

# WIDE DATA ANALYSIS REPORT / PR 1





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## WIDE - Wellbeing In Digital Education

### Collaboration

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# INTRODUCTION

The COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries in all continents. Distance learning was the obvious solution to the lockdown and schools and companies everywhere did their best to come up with interactive solutions to social distancing while learning. In this regard, education systems are now asked to capitalize the lessons learned, embedding the innovation generated under emergency, and integrating novel approaches, methods and practices.

In many countries, education providers are struggling to integrate Digital Learning in their curricula, reorganizing their offer and delivery systems accordingly. Their prior concerns seem to be focused on technical requirements of digital learning systems and tools, on how to exploit the opportunities offered by these systems for effective delivery, how to integrate them in the curricular activity (blended learning) and on what kind of skills and competences teachers and learners should have, in order to use these new tools in the best possible way.

On the other hand, the lockdown has made evident that digital interaction is changing our approaches, ways of organizing ourselves, and expression. It is also true that the overload coming from long-time internet connections is extremely tiring, physically as well as psychologically. Digital learning implies not only the need of coping and adopting a so-called “digital mindset”, but also the wellness of each involved person (Trainer/teacher, learner).



The WIDE project aims to create a new methodology for online and distance learning. A methodology where the mental and physical wellbeing of the students and teachers are not sacrificed in the process of distance learning but instead integrated as a core value of the learning process. The partnership is conformed by:

- FO-Aarhus (Coordinator - Denmark)
- Consorzio degli Istituti Professionali (Italy)
- T-HAP LTD (Cyprus)
- Udruga Suradnici u učenju (Croatia)
- Academy of Entrepreneurship (Greece)
- Greta du velay - Lycée C. et A. Dupuy (France)
- Universidad de Salamanca (Spain)

In this sense, the partnership will develop a methodology based on the replies of a cross European survey as well as the experience of teachers and experts. Moreover, a set of guidelines will be produced and presented in a professional and publicly accessible online platform and will then be tested thoroughly in all the partner countries. Finally, based on the testing and evaluation, a set of policy recommendations will be presented to teachers and stakeholders in VET education institutions and policy makers across Europe.

As part of the project tasks, a survey was developed so that students, teachers and parents could tell us about their experience with online education. In this sense, this report presents and systematizes the findings obtained in this survey. We hope they will be useful for the whole educational and Erasmus+ community.



# SAMPLE



This analysis involved 459 respondents.

These participants were grouped according to their profile: students (130), teachers (185) or parents (144). The 10 numerical characteristics are the scores obtained by the respondents: comfort, tiredness, effectiveness, motivation, learning, focus, homework, adult help, classmates help and loneliness. These were chosen from the questions proposed in the survey for the seven available countries: Spain (25 respondents), Cyprus (52), Denmark (49), France (119), Croatia (83), Greece (59) and Italy (72).

Therefore, in this analysis, the data consists of the scores on each characteristic for each profile in each country, i.e. a 3x10x7 cube.

**The WIDE  
survey was  
answered by  
130 students,  
185 teachers  
and 144  
parents.**

# DATA COLLECTION

In preparation for the survey partner sent out the questionnaire to stakeholders with their network. The recruitment of respondents proved to be a difficult task, and the goal of getting 30 respondents in each category (students, teachers and parents) in each country was only successful in some of the partner countries. The methods of recruiting were through organisational contacts, private networks and online social networks. The survey was shared in relevant online forums on Social Media with 1000's of followers, but it is very difficult to get people to respond to surveys through Social Media, so reaching out to organisational and private networks had to be done.

In the end we succeeded in getting the following results in the partner countries. Spain (25 respondents), Cyprus (52), Denmark (49), France (119), Croatia (83), Greece (59) and Italy (72).

This will of course affect the statistical reliability of the country result. In the following we will outline the technique used for the Data Analysis.



# TECHNIQUE

The technique we have chosen for this research is Partial Triadic Analysis - PTA, to discover how the characteristics defined to assess the degree of satisfaction with online learning depend on the profile and the country.

This technique allows us to show complex relations of many data points by collecting them into vectors that illustrate different dimensions.

To explore the data and better understand its behaviour, it is important to identify these dimensions, which will allow us to reduce the information captured in the original data cube to a two dimensional representation. A series of graphs will show both profiles and features simultaneously.

This method will allow us to test what we want with this research: to differentiate between profiles, obtaining a more accurate assessment of satisfaction with online learning. We can then determine whether one profile differs from the others in terms of the different characteristics. The same method allows us to show different dimensions and different vectors in the same graph, so be aware of what precisely the graph is showing.

The aim of the PTA is to analyse the relationships between the country data tables and combine them into a matrix corresponding to the most optimal average, for which we will follow two steps: the interstructure and the compromise.





**Interstructure:**

Determine whether the data tables of each country have similar structures or not, by means of a graph, where each vector represents one data table i.e. one country.

**The compromise:**

The compromise is a summary that encompasses the different data tables, which expresses the common structure of the characteristics in these tables. With the analysis of the compromise we can represent the average student, average teacher and average parent, as well as each average characteristic. So the compromise step represents the stable structure and can be plotted to interpret that structure.

**The profile:**

In a third step, after the compromise analysis, we can represent the characteristics and profiles of each country. It is very important to consider this third step because its study provides information on cross-country differences in profiles and characteristics, and shows how each country differs from each other and from the collective dataset (all countries).

