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**CAVING AS AN EDUCATIONAL INSTRUMENT: CENTRE TERRE
EXPERIENCE THROUGH THE ULTIMA PATAGONIA EXPEDITIONS**
*A ESPELEOLOGIA COMO INSTRUMENTO EDUCATIVO: A EXPERIÊNCIA DO CENTRE TERRE POR
MEIO DAS EXPEDIÇÕES DA ÚLTIMA PATAGÔNIA*

**Natalia Morata (1)(3), Élodie Mulot (2), José Mulot (1)†, Romina Pizarro (4), Arnaud Malard (1),
Bernard Tourte (1), Jérémie Prieur-Devron (1) and the Centre Terre and Cuerdas y Más teams**

(1) Centre Terre, 33760 Escoussans France, www.centre-terre.fr, natalia.morata@gmail.com (corresponding author)

(2) Physical education and sports teacher

(3) Asociación Espeleológica de Patagonia, Chile

(4) Escuela G-6 Profesor Miguel Montecinos, Puerto Edén, Chile

Contatos: natalia.morata@gmail.com; espeleopatagonia@gmail.com

Resumo

Em 2008, vinte estudantes da Académie d'Amiens (França) seguiram a expedição Última Patagonia. Eles foram supervisionados por José Mulot, um espeleólogo professor de Ciências da Vida e da Terra. O projeto se expandiu durante as expedições seguintes, e em 2019, quase uma centena de turmas foram envolvidas no acompanhamento da expedição graças a um fórum de discussão online, onde cerca de uma centena de notas dos professores foram publicadas no site do Centre Terre, e videoconferências, onde os alunos puderam trocar experiências ao vivo com os exploradores. As turmas que desejaram, apresentaram seus trabalhos para um concurso na França, onde quatro turmas foram premiadas após uma votação do júri. O prêmio foi um dia de cavernada na companhia dos membros do Centre Terre. Além do aspecto esportivo, a atividade permite aos estudantes desenvolver seus conhecimentos científicos, ambientais e o espírito de equipe. O acordo estabelecido entre o Centre Terre pelo Ministério Francês da Educação em 2016 é um reconhecimento dos valores educacionais da espeleologia pelo sistema educacional. Numa época em que a escola encoraja os professores a realizarem projetos multidisciplinares, a descoberta da espeleologia na escola parece despertar um interesse particular: a espeleologia, portanto, assume todo o seu significado e tornar-se um eixo transdisciplinar na educação. Além disso, este projeto com escolas francesas inspirou um novo intercâmbio educacional entre o Centre Terre e a pequena escola de Puerto Edén (Chile), o local habitado mais próximo do arquipélago de Madre de Dios e lar de descendentes dos povos Kawésqar e Mapuche Huilliches.

Palavras-chave: educação; intercâmbio cultural; trabalho em equipe; espeleologia para crianças; exploração.

Abstract

In 2008, twenty students from the Amiens academy (France) followed the Ultima Patagonia expedition. They were supervised by José Mulot, a caver and Earth Life Sciences teacher. The project expanded during the following expeditions, and in 2019, almost one hundred classes were involved in the follow-up of the expedition thanks to a discussion forum, around a hundred teacher's notes on the Centre Terre website and video conferences where the students can exchange live with the explorers. Classes who wish can submit their works for a competition in France and four classes are awarded prizes following a vote by the Jury. The prize is a caving day in the company of Centre Terre members. In addition to the sporting aspect, the activity helps students to develop their scientific and environmental knowledge and the team spirit. The agreement granted to Centre Terre by the French Ministry of Education in 2016 is a recognition of the educational values of speleology by the educational system. At a time when the school encourages teachers to carry out multidisciplinary projects, the discovery of caving at school seems to arouse particular interest; speleology, hence, takes on its full meaning, becoming a transdisciplinary axis in education. In addition, this project with French schools have inspired a new educational exchange between Centre Terre and the small school of Puerto Eden (Chili), the nearest inhabited spot to Madre de Dios archipelago and home to kawesqar and mapuche huilliches descendants.

