

Evaluation of the impact of the GOODFOOD project on the Spanish teachers' interest, attitudes and opinions about the project and its main aims

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Survey

We used a survey as a tool to assess the potential influence of the GOODFOOD methodology on the teachers involved in the GOODFOOD project. To do so, the questionnaire was administered before and after the project piloting, and we tried to compare and evaluate any differences in interests, attitudes, opinions and behaviours towards: 1) several curricula and school teaching issues and 2) various aspects related to the GOODFOOD themes about food and food habits.

In the IES Monte Miravete (Murcia, Spain), the teachers' PRE-questionnaire was administered between the 23rd and 30th of October before the piloting, and the POST-survey between the 7th and 20th of May 2024.

The questionnaire for the teachers included the following sections:

- Teachers profile
- Use and Attitude towards innovative learning methods
- Constraints on the use of innovative learning methods
- Self-efficacy in terms of self-esteem in front of new challenges
- Students' attraction towards teacher's subject by teaching food-related themes.
- Attitudes towards food habits and behaviours
- Attitudes towards changing curriculum or including extra-activities

Link to the GOOGLE surveys (in English):

PRE-survey

<https://docs.google.com/forms/d/e/1FAIpQLSfQcOJjCO9HPwRAi1wUL9zyHtOLtjvaPdBbl3yuhIAWsNBwag/viewform>

POST-survey

https://docs.google.com/forms/d/e/1FAIpQLSdH-3ENPTptbYJqUQn_XzT-oYPEluRYAlpU19D_os7XjMLf3w/viewform

Link to the GOOGLE surveys (in Spanish):

PRE-survey

https://docs.google.com/forms/d/e/1FAIpQLSfuERHlU1v6T2BW2a60BNpmlQgBN_8X3z5Q7UTQb8Ku4Q4cg/viewform

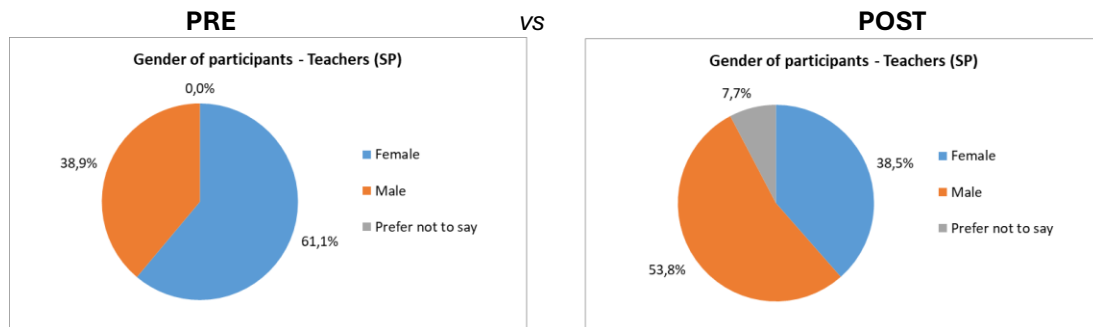
POST-survey

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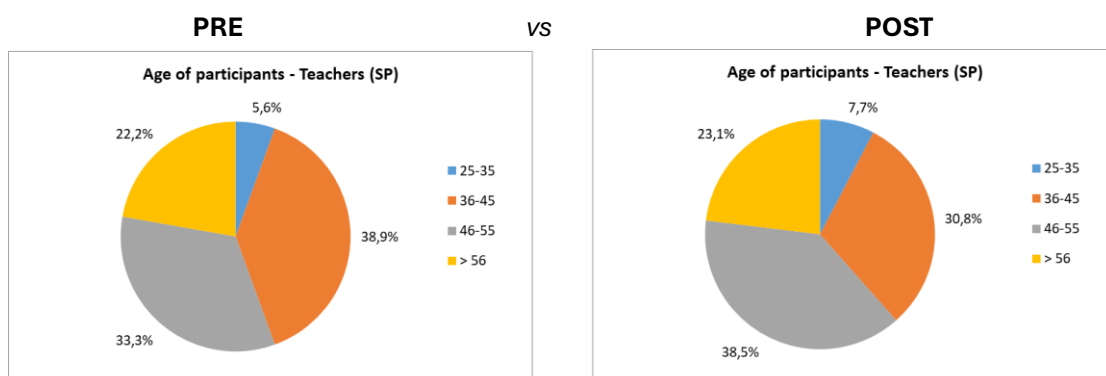
Teachers' results.

Sample population characteristics.

