



## Erasmus +: BLISS

Blended Learning Implementation for reSilient,  
acceSsible and efficient higher education

Project 2021-1-SE01-KA220-HED-000023166

### **Project Result 4 – Deliverable 4.2.1 The quality assessment procedure utilized in the feedback analysis.**



**Co-funded by  
the European Union**

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2022-2025

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## Document heading

Project title: **Blended Learning Implementation for reSilient, acceSsible and efficient higher education**

Project result: **4**

Leading org.: **POLITO**

Output title: **Implementation and evaluation of the proposed educational units**

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## Project Result 4 summary:

### Project Result implementation

#### **Needs Analysis:**

The organization of course materials was deemed of utmost importance. Recognizing that a well-organized course is not only manageable but also transparent for all stakeholders, the Consortium partners, all utilizing Learning Management Systems (LMS) such as Moodle, acknowledged the need for different methods and functionalities for face-to-face (F2F) and e-learning programs. The pandemic necessitated a shift from F2F to e-learning, highlighting the inadequacy of traditional and fully online course organization for the new blended learning approach adopted in Result 3. To address this, ILO, TLA, and AT developed in Result 3 were field-tested to identify potential organizational issues. Additionally, the project sought to determine if the new blended learning courses measurably improved learning outcomes from the student perspective.

#### **Target Groups:**

The target group comprised teachers and prospective students of the implemented and evaluated educational units. The results were made available to all consortium institutions and beyond.

#### **Elements of Innovation:**

Blended learning, categorized into skill-driven, attitude-driven, and competency-driven learning, offered diverse applications within Higher Education Institutions (HEIs). Recognizing that student education extends beyond course attendance to include group works, seminars, theses, and academic challenges, the project innovatively integrated the learning outcomes proposed in Result 3 into the standard engineering programs of the consortium HEIs. To the best of the BLISS consortium's knowledge, this constituted the first pilot course set encompassing the full spectrum of proposed blended learning approaches.

#### **Expected Impact:**

This activity provided a significant and unique learning opportunity for the entire consortium. The knowledge generated proved fundamental in enhancing the project's final output and fostering continued cooperation.

**Transferability Potential:**

The evaluation procedure was designed for easy replication in any new blended learning application. To enhance communication and mutual understanding of expertise, a specific training activity (C2) was conducted following a consortium meeting in Turin in June 2024.

**Deviations from planned time**

The End Date of the activity was postponed from 28 February 2024 to 30 November 2024 in order to allow all the partners to complete their educational unit following their respective academic schedules. The delay has not caused any further delay in the project conclusion.

Conversely the consortium meeting and the specific training activity was moved from February to 24-28 June.

**Division of work**

POLITO coordinated the activity, involving all partners according to their specific technical expertise.

**T4.1: Execution of Educational Units:**

The proposed educational units were implemented through various pilot courses at all the institutions within the BLISS consortium. Feedback from teaching staff and learners was gathered through course evaluations and specifically designed roundtable discussions involving all stakeholders. The C2 workshop was also included as an additional means of testing the proposed learning blocks.

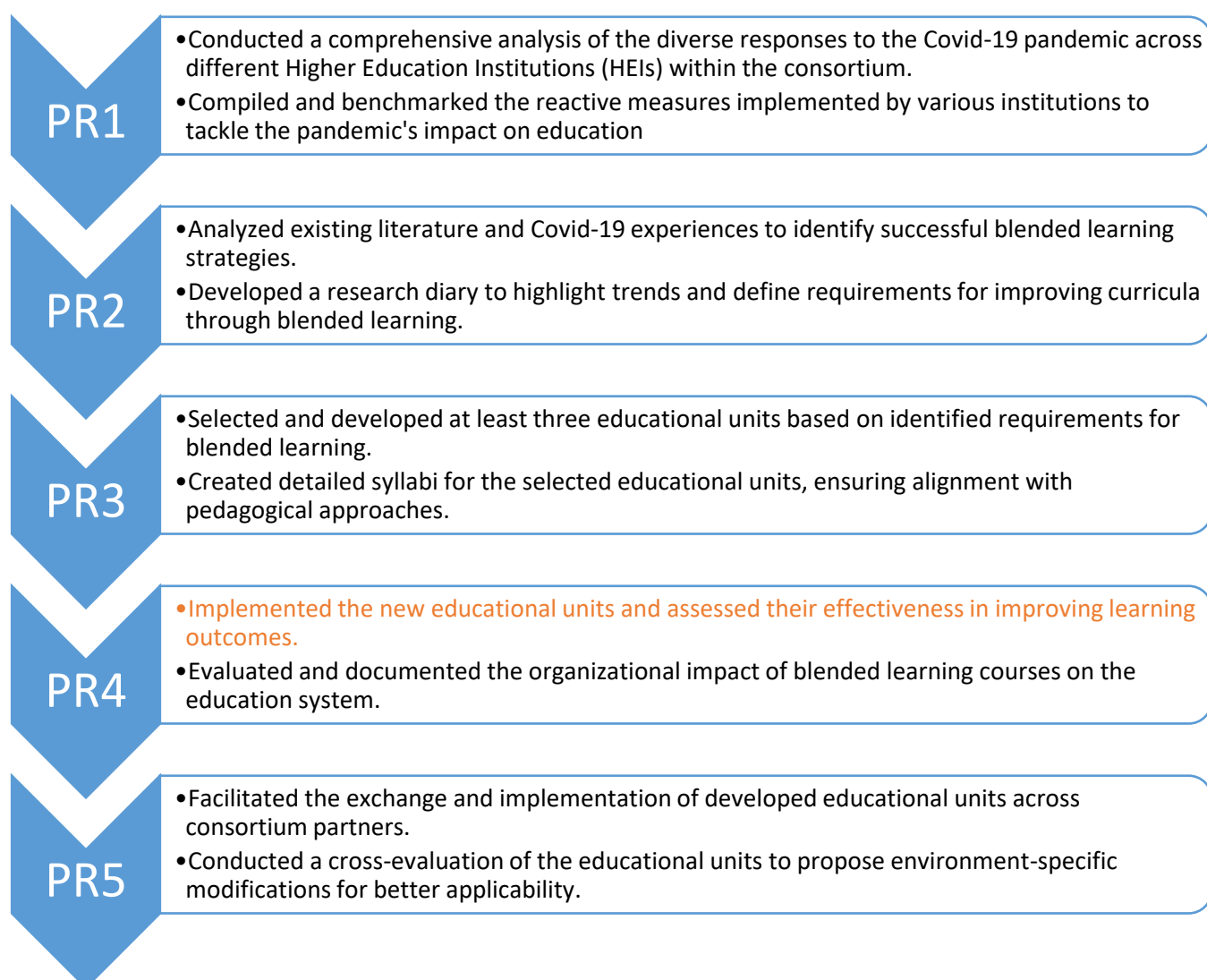
**T4.2: Feedback Analysis and Improvement:**

The results from T4.1 served as input for an improvement process focused on aligning stakeholder expectations with the actual course implementation. The analysis encompassed operational, tactical, and strategic levels, with assessment projected on dimensions such as learning objective achievement, reduction of teacher workload, lessening of student cognitive load, and organizational impact. This feedback analysis facilitated the refinement of the proposed set of ILO, TLA, and AT.

Two reports were generated:

- Deliverable 4.2.1: Documented the quality assessment procedure employed in the feedback analysis. (Present report)
- Deliverable 4.2.2: Presented the amended set of ILO, TLA, and AT.

## Project Result 4 in the context of the Project



## Results of the activities

### Implementation of new educational units

The new or modified educational units designed in PR3 were executed by each partner organization following its specific academic calendar.

Table1 presents the list of implemented educational units.

UNIVERSITY	E.U.	DATE	COMPLETED
KTH	Scientific Methodology for Production Engineering	Spring 2024	✓ YES
POLITO	Production Systems	Spring 2024	✓ YES
UNIBG	Operation Management	Autumn 2023	✓ YES
UNIMA	Artificial Intelligence in Engineering Quality and Reliability Engineering	Autumn 2023	✓ YES
		Autumn 2023	✓ YES
UNILJ	Discrete Control Systems Mechatronic Actuators	Autumn 2024	✓ YES
		Autumn 2024	✓ YES
UNIRI	Operating Systems	Spring 2024	✓ YES

The blended learning strategies deployed are:

1. **Face-to-Face:** This strategy involves traditional classroom instruction where students and instructors interact in person. It emphasizes direct engagement, immediate feedback, and hands-on activities. This method is beneficial for subjects requiring practical demonstrations and fosters a collaborative learning environment.
2. **Flex:** In the flex model, the curriculum is primarily delivered online, but students have the option to attend face-to-face sessions as needed. This approach allows for personalized learning paths, enabling students to progress at their own pace while still having access to in-person support and resources.
3. **Self-Blend:** This strategy allows students to supplement their traditional classroom learning with online courses. Students have the autonomy to choose additional online courses that align with their interests or academic needs, providing a customized learning experience that extends beyond the standard curriculum.
4. **Rotation:** The rotation model involves students rotating between different learning modalities, such as online learning, face-to-face instruction, and collaborative group work. This structured approach ensures that students experience a variety of learning environments, which can enhance engagement and retention of information.
5. **Labs:** In the lab model, students primarily engage in online learning but attend physical labs for hands-on activities and experiments. This strategy is particularly effective for subjects that require practical application of theoretical knowledge, such as science and technology courses.
6. **Online Driver:** This model is entirely online, with all instruction and coursework delivered through digital platforms. Students have the flexibility to access materials and complete assignments at their own pace. This approach is ideal for learners who require a high degree of flexibility due to personal or professional commitments.

The following blended learning strategies have been adopted to support different ILOs, catering to different learning styles and needs.



