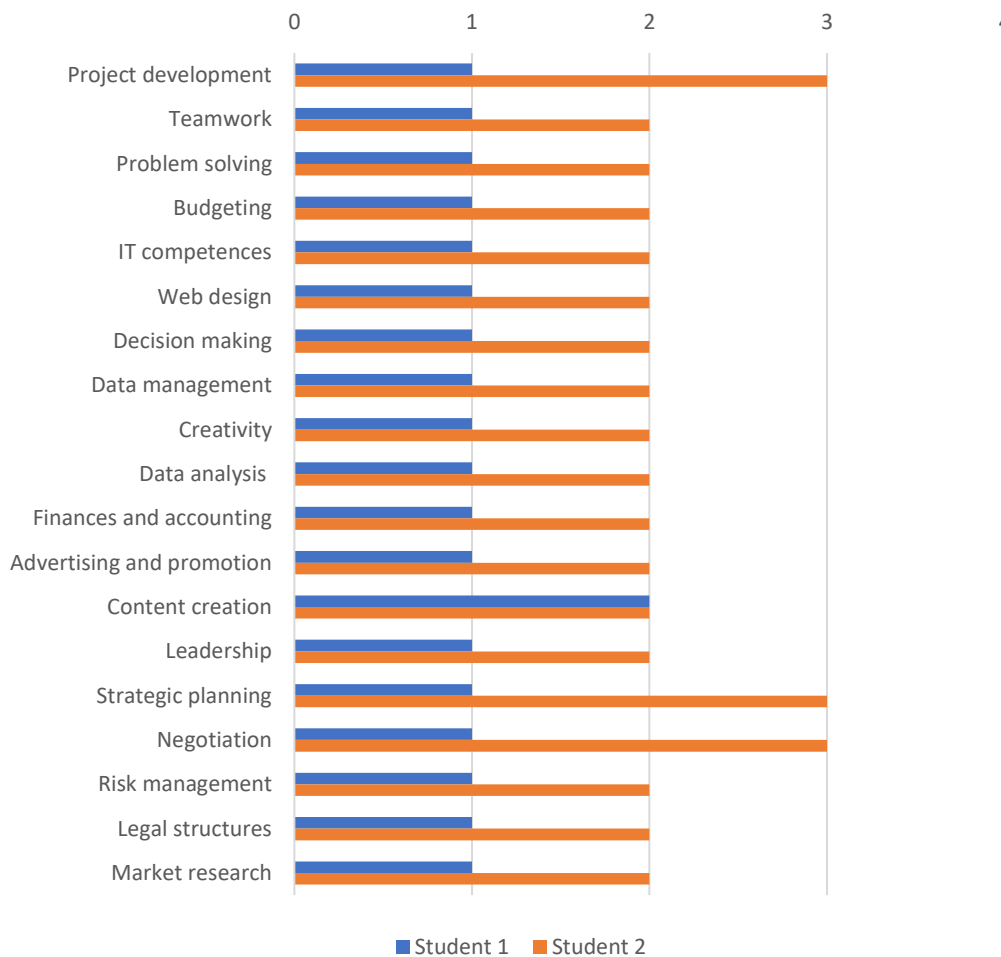

Figure 3: Skills (scale 1 to 4 and NA option) July 2022

The students were also asked to rate how the courses covered a list of topics that are relevant for entrepreneurial activities. As the results were generally low, the partners tried to improve the modules to address some crucial topics, especially those that the participants in the WP2 survey selected as the most important ones such as how to bring ideas to the market and topics related with business creation (resources, how business work, business creation).