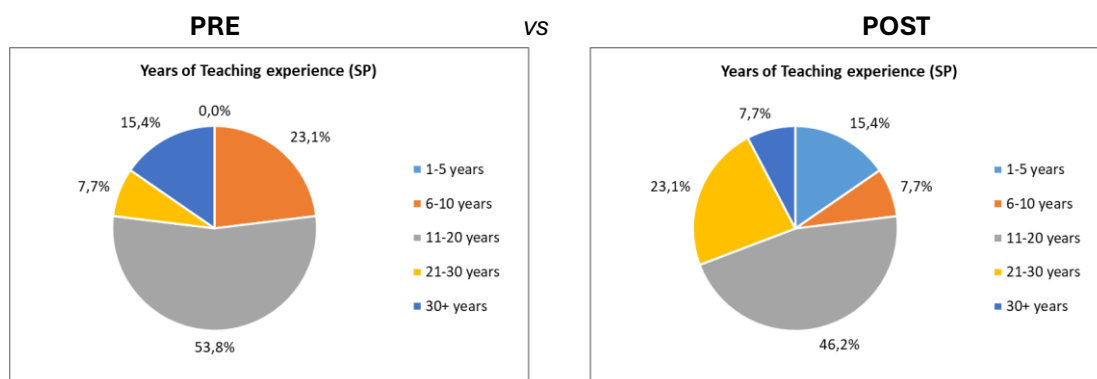
A total of 31 teachers from the IES Monte-Miravete (Torreagüera, Murcia, Spain) responded to the questionnaires: 18 teachers to the pre-piloting survey whereas 13 teachers responded to the post-piloting survey. The gender of the participants was distributed as follows: at PRE-piloting, more female teachers than male teachers (61% vs 38.9%) responded to the questionnaire whereas the POST-piloting survey was answered by a much lower percentage of women but higher % of men (38.5% vs 53.8%).



Regarding their ages, most of the teachers that responded to both surveys were between 36 and 55 y old ($\approx 70\%$). Around 22-23% were 56 y old or older and only between ≈ 6 to 7% were young teachers (25-35 y old).



Most of the teachers had a long teaching experience ≥ 11 y, and only around 23% had a shorter teaching experience (≤ 10 y). We noticed a higher involvement of younger teachers (≤ 5 y experience) in the POST survey.



Teachers of a broad range of signatures participated in both surveys covering some of the STEAM subjects (Science, Technology, Art and Mathematics) with the exception of Engineering. The Science area was mainly represented by teachers of Biology, Geology, Physics and Chemistry. English, Physical Education and Geography and History teachers were present during the PRE and POST surveys.

Table 1.- Subjects taught by the teachers participating at the PRE-survey.

SUBJECTS	What subjects do you teach?
Geography & History	15,8%
Biology	10,5%
Spanish Language & Literature	15,8%
English	15,8%
Art Research Project	5,3%
Mathematics	10,5%
Ethics Values & Psychology	5,3%
Physical Education (Sports)	10,5%
Technology	5,3%
Geology	5,3%

Table 2.- Subjects taught by the teachers participating at the POST-survey.

SUBJECTS	What subjects do you teach?
Geography & History	7,7%
Biology & Geology	7,7%
Physics & Chemistry	23,1%
English	15,4%
Economy	7,7%
Mathematics	15,4%
Physical Education (Sports)	7,7%
Technology	15,4%

Bullet 1. Teachers at the IES Monte Miravete.

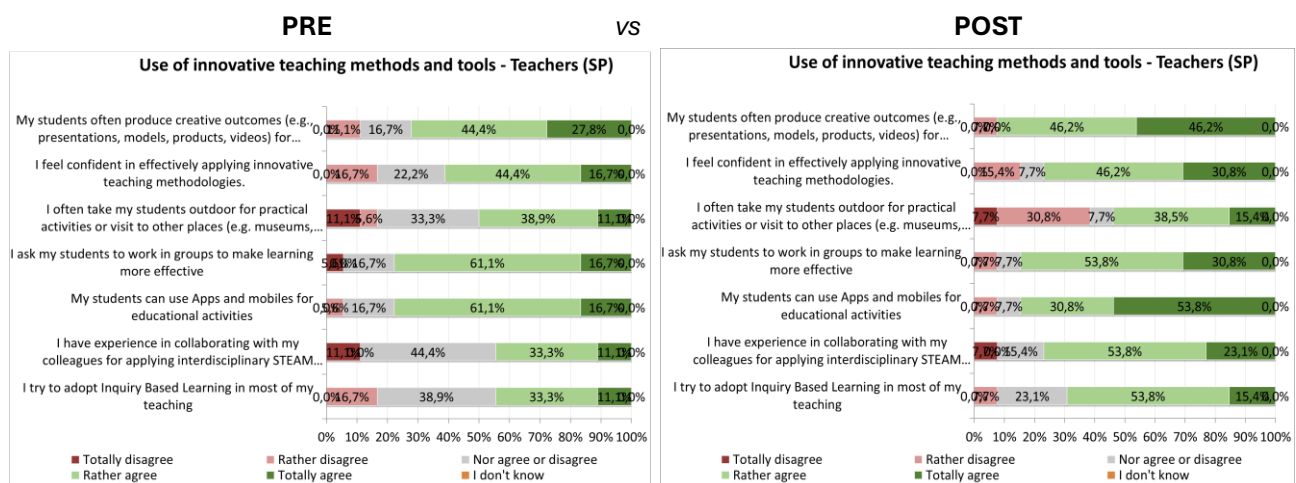
- The Spanish teachers participating in the GOODFOOD surveys constitute a reasonable sample population of highly experienced teachers covering a wide range of subjects.
- The two groups (PRE- and POST-surveys responders) were not exactly constituted by the same individuals but the following results of the questionnaires represent the interests, attitudes and opinions of a group of teachers from the IES Monte Miravete not having any experience of the GODFOOD project against a group of teachers that have experienced working with the methodology, learning units, protocols and activities proposed within the project during a full school year.

Teachers uses and attitudes.

“What is your level of agreement regarding the use of innovative teaching methods and tools?”