**The “math part”**

From a mathematical point of view, the interstructure step provides the coefficients for a weighted average of the different data tables, which results in an optimal average matrix, the compromise, which maximises the similarity with all tables, so that the weight of each table is proportional to its similarity, and therefore the tables that are different from the others will be weighted less.



# GENERAL RESULTS

## Interstructure:

Having explained the statistical methodology, we now present the results: the graph of the interstructure (Fig. 1), that of the compromise (Fig. 2), and those of each country (Fig. 3-9).

This graph can be read as how the countries are alike and also how much they differ from the average results from all countries.

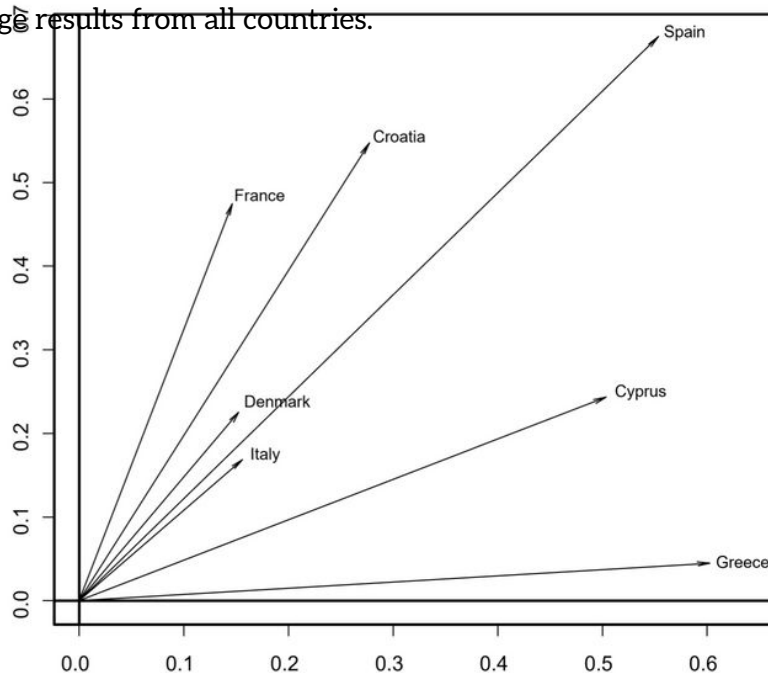


Figure 1. Interstructure from the Partial Triadic Analysis

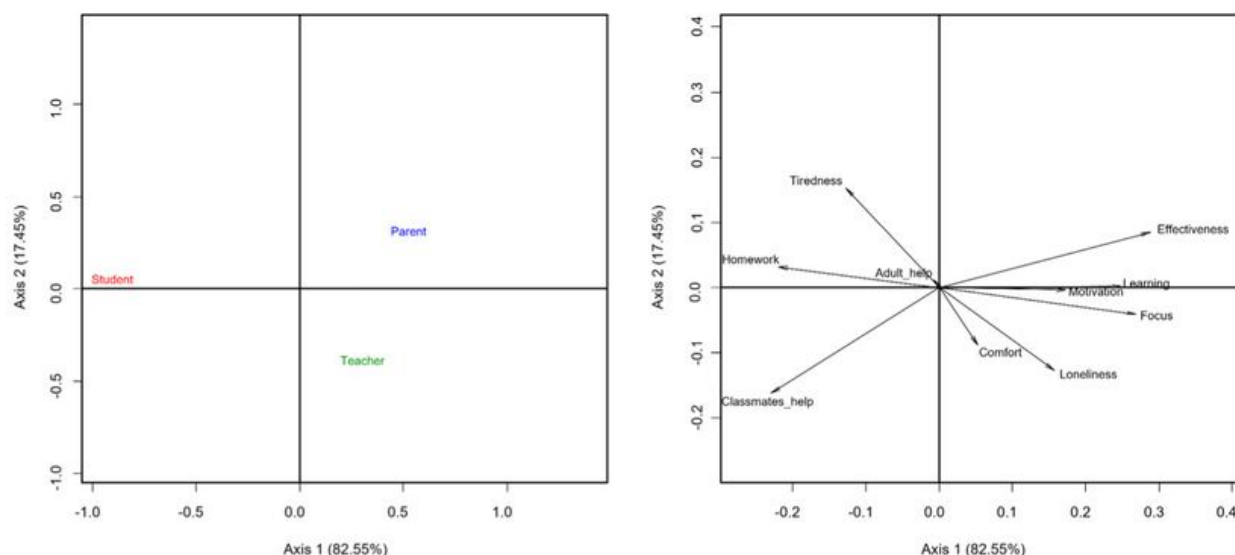
Figure 1, called the interstructure, is a graphical representation that serves to interpret the similarities and differences between the countries, as well as to highlight which of these countries are the most relevant when it comes to forming the compromise, i.e. those countries that most resemble an "average country" that will highlight the stable part of the data across the countries.

The countries closest to the horizontal axis, the abscissa, are Greece and Cyprus, which means that they are the ones that most resemble, on average, all the other countries. And the length of the vectors indicates how clear this trend is. Longer vectors mean that that country's data are pointing in the same direction, and shorter vectors indicate that that country's data might have internal differences i.e. if parents, teachers and students are not answering the same way.