Keywords: education; cultural interchange; teamwork; speleology for kids; exploration.

1. THE BEGINNINGS OF THE CENTRE TERRE SCHOOL PROJECT. OBJETIVE

José Mulot, a teacher in Earth Life Sciences at Crèvecœur-le-Grand secondary school in Picardy, France, was passionate about speleology. He had a state-registered diploma and was a member of the cave rescue team. From 1992 to 2012, with the help of his mathematics colleague Nathalie Maciejewski, also graduated in speleology, José Mulot organized a scientific and technical workshop (AST) on speleology in his secondary school. The objectives of these workshops were to promote the scientific approach on the field, to develop pupils' self-sufficiency, critical thinking, and the sense of responsibility in a multi-disciplinary approach linked to the world of research.

Every week, and for a period of 2 years, a group of 7 volunteer students, trained in rope climbing techniques in a water tower rigged by José Mulot. The speleological approach is complete: topography, cave fauna, geological phenomena related to the origin of the formation of the caves and the concretions. Each year a one-week trip was organised to a karst region to allow the young cavers to really live their budding passion. Dozens of young people have received José Mulot's teachings, providing them with lifelong memories and sometimes even inspiring sporting and/or professional vocations.

In this secondary school in Picardy where José Mulot used to teach, far away from the French karst regions, caving had become a valuable educational tool. In addition, caving became a cohesion element of the school identity, creating strong links between families and teachers, which otherwise might have had a complex relation to school, teachers, and other pupils. It became a place for discovery, for learning about science and sports, but also about living together.



Figure 1: 3 cavers in a video conference during the Ultima Patagonia 2010 expedition. Photo: Centre Terre.

José Mulot followed the expeditions of Centre Terre in Patagonia thanks to the expedition reports and the stories of his friends. He was fascinated by them and talked about them to his students. So, to help the association raise money for the 2008 Ultima Patagonia expedition, his class came up with an ambitious and original project. A letter explaining this project was sent by the young cavers to Bernard Tourte, the expedition leader. Hereby an extract: *“We are seven students in the fourth class (...) We are following your expedition: it must be hard and expensive in terms of equipment. To help you, we made a topography of an underground quarry 2.6 km long and sold it for 100 euros to the Picardy Conservatory of Natural Sites. We decided to give you the money (...). Our dream would be to be able to contact the expedition during your stay in Patagonia; not long, just a question from each one of us. The headteacher will lend us his phone (...)”*. José Mulot succeeded in transmitting his interest in this expedition to his pupils, arousing their curiosity and opening the door to a wide range of learning opportunities for these young people, who attended a school classified as a ZEP (priority education zone), i.e., with special social and cultural difficulties.

2. ULTIMA PATAGONIA 2008: A FIRST TELEPHONE LINK WITH THE EXPEDITION

Bernard Tourte, the expedition leader, responded favourably to the students' request. Together with José Mulot, they organised a telephone conversation on 4 February 2008, one month after the start of the expedition. The students took turns asking the explorers their questions. It was a powerful moment for José, Nathalie, their students, Yann Defrance, the head of the school, and Philippe Carosone, the regional educational inspector, who supported the workshop and the project. The latter remembers this moment as a turning point in the Ultima Patagonia school adventure: *“José, an experienced caver who secretly dreams of participating in an expedition of this type, seems a little moved. He is visibly proud of his students' attitude, their curiosity, and the progress they have made since the beginning of the year”*. In 2010, José, with the support of the Amiens education authority and within the framework of an educational project that he himself had set up, will take part in his first expedition to the island of Madre de Dios with Centre Terre.