Figure 4: Course content (scale 1 to 4 and NA option) July 2022

Finally, the students were asked about the collaborative tools developed for the course. Although one of the respondents agreed that collaborative tools are important for courses on entrepreneurship, they both think that they were not well implemented in this first pilot.
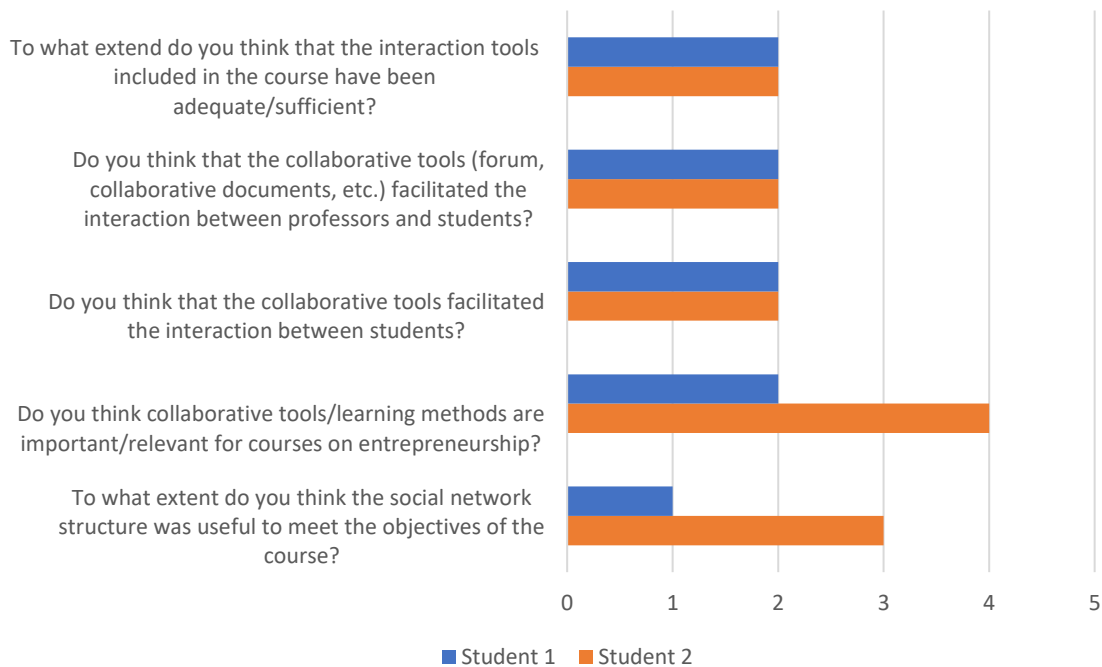

Figure 5: Collaborative tools (Likert scale 1 to 5) July 2022

3.2. Second pilot survey (January 2023)

The second survey was launched in January 2023 after the completion of the second pilot action. Five students answered the same questions as the students of the first pilot to test the improvement of the course. Also, a final section was added to ask the students about the inclusion of the seminar and the possibility of changing the structure of the course to this new format.

All the students in the second pilot learned and benefited from the course and enjoyed it (all answered with either 4 or 5 in a scale from 1 to 5). Although one struggled (4 in a scale from 1 to 5), the majority of them did not found much difficulty so the level of the content seems to be adequate for a course that complements their main tasks as PhD candidates. Also, the students did not get bored nor tired which is also an improvement from the first pilot.
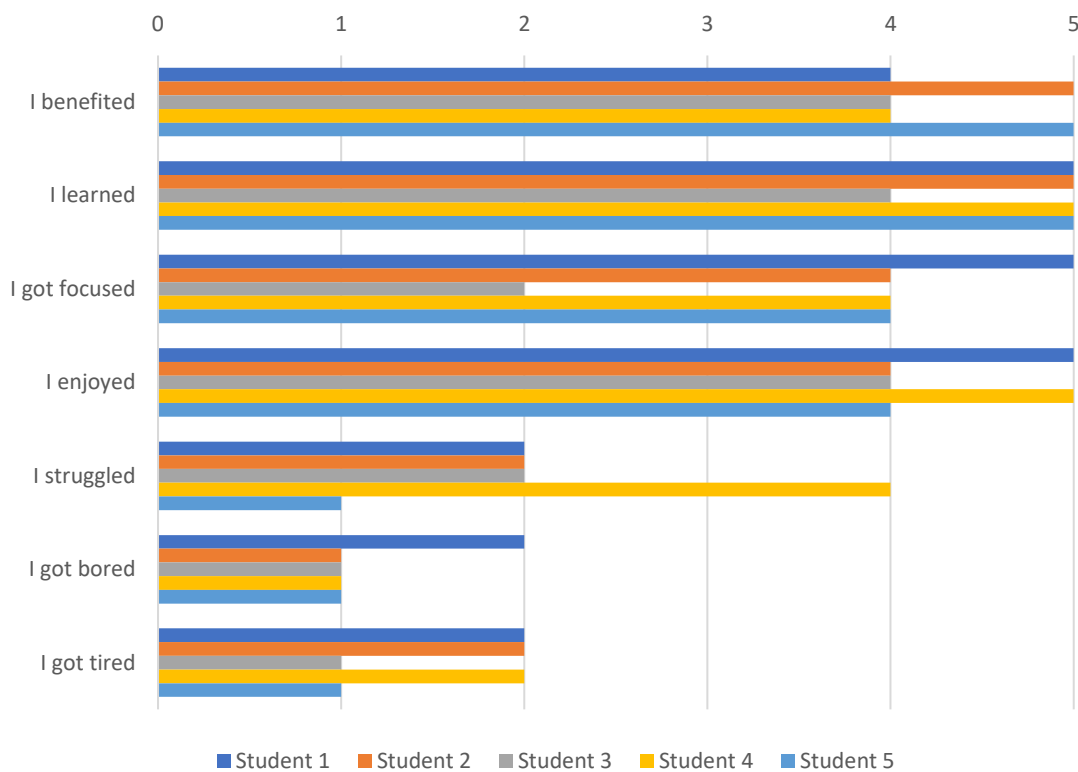
Figure 6: General satisfaction (Likert scale 1 to 5) January 2023