We can see how the countries are grouped: the flatter the vector, the more aligned with the average score. Steeper vectors mean that the country's scores differ from the rest.

### Compromise:

In a second step, once the similarities and differences of the individual countries with the "average country" are known, the average country can be obtained explicitly as a weighted average of all countries, thus the compromise has been calculated, which includes the three profiles and the most stable values they take on the ten characteristics. The analysis of this compromise can be visualised in Figure 2.



**Figure 2.** Compromise from the Partial Triadic Analysis

On the left-hand side of the figure we show the three target groups Students, Teachers and Parents. The three profiles are far apart, showing that they answer differently when it comes to evaluating their satisfaction with online learning.

On the right-hand side of the same figure, we show the Question topics as different vectors. Each vector represents the questions that cover one topic, like effectiveness, learning, motivation and focus. The direction of the vectors points to indicate which one of the Target groups that have a higher score on this dimension relative to the other two target groups. The arrow will point in the direction of the highest scoring group.

We now have to look at the specific questions to find out whether or not the dimensions are indicators of a high level of satisfaction with online learning, or a low level of satisfaction.

This graph is based on the data from ALL the countries together. We will look at each country separately in the country reports.

*Note:*

In the left side graph the placement of the target groups (students, teachers and parents) denotes how the groups answer RELATIVELY to each other - based on ALL the dimensions. The vectors on the right side graph show each dimension on their own.

Here is a list of the Dimensions and the questions used to obtain the data.

**Comfort:** How comfortable are you with doing Schoolwork remotely? (online)

**Tiredness:** Do you feel less tired attending remote distance learning compared to physical classroom learning?

**Effectiveness:** Do you study more effectively during remote distance learning compared to physical classroom learning?

**Motivation:** Do you think that your motivation is higher during remote distance learning compared to physical classroom learning?

**Focus:** Do you feel more focused and less distracted during remote distance learning compared to physical classroom learning?

**Homework:** Do you feel that it is easier to complete your assignments each day during remote distance learning compared to physical classroom learning?

**Adult help:** Could you ask an adult at home during remote distance learning who could help you complete your assignments?

**Classmates help:** Could you get more help from your classmates during remote distance learning compared to physical classroom learning?

**Learning:** Do you feel you learn more during remote distance learning compared to physical classroom learning?

**Loneliness:** Did you feel more lonely during remote distance learning compared to physical classroom learning?

*Caveat - Loneliness.*

A small note here is that the “Loneliness” dimension seems to measure a negative response to distance learning, while all the other dimensions seem to measure positive responses. This means that a high score on loneliness will all things being equal measure a lower satisfaction, while a high score on the other dimensions will measure a higher satisfaction with distance learning.

### **How to read the vectors**

In the right side graph on Figure 2 each vector will point in different directions. Look to the left side of the graph to see what target group (student, teacher or parent) the vector is pointing at. If the arrow is pointing straight at one of the groups, that means that this group has scored higher (more positive) on the question matching the vector ( see list above).

The longer the vector, the more pronounced this trend is. A short vector means that there is not one group that is significantly more positive than the others. A vector can also be pushed away from a target group that scores low on the corresponding question.

Be aware of the Loneliness vector that needs to be inverted, so a loneliness arrow pointing at teachers really means that teachers think that students are more lonely in online learning.

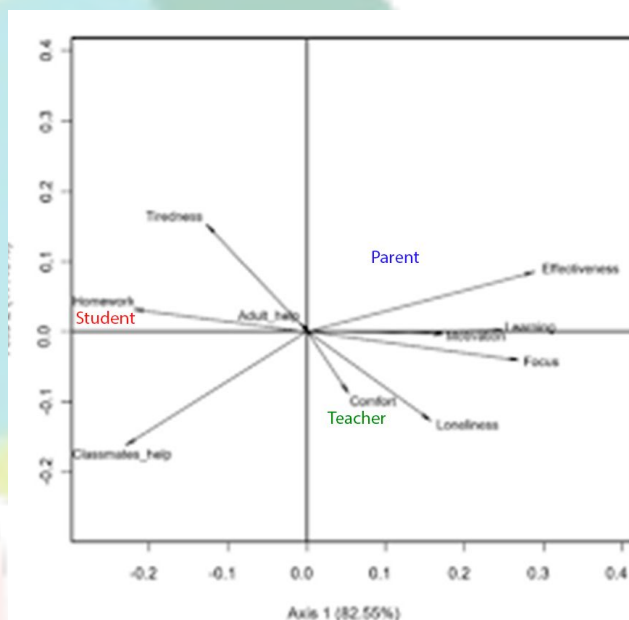
# COUNTRY RESULTS

We now present the results for individual countries, which could be used to interpret in more detail the relationships between profiles and characteristics for each country, as opposed to the compromise analysis, which serves to interpret how profiles and characteristics are related ON AVERAGE across countries. This means that the intersection of the axis denote the Mean for ALL countries, and each country will have different scores, so they might be moved away from the average scores indicated by the target group placement will differ, and the vectors also.

