



585687-EPP-1-2017-1-PT-EPPKA2-CBHE-JP

OA3.1.2 – Monitoring and Control of Multidisciplinary Projects and Internships (MP/I)

Developed by UDELAR, UVIGO, and IPP
October 2021



Co-funded by the
Erasmus+ Programme
of the European Union

Disclaimer: This project has been funded with support from the European Commission. The information available in this document reflects the views only from the authors and project participants, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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1. INTRODUCTION

LAPASSION (Latin-America Practices and Soft Skills for an Innovation Oriented Network) is a project from the program Erasmus+ within the line KA2 – Cooperation for innovation and the exchange of good practices – Capacity Building in the field of Higher Education (reference 585687-EPP-1-2017-1-PT-EPPKA2-CBHE-JP). It involves partners from Portugal, Finland, Spain, Brazil, Uruguay and Chile. LAPASSION consortium has as motivation to create a unique solution to address different problems affecting youth in HEI, helping students to obtain a better training in terms of innovation, soft skills, and internationalization. This solution is obtained by LAPASSION MP/I (Multidisciplinary Projects/Internships) for students' teams to help them to co-create, and co-develop projects proposed by enterprises and other organizations, or to accelerate innovative ideas in an international context involving students from several countries.

The aim of LAPASSION is to increase the innovation culture of HEI and the connection with Enterprises/Organizations (E/O) with impact in Employability, and Internationalization. This aim is pursued by implementing multidisciplinary projects/internships(MP/I) for co-creation, co-development, and acceleration of innovative ideas, integrated in the educative project of the involved institutions. MP/I will be implemented by means of students' teams involving students with different backgrounds, different graduation levels, and from different countries, and solving challenges posed by E/O.

1.1 Consortium of LAPASSION

LAPASSION is a consortium with 15 partners, including 13 Higher Education Institutions (4 from Europe and 9 from Latin America), 1 Association of Enterprises from Portugal, and 1 Council of the Federal Institutes from Brazil. The list of the partners is the following:

- Polytechnic of Porto (IPP, Portugal)
- Tampere University of Applied Sciences (TAMK, Finland)
- University of Vigo (UVIGO, Spain)
- University of Salamanca (USAL, Spain)
- Federal Institute Riograndense (IFSUL, Brazil)
- Federal Institute of Triângulo Mineiro (IFTM, Brazil)
- Federal Institute of Goiás (IFG, Brazil)
- Federal Institute of Maranhão (IFMA, Brazil)
- Federal Institute of Amazonas (IFAM, Brazil)
- University of the Republic of Uruguay (UDELAR, Uruguay)

Technological University of Uruguay (UTEC, Uruguay)

Foundation of Professional Institute (DUOC, Chile)

Catholic University of Chile (PUC, Chile)

Association of Enterprises of Portugal, Commerce and Industry Chamber (AEP, Portugal)

Council of Federal Institutes of Brazil (CONIF, Brazil)

IPP is the coordinator institution of the project.



Figure 1 - LAPASSION partners in Latin America and Europe

1.2 Workpackages of LAPASSION

LAPASSION involves the following Workpackages:

WP1 – Preparation and Training for Multidisciplinary Projects/Internships (MP/I)

WP2 – Development of MP/I

WP3 –Quality Planning & Control (QP&C)

WP4 –Communication Plan, Dissemination and Exploitation Strategy

WP5 – Management

Communication, Dissemination and Exploitation are very important aspects for the project, and a specific Work package has been included for this purpose.

Work package WP3 is focused on the Quality Control of LAPASSION in two different aspects: the Quality of Students Teams'projects; and the Quality of the project LAPASSION. This report delas with the first part.

2. TOOLS FOR THE QUALITY CONTROL OF MP/I PROJECTS

Two main tools were analysed for quality control of the Multidisciplinary Students Teams' projects: SCEQ - Student Course Experience Questionnaire; and CATME - Comprehensive Assessment of Team Member Effectiveness. UDELAR has a large experience in using these two tools in their courses. However, they needed to be adapted since there is now an orientation for the development of projects by students.

The SCEQ allows to evaluate a course from the student perspective, give feedback to the teaching team, compare the courses quality, and define a course style identify. It corresponds to a questionnaire with statements to be answered on a Likert scale (5 points from "strongly disagree" to "strongly agree"), which are clustered for analysis into 7 categories: good teaching; clear objectives and standards; assessment; workload; graduate attributes; learning community; and overall satisfaction. Some open questions can be addressed like "What were the best aspects of the course?" or "What aspects can be improved?".