Regarding more specific evaluation issues, the answers are also very positive, which reflect the improvement of the course from July to January. All the students would recommend the course to other PhD candidates and would like to receive similar courses. Also. The videos and materials were well chosen and the module was in accordance with the objectives. Also, they find collaborative tools useful and did not have technical problems using the system. The category with the lowest punctuation is the organization of the course, which would have to be improved for future editions.
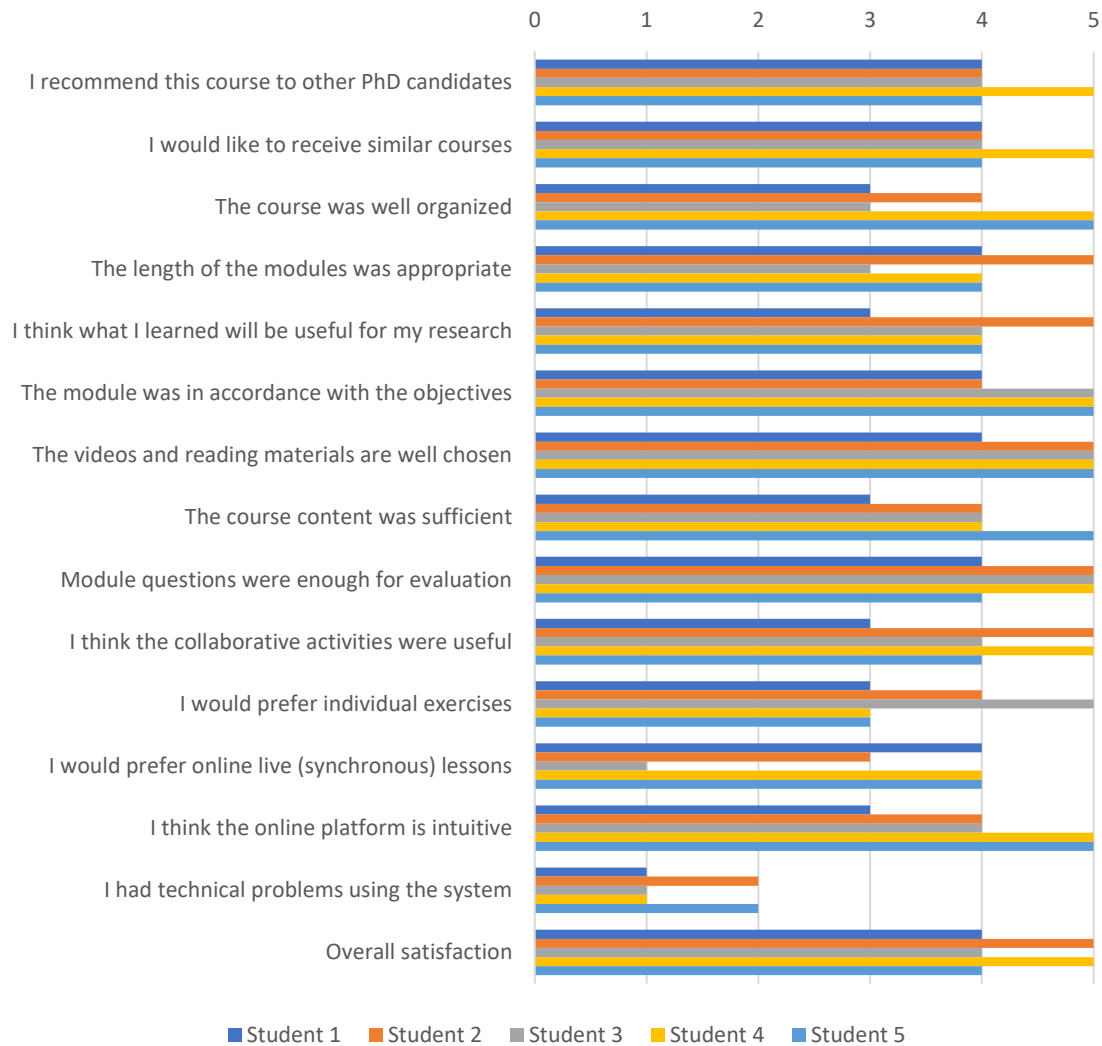
Figure 7: Particular aspects of the course (Likert scale 1 to 5) January 2023