**Table 2 – Matching between BLOOM Taxonomy and BL strategy per partner’s ILO**

	F2F	Flex	Self-blend	Rotation	Labs	Online Driver
Create		KTH ILO 1				
Evaluate				UNILJ ILO2		
Analyse			-UniLJ ILO1, -Polito ILO3, -UniBG ILO2	-UniMA ILO edu Unit 1 - UniMA ILO edu Unit 2		POLITO ILO 2 and ILO3
Apply	UNIRI ILO1 UNIRI ILO2		- UNIBG ILO1 - POLITO ILO 2 - UniLj ILO1			POLITO ILO 3
Understand	UNILJ ILO2		POLITO ILO 1			POLITO ILO 1
Remember						

### Feedback collection

Two questionnaires were given to the teacher, one before and one after the intervention. Another questionnaire was given to the students after the course and the learning assessment. The rating was expressed using the Likert scale in the range 1-5. The questionnaire for the students aims at having an insight about the impact of BL on ILO, TLA and AT. Eventually, the last section of the questionnaire investigates the role of technology in the success of the BL application. In the following sections the questionnaires are presented.

#### Pre-intervention questions for teachers:

Express your level of agreement (1 totally disagree - 5 totally agree)

1. The BL training content learned during the BLISS project (C1 - BL training in Stockholm) and transferred into teaching will depend solely on me.
2. The success of the transfer will NOT depend only on me.
3. Overcoming any obstacles in the transfer will depend solely on me.
4. I believe that what I learned in the BLISS project can be applied to my teaching activities.
5. I am NOT able to apply what I learned in the BL training course in my teaching activities.
6. I expect that I will be able to implement the new teaching action adequately.
7. I'm thinking of involving other colleagues in the operation.
8. I expect that it will be difficult to involve students in the innovative teaching action.
9. I foresee that the working context in my University will facilitate the application of innovations in teaching.

### Post-intervention questions for teachers:

Express your level of agreement (1 totally disagree - 5 totally agree)

1. I DO NOT consider the BL intervention successful.  
(Please briefly comment and justify your answer.)
2. The success of the transfer depended only on me.
3. I was able to overcome any obstacles.
4. My teaching DID NOT improve after the BLISS project.
5. I was able to exploit what I learned in the C1 - BL training course in my teaching activities.
6. I was NOT able to involve other colleagues in the operation.
7. During lessons, students reacted positively to the innovation.
8. In terms of exam results, students reacted positively to the innovation.
9. My University assisted me in the application of innovations in teaching.

### Questionnaire for the students

Express your level of agreement (1 totally disagree - 5 totally agree)

#### Section 1 - Clarity of ILOs

10. I had a clear idea of what I was supposed to learn.
11. I received a precise overview of the practical applications associated with the topics covered.
12. I was never in doubt about what I was supposed to learn in this educational unit.
13. The educational material clearly outlined what I was supposed to learn.
14. Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

#### Section 2 – Teaching Alignment

1. The teaching and learning activities addressed what I was supposed to learn.
2. The teaching and learning activities helped me learning what I was supposed to learn.
3. I was provided the opportunities to actively participate in what I was supposed to learn,
4. I was provided with a variety of activities that helped me learning what I was supposed to learn.
5. I was given clear and specific instructions about what to do in learning what I was supposed to learn.

#### Section 3 – Assessment Alignment

1. The assessment tasks addressed what I was supposed to learn.
2. It was explained clearly to me how the assessment tasks were related to what I was supposed to learn.
3. The assessment tasks provided opportunities for me to demonstrate how well I had achieved what I was supposed to learn.
4. The grades that I received indicated fairly how well I had achieved what I was supposed to learn.
5. I received useful feedback on how well I had achieved what I was supposed to learn.

#### Section 4 – Feedback effectiveness

1. I received feedback that related directly to the assessment criteria.
2. I received feedback that was clear and specific to what I was supposed to learn.
3. I received feedback that helped me preparing for the next assessment task.
4. I could take action to improve my own learning based on the feedback provided.
5. I was able to make informed judgments about my own work from the feedback provided.

#### **Section 5 – Integration of digital technology**

1. The digital tools and technologies used for the educational unit enhanced the educational experience.
2. The way digital technology was used in this educational unit would be beneficial in my future courses.
3. I have all the necessary equipment to make use of the digital technologies used in this educational unit.
4. It was easy to learn how to use the digital technology utilized in this educational unit.
5. Overall, I liked how digital technology was utilized in this educational unit.

## Assessment of Blended Learning effectiveness in improving educational units

### Insights from the answers of partner teachers

We can draw several insights from the answers of the teachers to the questionnaires submitted before and after the Blended Learning course, reported in Annex1.

Before the course, most teachers expressed confidence in their ability to implement the new teaching action and apply what they learned in the BLISS project to their teaching activities. They also believed that the success of the transfer did not depend solely on them. However, some teachers expected difficulties involving students in the innovative teaching action and expressed uncertainty about their university's working context facilitating the application of innovations in teaching.

After the course, the majority of teachers considered the BL intervention successful and were able to overcome any obstacles. They also reported improvements in their teaching and the ability to exploit what they learned in the BL training course. The students' reactions to the innovation were generally positive, both in terms of exam results and during lessons. However, some teachers were not able to involve other colleagues in the operation, and some universities did not assist in applying innovations in teaching.

Overall, the results suggest that the Blended Learning course positively impacted teachers' ability to implement blended learning in their teaching and that students generally reacted positively to the innovation. However, involving other colleagues and getting support from universities was challenging.

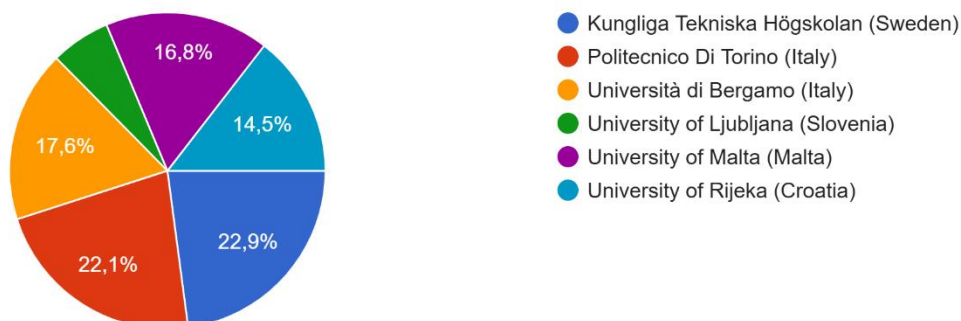
### Insight from the answers to student questionnaire

The results of the questionnaires are reported in the following pie chart. Partner organizations adopted different BL approaches; therefore, the results sometimes differs among Universities as they refer to different BL strategies.

There were 131 distributed among the partners as described in the pie chart.

Please select your University:

131 risposte



Overall, students from all universities had a positive attitude towards the blended learning courses, as evidenced by the survey results. They found the digital tools to be effective and the teaching methods to be engaging.

Here is a summary of the results per university:

**University of Malta (Malta)**

- Students found that educational material was congruent with learning objectives
- They found the digital tools to be effective and easy to use.
- They also appreciated the clear and specific instructions provided.

**University of Rijeka (Croatia)**

- Students found the course to be well-organized and the learning objectives to be clear.
- They found the digital tools to be effective and easy to use.
- They also appreciated the practical applications of the topics covered.

**Università di Bergamo (Italy)**

- Students found the course to be engaging and the teaching methods to be effective.
- They found the digital tools to be helpful in understanding the course material.
- They also appreciated the variety of activities provided.

**Kungliga Tekniska Högskolan (Sweden)**

- Students found the course to be well-structured and the learning objectives to be clear.
- They found the digital tools to be effective and easy to use.
- They also appreciated the opportunity to actively participate in the learning process.

**Politecnico Di Torino (Italy)**

- Students found the course to be challenging but rewarding.
- They found the digital tools to be helpful in learning the course material.
- They also appreciated the clear and specific instructions provided.

**University of Ljubljana (Slovenia)**

- Students found the course to be informative and the teaching methods to be effective.
- They found the digital tools to be useful in reinforcing the learning objectives.
- They also appreciated the regular reminders of the key learning objectives.

## Suggested Readings

1. M. Mabkhot, Mohammed, et al. "Mapping industry 4.0 enabling technologies into united nations sustainability development goals." *Sustainability* 13.5 (2021): 2560.
2. Lupi, Francesco, et al. "Toward a sustainable educational engineer archetype through Industry 4.0." *Computers in Industry* 134 (2022): 103543.
3. Antonelli, Dario, et al. "Tiphys: an open networked platform for higher education on industry 4.0." *Procedia CIRP* 79 (2019): 706-711.
4. Maffei, Antonio, et al. "CONALI ontology. a framework for design and evaluation of constructively aligned courses in higher education: putting in focus the educational goal verbs." *Procedia CIRP* 50 (2016): 765-772.
5. Maffei, Antonio, et al. "On the design of constructively aligned educational unit." *Education sciences* 12.7 (2022): 438.
6. Sala, Roberto, et al. "Blended learning in the engineering field: A systematic literature review." *Computer applications in engineering education* 32.3 (2024): e22712.
7. Maffei, Antonio, and Fredrik Enoksson. "What is the optimal blended learning strategy throughout engineering curricula? Lesson learned during Covid-19 pandemic." *2023 IEEE Global Engineering Education Conference (EDUCON)*. IEEE, 2023.
8. Sala, Roberto, et al. "Examining the implementation of Blended Learning in the Engineering field." *5th International Conference on Higher Education Learning Methodologies and Technologies Online*. 2023.

## Annex 1 – Answers to the teachers' questionnaires

Here are reported the results of the questionnaires proposed to teachers pre and post intervention.