CATME is an instrument that allows to evaluate different dimensions of teamwork and determine if the work has been distributed and carried out in a responsible manner by the different members of a team. It was developed based on literature on teamwork skills necessary for team efficiency. CATME consists of items that are rated on a Likert scale (5 points from "strongly disagree" to "strongly agree") and correspond to 5 categories of skills and attitudes for teamwork: Contribution to teamwork; Interaction with teammates; Maintenance of equipment operation; Quality expectations; and Knowledge and skills. CATME allows self-evaluation and peer evaluations during and / or at the end of teamwork. Depending on the duration of the course, it can be applied more than once, providing personalized feedback for each student to allow metacognition and the development of skills and attitudes.

UDELAR has an extensive experience with SCEQ and CATME.

CATME was selected as the base for the evaluation of the quality of the Multidisciplinary Projects/Internships of LAPASSION students. Since LAPASSION is more a project-oriented activity, and not a course, it was necessary to adapt CATME.

The adaptation of CATME to LAPASSION achieved the following set of 32 statements,

that students must answer in the Likert scale, as it was seen in the following figures.

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I clearly understood the goals and objectives of the course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course helped me develop problem-solving skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was really difficult to integrate with people from other countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course helped me develop the capacity for research and inquiry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my learning benefited from being in contact with students from different areas of knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The faculty normally gave our team feedback on work progress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I did not learn much from the course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to develop good relationships with other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the course I felt lost most of the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I had the preparation needed to succeed in this course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2 –CATME – first set of statements

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The course helped me develop the ability to work as a team member	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my learning benefited from being in contact with students from different countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty made a real effort to understand difficulties I might have had with the work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was not able to feel integrated within my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty and/or staff were supportive with difficulties that aroused for different students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt part of a group of students and faculty committed to learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student integration was facilitated by the course activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I could not contribute effectively to the team work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integration within my team was facilitated by the course activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to develop good relationships with faculty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe language was a barrier to student full participation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I am satisfied with the quality of the work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 3 –CATME – second set of statements

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The course helped me develop planning and time management skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I could contribute effectively to the teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course fostered my personal and intellectual independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The project was too challenging for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The project was open-ended, allowing students to develop more than one reasonable solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to develop good relationships with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty mediated when conflict aroused within my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course helped me develop skills to explore ideas with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The project was understandable and inspiring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inquiry was sustained over time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4 –CATME – third set of statements

It is important to refer that the statements are mixed and that sometimes the statement is done in the affirmative way and other times in the negative way. The objective is to avoid students respond in the same way to sequences of related questions.

However, for the analysis of the answers it is better to group statements in a different manner, as follows:

- Overall, I am satisfied with the quality of the work
- Integration with my team was facilitated by the course activities
- Student integration was facilitated by the course activities
- I was able to develop good relationships with faculty
- I was able to develop good relationships with other students
- I felt part of a group of students and faculty committed to learning
- I feel my learning benefited from being in contact with students from different

countries

- I feel my learning benefited from being in contact with students from different areas of knowledge
- I believe language was a barrier to student full participation
- It was really difficult to integrate with people from other countries
- Faculty and/or staff were supportive with difficulties that aroused for different students
- Faculty made a real effort to understand difficulties I might have had with work
- Faculty mediated when conflict arose within my team
- The faculty normally gave our team feedback on work progress
- I was not able to feel integrated within my team
- I was able to develop good relationships with members of my team
- I feel I could not contribute effectively to the team work
- I feel I could contribute effectively to the teamwork
- The course helped me the ability to work as a team member
- The course fostered my personal and intellectual independence
- The course helped me develop planning and time management skills
- The course helped me develop skills to explore ideas with other people
- The course helped me develop problem solving skills
- The course helped me develop the capacity for research and inquiry
- I feel I did not learn much from the course
- The project was understandable and inspiring
- Inquiry was sustained over time
- The project was open-ended, allowing students to develop more than one reasonable solution
- The project was too challenging for me
- I feel I had the preparation needed to succeed in this course
- In the course I felt lost most of the time
- I clearly understood the goals and objectives of the course

It is important to say that we expect that the media of some answers are higher than the neutral (3.0) while others are lower than the neutral. If things run well, we expect that for a statement like "I was able to develop good relationships with members of my team" we obtain something close to Agree (4.0) or Strongly Agree (5.0) while for a statement like "I feel I did not learn much from the course" we expect Disagree (2.0) or

Strongly Disagree (1.0). Thus we will represent the charts using grey for the first type of questions (that would be higher than neutral) and red for the questions of the second type (that would be lower than neutral). This helps us to see better potential problems when the red bars ends after the normal (3.0) or when grey bars end before the normal.

