



Class Report

Dili, 2020/2021

East Timor



Cartas com Ciência

At a glance

28 pairs

student-scientist



155 letters exchanged

16217 km distance flown by letters that travelled the furthest (between Curitiba, Brazil, and Dili)

Students: evaluating perceptions

52% showed more interest in becoming a scientist

33% feel “more capable” of learning about science

Students: what they say

94% “loved” the experience

100% say it was “fun”

95% say it was “important”

First time that...

89% students met a scientist

44% students wrote or received a letter

“This was by far the most gratifying project in which I have participated”

Scientists classified letter exchanges as:

59% fun | 58% gratifying

48% challenging | 39% inspiring

Cientistas

Coming from Brazil, Cabo Verde, Mozambique and Portugal

Living in 9 different countries in 4 continents

Students: favourite topics



Planets (50%)

Music/Sound (39%)



Animals (25%)



1. The first class in East Timor

When Professor Teresa's application came in, we immediately jumped at the opportunity since it was our first contact in East Timor. The implementation of the letter exchanges in the Dili class was an example of resilience and flexibility in the face of the flood situation in the country, which left thousands of people homeless, including students from the Portuguese School in Dili, and the COVID-19 pandemic, which affected

the mail service from its beginning and made it so that in the second half of the school year, the students were confined in their homes. The flexibility of teacher Teresa and the generosity of people who agreed to carry letters with them on their trips to and from Dili really paid off. The letter exchange program was also joined by teachers of Portuguese, Mathematics and Arts, a great example of collaborative work among teachers.



Teacher

Teresa Cunha

Courses: Natural Sciences and Biology-Geology



Coordination

Mariana Alves

Portuguese researcher in Germany

Students learn about the discoveries of science and the lives of scientists, but they often seem like far-off stories because they are not part of everyday life. The opportunity to 'exchange conversations' with scientists is very interesting for these students, and it is also a unique way to value the Portuguese language in the building and dissemination of science around the world.

Teacher Teresa Cunha

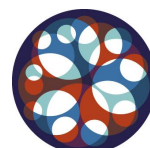
School

Dili Portuguese School - Teaching and Portuguese Language Center Ruy Cinatti

School Website: <http://www.epd-celp.org>

School Facebook Page: www.facebook.com/escolaportuguesaruycinatti

The letter exchange program with the Dili class of 2020/2021 was specifically supported by the Biochemical Society through a Scientific Outreach Grant.



**BIOCHEMICAL
SOCIETY**

28 Students

They are 12 to 15 years old, and attending 8th grade in the East Timorese school system. According to the teacher's record, 68% are female and 32% are male.

Scientific Capital

89% of the students have people in their family who have attended higher education, however, 89% met a scientist for the first time through the letter exchanges. 11% reported having scientists in the family.

Linguistic Capital

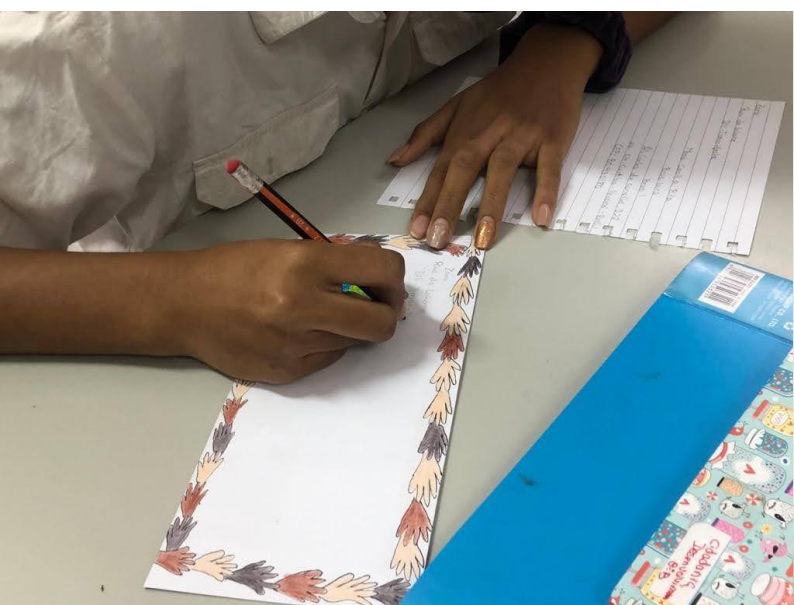
More than half of the students speak more than one language at home (22 out of 28, 79%); the languages spoken at home are Portuguese (23, 82%), Tetum (22, 79%), English (10, 36%) and Indonesian (1). For 44% it was the first time they wrote or received a letter.