### Pre intervention results

Pre intervention results	
Gender:	Male
University:	University of Rijeka (Croatia)
Course	Human-Computer Interaction
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Strongly Agree
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Agree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Strongly Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Disagree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Strongly Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Disagree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Disagree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Strongly Agree

Gender:	Male
University:	Politecnico Di Torino (Italy)
Course	Production Systems
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Strongly Agree
The <b>success of the transfer will NOT depend only on me.</b>	Strongly Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Disagree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Strongly Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Disagree

I expect that <b>I will be able to adequately implement</b> the new teaching action.	Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Disagree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Disagree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Strongly disagree

Gender:	Male
University:	University of Malta (Malta)
Course	Quality and Reliability in Engineering
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Strongly Agree
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Agree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Agree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Neutral
<b>I'm thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Agree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Agree

Gender:	Male
University:	University of Malta (Malta)
Course	Artificial Intelligence in Engineering
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Strongly Agree
The <b>success of the transfer will NOT depend only on me.</b>	Strongly Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Agree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Strongly Agree



I am <b>NOT</b> able to apply what I learned in the BL training course in my teaching activities.	Strongly Agree
I expect that I <b>will be able to adequately implement</b> the new teaching action.	Neutral
I'm <b>thinking of involving</b> other colleagues in the operation.	Strongly Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Agree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Agree

Gender:	Female
University:	Università di Bergamo (Italy)
Course	Operation Management
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Disagree
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Disagree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Strongly Agree
I am <b>NOT</b> able to apply what I learned in the BL training course in my teaching activities.	Strongly disagree
I expect that I <b>will be able to adequately implement</b> the new teaching action.	Strongly Agree
I'm <b>thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Agree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Agree

Gender:	Female
University:	Università di Bergamo (Italy)
Course	Operation Management
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Agree
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Disagree

I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Disagree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Disagree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Neutral

Gender:	Male
University:	Università di Bergamo (Italy)
Course	Operation Management
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Disagree
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Disagree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Strongly disagree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Strongly Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Disagree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Agree

Gender:	Male
University:	University of Ljubljana (Slovenia)
Course	Discrete Control Systems
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Strongly Agree
The <b>success of the transfer will NOT depend only on me.</b>	Agree

Overcoming any obstacles in the transfer will depend solely on me.	Neutral
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Strongly Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Strongly disagree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Neutral
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Neutral

Gender:	Female
University:	Kungliga Tekniska Högskolan (Sweden)
Course	Scientific Methodology for Production Engineering
The <b>BL training content</b> learned during the BLISS project (C1) will depend solely on me.	Neutral
The <b>success of the transfer will NOT depend only on me.</b>	Agree
<b>Overcoming any obstacles</b> in the transfer will depend solely on me.	Disagree
I believe that <b>what I learned in the BLISS project can be applied</b> in my teaching activities.	Agree
<b>I am NOT able to apply</b> what I learned in the BL training course in my teaching activities.	Disagree
I expect that <b>I will be able to adequately implement</b> the new teaching action.	Agree
<b>I'm thinking of involving</b> other colleagues in the operation.	Agree
I expect that <b>it will be difficult to involve students</b> in the innovative teaching action.	Disagree
I foresee that <b>the working context in my University will facilitate the application</b> of innovations in teaching.	Agree

## Post intervention results

Post intervention results	
Gender:	Male
University:	University of Rijeka (Croatia)
Course	Human-Computer Interaction
<b>I DO NOT consider</b> the BL intervention successful.	Strongly disagree
Comment	I consider the BL intervention to be completely successful: the planned activities were carried out without any problems, the students reacted positively to the adapted ILO and confirmed in informal discussions that it was useful for them in the context of the whole course (especially in the preparation of the final project task).
<b>The success of the transfer depended only on me.</b>	Disagree
Comment	Although I organized the entire preparation and implementation of the adapted ILO independently, I believe that the success of the transfer additionally depends on the commitment of the students themselves. In this context, I regard them as "partners" in the transfer process.
<b>I was able to overcome</b> any obstacles.	Strongly Agree
Comment	There were no significant obstacles to the implementation of activities related to the relevant ILO. In this context, I can mention some emails from students who did not regularly attend class during the two weeks of targeted activities and to whom the objectives were additionally explained in the counseling sessions.
Comment	It is not easy to judge one's own progress in the teaching process; probably the students themselves can do it better. I could remain neutral on this question, but based on the positive feedback from students (which I received in informal conversations after the assessment), I would say that the learning and teaching process in this course has improved overall.
<b>My teaching DID NOT improve</b> after the BLISS project.	Disagree
Comment	Yes, I have tried to apply what I have learned that was applicable in my context, i.e. in my course. I have not encountered any problems in this application. I must mention that in this case it was the implementation of a relatively simple F2F-DRIVER concept.
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	The entire teaching of the course in question is entirely my responsibility. In this sense, there was no possibility of involving other colleagues in the operation. However, during the discussions, I informed my colleagues about the changes in the delivery of the course, which interested them greatly and they wanted to know more details.
<b>In terms of exam results,</b> students reacted positively to the innovation.	Strongly Agree
Comment	The students reacted extremely positively to the assessment results as well. I think two things contributed to such a positive response: (1) a rubric with clear guidelines about what is assessed and how, and (2) detailed feedback about how students completed their assignments.
<b>I was NOT able to involve</b> other colleagues in the operation.	Agree

Comment	In this case I must remain neutral. From an institutional point of view, there was indeed no particular help, but also no particular obstacle, as far as the application of innovations in teaching is concerned. It can be said that the ILO was adapted without the explicit involvement of the University itself.
<b>My University assisted me</b> in the application of innovations in teaching.	Neutral
<b>During lessons, students reacted positively</b> to the innovation.	Agree
Comment	As the ILO actions were carried out according to the F2F-DRIVER concept, the theoretical lessons themselves did not change significantly; however, the concept itself, the final presentations (after using the proposed digital tools) and the joint discussion of the completed projects in class were extremely well received by the students.
<b>Students were involved</b> in the innovative teaching action.	Strongly Agree
Comment	Students were fully involved. At the beginning, they were motivated in such a way that they were made aware of the expected benefits of innovative teaching actions. The final presentations of the project tasks and the lively discussion in class confirmed the students' commitment.

Gender:	Male
University:	Politecnico Di Torino (Italy)
Course	Production Systems
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	The BL was completed and the target outcomes were obtained, there are still some details to improve.
<b>The success of the transfer depended only on me.</b>	Strongly disagree
Comment	I was able to get an important support of other teachers for the online teaching and assessment activities.
<b>I was able to overcome</b> any obstacles.	Disagree
Comment	There are some online activities that were not allowed by the rules of my University
Comment	I changed my teaching after the lecture about the Community of Inquiry
<b>My teaching DID NOT improve</b> after the BLISS project.	Strongly disagree
Comment	The same as before

<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	Other colleagues voluntarily participated in the BL activities
<b>In terms of exam results</b> , students reacted <b>positively</b> to the innovation.	Neutral
Comment	The average score did not change from last year
<b>I was NOT able to involve</b> other colleagues in the operation.	Strongly disagree
Comment	My University issued very restrictive regulations both in terms of class attendance and the possibility of taking exams online
<b>My University assisted me</b> in the application of innovations in teaching.	Strongly disagree
<b>During lessons</b> , students reacted <b>positively</b> to the innovation.	Strongly Agree
Comment	Students during F2F lessons made questions and gave feedback about the online activities, therefore they were able to learn using both modalities
<b>Students were involved</b> in the innovative teaching action.	Strongly Agree
Comment	Students were involved in a flipped classroom experiment

Gender:	Male
University:	University of Malta (Malta)
Course	Quality and Reliability in Engineering
<b>I DO NOT consider</b> the BL intervention successful.	Strongly Agree
Comment	/
<b>The success of the transfer depended only on me.</b>	Agree
Comment	/

<b>I was able to overcome</b> any obstacles.	Strongly Agree
Comment	/
Comment	/
<b>My teaching DID NOT improve</b> after the BLISS project.	Agree
Comment	/
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	/
<b>In terms of exam results</b> , students reacted positively to the innovation.	Neutral
Comment	/
<b>I was NOT able to involve</b> other colleagues in the operation.	Neutral
Comment	/
<b>My University assisted me</b> in the application of innovations in teaching.	Neutral
<b>During lessons</b> , students reacted positively to the innovation.	Agree
Comment	/
<b>Students were involved</b> in the innovative teaching action.	Agree
Comment	/

Gender:	Male
University:	University of Malta (Malta)
Course	Artificial Intelligence in Engineering
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	/
<b>The success of the transfer depended only on me.</b>	Neutral
Comment	/
<b>I was able to overcome</b> any obstacles.	Agree
Comment	/
Comment	/
<b>My teaching DID NOT improve</b> after the BLISS project.	Strongly disagree
Comment	/
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	/
<b>In terms of exam results,</b> students reacted <b>positively</b> to the innovation.	Agree
Comment	/
<b>I was NOT able to involve</b> other colleagues in the operation.	Neutral
Comment	/



<b>My University assisted me</b> in the application of innovations in teaching.	Agree
<b>During lessons, students reacted positively</b> to the innovation.	Agree
Comment	/
<b>Students were involved</b> in the innovative teaching action.	Agree
Comment	/

Gender:	Female
University:	Università di Bergamo (Italy)
Course	Operation Management
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	The initiative was partially successful since the material developed can help students reinforce their knowledge in simulation and is a great support for exam preparation.
<b>The success of the transfer depended only on me.</b>	Agree
Comment	The ability to transfer depends on my ability to develop material suitable for the students and linked to the Assessment activities. In parallel I'm not sure how many students really went through the material
<b>I was able to overcome</b> any obstacles.	Agree
Comment	Not big obstacles. The main one is related to the language since the teaching is material must be suitable both in Italian and in English
Comment	The possibility to augment the teaching with additional material is useful the risk is a less involvement of the students during practical activities
<b>My teaching DID NOT improve</b> after the BLISS project.	Disagree
Comment	I used the bloom taxonomy to rethink the ILO

<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Agree
Comment	I involved colleagues already involved in the course
<b>In terms of exam results, students reacted positively</b> to the innovation.	Agree
Comment	The preparation of the assignment related to the ILO where we have used the innovation has been better managed in autonomy from the students
<b>I was NOT able to involve</b> other colleagues in the operation.	Disagree
Comment	The university is moving now towards such innovation
<b>My University assisted me</b> in the application of innovations in teaching.	Neutral
<b>During lessons, students reacted positively</b> to the innovation.	Agree
Comment	They have considered the new material useful
<b>Students were involved</b> in the innovative teaching action.	Disagree
Comment	Their role was quite passive due to the objective of the innovation