None of the participating teachers (both PRE and POST groups) responded with the ‘I don’t know’ response to this question indicating a high level of interest and opinion about the different issues included in the question regarding innovative methods and tools. Overall, there seems to be a considerable agreement of the teachers (represented by “totally agree” and “rather agree”) with the use of innovative teaching methods and tools. The largest agreement was noticed for “working in groups”, the “use of Apps and mobiles”, and the “production of creative outcomes”.

The experience of the GOODFOOD project seems to have a positive impact on the agreement for the application of the innovative teaching methods and tools listed in the survey with a general increase of the percentages of agreement for most of the indicated items. The largest increase in the agreement was noticed for the “adoption of Inquiry Based Learning in teaching” (≈25% increase), and “experience in collaborating with colleagues for applying interdisciplinary STEAM teaching” (≈32% increase). There was not much difference in the agreement (≈50%) about the “outdoor practical activities and visits”.



Bullet 2. Use of innovative teaching methods and tools.

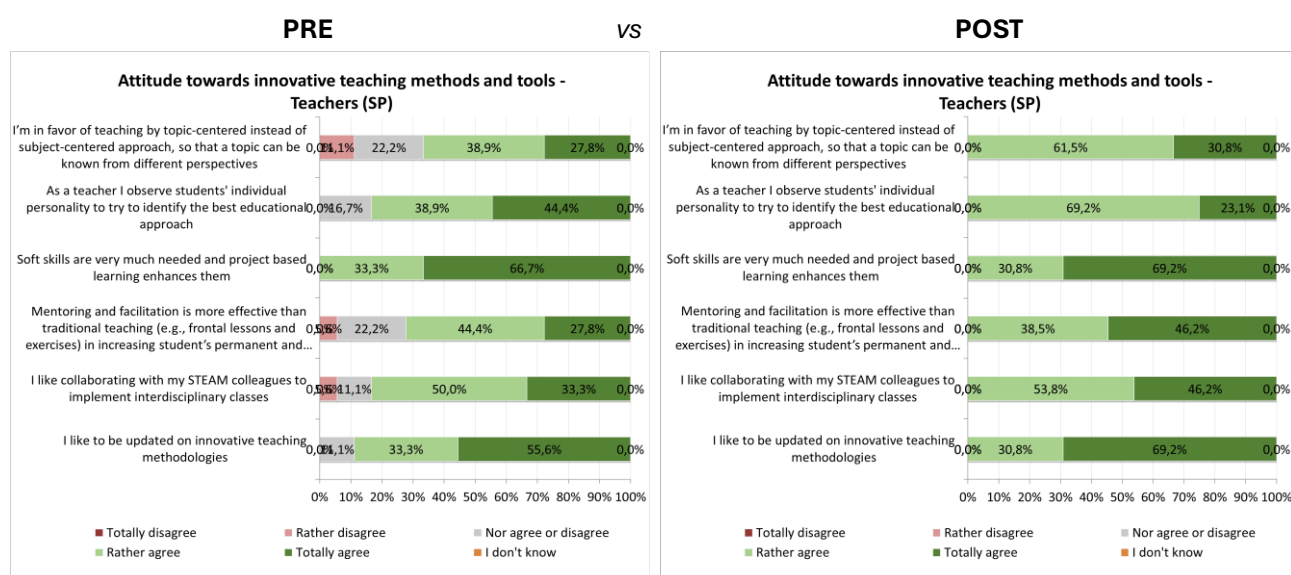
- The Spanish teachers showed a high interest in this question.
- There was a substantial agreement with the use of the different methods proposed, especially with ‘working in groups’, ‘using Apps and mobiles’ and ‘producing creative outcomes’.
- Overall the GOODFOOD experience had a positive impact on the agreement with the use of these methods and tools.

“What is your level of agreement regarding the attitudes towards innovative teaching methods and tools?”

The responses to this second question corroborates the high interest and positive attitude of the participating Spanish teachers towards the use of innovative methods and tools since the beginning of the project. Once again, none of the participating teachers (both PRE and POST groups) responded with the ‘I don’t know’ response to this question.

The GOODFOOD project seems to have reinforced such attitude reaching a 100 % of agreement (‘totally agree’ and ‘rather agree’) for all the issues included in this question, after the implementation of the activities. This improvement was most noticeable for ‘teaching by topic-centred instead of subject-centred’, ‘mentoring and facilitation rather than traditional teaching’, and ‘collaborating with STEAM colleagues’.

All participating teachers both before and after the project implementation agreed on that ‘soft skills are very much needed and project-based learning enhances them’ and ‘as teachers, they observe students’ individual personality to try to identify the best educational approach’.