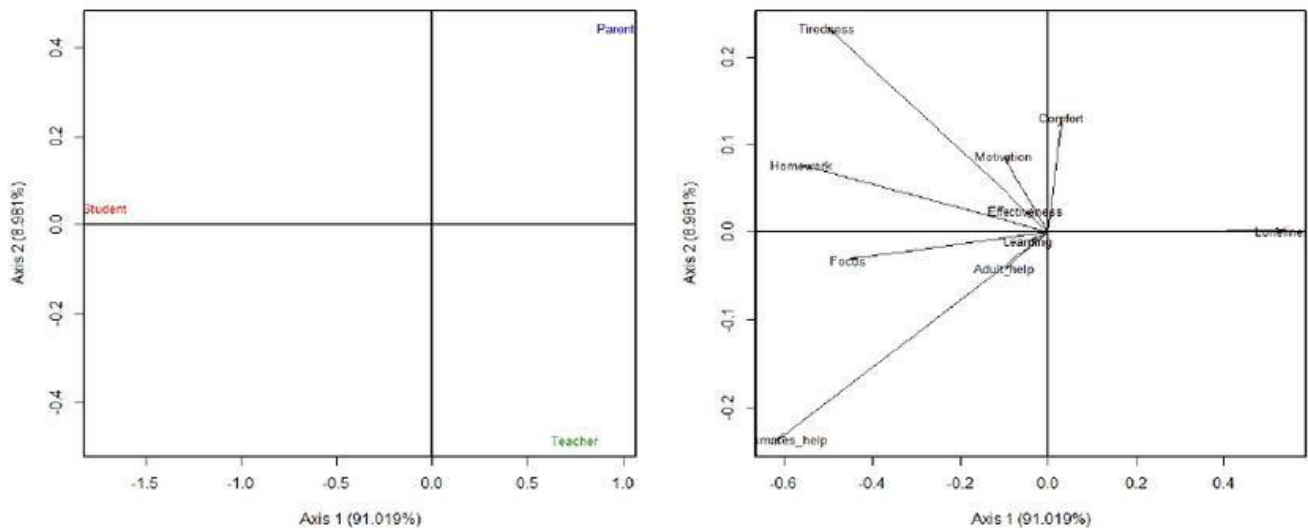
These graphs (Fig. 3-9) are interpreted in the same way as seen in the PTA compromise analysis: how far apart the profiles are from each other, how similar the characteristics are and what the variability is for each, and how profiles are related to characteristics.

Now we are ready to look at the country results. But keep in mind how you read the vectors. A long arrow pointing towards a specific group means that this group has scored higher on the question matching the vector. This might indicate a positive attitude from this group on this particular vector, but it is only in RELATION to the other groups. So if students are positive towards classmates help during online learning, that might be because they experienced it first hand, while the teachers and parents might not have focus on this aspect but more on adult help.

A short vector is not very indicative of any clear relative preference, so even if the vector points toward a specific group the relative difference between groups is low and therefore not that significant.



# Croatia



In Croatia, it can be observed that students, teachers and parents are placed far apart indicating that their answers differed from each other:



## STUDENTS

Students are positive toward online learning compared to teachers and parents on the dimensions of: **classmates\_help**, **focus**, **homework** and **tiredness**, but because **loneliness** is reversed they *also* seem to be more positive in this dimension than the teachers and the parents.



## TEACHERS

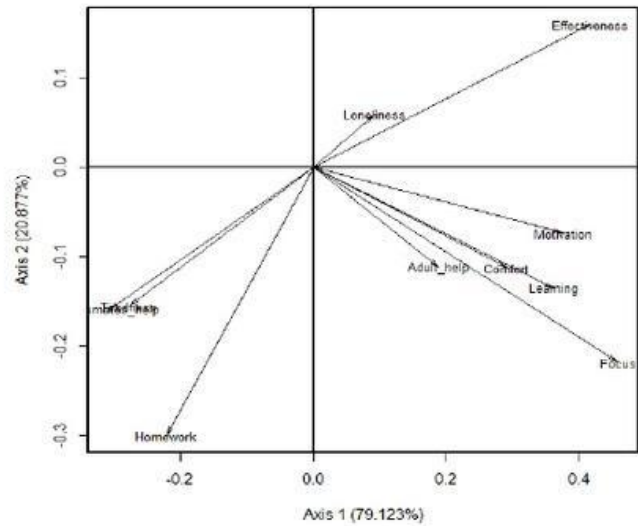
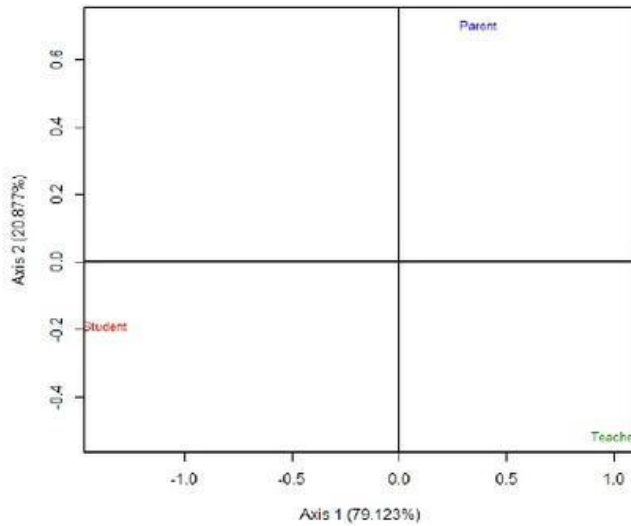
Teachers seem to think that students are more **tired** and do less **homework** online. They also don't recognise **Classmates help** as much as the students do.