Gender:	Female
University:	Università di Bergamo (Italy)
Course	Operation Management
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	The students leveraged on some video tutorial to better understand the use of the simulation software. These videos was helpful also as support for the assignment preparation and the for the assessment activity.
<b>The success of the transfer depended only on me.</b>	Disagree

Comment	I made available the video tutorials and communicated to the classroom. For a successful implementation is fundamental also the willingness of students to go into more detail of the teaching material and I'm not sure how many of them used these additional materials
<b>I was able to overcome any obstacles.</b>	Agree
Comment	The main obstacle was the language of the video since we provided this material in two parallel course, one taught in italian and the other one in english.
Comment	The Bliss project provided to me useful suggestions on how to improve the teaching material and how to help students to better learn the topic using blended technologies
<b>My teaching DID NOT improve</b> after the BLISS project.	Disagree
Comment	yes, I modified the ILO and the course objectives
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Agree
Comment	I involved other colleagues that implement some of the project suggestions in other courses
<b>In terms of exam results, students reacted positively</b> to the innovation.	Neutral
Comment	I don't exactly know how many students used the additional materials, but the impression is they achieve a better knowledge and understanding of the simulation part of the course
<b>I was NOT able to involve</b> other colleagues in the operation.	Disagree
Comment	I did everything by myself
<b>My University assisted me</b> in the application of innovations in teaching.	Disagree
<b>During lessons, students reacted positively</b> to the innovation.	Neutral
Comment	They basically used the innovation to increase their knowledge and to prepare the assignment
<b>Students were involved</b> in the innovative teaching action.	Disagree

Comment	They just received the additional material made available
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Gender:	Male
University:	Università di Bergamo (Italy)
Course	Operation Management
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	The use of video in support of the lectures provides students with content-specific material that they can use to solve doubts.
<b>The success of the transfer depended only on me.</b>	Disagree
Comment	Additional material is useful, but students need to use it. If the students are not using the additional resources the effect of transfer learning is diminished.
<b>I was able to overcome</b> any obstacles.	Strongly Agree
Comment	Given the typology of blended learning material added to the course (video), the problems in creating and sharing the material were easily overcome.
Comment	The way I had to rethink part of the ILOs and the decision to add video material for specific purposes also allowed to spend more time on explaining (usually) difficult passages.
<b>My teaching DID NOT improve</b> after the BLISS project.	Disagree
Comment	I was able to better define the expectations for my teaching and for the students tasks.
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	I shared the information with colleagues discussing the structure of the syllabus
<b>In terms of exam results,</b> students reacted positively to the innovation.	Agree
Comment	Students appreciated the availability of the video material they could refer to during their preparation

<b>I was NOT able to involve</b> other colleagues in the operation.	Disagree
Comment	This particular case of innovation did not require particular university involvement.
<b>My University assisted me</b> in the application of innovations in teaching.	Disagree
<b>During lessons, students reacted positively</b> to the innovation.	Agree
Comment	\
<b>Students were involved</b> in the innovative teaching action.	Agree
Comment	Students found the video useful

Gender:	Male
University:	University of Ljubljana (Slovenia)
Course	Discrete Control Systems
<b>I DO NOT consider</b> the BL intervention successful.	Strongly disagree
Comment	Feedback of students has been positive. Also, the results on exams have improved.
<b>The success of the transfer depended only on me.</b>	Agree
Comment	University rules limit the possibilities
<b>I was able to overcome</b> any obstacles.	Agree
Comment	In general there were no big problems
Comment	I think BL was definitely a step forward
<b>My teaching DID NOT improve</b> after the BLISS project.	Disagree

Comment	I think it made me develop materials better suited to current generation
<b>I was able to exploit</b> what I learned in the C1 - BL training course in my teaching activities.	Strongly Agree
Comment	Other people from the lab did similar thing with their subjects
<b>In terms of exam results, students reacted positively</b> to the innovation.	Agree
Comment	Exam results have improved
<b>I was NOT able to involve</b> other colleagues in the operation.	Disagree
Comment	The support from equipment point of view was available. Administrative rules are however sometimes an obstacle
<b>My University assisted me</b> in the application of innovations in teaching.	Agree
<b>During lessons, students reacted positively</b> to the innovation.	Agree
Comment	Feedback was in general very positive
<b>Students were involved</b> in the innovative teaching action.	Agree
Comment	Yes, they were involved due to another Erasmus project

Gender:	Female
University:	Kungliga Tekniska Högskolan (Sweden)
Course	Scientific Methodology for Production Engineering
<b>I DO NOT consider</b> the BL intervention successful.	Disagree
Comment	The students were enthusiastic about the introduction of BL. The students worked successfully according to the instructions.

<b>The success of the transfer depended only on me.</b>	Disagree
Comment	the students should stay engaged and motivated along the all activity to effectively self-direct their learning using the digital tool.
<b>I was able to overcome any obstacles.</b>	Agree
Comment	students actively participated to the activity using digital tools with enthusiasm. The chosen tool was freely available for the students and required no technical support from the teacher.
Comment	for the activity implemented during the project I would say the teaching was improved. For other courses that I am involved as teacher, further work is needed to initiate the design of appropriate BL.
<b>My teaching DID NOT improve after the BLISS project.</b>	Disagree
Comment	CA was exploited along with all concepts related to the role of teachers in BL
<b>I was able to exploit what I learned in the C1 - BL training course in my teaching activities.</b>	Agree
Comment	the course responsible was involved during the design of the blended activity.
<b>In terms of exam results, students reacted positively to the innovation.</b>	Agree
Comment	the outcome of the activity was satisfactory for all students
<b>I was NOT able to involve other colleagues in the operation.</b>	Disagree
Comment	the choice of the digital tool to be used during the activity did not require any development support from the University.
<b>My University assisted me in the application of innovations in teaching.</b>	Neutral
<b>During lessons, students reacted positively to the innovation.</b>	Agree
Comment	students were very enthusiastic

<b>Students were involved</b> in the innovative teaching action.	Agree
Comment	students were actively engaged in the learning process and with the digital tool they had more control in their learning experience.

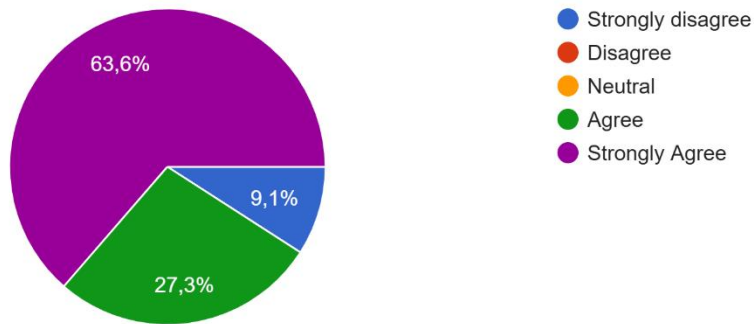
## Annex 2 – Answers to the students’ questionnaires

The following are the answers per question and per partner:

### Section 1 - Clarity of ILO(s) - MALTA

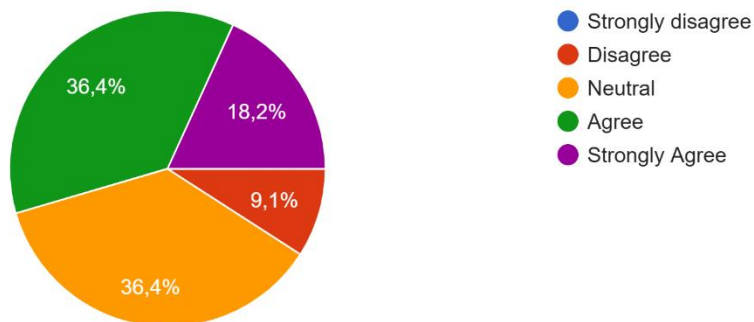
I had a clear idea of what I was supposed to learn.

11 risposte



I received a precise overview of the practical applications associated with the topics covered.

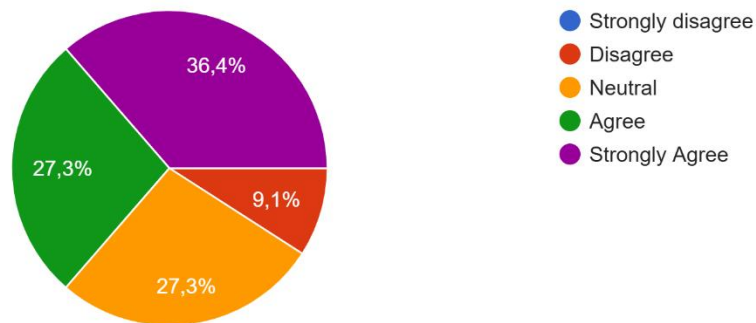
11 risposte





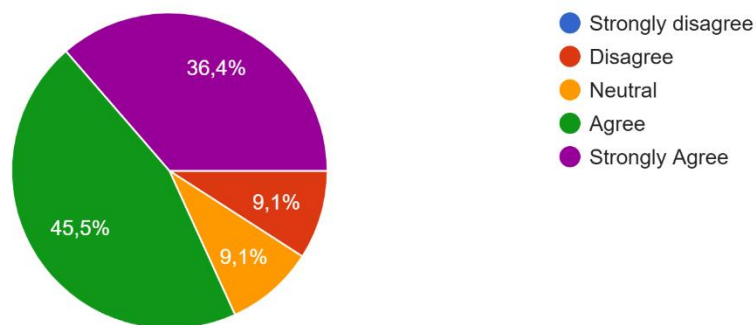
I was never in doubt about what I was supposed to learn this educational unit.

11 risposte



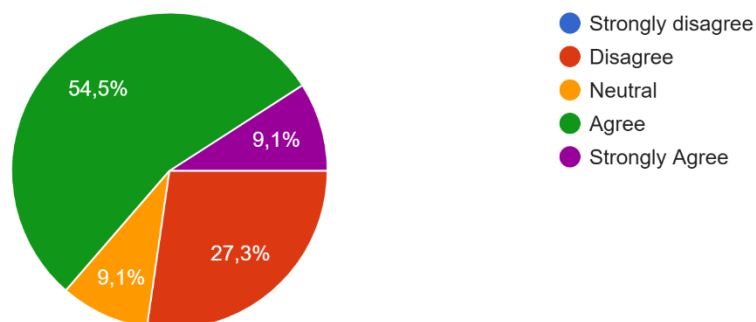
The educational material clearly outlined what I was supposed to learn.