28 Scientists

They are at different stages of their careers: 46% are students (Ph.D., M.Sc. or in internship) and 54% have a Ph.D. (25% teach in higher education); 89% of these scientists work in academia. 61% identify as female, and 39% as male. 43% of the total identify as being or having been a first-generation higher education student (whose family has no academic history in higher education).

Cultural Capital

With nationalities from four of the nine Portuguese-speaking countries: Brazil (5), Cape Verde (2), Mozambique (2), and Portugal (21); two scientists have dual nationality. They live all over the world: Brazil, Macau, Mozambique, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.



On the left, a student prepares the envelope they illustrated to send their letter. On the right, a polaroid photo shared by a scientist on social media, saying "I am with my drawing notebook, hobby I share with my #penpal"

2. Student-Scientist Pairing

To form each student-scientist pair, the "scientific" interests of each student are taken into account, ascertained through a questionnaire with a list of science-related topics (each student chooses up to three). In cases of a tie, the selection of scientists is made based on the students' and scientists' hobbies.

Scientific Interests

The most popular topics chosen by students as their first choice were Planets (21%), Animals (18%) and Health (14%).

Considering all three options, the most popular topics chosen were Planets (50%), Music/Sound (39%) and Animals (25%).

Aspirations

The most popular professional areas among these students are Law (39%), Engineering (32%), Astronautics (21%), Medicine (21%), and Acting (21%). Three students (11%) selected "scientist" and two out of those specified "astronomy".

Hobbies

The most popular hobbies amongst the students were listening to music (43%), video games (39%) and watching TV, series or movies (36%).

Research Areas

The most represented areas of knowledge among the scientists paired with this class mostly reflect the students' preferred interests: Biology/Biochemistry (46%; including two scientists from Astrobiology), Social Sciences (18%), and Physics (18%). Other areas include: Computer Science, Marine Science, Law, Engineering, Statistics, History, Neuroscience, and Psychology.

Hobbies

The hobbies most chosen by these scientists were reading (82%), listening to music (75%), and watching TV, series or movies (64%).



Screenshot of one of the three video calls that took place at the end of the program between scientists and students from the East Timor class. During the video calls, each scientist-student pair had the opportunity to meet face to face and exchange some questions and impressions about their letters.

3. Students: what do they say?

In the questionnaires that each student filled in, the responses generally reveal great enthusiasm for the sharing that happened in the letter exchanges and for the person with whom they corresponded: 100% considered it "fun" to read and write the letters, and 95% considered it "important." 94% said they "loved" the experience (the remaining 6% said they "liked" it). Whether it was "easy" or "difficult" to read and write the letters, the opinions were divided 50:50.

What they liked the most

It's fun, we share many things and learn many things, by all means I LOVED IT...
Student

When the scientist shared some of his experiences, motivations and advices to me.
Student

When we share customs and the culture of the land where the scientist and I are.
Student

When my scientist talked about the typical foods in Portugal.
Student

What they liked the least

It was a very short time period
Student

I didn't like having to think for so long on how to write to my scientist. I wanted to write in correct sentences.
Student

I don't like that I can't talk to my scientist anymore.
Student

The letters take too long to arrive.
Student

3. Students: what do they say?

About the scientist they were paired with

It was a great pleasure to be able to exchange letters with Mrs. Scientist. I learned a lot, she explained to me, showed me species that I didn't know.