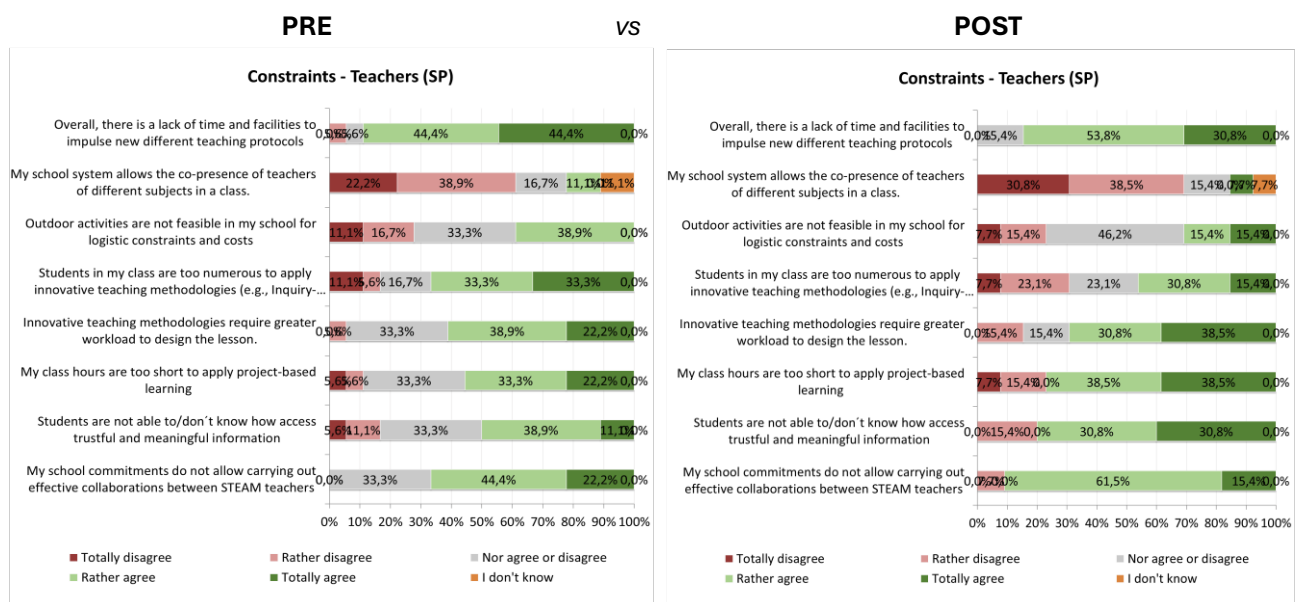
Bullet 3. Attitude towards innovative teaching methods and tools.

- The Spanish teachers also showed a high interest in this question.
- There was a very high agreement both before and after implementation of the project with all the items included in this question, especially with ‘soft skills are needed and project-based learning enhances these skills’.
- Overall the GOODFOOD experience had a positive impact on the attitude towards the use of innovative methods (STEAM; mentoring, topic-centred).

“What is your level of agreement regarding the following constraints on the use of innovative teaching methods and tools?”

Already before the GOODFOOD experience, the teachers from Monte Miravete manifest awareness of a number of potential constraints of the application of the proposed project methodologies and activities. Overall, most teachers agreed on that ‘there is a lack of time and facilities’, ‘the school does not allow much collaboration between teachers of different subjects’, ‘too many students per class to apply this methodology’, ‘greater workload’, ‘class hour too short’, ‘school commitments do not allow effective collaborations between teachers’. Some of these opinions and views were reinforced by the GOODFOOD experience since, for example, similar percentages or, in some cases, even more teachers agreed on that ‘school commitments’, ‘class hours’, ‘work load’, ‘lack of time and facilities’ and the ‘co-presence of teachers from different subjects’ make the application of the project complicated.

We observed a small improvement in the opinion about the ‘number of students per class’ since a higher percentage indicated disagreement with this issue being a problem. Regarding ‘outdoors activities’, we observed a high percentage of ‘nor agreement, nor disagreement’ before and even higher following the GOODFOOD experience which might indicate that many of the participants are not normally involved in this kind of activities and that the GOODFOOD project has not been sufficient to improve the outdoors activities.



Bullet 4. Constraints on the use of innovative teaching methods and tools.

- Overall the Spanish teachers from Monte Miravete showed awareness of various problems associated with the application of the methods and tools of the GOODFOOD project, i.e.: lack of time/reduced class hours, lack of facilities, increased workload/other commitments, difficulties in the co-presence/collaboration of teachers from different subjects (STEAM).
- Overall the GOODFOOD experience has reinforced this opinion suggesting that the teachers may think that there is a need for essential changes in the school system in

Regarding ‘facing new challenges’ and ‘learning new things’ the two groups of teachers, pre- and post-, but especially those that have experienced the GOODFOOD project showed willingness to face and apply new school learning experiences. The capacity of the participating Spanish teachers to ‘ensure continuity of the activities’, ‘communicate, motivate and ensure the participation of the students’, ‘applying IBL’ and ‘preventing troubled students from disturbing the class’ is in general very high and is improved in those teachers experiencing the project.