Students reported that the course addressed some important topics for entrepreneurship. The missing colour lines represent the questions were the students chose "not applicable". The pilot was a unique module that cannot address all topics that are relevant for entrepreneurship so it is not surprising that some skills are not applicable or underrated. However, others, such as project development, IT competences and advertising and promotion.
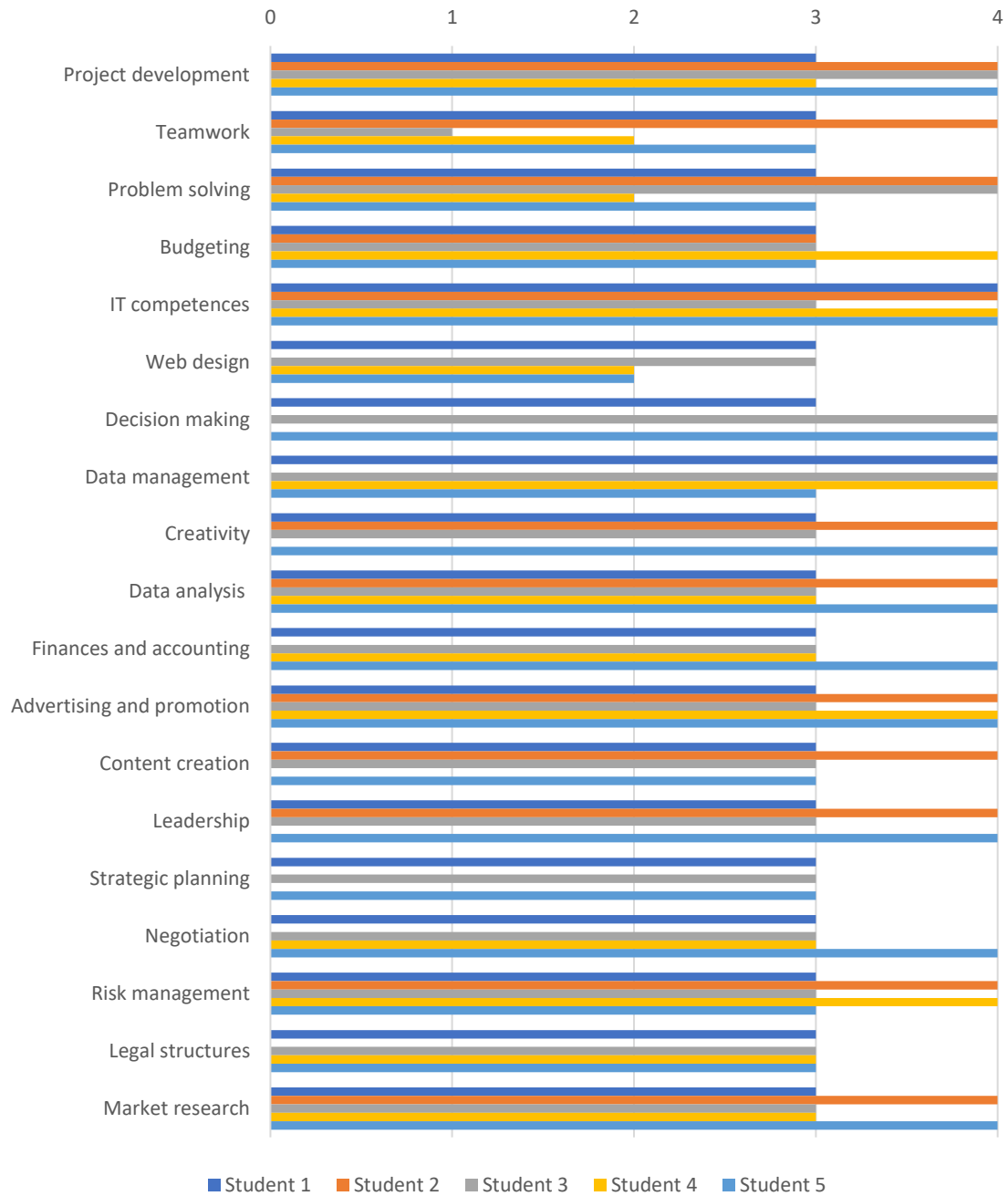
Figure 8: Skills (scale 1 to 4 and NA option) January 2023