3. ULTIMA PATAGONIA 2010: A TEACHER AT THE SERVICE OF THE EXPEDITION

The *Rectorat de l'Académie d'Amiens*, José Mulot and the Centre Terre association started a collaboration committing to the following:

- José Mulot would guide and accompany teachers and students in the follow-up of the expedition.
- A competition between the participating classes would be set up to create additional motivation and encourage real production.
- José Mulot or other Centre Terre members would make presentations in the participating schools before, during and after the expedition.
- Each part would promote the partnership through the media.
- Centre Terre would create a school space on its website with a discussion forum that would allow exchanges between explorers, students, and teachers.
- A video conference that would bring together all participating classes from the *Académie d'Amiens* would be organised from the Madre de Dios Island.
- José Mulot would be allowed to participate in the expedition and would be on Madre de Dios for two months. He would be the main contact for the participating teachers and students.

In December 2009, in collaboration with the *Délégation Académique à l'Action Culturelle* of the *Rectorat d'Amiens* and with the support of Myriam Cappe, the teacher in charge of the project, José Mulot staged his symbolic departure for the expedition. The event, orchestrated with his students from the science workshop, took place at the Jules Verne House, which became the scenario of a virtual departure via a zipline from the top of its tower. All students and teachers descended the zipline.

An open-access exhibition with class visits and a conference allowed teachers to promote their project and students to show their work, particularly that done in French, comparing the expedition accounts of the Centre Terre association with those of Jules Verne's "Journey to the Centre of the Earth".

4. ULTIMA PATAGONIA 2010: THE FIRST SESSION OF A SUCCESSFUL SCHOOL PROJECT!

15 classes from the *Académie d'Amiens*, from primary to high school, followed the expedition and were visited by José a few months

later to talk to them about his adventure, with photographs and videos. 22 classes (almost 1000 pupils) from other *Académies* also took part in this adventure,

The first video conference took place after one month of the expedition. Mulot described this moment in an article in *Spelunca* magazine: "*Hello, Patagonia? On 4 February 2010, 350 pupils gathered in the large amphitheatre of the Centre régional de documentation pédagogique in Amiens, which was filled. This sentence, pronounced by the former principal of Crèvecœur-le-Grand secondary school, opens more than an hour of video conference: communication has just been established with the speleologists of the UP2010 expedition, lost somewhere on the karsts of Madre de Dios, at camp 2. At this moment I realised that this magical moment was the achievement of a long work*". (MULOT, 2010, p. 25).

This first highly positive experience for both pupils and teachers pleased the association, which wished to continue the partnership and extend it to the whole country to enable more schools to follow-up the expeditions. By pushing the limits and organising a large-scale video conference even though its technical feasibility was not guaranteed, José Mulot and Centre Terre paved the way for school exchanges with the Ultima Patagonia expeditions.

5. 2014, 2017 AND 2019: A SCHOOL PROJECT AT A NATIONAL LEVEL

After the 2010 expedition, the project was carried by the *Académie de Toulouse*. Mulot was not a teacher anymore, but a national technical adviser of the French Federation of Speleology. His main mission was to develop projects related to caving within the Ministry of National Education.

The school space on the Centre Terre website: at each expedition between 1'300 and 1'700 pupils from all over France sign up to follow the expedition. Centre Terre provides them with a discussion forum where students, teachers and explorers can exchange on the themes of their choice. In 2017 there were 120 lists of exchanges. About one hundred online teachers' notes are updated, modified, and enriched with each expedition. They contain raw scientific data, worksheets concerning fauna, flora, geology, and meteorology, but also maps, topographies and photos. More "daily life" subjects were added in 2018 such as food, transport from Paris to Madre de Dios or how to build the camp hut.



Figure 2: The CM1/CM2 class from La Prairie school in Toulouse created a story about the Kawesqar people.

A training day for teachers: it took place at the *Maison de la science* in Toulouse in December prior to the expedition. The aim was to help teachers in understanding the work, challenges, and constraints of the expedition so that they can guide their pupils in the best possible way. They were a success before the 2014 and 2017 expeditions.

Visits to schools by members of Centre Terre: for each expedition, between 8 and 12 schools, at their request, are visited by one or more members of Centre Terre before or after the expedition.