11 risposte



Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

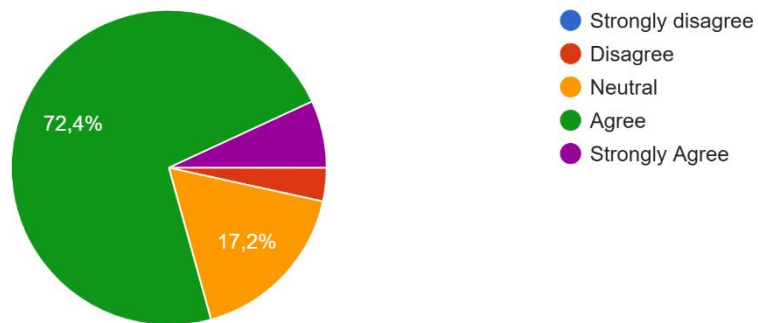
11 risposte



**Section 1 - Clarity of ILO(s) - POLITO**

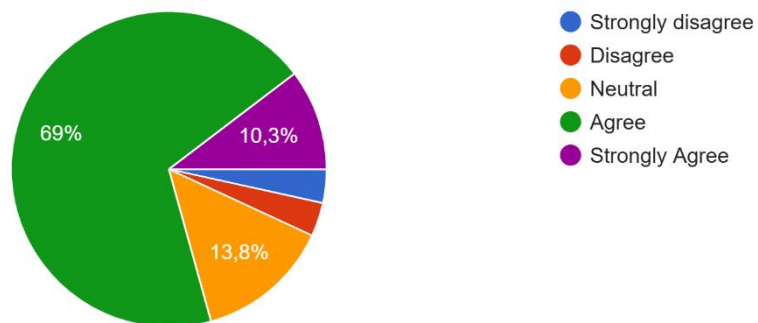
I had a clear idea of what I was supposed to learn.

29 risposte



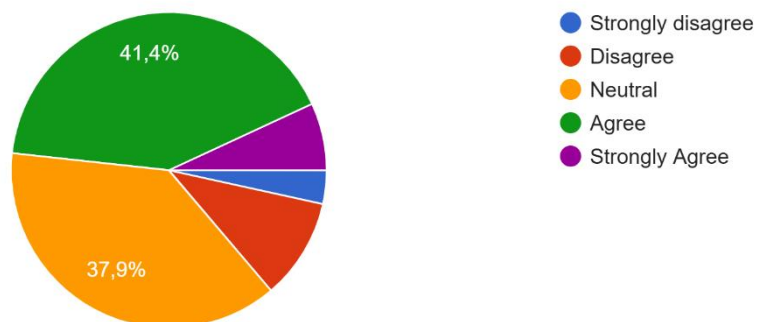
I received a precise overview of the practical applications associated with the topics covered.

29 risposte



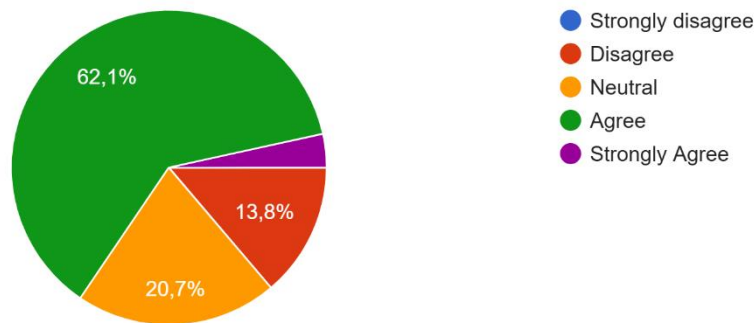
I was never in doubt about what I was supposed to learn this educational unit.

29 risposte



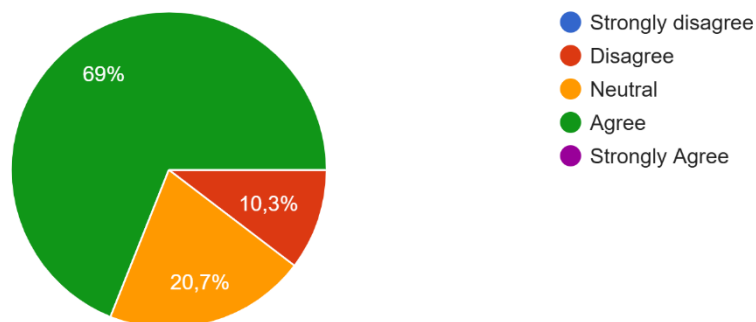
The educational material clearly outlined what I was supposed to learn.

29 risposte



Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

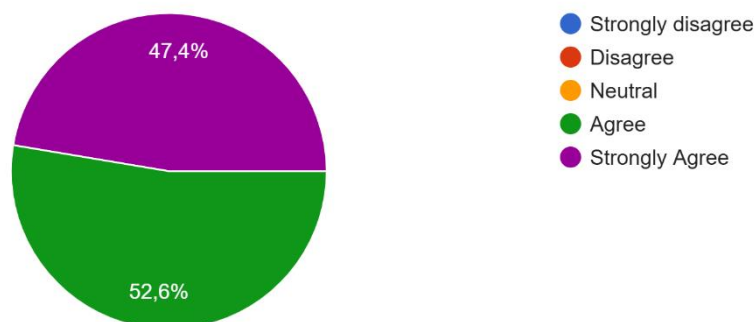
29 risposte



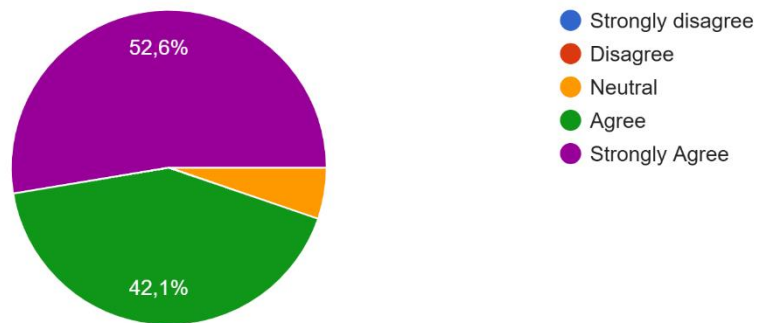
### Section 1 - Clarity of ILO(s) - UNIRI (HCI)

I had a clear idea of what I was supposed to learn.

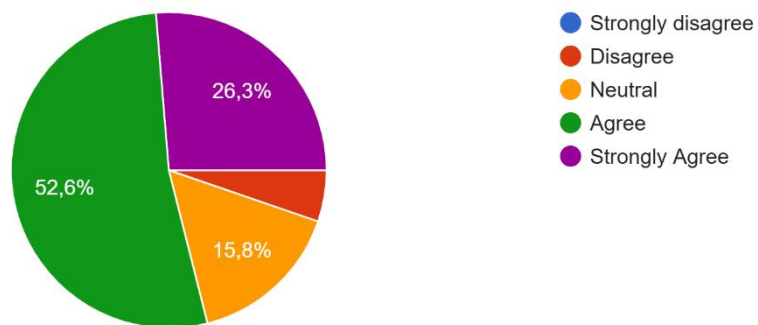
19 risposte



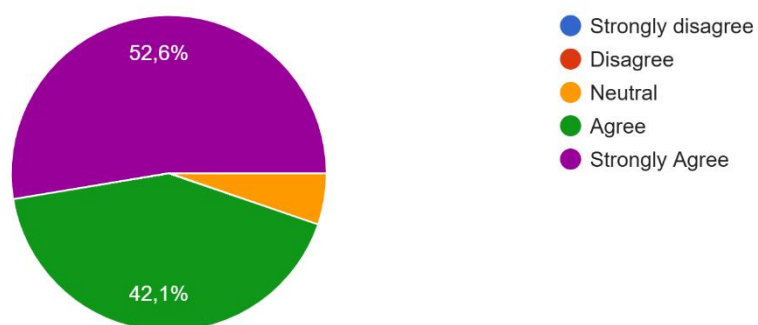
I received a precise overview of the practical applications associated with the topics covered.  
19 risposte



I was never in doubt about what I was supposed to learn this educational unit.  
19 risposte

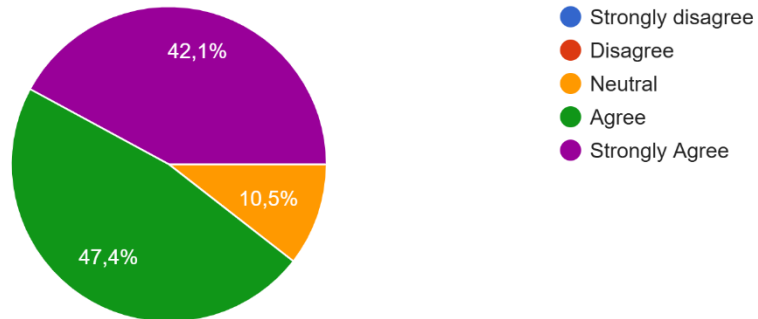


The educational material clearly outlined what I was supposed to learn.  
19 risposte



Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

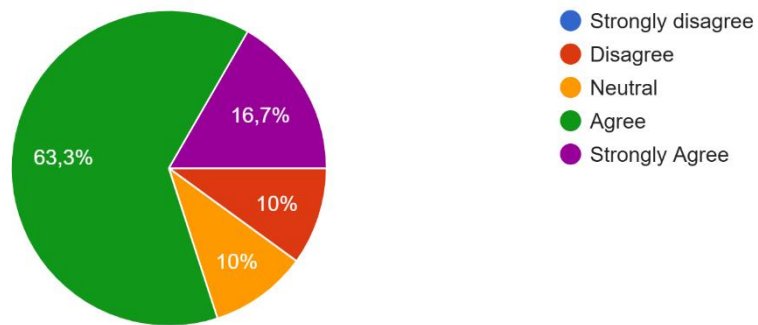
19 risposte



### Section 1 - Clarity of ILO(s) – KTH

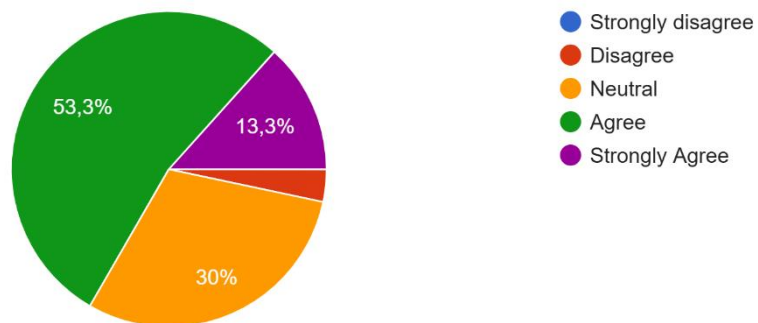
I had a clear idea of what I was supposed to learn.