Student

He always gives good advice, understands us quickly, and is also playful.

Student

He is kind, likes to tell stories, is nice and likes to share knowledge with me.

Student

What they learned by exchanging letters with a scientist

I never thought learning about plants would be so interesting.

Student

I learned that it is very fun to talk to someone far away.

Student

There are many kinds of people around the world doing different things.

Student

Students in the classroom show pictures they received with their letters and admire the envelopes prepared by the class.



4. Students: attitudes and perceptions

28 students answered a questionnaire in the beginning of the programme; 21 (75%) answered a similar one at the end of the programme as well, allowing us to assess whether their perceptions regarding science, higher education, and the Portuguese language changed during the time period in which the programme happened.

Science is...

At the beginning of the program, 93% considered science to be "fun" (as opposed to "boring") and 96% considered science to be "important" (as opposed to "insignificant"). These opinions did not change significantly at the end of the program. As for whether science is "easy" or "hard," opinions at the beginning of the year were more divided: 44% and 56%, respectively. At the end of the program, 33% changed their opinion from "easy" to "difficult" and 5% from "difficult" to "easy".

Learning about science

At the beginning of the program, on a scale about whether they like learning about science, 89% said "yes" or "I think so." As for whether they liked to learn more about science, all said "yes" (71%) or "I think so" (29%). There were no significant differences at the end of the program in liking to learn about science or to learn more about science.

At the beginning of the program, 50% said "yes" or "I think so" on a scale about their perception of being "good" at learning about science. At the end of the program, 33% gave more positive answers on that scale (52% gave the same answer and 14% gave more negative answers). Three students (14%) now consider themselves "good" at learning about science, and one no longer considers him/herself good.

Being a scientist one day: wanting vs being able

On a scale about whether they would like to be a scientist one day, at the beginning of the program 11% said "yes" or "I think so." At the end of the program, 52% showed more desire to be a scientist than at the start (33% expressed the same and 14% expressed less). In total, 7 students (33%) became willing to be a scientist (vs. 1 student stopped wanting to be one).

We also asked them if they could be a scientist one day if they wanted to. At the beginning of the program, 14% said yes, 43% said they did not know, 25% said they would not be able, 4% said it would not be possible, and 14% said they would not be able and it would not be possible. At the end of the program, 8 students (38%) changed their answers: 6 (29%) from "yes" to "don't know" and 2 (10%) from "yes" to "wouldn't be possible".

Further investigating these students regarding how they rated science and whether they would like to be a scientist, 4 changed their opinions to science being "difficult" and 2 to "easy" (remaining 2 did not change opinion); 4 showed more desire to become a scientist (2 less and 2 no change).

Conclusions

Overall, the class sees science as fun and important, enjoys learning about science, and wants to learn more about science. At the end of the program, some students found science "difficult" and doubted whether they could be a scientist if they wanted to. However, these perceptions do not seem to be associated with less willingness to become a scientist. In general, more students feel "better" at learning about science and express more willingness to be a scientist than the other way around.

4. Students: attitudes and perceptions

Studying in “university”

At the beginning of the program, most felt that studying at "university" (as an approximation to higher education, as a more familiar word) could be "difficult" (93%), "fun" (74%), and "important" (100%) - as opposed to "easy," "boring," and "meaningless," respectively. At the end of the program, these opinions did not change significantly.

As for whether they would like to go into higher education, 96% said "yes" and 4% "I think so." We also asked them if they could go to university if they wanted to: 75% said yes, 21% said they didn't know, and 4% said it wouldn't be possible. There were also no significant differences at the end of the program for any of the answers about liking or being able to go into higher education.