Regarding entrepreneurial skills, the course addressed all of them in a transversal way, as they are indeed interconnected. However, the focus on the business creation, understanding how business work and how to bring an idea to the marked have improved their scores. The course also included theoretical concepts and encouraged students to set up a business. However, one of the most important topics for the participants in the WP2 survey still needs to be addressed: students were very interested in learning how to obtain resources to create their own business, however the course did not manage to address that point. Although this particular, Digital entrepreneurship module was not focused on this topic, it might be worth to design seminars that help students with this issue.
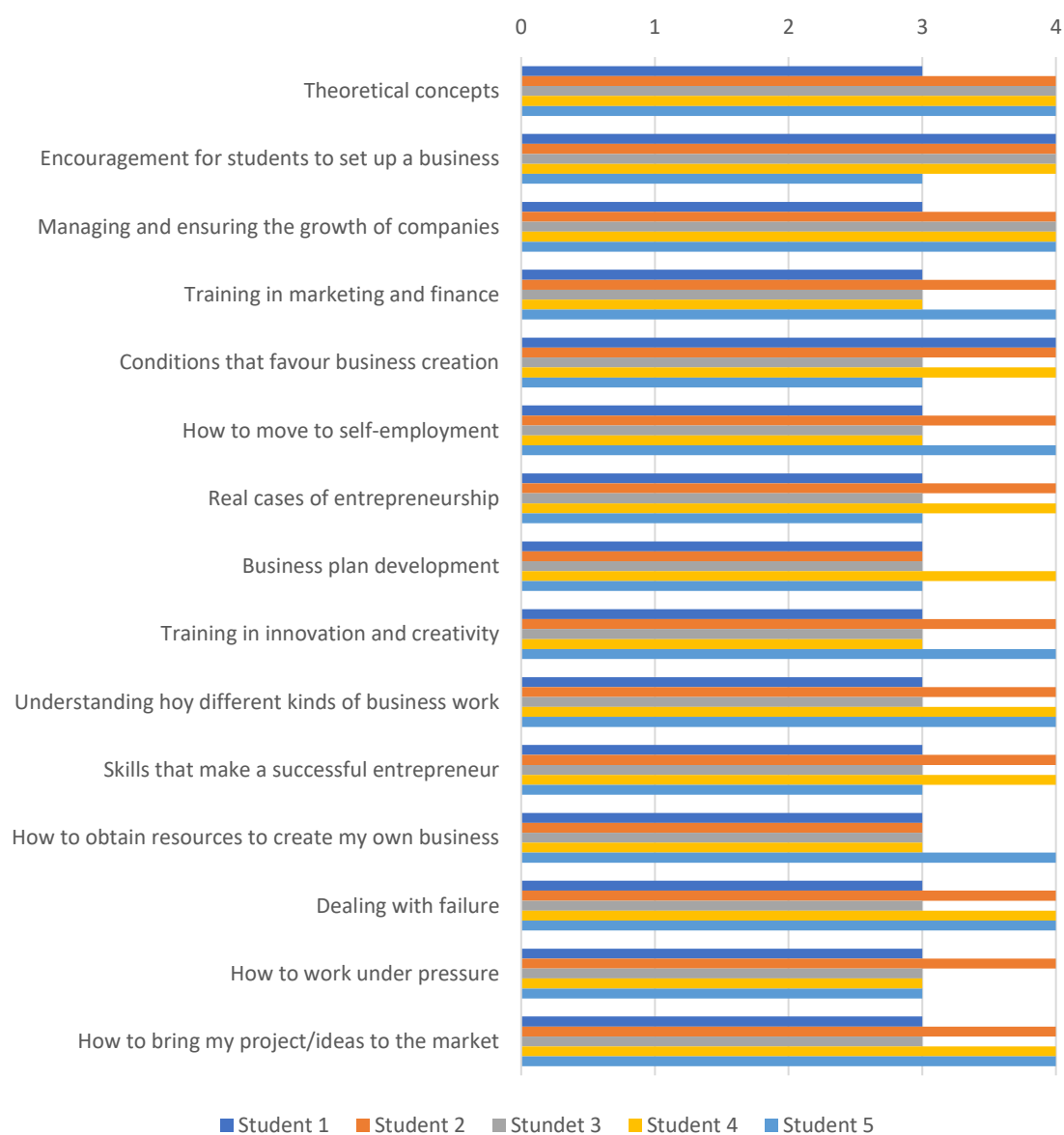
Figure 9: Course content (scale 1 to 4 and NA option) January 2023