30 risposte

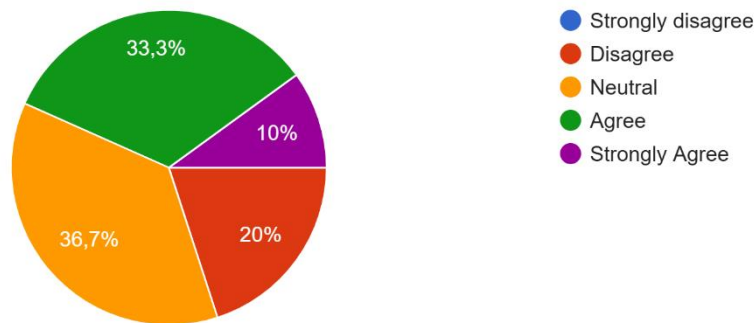


I received a precise overview of the practical applications associated with the topics covered.

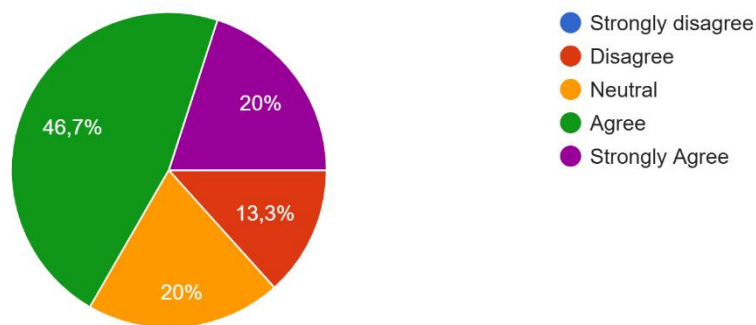
30 risposte



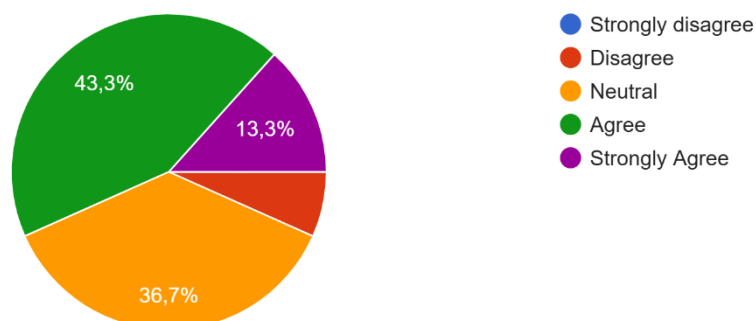
I was never in doubt about what I was supposed to learn this educational unit.  
30 risposte



The educational material clearly outlined what I was supposed to learn.  
30 risposte



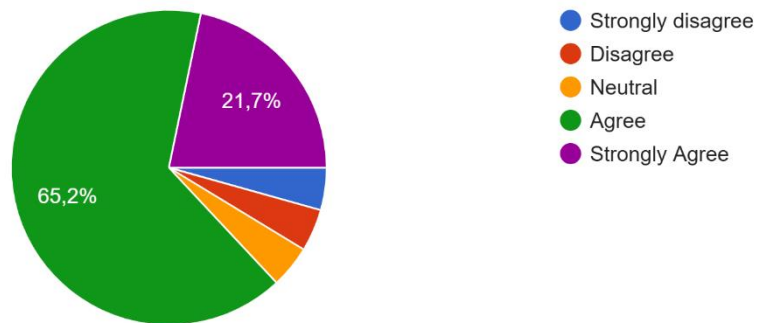
Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.  
30 risposte



**Section 1 - Clarity of ILO(s) – UNIBG**

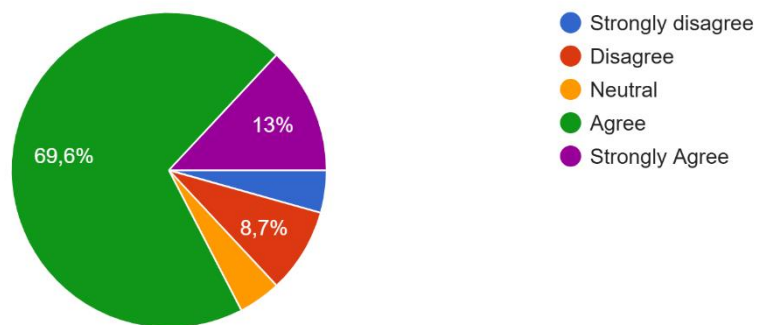
I had a clear idea of what I was supposed to learn.

23 risposte



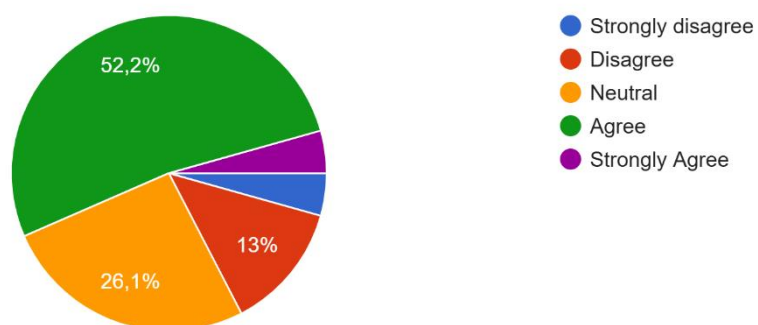
I received a precise overview of the practical applications associated with the topics covered.

23 risposte



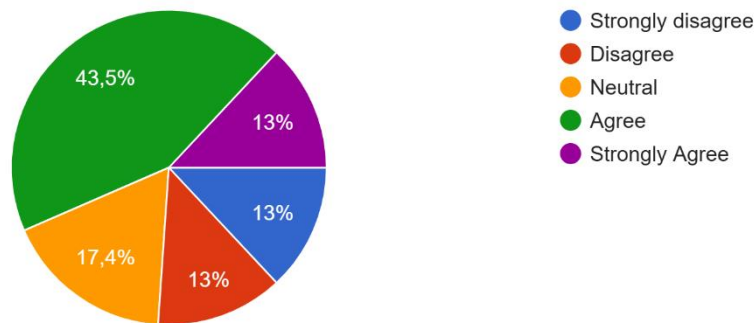
I was never in doubt about what I was supposed to learn this educational unit.

23 risposte



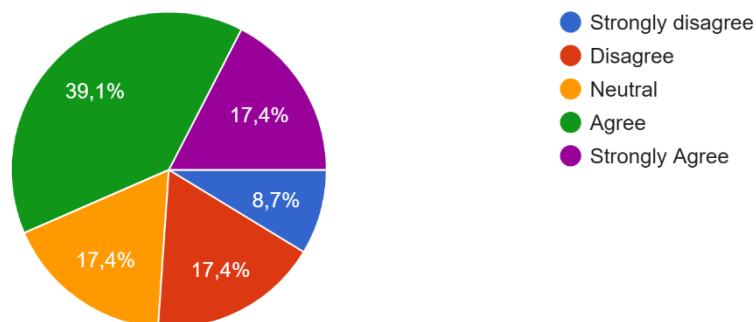
The educational material clearly outlined what I was supposed to learn.

23 risposte



Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

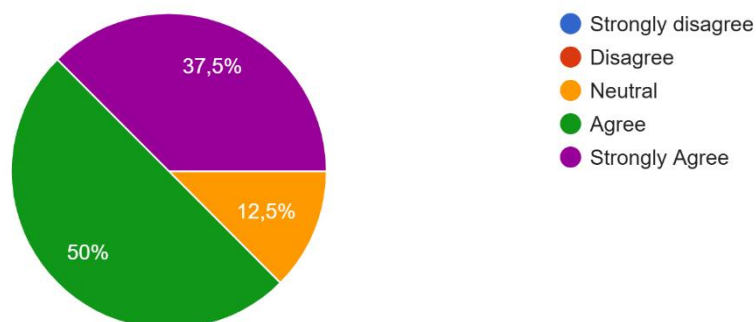
23 risposte



**Section 1 - Clarity of ILO(s) – UNILJ**

I had a clear idea of what I was supposed to learn.