Knowing more about university and knowing more about scientists, (...) this makes you more aware for the future.

Student

Literacy and Portuguese language

Almost the entire class expressed enjoying learning Portuguese (language spoken at home for 82% of the students): 93% said "yes" or "I think so", and these figures did not change significantly at the end of the program. 100% considered it "important" to speak Portuguese (as opposed to "insignificant") and 89% considered it "fun" to speak Portuguese (as opposed to

"boring"). As to whether speaking Portuguese is "easy" or "difficult", the opinions were 65% and 35%, respectively.

As for writing as an activity in classroom or during leisure time, 92% considered it an "important" activity, 85% an "easy" activity, and 67% a "fun" activity.

At the end of the program, there were no significant changes in one direction or the other in students' perceptions of learning, speaking, or writing the language.

29% reported having learned new words with the letter exchanges, such as "doctorate", "masters", "higher education" and "sea lamprey".

Contents of a scientist's letter.



5. Perceptions about being a scientist

For 89% of the students, this was the first time they met a scientist.

I used to think that a scientist...

... is so busy that they can't write a letter.

Student #1



Now I think that a scientist...

... it's fun to talk to, we can ask questions and learn from them.

Student #1

... must be smart.

Student #2



... must be curious.

Student #2

... always worked in chemical labs.

Student #3



... they can work anywhere. There are scientists that don't even work in a lab.

Student #3

... it was a very serious and very busy profession with no room for playing or having vacation time.

Student #4



... is a very fun profession.

Student #4

Students in the classroom read their letters and share with classmates the contents of the letters they received from their correspondents.



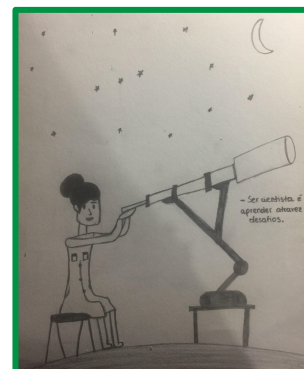
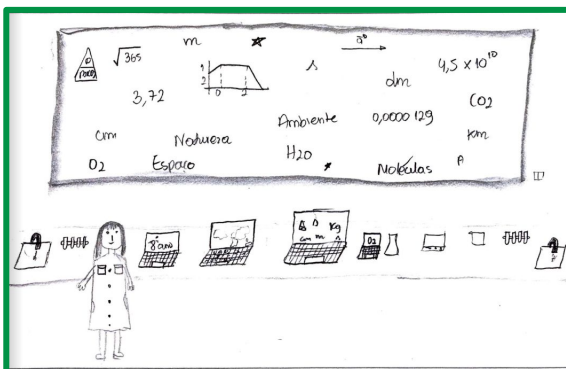
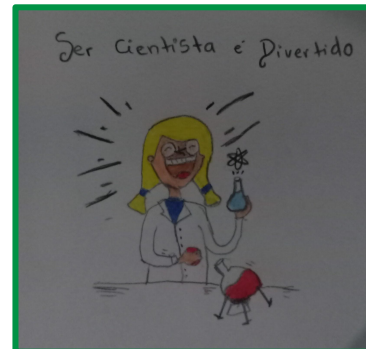
5. Perceptions about being a scientist

Each student, at the beginning and end of the program, accepts the challenge to close their eyes, imagine a scientist at work, and then draw what they imagined (writing a sentence about what they drew). The most glaring changes at the end of the school year were new workplaces other than the lab and more descriptions of scientists as female.