PRE **VS** **POST**

Teachers' self-efficacy in front of new challenges - Teachers (SP)

Statements and data for PRE (approximate values):

- I can take the necessary measures to ensure that activities continue effectively: 0.0%, 0.0%, 0.0%, 83.3%, 16.7%
- I can establish a good communication/relationship with the students: 0.0%, 0.0%, 0.0%, 77.8%, 22.2%
- I can motivate students when they are not focused on the class: 0.0%, 0.0%, 50.0%, 50.0%, 0.0%
- I can ensure the participation of students with learning difficulties in the lesson: 0.0%, 0.0%, 38.9%, 44.4%, 16.7%
- I can prevent troubled students from disturbing the entire class: 0.0%, 0.0%, 66.7%, 16.7%, 16.7%
- I am confident in the application of Inquiry Based Learning: 0.0%, 22.2%, 55.6%, 22.2%, 0.0%
- I ask my colleagues for help if I need to: 0.0%, 55.6%, 44.4%, 0.0%, 0.0%
- I am very good at achieving the key goals I have set: 0.0%, 22.2%, 72.2%, 5.6%, 0.0%
- I avoid trying to learn new things that seem difficult to me: 33.3%, 38.9%, 22.2%, 5.6%, 0.0%
- I avoid facing challenges: 33.3%, 38.9%, 22.2%, 5.6%, 0.0%

Legend: Totally disagree, Rather disagree, Nor agree or disagree, Rather agree, Totally agree, I don't know

Teachers' self-efficacy in front of new challenges - Teachers (SP)

Statements and data for POST (approximate values):

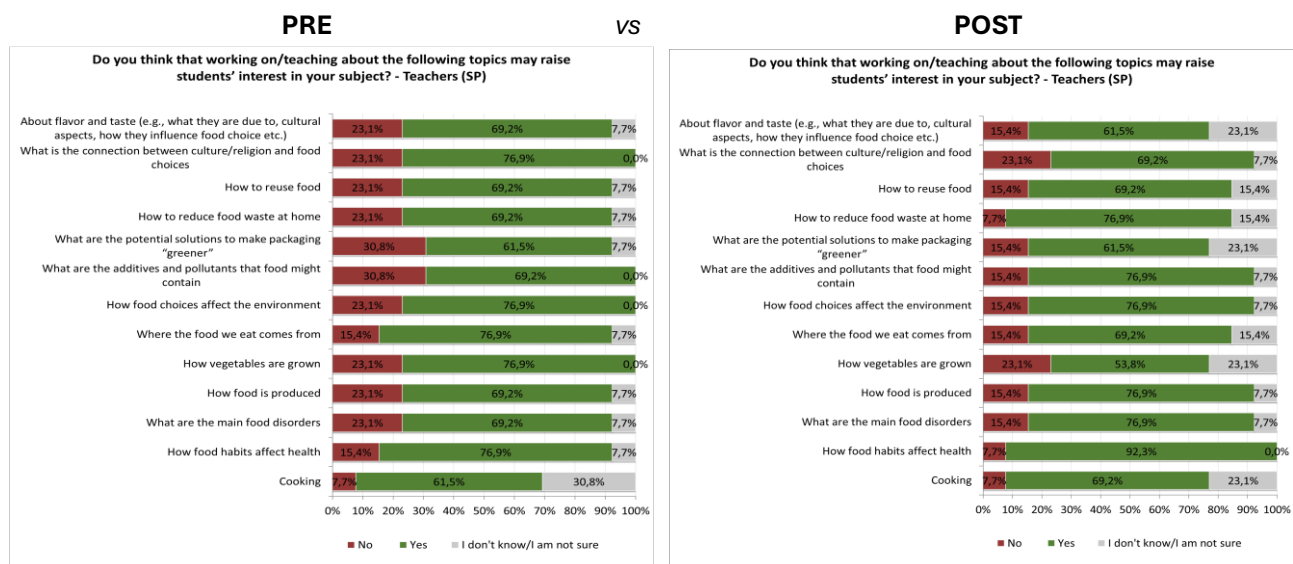
- I can take the necessary measures to ensure that activities continue effectively: 0.0%, 0.0%, 0.0%, 53.8%, 46.2%
- I can establish a good communication/relationship with the students: 0.0%, 0.0%, 0.0%, 38.5%, 61.5%
- I can motivate students when they are not focused on the class: 0.0%, 0.0%, 23.1%, 46.2%, 30.7%
- I can ensure the participation of students with learning difficulties in the lesson: 0.0%, 0.0%, 30.8%, 53.8%, 15.4%
- I can prevent troubled students from disturbing the entire class: 0.0%, 0.0%, 23.1%, 30.8%, 46.1%
- I am confident in the application of Inquiry Based Learning: 0.0%, 46.2%, 53.8%, 0.0%, 0.0%
- I ask my colleagues for help if I need to: 0.0%, 53.8%, 46.2%, 0.0%, 0.0%
- I am very good at achieving the key goals I have set: 0.0%, 30.8%, 53.0%, 15.4%, 0.8%
- I avoid trying to learn new things that seem difficult to me: 53.8%, 30.8%, 7.0%, 7.0%, 0.6%
- I avoid facing challenges: 53.8%, 38.5%, 7.0%, 0.6%, 0.0%

Legend: Totally disagree, Rather disagree, Nor agree or disagree, Rather agree, Totally agree, I don't know

- Overall the Spanish teachers also showed a high interest in new challenges and activities like those proposed within the GOODFOOD project and considered themselves perfectly fit for this kind of work with good capacities to apply the methods, communicate and motivate the students, and to prevent problems.
- The GOODFOOD experience has probably made them a little bit more aware of the difficulties of achieving some goals and also of asking for help to other teachers.

“What is your level of agreement regarding teaching about food-related topics as a means to raise the students’ interest in your subject?”