## PARENTS

Parents also have a low score on **Classmates help**. So maybe this is an effect that they don't notice while the students are working online.

# Cyprus



In Cyprus, it can be observed that the three groups have scored high on different vectors indicating a clear trend:



## STUDENTS

Students seem to have a positive attitude towards **tiredness**, **classmates\_help** and **homework** in online learning compared to Classroom learning. While **effectiveness** seems to be scored much lower compared to what the parents think.



## TEACHERS

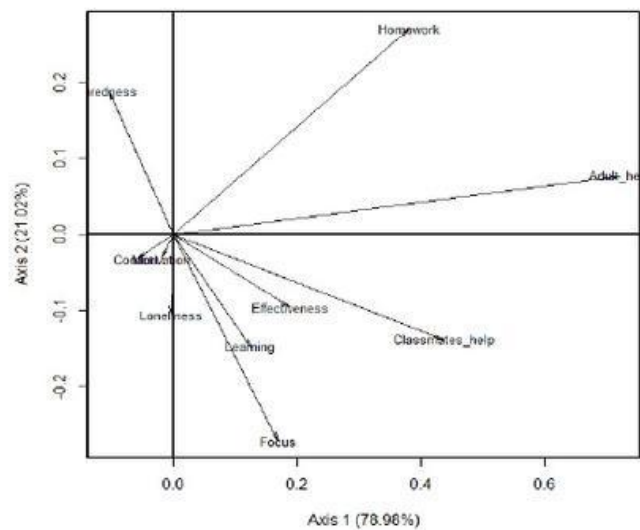
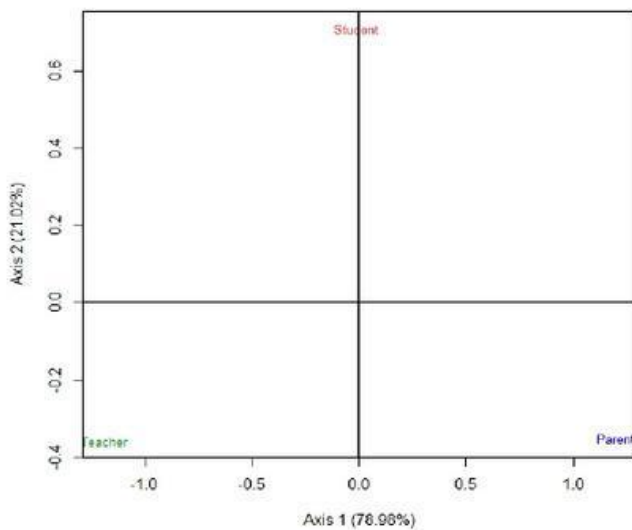
Teachers seem to think that **focus**, **learning**, **motivation**, **comfot** and **adult\_help** works better in the online classroom than the parents and students believe.



## PARENTS

Parents seems to have faith in the **effectiveness** in online learning but they do seem to think that the students do less **homework** and are more **tired**.

# Denmark



In Denmark, it can be observed that all the vectors in general have a higher score among the parents and the students than among teachers, this indicates that the teachers are not very positive towards online learning compared to classroom learning on any of the vectors.:



## STUDENTS

Students seem like the amount of **homework**, but **focus** is not scored as high as with teachers and parents. The students in Denmark do not value **Classmates help** as high as the other countries, but instead seem to rely more on **Adult help**.



## TEACHERS

Teachers seem very sceptical on all dimensions of online learning. They seem to prefer classroom teaching compared to how the students and parents feel.

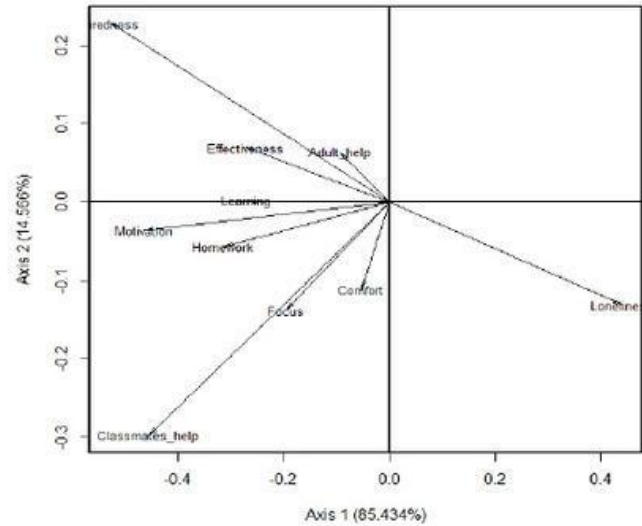
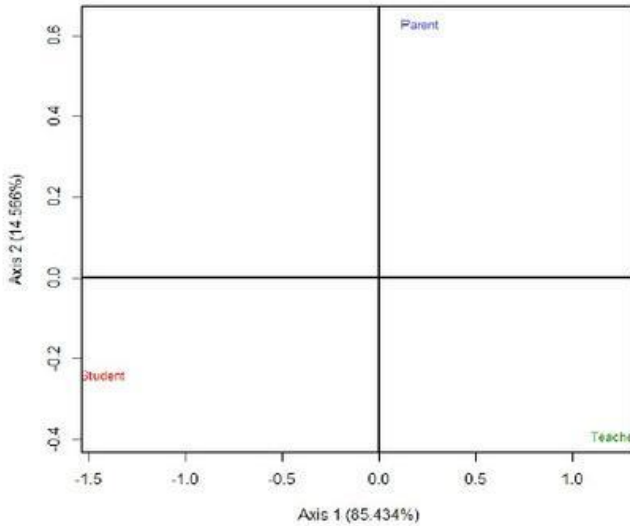