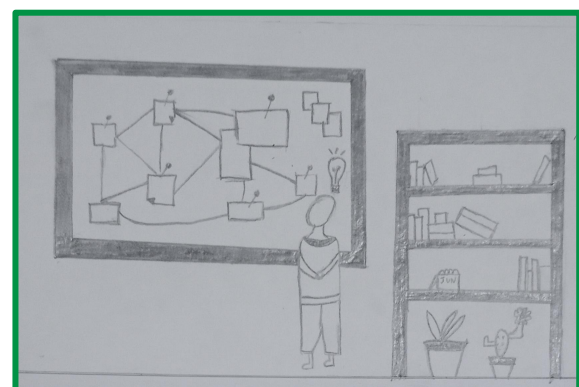
At the beginning of the programme



At the end of the programme

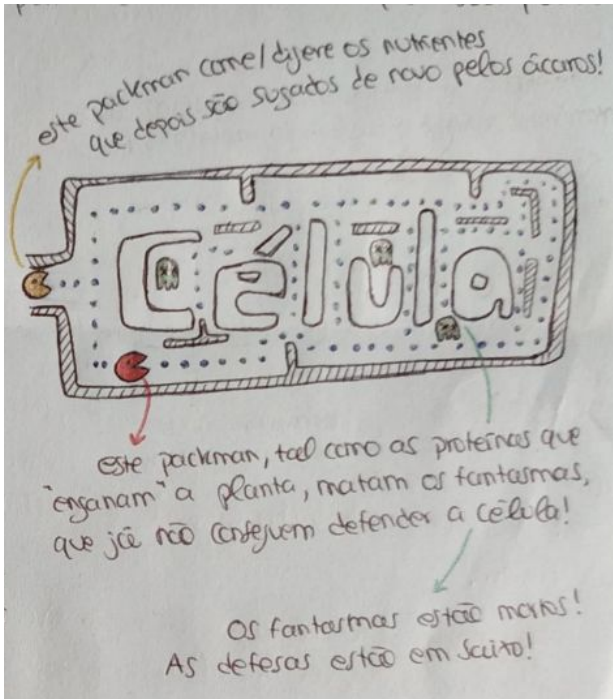


"I don't have the ability to draw what I imagined, but I can tell it. I imagined a scientist making an observation of an experiment in a laboratory (...)"



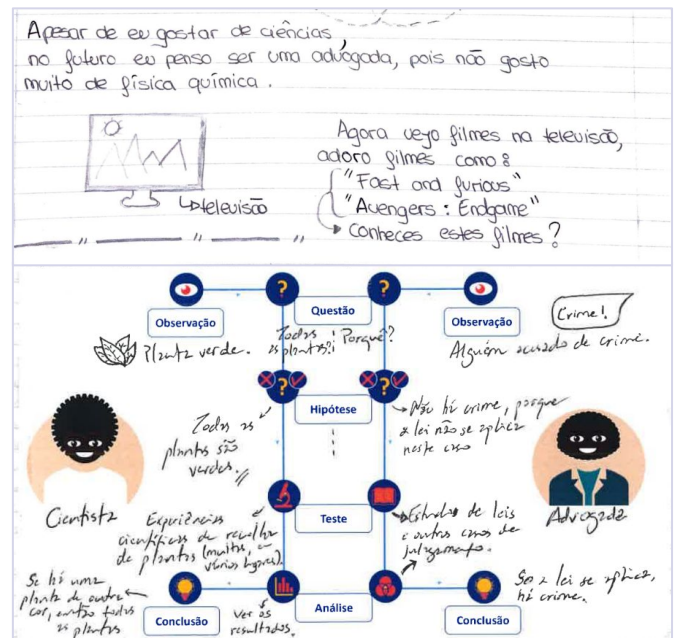
6. Scientists: letters

We collected here some examples of science-related content found in scientists' letters.



Célula = Cell

(up) "This packman [yellow] eats/digests nutrients that are later on sucked by aphids"
 (middle) "This packman [red], like the proteins that "fool" the plant, kills the ghosts, which can no longer defend the cell!"
 (down) "The ghosts are dead! Defenses are low!"



Upper: extract from student letter, where she says "Although I like sciences, in the future I think of being a lawyer, because I don't like physics and chemistry that much.