The social network structures and collaborative tools also improved in the second pilot. The student rated the tools as useful, adequate and relevant for the courses. In general, they think that collaborative tools and learning methods are important for entrepreneurship courses so future editions and courses might want to explore different possibilities of including these learning methodologies.
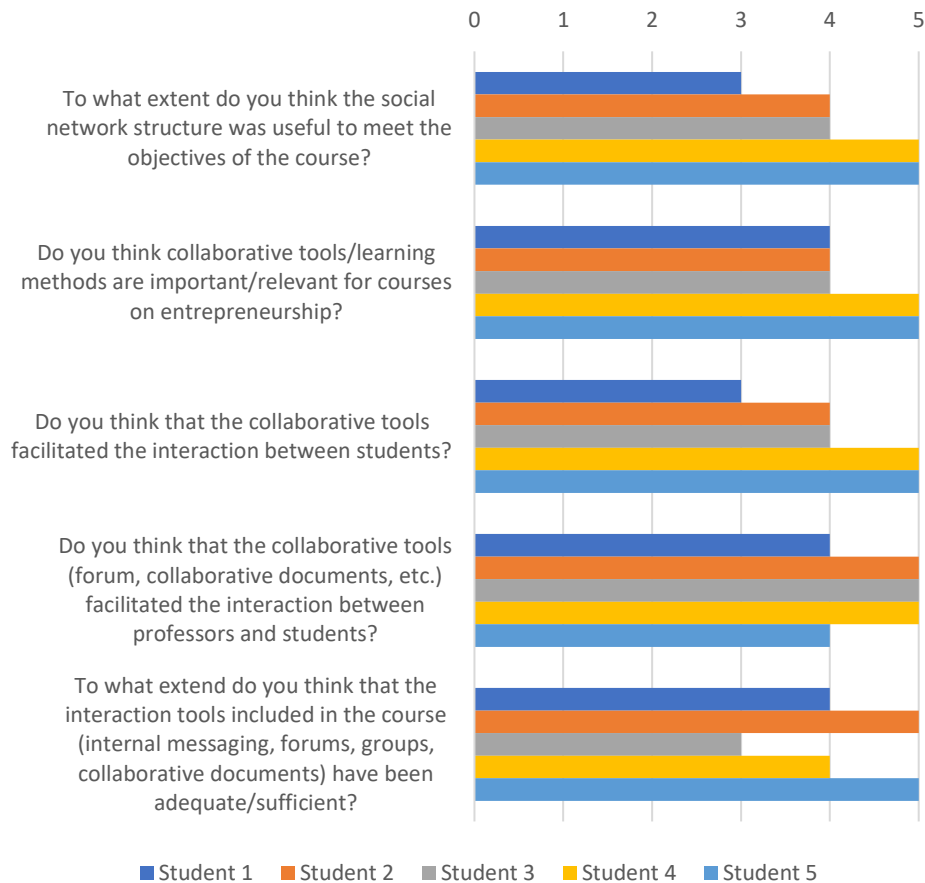
Figure 10: Collaborative tools (Likert scale 1 to 5) January 2023

Regarding the time spent in the course, almost all the students (4) spent from 1 to 3 hours every week on the course. However, one of them needed between 3 and 5 hours.
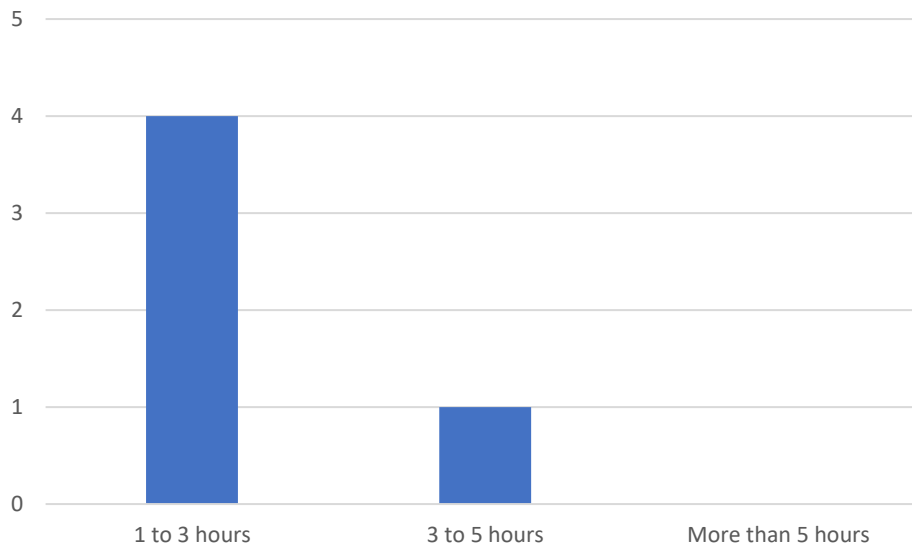
Figure 11: Time spent in the course. January 2023

As the students on the first pilot seemed to prefer synchronous lessons and shorter courses, an online seminar was included in the second pilot. The majority of the students think that the seminar was useful, and the length and the format were adequate.
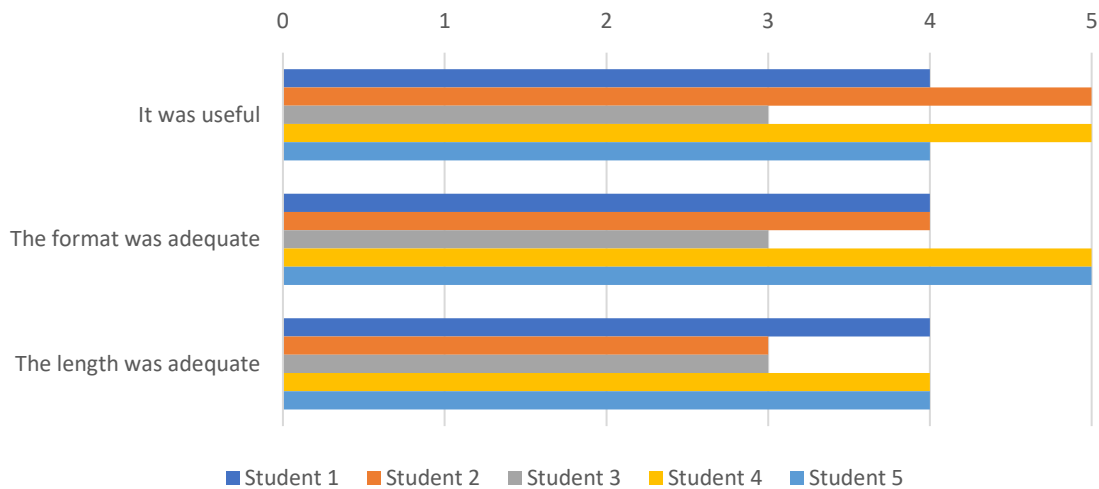
Figure 12: Seminar (Likert scale 1 to 5) January 2023