3. RESULTS OF CATME APPLIED TO LAPASSION MP/I PROJECTS

Since the first LAPASSION set of projects (LAPASSION@Santiago) started early in the project (month six) it was not possible to apply CATME since it was not yet adapted and available to be used. However, LAPASSION@Santiago was very important to understand what kind of statements would be placed or not, since CATME was originally conceived for traditional academic courses. Thus, CATME was applied to the other 6 sets of multidisciplinary projects (Montevideo, Uberaba, São Luís, Goiania, Manaus, and Pelotas) for a total of 33 teams and 187 students invited to answer CATME.

The results of CATME can for these 6 editions of LAPASSION multidisciplinary projects can be seen in the following figures.

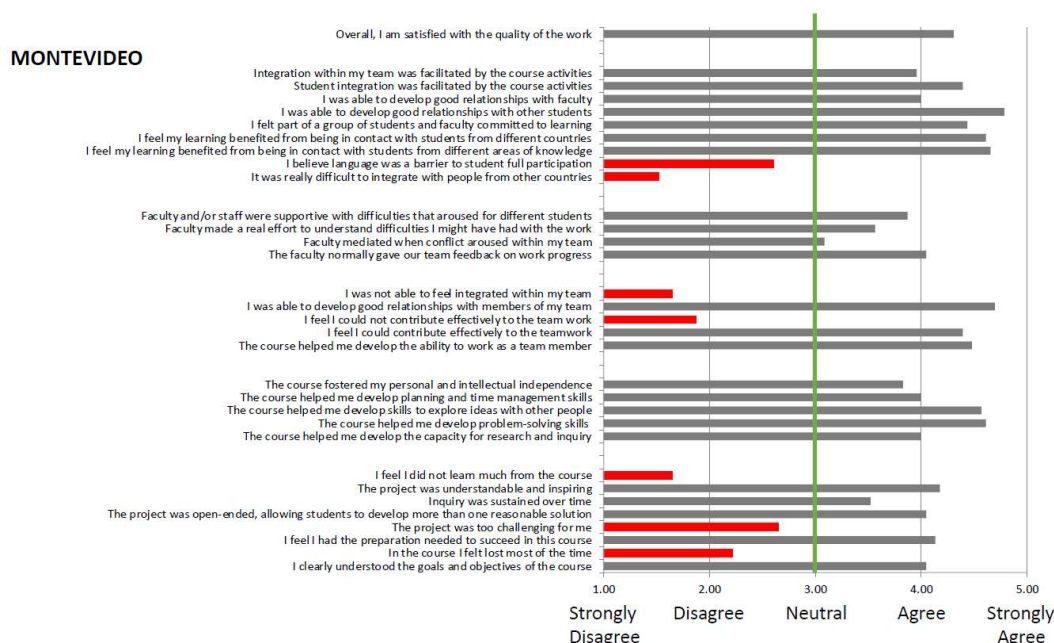


Figure 5 – CATME – results for LAPASSION@Uruguay

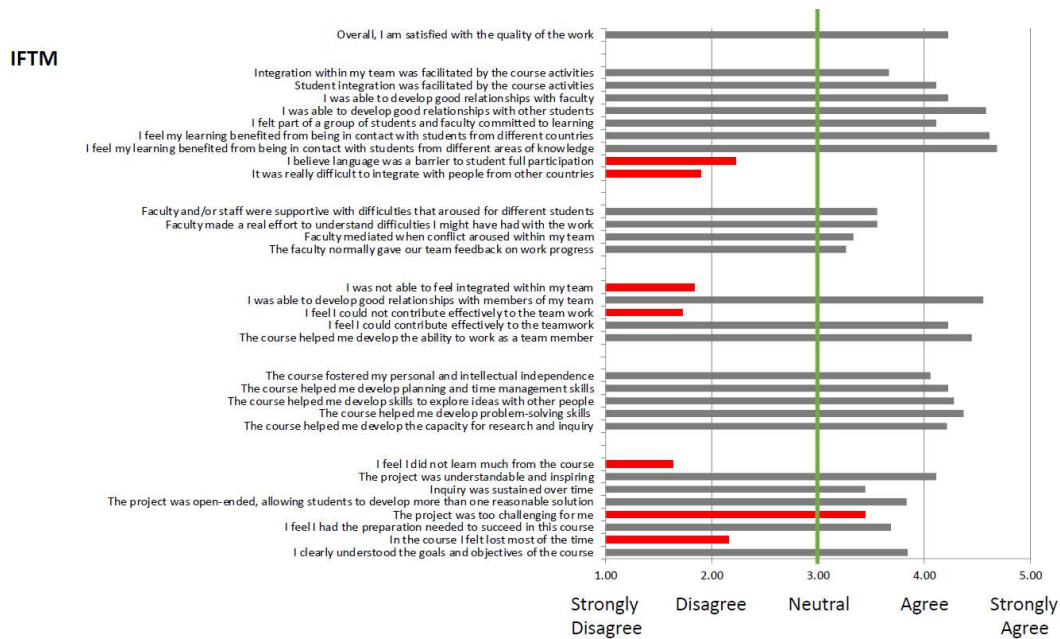


Figure 6 – CATME – results for LAPASSION@Uberaba

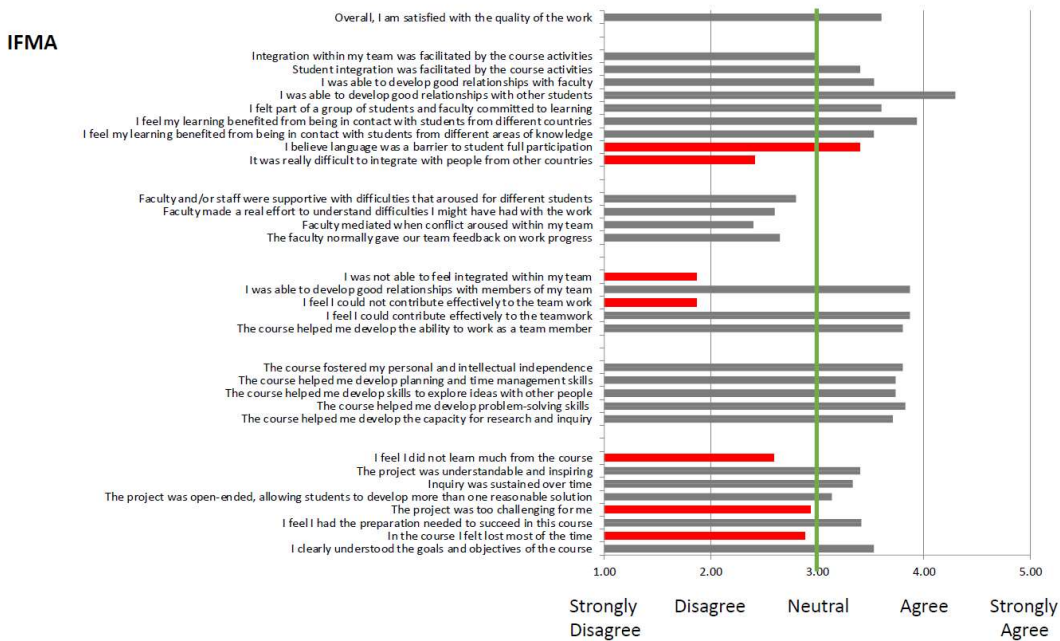


Figure 7 – CATME – results for LAPASSION@SãoLuís

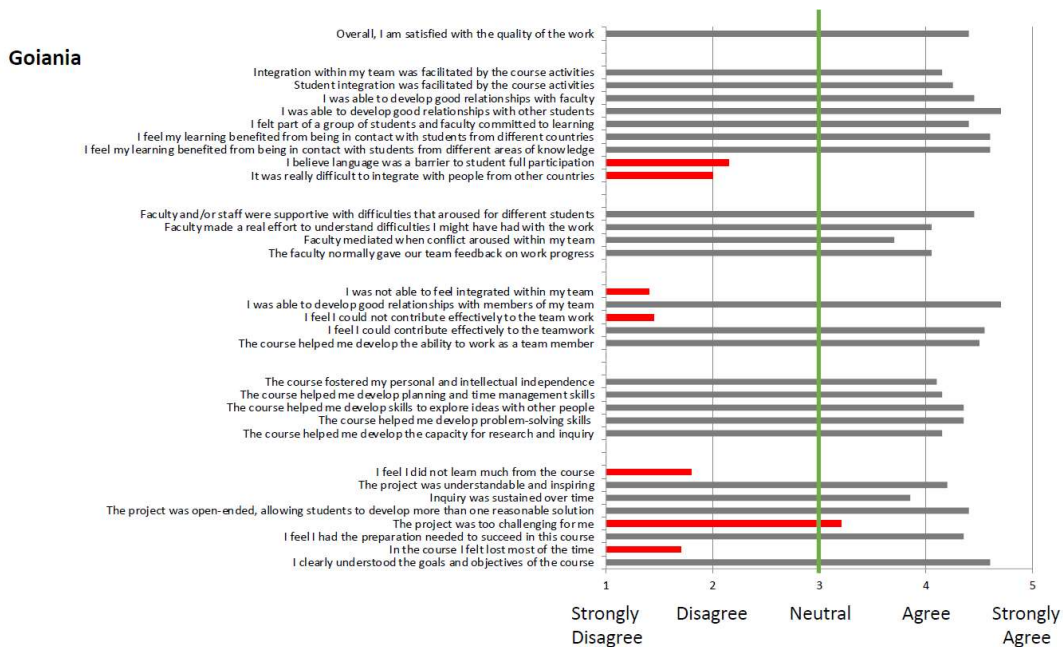


Figure 8 – CATME – results for LAPASSION@Goiania