Lower: reply from the scientist, drawing parallels between the work process of a scientist (on the left) and that of a lawyer (on the right).



"Examples of some plankton organisms that serve as food for fish and whales"

6. Scientists: testimonies

During the digital submission of each of their letters, we invited scientists to choose fitting adjectives (from a list) to describe the experience each round. The most chosen were "fun" (59%), "rewarding" (58%), "challenging" (48%), and "inspiring" (39%). Also chosen were "easy" (16%), "stressful" (5%) and "difficult" (4%). The adjectives "boring" and "tiring" were never chosen. We also collected social media posts from corresponding scientists.



Deborah Carvalho ▶ Cartas com Ciência

21 de junho às 12:37 · 🌐

Ontem (20/6/2021) às 21:00 (Horário Brasil/Curitiba) tivemos uma videochamada com estudantes de Dili (Timor Leste). Que experiencia maravilhosa. Uma rica partilha.... Fomos acolhidos com muito carinho. Foi um verdadeiro presente estar junto aos estudantes, professores da escola, cientistas e Mariana Alves (Cofundadora, Codiretora). A videochamada ficou com gostinho #QUEROMAI

Yesterday (20/06/2021) at 21:00 (Brazil/Curitiba time zone) we had a video call with students from Dili (East Timor). What a wonderful experience. A rich sharing occasion... We were received with great affection. It was a real gift to be amongst the students, schoolteachers, scientists and Mariana Alves (Cofounder, Codirector). The videocall left me #hungryformore

Fredilson Melo
28 de Abril · 🌐

Ainda sobre a [Cartas com Ciência](#)

Diverti-me tanto com esta carta, que resolvi fazer uma pequena animação da ilustração. 😊😊

Isto é o quão divertido e gratificante que é participar desta iniciativa. Quem me dera ter tido um/a cientista por correspondência que me explicasse o que é a ciência e que eu também poderia um dia fazê-la.

Still about "Cartas com Ciência" // I had so much fun with this letter, that I decided to make a small animation of the illustration. This is how fun and gratifying to participate in this initiative. I wish I'd had a scientist pen pal who would have explained to me what science is and that I could also work on it one day.

#CIENTISTASPORCORRESPONDENCIA

giselebanin

@GISELEBANIN

Dia de ensino e amizade a distância. Esse tubarão segue, pelo correio, ao meu amigo do Timor-Leste Ronda 3 do Projeto @cartascomciencia

#scientistpenpals
Teaching and distance friendship day.
This shark is going, by mail, to my friend from East Timor. Round 3 of the @cartascomciencia project.

6. Scientists: testimonies

After this experience, the day at the lab was spent in a different mood! At least for me, this project has been reawakening the will to follow this sometimes turbulent path!

Scientist

I was able to send the letter today. The schedules were affected because of the pandemic, but nothing that a couple of hours in line couldn't have solved.

Scientist



@JESSICAPAU094

Esta foi a última carta. Desta vez vai seguir uma polaroid, em que estou com o meu caderno de desenho, hobby que partilho com o meu

#amigoporcorrespondência
Isto foi de longe o projecto mais gratificante no qual participei. Obrigada @CartasCiencia pela oportunidade 🥰

Translate Tweet

This was the last letter. I'm sending with it a polaroid of me with my sketching notebook, a hobby that I share with my #penpal. This was by far the most gratifying project I ever participated in. Thank you @CartasCiencia for the opportunity.