## PARENTS

Parents have a higher faith in the **Effectiveness**, **learning** and **focus** and **Classmates help** in online learning compared to students. This may be because they are witnessing the learning process at home, and feel that they know more about it than in the classroom



# France



In France, it can be observed that neither teachers nor parents in general have much faith in the concept of online learning - note that the only vector pointing to teachers is **Loneliness**, and this vector should be inverted:



## STUDENTS

Students especially value **classmates\_help**. **Motivation**, **homework**, **learning**, **effectiveness** and **tiredness** are also valued higher by students than either parents and teachers will. But that might also speak to the lack of enthusiasm by both parents and teachers.



## TEACHERS

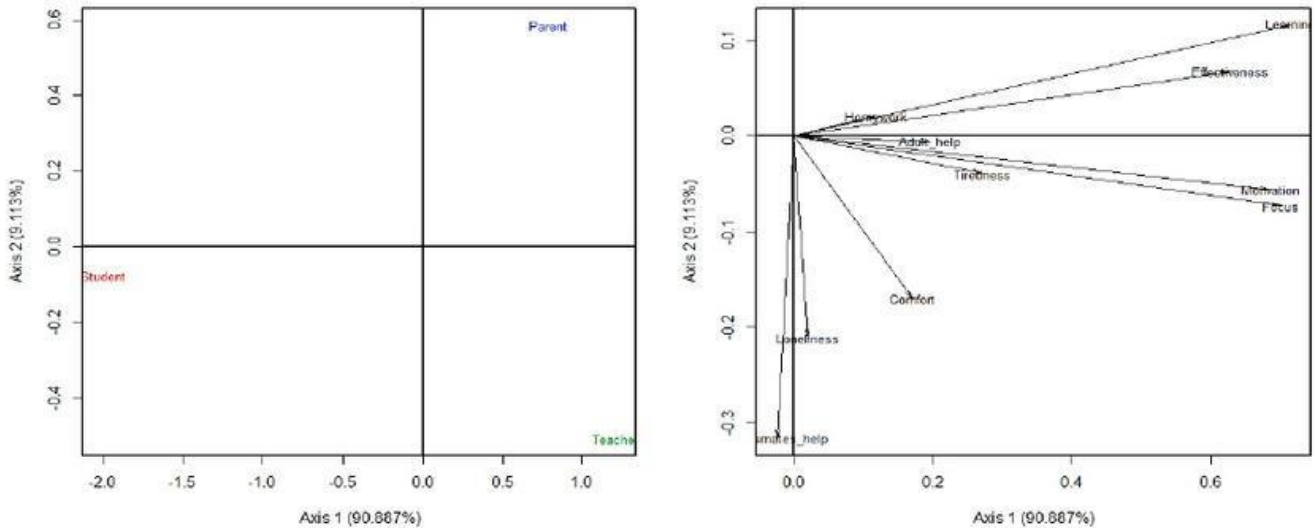
Teachers in France are NOT fans of the online learning concept. None of the vectors points in the direction of parents.



## PARENTS

Parents doesn't seem to be fans of online learning either - Parents score much lower on **Classmates help** than the students

# Greece

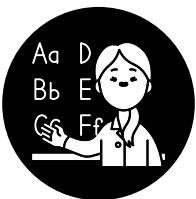


In Greece, it can be observed that students seem to absolutely hate online learning. This might reflect either the format of the distance learning or tech problems. Parents and teachers on the other hand seems to be less skeptical :



## STUDENTS

Students in Greece hate everything about online learning. At least none of the vectors points towards them. **Classmates help** and **loneliness** (even read inverted) seems to be the least unpopular vectors among the students.



## TEACHERS

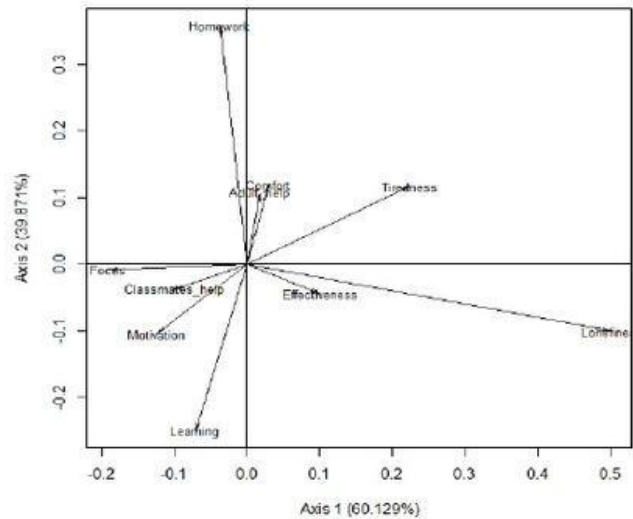
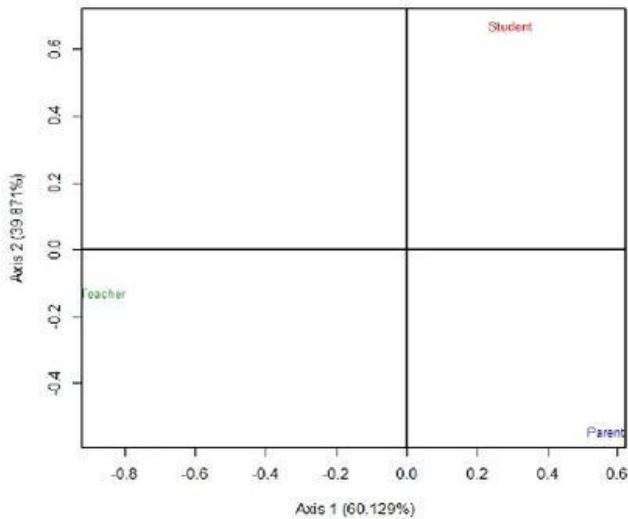
If teachers like online learning in general or they just score high compared to the students is hard to tell. The vectors all indicate a relative positive score from parents - but that might also reflect the very low score of students.