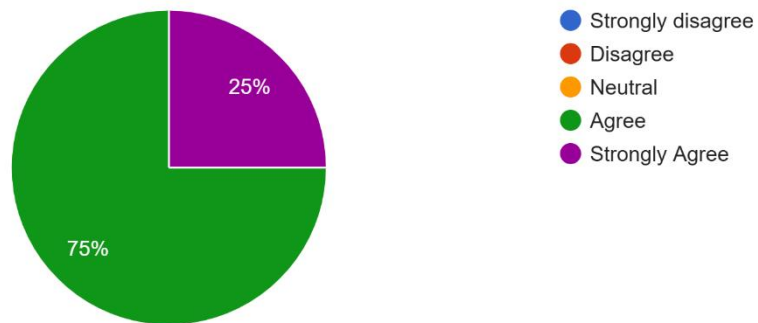
8 risposte





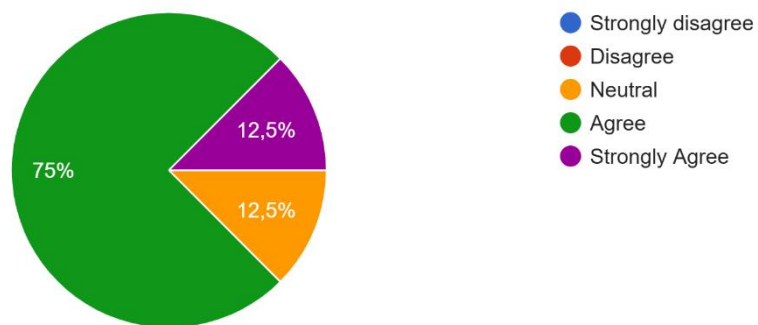
I received a precise overview of the practical applications associated with the topics covered.

8 risposte



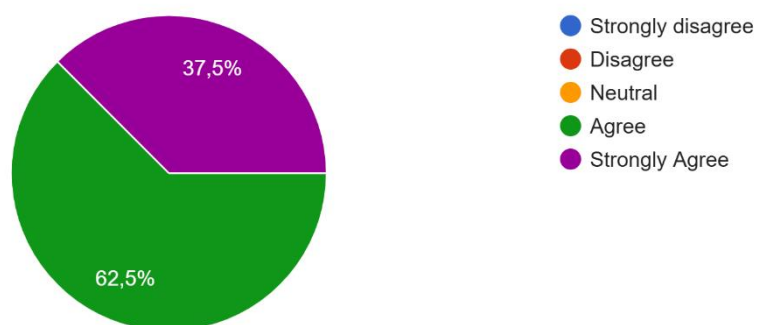
I was never in doubt about what I was supposed to learn this educational unit.

8 risposte



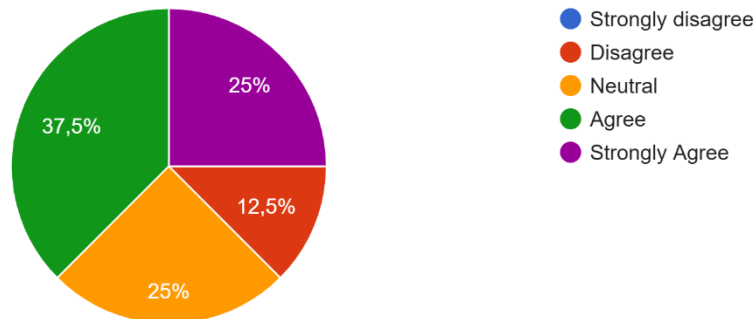
The educational material clearly outlined what I was supposed to learn.

8 risposte



Throughout the duration of the educational unit, there were regular reminders reinforcing the key learning objectives.

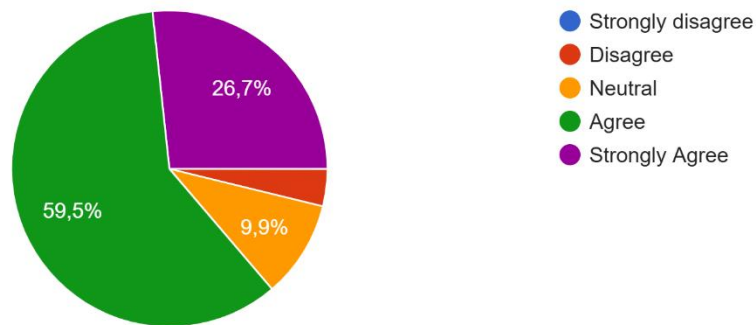
8 risposte



## Section 2 - Teaching alignment

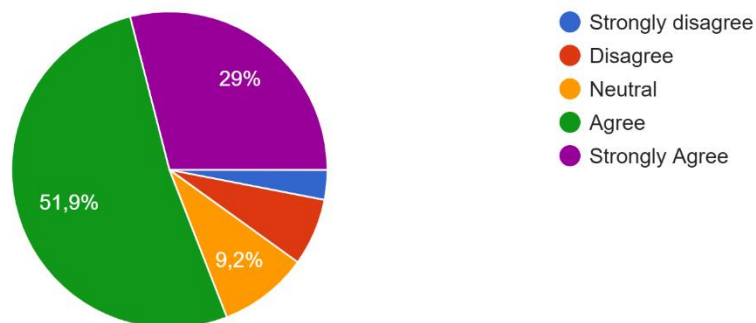
1) The teaching and learning activities addressed what I was supposed to learn.

131 risposte

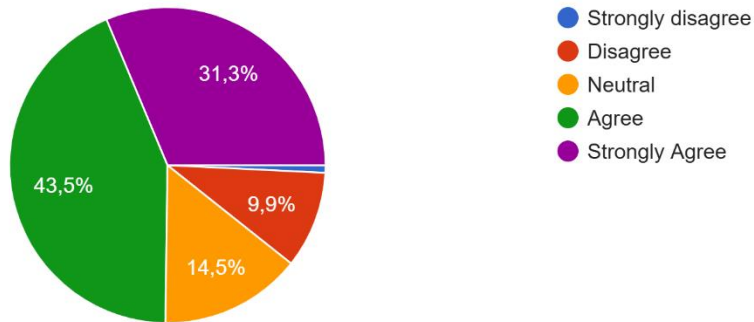


2) The teaching and learning activities helped me learning what I was supposed to learn.

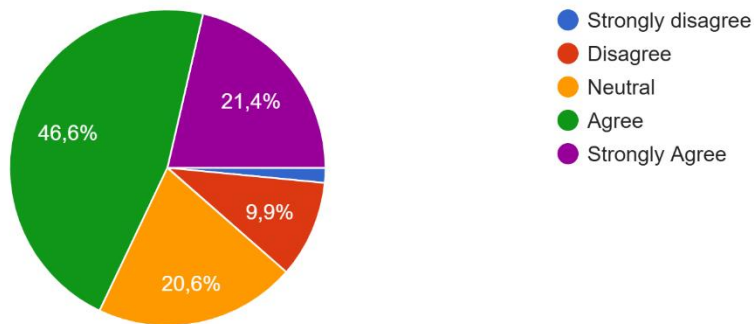
131 risposte



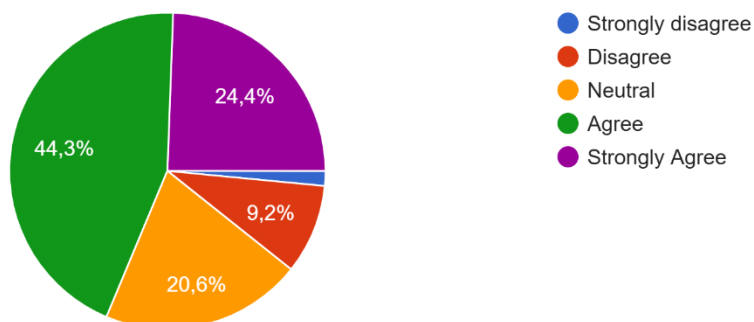
3) I was provided the opportunities to actively participate in what I was supposed to learn,  
131 risposte



4) I was provided with a variety of activities that helped me learning what I was supposed to learn.  
131 risposte



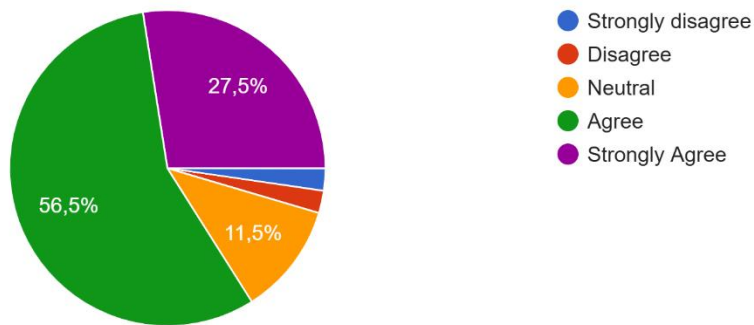
5) I was given clear and specific instructions about what to do in learning what I was supposed to learn.  
131 risposte



**Section 3 - Assessment alignment**

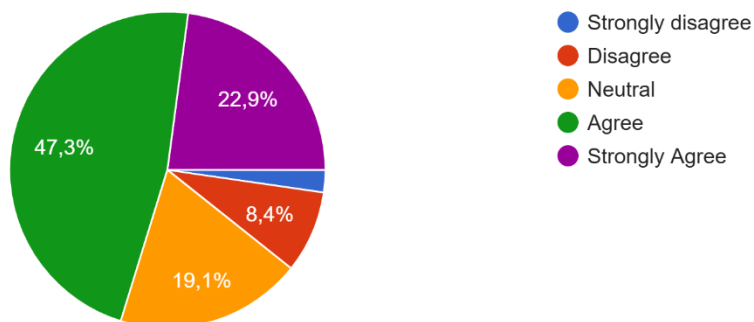
1) The assessment tasks addressed what I was supposed to learn.

131 risposte



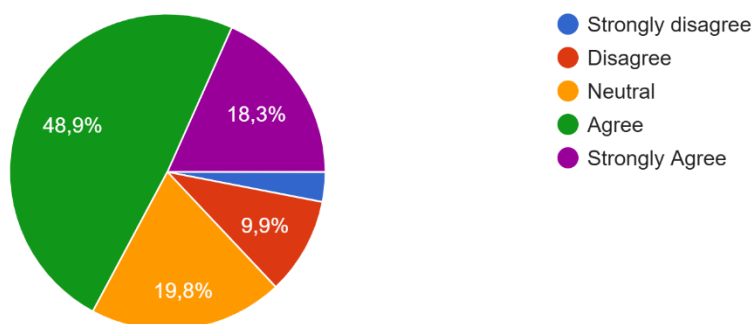
2) It was explained clearly to me how the assessment tasks were related to what I was supposed to learn.