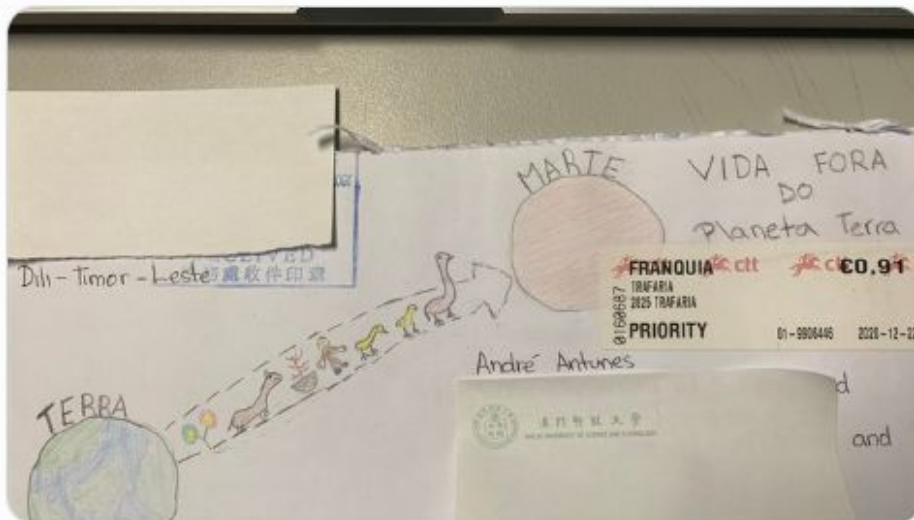
Tiago André Marques @TiagoALOMarques · Mar 21

I have received my 2nd letter from my penpal student within the most amazing project of all @CartasCiencia. Mindblowing: it is amazing how distant and how close two people can be, and how such a simple project can bring them closer #cartascomciencia, #cientistasporcorrespondencia



André Antunes @ExtremophilesUK · Jan 26

Mas que carta tão bonita que recebi de #Timor! As ilustrações científicas do envelope fizeram furor aqui em #Macau! :) Feliz por fazer parte desta iniciativa @CartasCiencia #cientistasporcorrespondencia #cartascomciencia #Ciencia #Lusofonia



What a beautiful letter I got from #Timor! The scientific illustrations of the envelope were a great success here in #Macau! :) Happy to be a part of this initiative @CartasCiencia #scientistpenpals #cartascomciencia #science #lusofonia

Proud. This makes my day, my week, my month, and maybe my year. @CartasCiencia is amongst many, but on the top of the list of the most gratifying and impactful projects I've ever participated in. Help, share, talk about it! Change the world, a small world at a time!

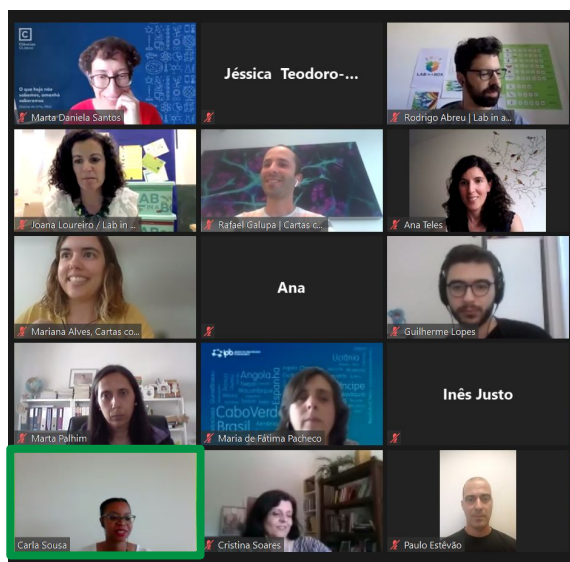
Scientist

6. Scientists: testimonies

Some scientists have also participated in interviews, seminars or other events to share their experiences as correspondents.



Scientist Ivo Sengo participates in the seminar celebrating June 1st as Children's Day, organized by the Portuguese Semester of the Joint Research Centre of the European Commission.



Scientist Carla Sousa participates in the Science(s) Communication Meeting dedicated to science communication for young people and organized by FCUL.