## PARENTS

Parents, like teachers, score higher than Greek students in most dimensions, but if that indicates a positive attitude, or just more positive than students is hard to tell.

# Italy



Italy, as could be seen in the interstructure graph, behaves differently from the average of all countries. As is shown the relative placement of the three groups also seems to be different than in other countries:



## STUDENTS

Students seem to be most satisfied with the **Homework** dimension. Maybe the workload was lower during online learning?



## TEACHERS

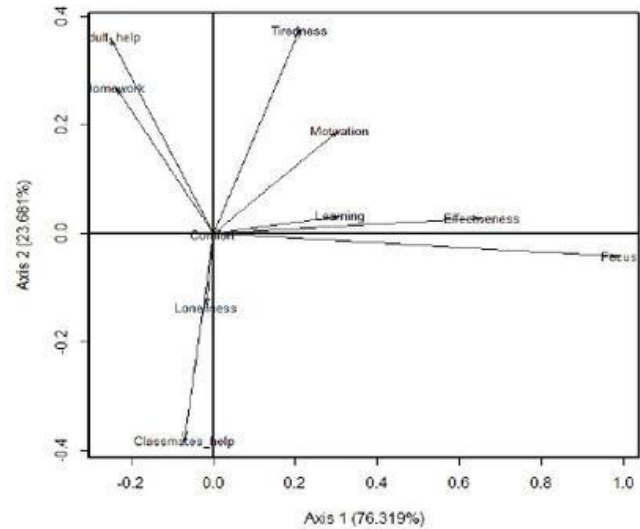
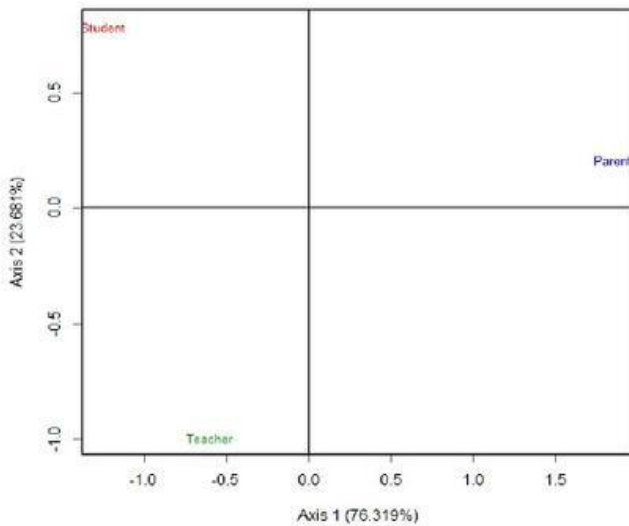
Teachers seem slightly more positive on the **motivation** and **focus** dimensions - but a lot more positive on the **loneliness** (reversed) dimension.



## PARENTS

Parents are not very positive on any of the vectors - taking into account that **loneliness** is reversed. Most vectors point away from parents.

# Spain



In Spain, it can be observed that each group seems to have their own favourite dimensions:



## STUDENTS

Students seem to value the **homework** vector and the **adult help** vector in online teaching. They also seem to be less **tired**. On the other hand they don't seem to appreciate their **classmates help** very much.



## TEACHERS

Teachers indicate a high value on **classmates\_help**, but low on **Adult help** and **homework**.



## PARENTS

Parents believe strongly in **focus**, **effectiveness**, learning in online learning, at least compared to students and teachers.

# SUMMARY

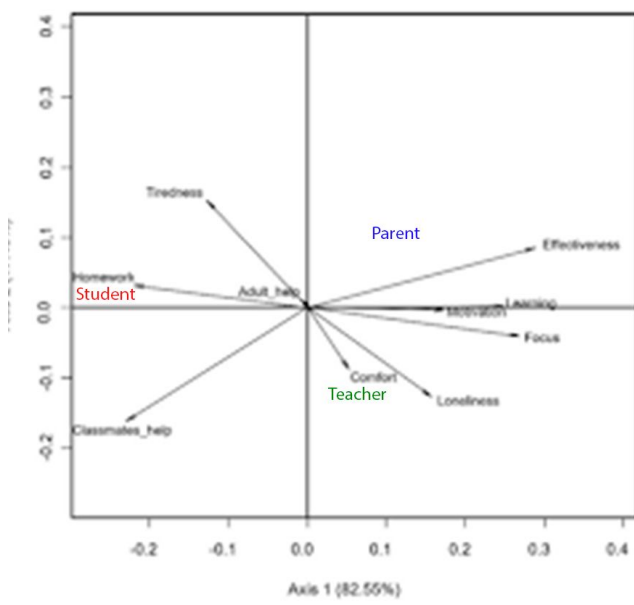
# CONCLUSION

So what have we learned in this survey?