As the seminar was vey welcomed by the students of the second pilot and some of them though that the whole course was too long, a question about the possibility of breaking down the course into smaller seminars was added. Three out of five students prefer this option so it might be useful to consider it in the future.
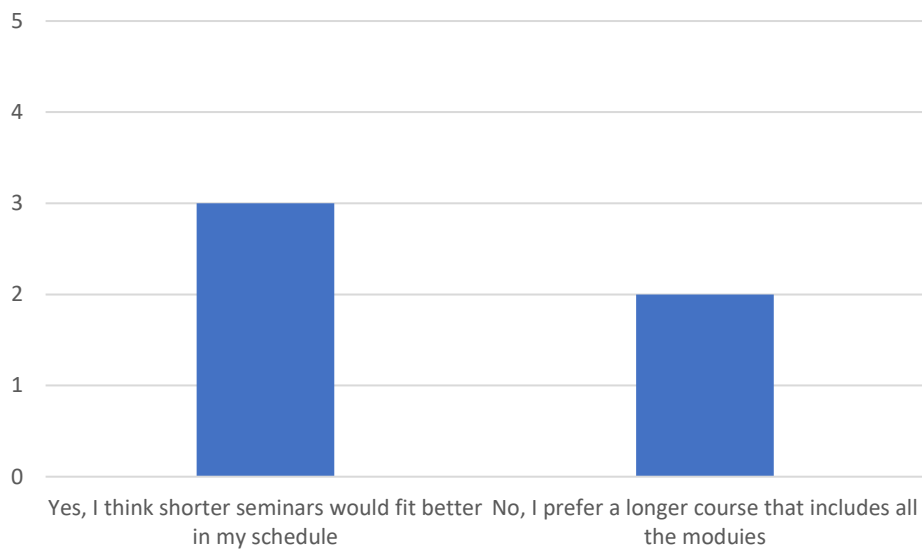
Figure 13: Short seminars vs long course. January 2023

3.3. Partners' evaluation
3.3.1. Technical support

As the main innovation was the use of an interactive platform and collaborative tools, the perspective of the technical support staff was very important to evaluate the success of the course from this perspective.

The survey was sent to the two persons in charge of the platform and they both responded that the platform behaved successfully, and the group work and collaborative exercises behave as expected. No technical problems were reported by the students but some areas of improvement were identified by the developers.

One of the developers wrote that:

> Engineering PhD students don't have much time to dedicate to entrepreneurship learning even if they are interested in them. For that reason, some "gamification" concepts could encourage them to follow the course. Some possible options are earning virtual "points" for completing tasks or for good results in some evaluable questionnaires, competing between them or auto evaluate themselves with a time limit.

This project has received funding from
European Union's Horizon 2020
research and innovation programme
under grant agreement Nº 101005985

Similarly, the second respondent answered that:

> The students, despite showing great interest, do not have time. It would be positive to try to incentivize in some way to prioritize the course, either with levels, and make it more visually attractive, with percentages of what remains of the subject and similar elements.

Overall, the main conclusions of the technical support are that the introduction of gamification strategies might help to engage students in external courses and improve interaction. Also, changing the format and length of the course (i.e. from a long course to shorter seminar series) might be beneficial for the students, especially those with tight schedules.

4.   CONCLUSIONS

The results show the success of the course among the students of the second pilot and therefore the improvements made in the initial planning. Adapting the materials, the tools, and the format to the needs of the students was crucial for them to engage with the course. The results show that the students of the second pilot felt that they benefited and enjoyed much more than the students of the first pilot. The improvement is also seen in the fact that they learned more than the students of the first pilot, and they would recommend the course to other PhD candidates.

Regarding the content of the course, the responses of the students of the second pilot show that they learned a diverse range of abilities. Although the module was essentially the same in both pilots, the changes introduced after the first one seems to have helped to clarify the content of the course and improve the students' understanding of the subject.