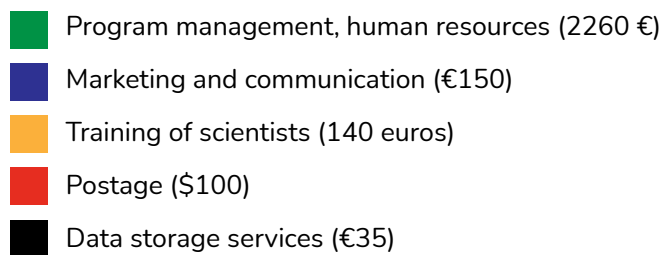
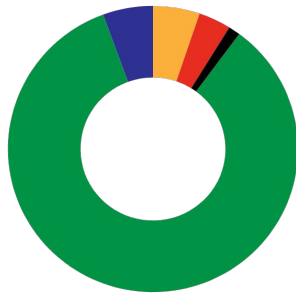
Scientist Fredilson Melo participates in an interview about Cartas com Ciência for RTP Africa, program "Bem-Vindos" ([link here](#))

"Seeing" my correspondent's emotion in her letters gave me a new impetus to pursue my career and perhaps inspire children to follow the same path.

Cientista Dinelsa Machaieie

7. Expenses

Expenses for this program totaled €2685 (factoring in as well expenses with human resources, which do not exist yet de facto; the management of the programme(s) is done by volunteers). The portion spent on postage was less than expected due to the fact that most letters were sent with carriers. A significant portion of the expenses was covered by the Biochemical Society through a Scientific Outreach Grant, and the remainder by individual sponsorships.



8. Other considerations

This report was prepared by the Cartas com Ciência team. The data presented here was obtained from questionnaires given to stakeholders at different times throughout the program, or from shares made to the team or on social media. Student sentences were sometimes corrected for spelling and edited for clarity, but were not corrected for syntax or sentence agreement.

We recognize our inability to use completely gender-neutral language, but we tried to do so whenever possible.

Student letters travel from Dili with a carrier (interruption of the post office in East Timor due to the COVID19 pandemic).



9. Acknowledgments

We would like to express our many thanks to those who contributed, in various ways, to make this letter exchange program possible:

- Teachers Teresa Cunha, Isabel Salsinha, Maria Flor Gomes and Rita Magriço
- Portuguese School of Dili - Ruy Cinatti Portuguese Language and Teaching Center
- Mail carriers: Albertina Pedroso, Paulo Correia, Paulo Eliseu, Rui Nelson Dinis
- Carrier pigeons: Fernanda and Dinis Alves
- Participants: scientists and students, and their families

We thank the whole ecosystem of Cartas com Ciência: [team](#), [partners](#), [patrons](#), [sponsors](#), followers and supporters, and the rest of the community.

We also thank the Biochemical Society for the financial support especially dedicated to this letter exchange program through a Scientific Outreach Grant.



10. Further links

See videos related to letter-sharing in the class [here](#). The list includes videos of letter sharing at letter opening parties, interviews with corresponding scientists or other moments related to the program of letter exchanges.

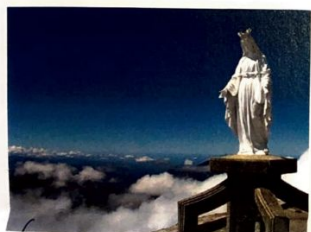
Letters sent by students with examples of cultural aspects of East Timor.



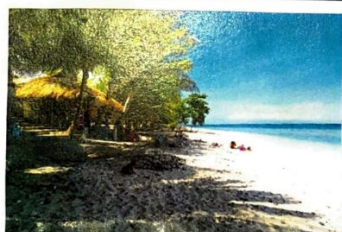
↳ Cristo Rei



ilha de yau



↳ Ramelau



↳ ilha de Itauiro



↳ TAIS

This report was translated from Portuguese by Guilherme Freches (Cartas com Ciência)



Cartas com Ciência

Letters with Science is an organization incubated by Native Scientist and inspired by the American project Letters to a Pre-Scientist.

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