Video conferences which involve more and more students: they take place during each expedition. 2 in 2014 and 4 in 2017 and 2019. Lasting approximately 1.5 hours during the expedition, they enabled more than a thousand pupils to exchange views with the explorers. The relevance of the questions reflects the involvement of the students in the project, who work well in advance of the expedition using the scholar section of the website.

A competition to make the follow-up more attractive: a competition is organised between classes, which submit their work on different subjects related to the expedition. Four classes are awarded, which has nurtured a sort of competitive spirit between schools. Even though the early deadline of April 15th makes it difficult to finish the realizations, 22 of them were sent to the jury in 2014 and 2017, and 38 in 2019. The jury is composed of representatives of the Cultural Action of the *Rectorat*, inspectors, members of Centre Terre and representatives of the French Federation of Speleology. Classes submit online films, slide shows, books, plays, travel diaries, scientific productions, bilingual video reports, cave representations, etc. They highlight pupils' group work.

Winning classes discover caving: the winning classes can experience a day of caving with one or

more members of Centre Terre. These excursions are the highlight of the expedition's follow-up.

6. SHARING CAVING VALUES WITH CHILDREN OF PUERTO EDEN, PATAGONIA

After the 2019 expedition, an invitation from the Puerto Eden community (Chile) was made to Centre Terre members to visit the village school and share with the children of this isolated village findings made during the expeditions. Puerto Eden is the only inhabited spot in the middle of the Patagonian fjords and home to kawesqar and mapuche huilliche communities. The first visit to the school was made in November 2019 and offered the opportunity to share with the children Centre Terre's knowledge about the Patagonian karst and its natural and cultural value. It was also the first approach for these children to rope access techniques used in speleology.



Figure 3: Indoor activities with the school of Puerto Edén in September 2021 in preparation for the kids' expedition to the Tempanos glacier. (Photo: Leonardo Rivas).

After this first successful activity, named "Cuerdas y Más" (Ropes and More), a cooperation was established with the Miguel Montecinos school of Puerto Eden to organize expeditions that followed Centre Terre's path. The first one was originally scheduled for November 2021 and considered the support of the Chilean Navy to transport the children safely from Puerto Edén to the Tempanos glacier. However, due to operational

constrains, the Chilean Navy is not assuring to support the activity this year and the visit to the glacier will most probably have to be postponed to 2022. Nevertheless, caving related activities have been organized in September and November 2021, which will help forge solid bonds between cavers, children, and the Puerto Eden community.

In addition, the Centre Terre website dedicated to the educational project will also include all pedagogical material in Spanish, adapted to the Chilean curriculum, so that it can be freely used by schools from all over the country.

7. CONCLUSION

In 2016 the French Ministry of Education recognised Centre Terre as an educational association. This is a recognition of the educational values of caving. It makes it easier to disseminate information to schools and to obtain financial support for the organization of videoconferences. The Ultima Patagonia expedition's educational project has proved to be a great asset for teachers, students, and Centre Terre's explorers, who honour their motto, "Discover, Explore, Share", with each expedition.

In Chile, the school project does not enjoy any financial support. However, this self-financed

collaboration with an isolated school from Patagonia may pave the ground for a wider original school project that help children from public schools to know their territory through caving.

Through this partnership, teachers build multidisciplinary educational projects that are motivating and meaningful for the students. For many of them, it is an opportunity to acquire a lot of knowledge, to awaken their curiosity and to live an original and certainly unforgettable human adventure.

Caving becomes a real source of values and knowledge for pupils and teachers, recognised by the French Ministry of Education and now by the first school in Chile with whom Centre Terre shares its knowledge of a territory that has captivated Ultima Patagonia expedition teams since the early nineties and that offered shelter to some of these children's ancestors several centuries ago.

José Mulot passed away in January 2018 at the age of 60, following a terrible illness. A pillar of Centre Terre and a companion of the expeditions for 10 years now, José Mulot set up our educational project with schools as early as 2008, a project that is now a real success. Hereby we aim to honour his contribution to caving and to education.

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