The evaluation of the collaborative tools and social network environment is also very positive. The students believe that these kinds of tools are beneficial for learning entrepreneurship and that they worked perfectly during the course. No incidences were reported by the students nor the professors.

Finally, the professors noticed that finishing the course in the stipulated time was difficult for the students. This might be due to the tight schedule of the PhD candidates, who cannot fit a long course in their schedule. To overcome this difficulty, the partners tested an online seminar format which might be more convenient for the students. The seminar had very positive feedback and most of the students preferred the shorter and more specific seminars rather long tan courses.

5. APPENDIX 1: SURVEY QUESTIONNAIRE

This survey aims to gather information about your experience in the "Entrepreneurship in digital economy" course. Please, take your time to answer as it will help us to improve the course for future editions.

This survey takes approximately 10 minutes to complete.

It is voluntary and all personal data will be anonymized. If you continue and respond to the questions below, you are agreeing to be included in this survey. If you do not wish to continue, you may close your browser now.

Section 1: Instructions

Please take your time to answer each question as honestly and as accurately as possible, and be sure to click the 'Submit' button to complete the survey.

Section 2: General satisfaction

Please, rate the following aspects of the course, being 1 strongly disagree and 5 strongly agree. At the end of this course:

	1	2	3	4	5
I benefited					
I learned					
I got focused					
I enjoyed					
I struggled					
I got bored					
I got tired					

Section 3: Particular aspects of the course

Evaluate the course in different aspects with the following items, being 1 strongly disagree and 5 strongly agree:

	1	2	3	4	5
I recommend this course to other PhD candidates.					
I would like to receive similar courses designed in this way.					
The course was well organized					
The length of the modules was appropriate					

I think what I learned will be useful for my investigation					
The modules are prepared in accordance with the learning objectives					
The videos and reading materials are well chosen					
The course content was sufficient					
End of the module questions were sufficient to evaluate my learning					
I think the collaborative activities were useful for the learning process					
I would prefer individual exercises					
I would prefer online live lessons					
I think the platform is intuitive					
I had technical problems using the system					
I had internet access problems while completing this course					
Overall satisfaction					

Section 4: Skills

Please, evaluate how the course contributed to improve the following skills, being 1 it did not contribute at all and 5 it strongly contributed:

	1	2	3	4	NA
Project development					
Teamwork					
Problem solving					
Budgeting					
IT competences					
Web design					
Decision making					
Data management					
Creativity					
Data analysis					
Finances and accounting					
Advertising and promotion					

Content creation					
Leadership					
Strategic planning					
Negotiation					
Risk management					
Legal structures					
Market research					

Section 5: Course content

Please, rate how the courses covered the following content, being 1 strongly disagree and 4 strongly agree:

	1	2	3	4	NA
Theoretical concepts behind setting up and running a business					
Encouragement for students to set up a business					
Strategies for managing and ensuring the growth of stablished companies					
Training in marketing and finance					
Conditions that favour business creation					
How to move/make the transition from traditional employment to self-employment					
Presentation and review of real cases of entrepreneurship					
Business plan development					
Training in innovation and creativity					
Understanding hoy different kinds of business work					
The competences and skills that make a successful entrepreneur					
How to obtain resources to create my own business					
Dealing with failure					
How to work under pressure					

How to bring my project/ideas to the market					

Section 6: Collaborative tools

To what extent do you think the social network structure was useful to meet the objectives of the course?

1 Not useful at all	2	3	4	5 Very useful

Do you think collaborative tools/learning methods are important/relevant for courses on entrepreneurship?

1 Not important at all	2	3	4	5 Very important

Do you think that the collaborative tools facilitated the interaction between students?

1 Strongly disagree	2	3	4	5 Strongly agree

Do you think that the collaborative tools (forum, collaborative documents, etc.) facilitated the interaction between professors and students?

1 Strongly disagree	2	3	4	5 Strongly agree

To what extend do you think that the interaction tools included in the course (internal messaging, forums, groups, collaborative documents) have been adequate/sufficient?

1 Not adequate at all	2	3	4	5 Very adequate

Section 7: Seminar and length of the course

Please, rate the live online seminar:

	1	2	3	4	5
It was useful					
The format was adequate					

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The length was adequate					

On average, how much time did you spend on the course weekly?
- 1 to 3 hours
- 3 to 5 hours
- More than five hours

If you think that the course is too long, would you prefer to conduct the course in a series of shorter seminars rather than in a longer course?
- Yes, I think shorter seminars would fit better in my Schedule
- No, I prefer a longer course that includes all the moduies

Section 8: Other comments

Please, if so, describe how this entrepreneurship course has stimulated your entrepreneurship initiative (better undestanding of the market, ideas on how to translate your research into a company, etc.)
[Open question]