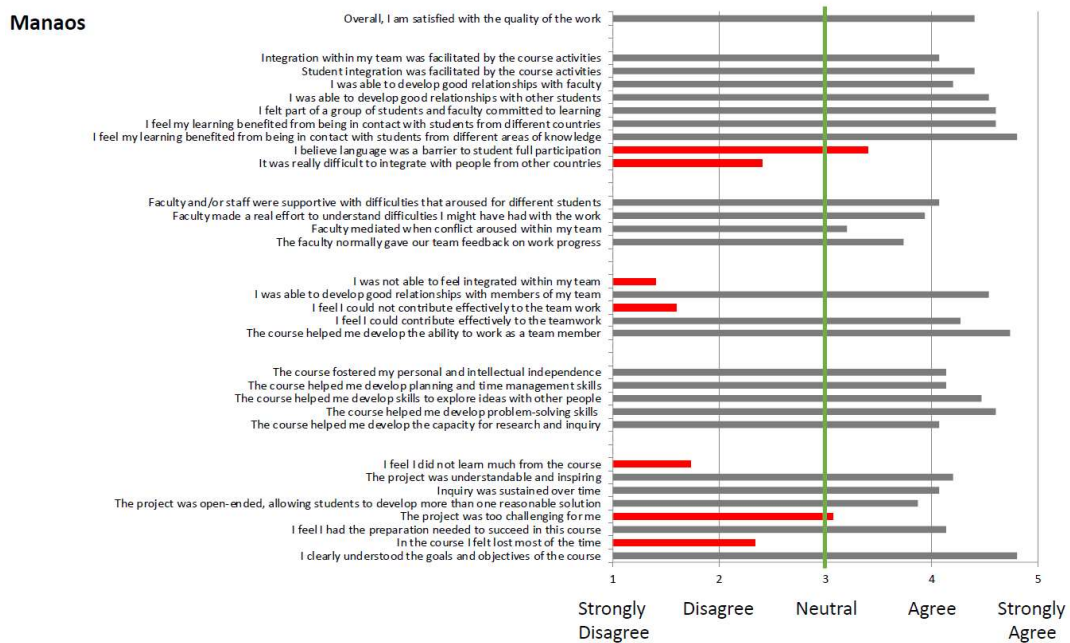


Figure 9 – CATME – results for LAPASSION@Manaos

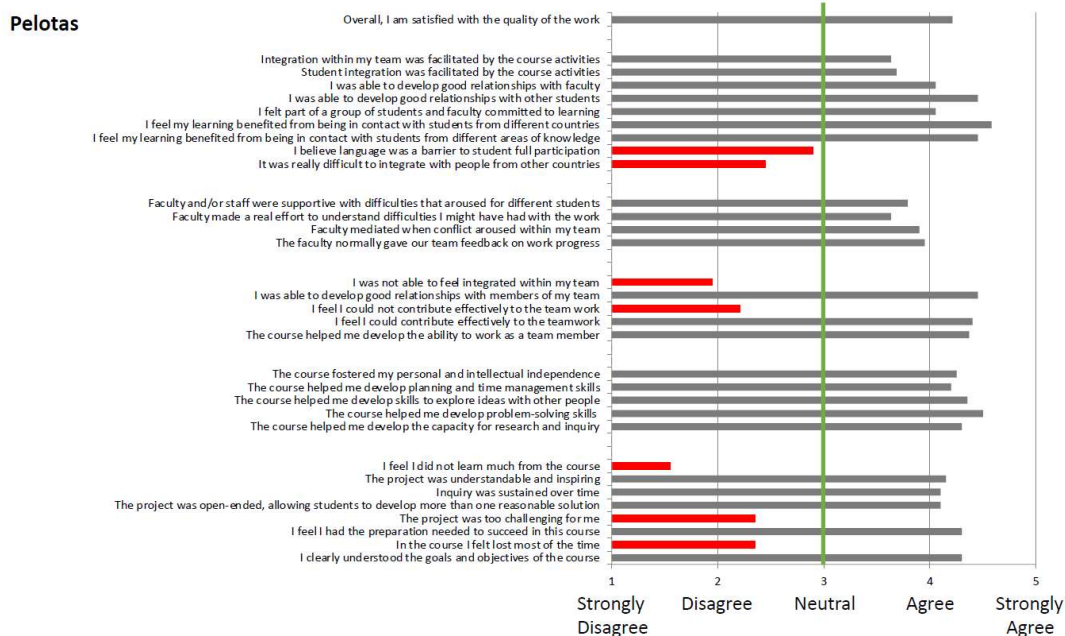


Figure 10 – CATME – results for LAPASSION@Pelotas

4. ANALYSIS OF CATME ANSWERS FOR LAPASSION MP/I PROJECTS

As we can see from the figures of the previous section the red bars cross the green line of Neutral for two statements:

- “The project is too challenging for me” for LAPASSION@Uberaba, LAPASSION@Goiania, and LAPASSION@Manaus. We suppose that the question in Uberaba was to have 4 challenges from enterprises, and in the case of Manaus and Goiania was due for the need to convert a presential project in a remote/online in the first weeks due to the coronavirus pandemic. Anyway, the medium values are slightly higher than neutral (3.0).
- “I believe language was a barrier to student full participation” for LAPASSION@SãoLuís and LAPASSION@Manaus. Here the situation may be due to the difficulties of Brazilian students and even Professors/Coaches with English language, notice that in these two projects English should be used due to the