Most teachers, both pre- and post- participants, agreed on that all the topics considered in the GOODFOOD project can contribute greatly to raising the students’ interest in school subjects with only a slightly higher level of disagreement in the pre-teachers than those that experienced the project activities. It should be noted that we observed a slightly higher proportion of uncertainty responses (‘don’t know/not sure’) in those teachers that participated in the project. This might be a consequence of them experimenting the different types of activities and becoming more aware of the potential association or not with their own subjects. For example, the relationship between ‘food habits and health’ obtained the maximum agreement of the GOODFOOD participating teachers maybe because they could see clearly the relationship between this issue and learning subjects like biology. On the other hand, areas like ‘flavour and taste’, ‘greener packaging’, or ‘growing vegetable’ may have resulted more difficult to relate with specific subjects.



Bullet 6. Teaching about food-related topics as a means to raise the students’ interest in your subject.

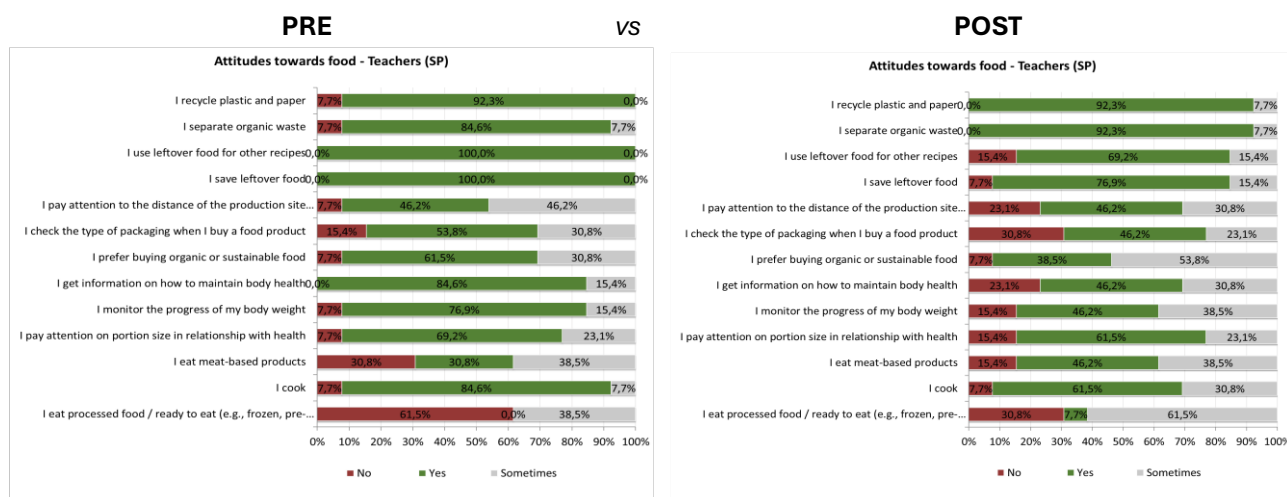
- There was a general agreement on that using the theme and activities of GOODFOOD about food, health and sustainability is a good means of increasing the interest of the students in the different subjects involved in the school projects.
- Some of the GOODFOOD activities may not be so easily related with some subjects and thus some doubts were raised about their potentiality to increase interest in those

“What are your habits and behaviours regarding food?”

In general, Spanish teachers from Monte Miravete displayed sustainable and healthy food related habits. ‘Recycling paper, plastic, organic’ and ‘saving/using leftover food’ were the most common habits followed by ‘cooking’ and ‘health related habits’. Some eating habits such as eating processed foods reflect healthy habits with most responses being negative or sometimes. On the other hand, meat eaters are still a good proportion in the participant population.

Other habits related with sustainability were carried out only sometimes like ‘attention to distance of production’, type of packaging’, or ‘buying organic food’.

Overall, the results of the group of teachers that participated in the GOODFOOD project were slightly worse than the pre-group with a general decrease of the percentage of positive ‘yes’ responses (I do this) against a higher proportion of the ‘sometimes’ responses (I sometimes do this). This may be a consequence of the different issues learned during the project such as the different Apps and Databases where they could find true information about the food we should eat and thus, becoming more aware of their potential application to our daily lives.



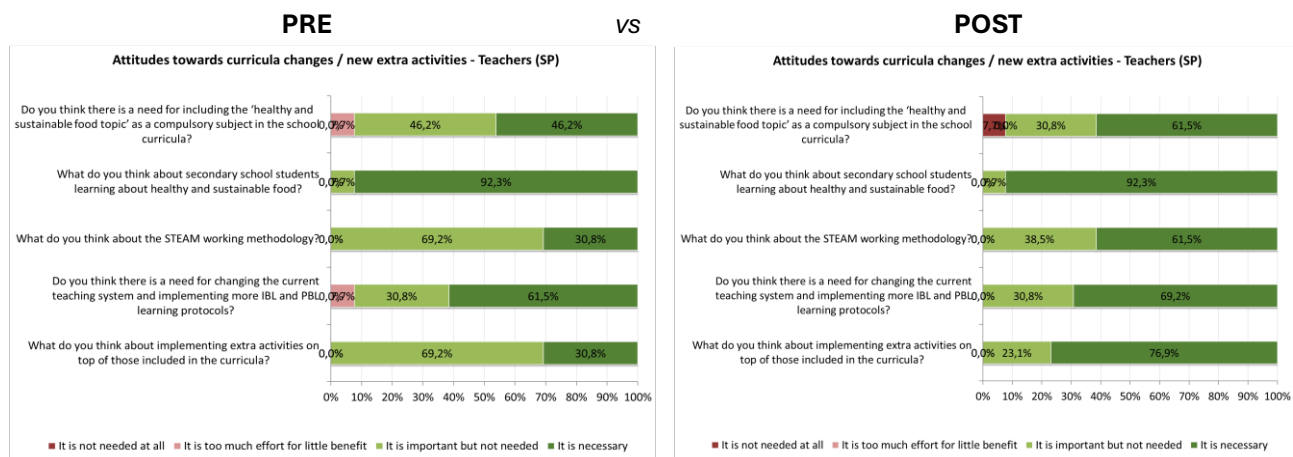
Bullet 7. Teachers habits and behaviours regarding food.