131 risposte

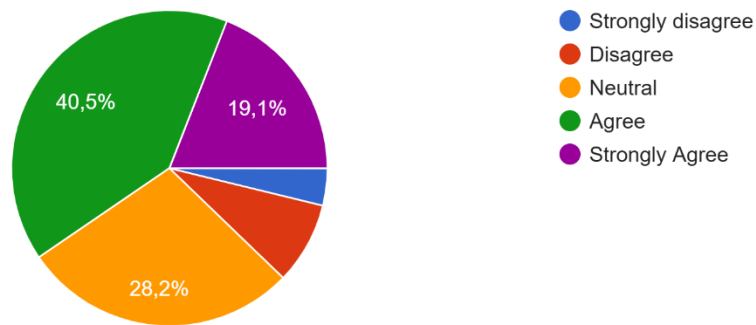


3) The assessment tasks provided opportunities for me to demonstrate how well I had achieved what I was supposed to learn.

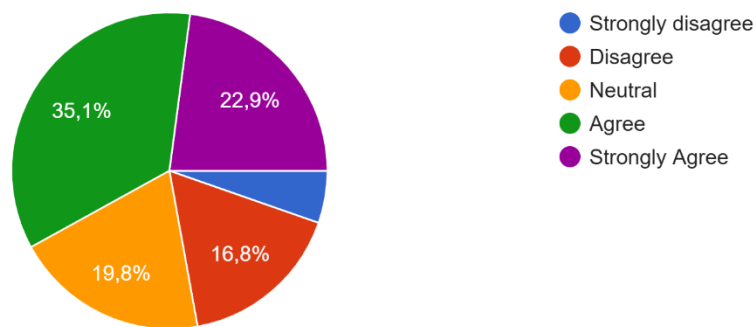
131 risposte



4) The grades that I received indicated fairly how well I had achieved what I was supposed to learn.  
131 risposte

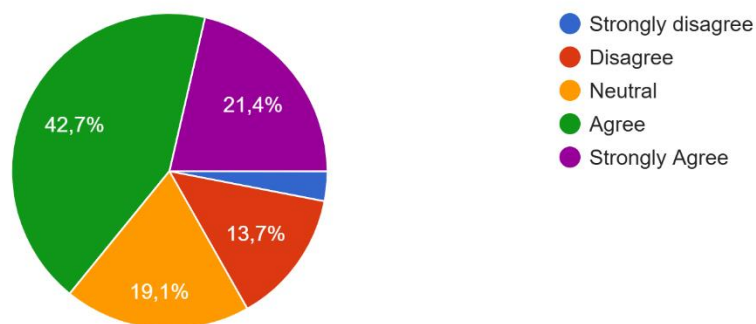


5) I received useful feedback on how well I had achieved what I was supposed to learn.  
131 risposte



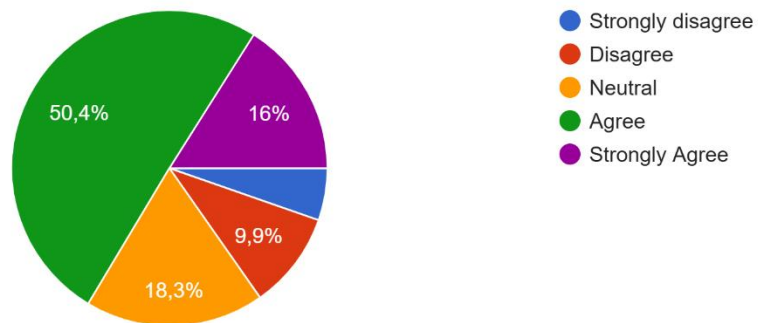
#### Section 4 - Feedback effectiveness

1) I received feedback that related directly to the assessment criteria.  
131 risposte



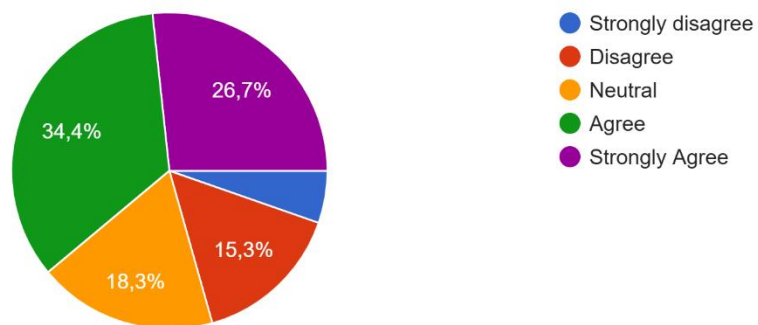
2) I received feedback that was clear and specific to what I was supposed to learn.

131 risposte



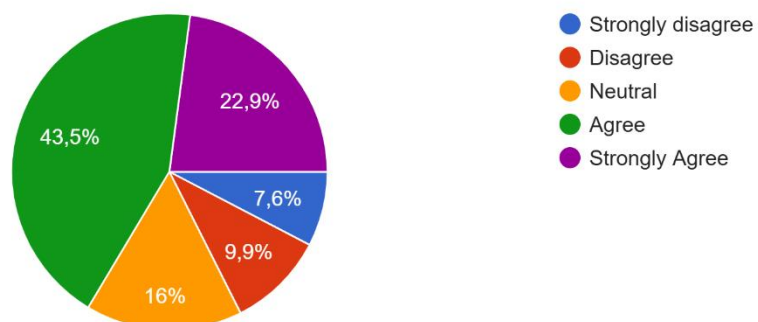
3) I received feedback that helped me preparing for the next assessment task.

131 risposte



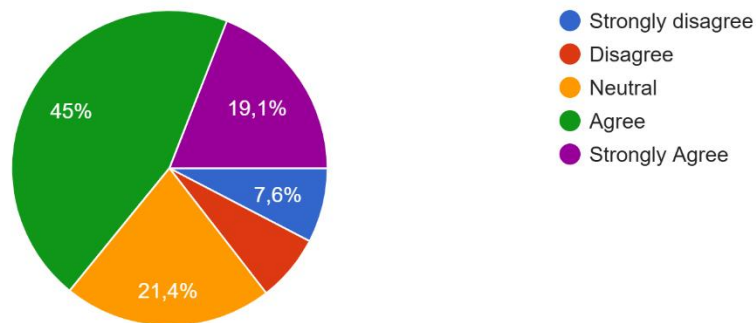
4) I could take action to improve my own learning based on the feedback provided.

131 risposte



5) I was able to make informed judgments about my own work from the feedback provided.

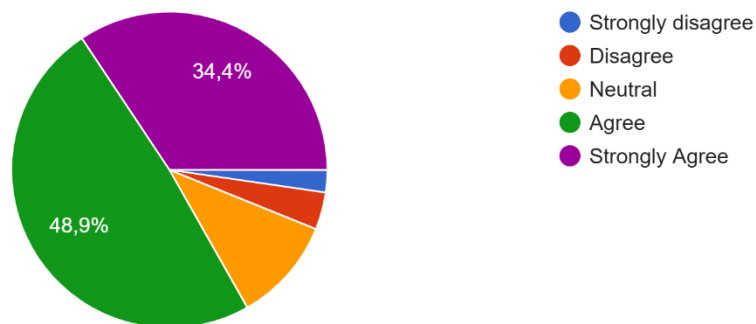
131 risposte



## Section 5 - Integration of digital technology

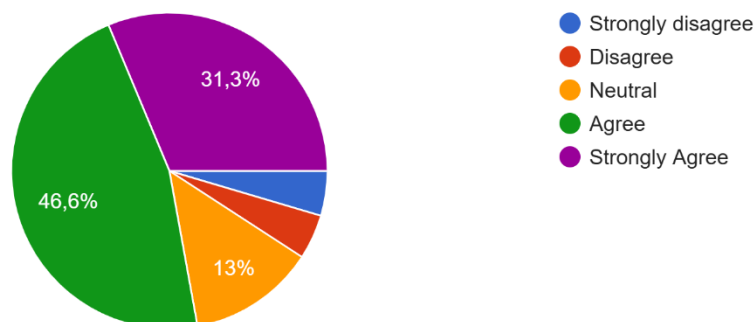
1) The digital tools and technologies used for the educational unit enhanced the educational experience.

131 risposte



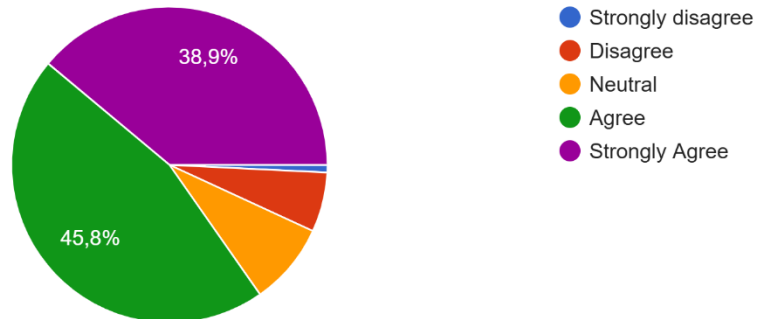
2) The way digital technology was used in this educational unit would be beneficial in my future courses.

131 risposte



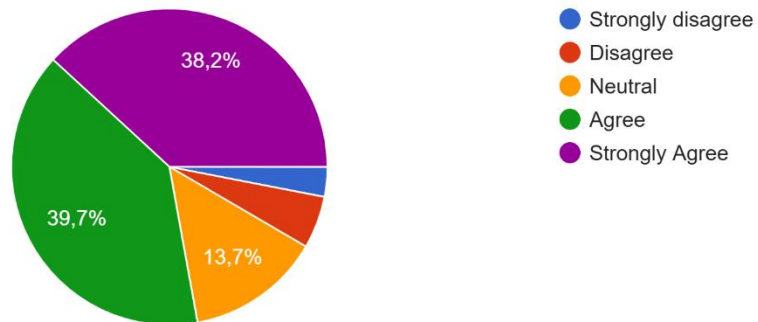
3) I have all the necessary equipment to make use of the digital technologies used in this educational unit.

131 risposte



4) It was easy to learn how to use the digital technology utilized in this educational unit.

131 risposte



5) Overall, I liked how digital technology was utilized in this educational unit.

131 risposte