Finish students that participated, while in other projects like LAPASSION@Uruguay, LAPASSION@Uberaba, and LAPASSION@Pelotas we did not have Finish students, so a kind of Portuguese-Spanish mixing language (known as “Portunhol”) made its way to facilitate the dialogue due to the similarity of both languages. Again, the medium values are slightly higher than neutral (3.0). Important to say that LAPASSION@Goiania involved Finish students, but a course of English was organize to prepare students better in English language, and with positive result as we can see from the CATME analysis.

Concerning the gray bars that did not cross the green line of Neutral this happens just for LAPASSION@SãoLuís questions relative to Faculty support. Maybe this is due to the expectations, namely from students from Brazil, that they would be more supported to deal with the challenges. Challenge-oriented problem solving is not a usual practice for Brazilian students, and maybe Professors/Coaches did not make aware of this new functioning of the projects. Anyway, at the end good results have been achieved, and Professors have supported students in different tasks as registering software and applying for an innovation contest with two projects of LAPASSION@SãoLuís being selected for support, inclusively one in the first position.

As conclusion we think that LAPASSION Multidisciplinary projects for students were a very positive experience that could be measured by an instrument like CATME. The main recommendations for future LAPASSION inspired projects for students' teams are the following:

- prepare students for the new reality of challenge-based projects, they will need to do things in a more autonomous way and things will not be well defined as in other academic projects, there is not an official good solution for the project, and the objective is to open the mind of the students for different possible ways to present a solution of a challenge
- prepare students for Languages and multiculturality, namely if students not speaking Portuguese or Spanish will participate
- prepare students better for the unknow, the ability to be faced to new realities, and to be agile in adapting to these new realities.