- Overall the participant Spanish teachers exhibit good food-related habits, especially those related with recycling, reusing, health-watching and cooking. Some of the sustainability habits such as paying attention to the production site distance, packaging or buying organic food are less extended.
- The participants of the GOODFOOD activities don't see to have improved much any of these habits. It is tempting to hypothesise that this might be due to the learning process and becoming more aware of issues that they did not considered before.

“What is your opinion regarding curricula changes or new extra activities?”

Overall, the Spanish teachers from Monte Miravete think that changes in the curricula and new learning protocols and activities such as STEAM, IBL and PBL are important and (or) needed. They also mostly agree on that the topics of the GOODFOOD project, i.e. food, nutrition, health and sustainability are necessary and should be included as compulsory subjects in the school curricula.

The participation in the GOODFOOD project has promoted even more the necessity of these methodologies and themes as part of the school curricula.

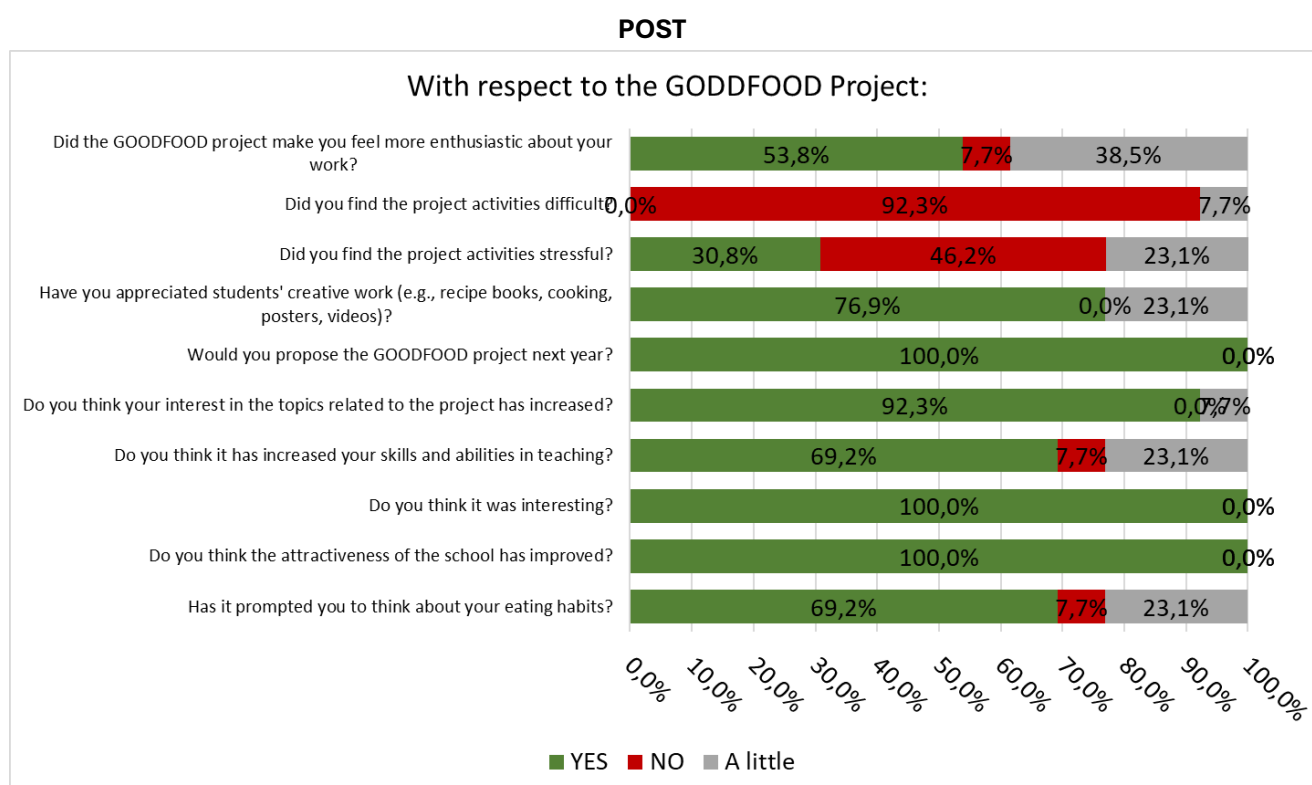


Bullet 8. Teachers opinion regarding curricula changes or new extra activities.

- The Spanish teachers from Monte Miravete generally agreed on that:
 - new learning protocols and activities such as STEAM, IBL and PBL
 - the topics of the GOODFOOD project, i.e. food, nutrition, health and sustainability

“What was the GOODFOOD impact on your teaching?”