We have learned that the countries are quite different from each other. Greece and Cyprus are the two countries that are closest to the average scores reported from all countries.

We collected data from all partner countries, asking students, teachers and parents about their overall attitude towards online learning across 10 different dimensions: **Comfort**, **Tiredness**, **Effectiveness**, **Motivation**, **Focus**, **Homework**, **Adult help**, **Classmates help**, **Learning and Loneliness**

When we look at the collected dataset from all countries we can see the following trends, although these have varied much between the countries. Please consult the country reports for details about each country.



*Collected vectors from all countries*

## Students

When we look at the collected data from all countries the students seem to be most positive on the dimensions of **tiredness**, **classmates help** and **homework**, at least when we compare the answers to those of teachers and parents. This can be interpreted in many ways. Maybe **homework** was less difficult during the forced online learning period, and maybe the students could stay in bed for longer and didn't have to use the time for commuting to school and so would feel less **tired**. The classmates help seems to have

## Parents

Parents seem to have a stronger belief in the **effectiveness, motivation and focus** than both teachers and students. Parents might not be used to being so involved in the schoolwork of their children. But during lockdown they had front row seats to the process of school education. But they were still removed from the actual lessons, and were only involved in the homework and stories told to them by their children.

They might have been impressed by the relative **effectiveness, motivation and focus** of students and teachers in this new and difficult learning environment, but the trend may also be a result of the lower score on these vectors by both teachers and students who were actually present during the online lessons.

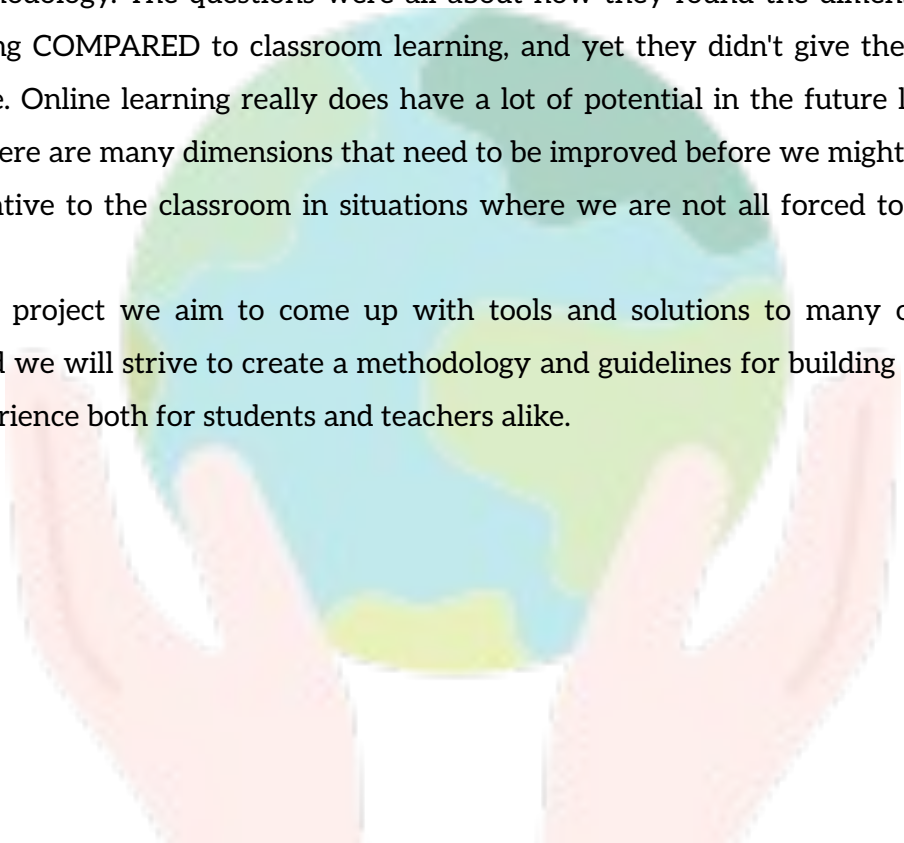
## Teachers

Teachers only have a relatively high score on **Comfort**. The question behind this vector: How comfortable are you with doing school work remotely? The teacher could think of this to mean that the students were probably **comfortable** studying from their own home, or they might interpret it to mean that they and the students were **comfortable** with the way the new style of learning was done. Since the **loneliness** dimension is reversed the teachers may also have been worried about this aspect of online learning, fearing that the students might feel more **lonely** at home away from their classmates.

## Conclusion

Even though all three groups had very different views on the dimensions, and especially from country to country, all respondents had some degree of support for the distance learning methodology. The questions were all about how they found the dimensions in online learning COMPARED to classroom learning, and yet they didn't give the lowest score possible. Online learning really does have a lot of potential in the future learning spaces, but there are many dimensions that need to be improved before we might call it a viable alternative to the classroom in situations where we are not all forced to stay at home.

In the WIDE project we aim to come up with tools and solutions to many of these problems, and we will strive to create a methodology and guidelines for building a better learning experience both for students and teachers alike.





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