These questions were included only in the POST-survey and therefore was only responded by those teachers who participated in the project and activities. Of those, most teachers considered the GOODFOOD project ‘interesting’, and that ‘improved the attractiveness of the school’. Further, most teachers ‘would propose it for the following year’, ‘increased their interest in the topics of the project’ and thought that the ‘activities were not difficult’. Also, a good proportion of the participant teachers ‘appreciated the student’s creative work’, and that the project had ‘increased their skills and abilities in teaching’ as well as ‘prompted them to think about their habits’. Also, more than 50% of the teachers felt ‘more enthusiastic about their work’. The only negative point is that quite a percentage of teachers found the project activities a bit stressful.



Bullet 9. General impact of the GOODFOOD project on the teachers.

- Most of the Spanish teachers from Monte Miravete that participated in the projects and activities of GOODFOOD expressed a general positive experience with the improvement of their teaching capacities as well as the knowledge about the relevance of our food habits.
- Even though there was some stress associated with the extra load of work, they were

Further Opinions

Additional comments, suggestions and/or ideas regarding the implementation of the GOODFOOD project and potential future development:

PRE-Survey

‘A commitment on the part of the administration is necessary to ensure more human and material resources’.

‘I think it would be interesting if all students of the same level could participate in the project and not just the bilingual groups’.

‘More support is needed from the administration and management teams so that there can be effective interdepartmental collaboration and activities can be carried out without obstacles and obstacles’.

POST-Survey

The following Table collects some other opinions from the teachers that participated in the GOODFOOD project.

What did you like most about the GOODFOOD project?	Do you think that the GOODFOOD project has not met your expectations in any way? Please explain to us why.	What ideas/activities would you like to suggest to help us improve the GOODFOOD project? What would you recommend to enhance GOODFOOD?
Everything, the teachers and how well we have worked in class.	Yes	Eat a healthy diet.
The laboratory practices and excursions that have been carried out	I don't know if the students have been motivated enough by the project.	Activities such as bringing food to class to study its origin, ingredients, nutritional value, type of packaging, etc, and search the market for better alternatives to those same products. Or visits to farms, agricultural operations, food packaging companies, etc.
What I liked most is that the students have learned basic skills to continue their training, such as the use of new technologies and apps for academic uses, implementing research techniques, teamwork, and they have improved their oral expression skills.	Sometimes the students, far from feeling enthusiastic, have seen the project as an extra workload.	We must emphasize more on the idea that the project and its results cannot remain in the classroom, but that the entire educational community must be involved and that the students' work is known by the rest of the teachers, students and families. The dissemination part should be encouraged.
All the practical part.	Yes, it has fulfilled.	Visit farms of primary production and transformation of these raw materials.
The topic it deals with, being able to learn and teach about it.	There are many activities and the research methodology is very difficult to apply to students as they are not used to it.	That the institute can modify the activities with total flexibility and can include new ones. Promote interdepartmental participation. A weekly meeting hour is necessary to be able to move the project forward.
Skills to apply in daily life	Yes, it has fulfilled.	Cooking in class
What I liked most about the GOODFOOD project is its innovative approach to promoting healthy eating habits among young people.	The GOODFOOD project has met my expectations by improving the understanding of eating habits.	Establish collaborations with nutrition experts and chefs to provide up-to-date, high-quality content and advice.
Student participation.	The project has been a bit closed and not very open to participate.	Try to improve the participation of teachers and students.
Interdisciplinary activities.	No	Collaboration with other schools.
The interdisciplinary model.	I think we should have taken more into account the experience of the previous course as a starting point to structure the activities to be carried out this course.	Have one day a week to be able to work on the project for 2 hours straight with a support teacher.

What students learned and their way of disseminating it	Yes, it has fulfilled.	More laboratory and field activities
It has allowed us from the Physics and Chemistry department to do more practices in the laboratory.	Yes, it has fulfilled.	Introduce new activities from the Physics and Chemistry department.
Work with my department colleagues.	Yes, because there are certain topics that have not been given to us until after the activity has taken place, such as the topic of travel. They have not given the importance that the topic of chemical analysis and the use of the laboratory really has.	I would recommend that in activities that take place outside, to publicize our project, the people really involved in the activity should go. That more points related to food will be discussed and more diverse activities will be developed. That the meetings were more participatory.

Bullet 10. Other opinions and ideas about the GOODFOOD project.

POSITIVE ISSUES

- The interdisciplinary work and the new learning about food, nutrition and sustainability.
- The practical work (activities, trips, visits, etc).
- The learning process of this topic and the different tools that can be applied, the team work, oral communication.

NEGATIVE ISSUES

- Extra work load for the students.
- Not so much motivation.
- Limited collaboration.

NEEDS

- More support and facilities from the authorities (Administration, school management). More time, more flexibility.
- More collaborative efforts with the students, between teachers, with relatives, with other schools, with experts in the different food related areas.
- Expand the participation to all the students and to other courses. More dissemination activities in general in the hands of the responsible actors.
- Continuous development and application of new hands-on and field activities (i.e. bringing and analysing foods at school, cooking at school, laboratory activities, chemistry and physical activities, visits to farms, food and agriculture industries, etc).