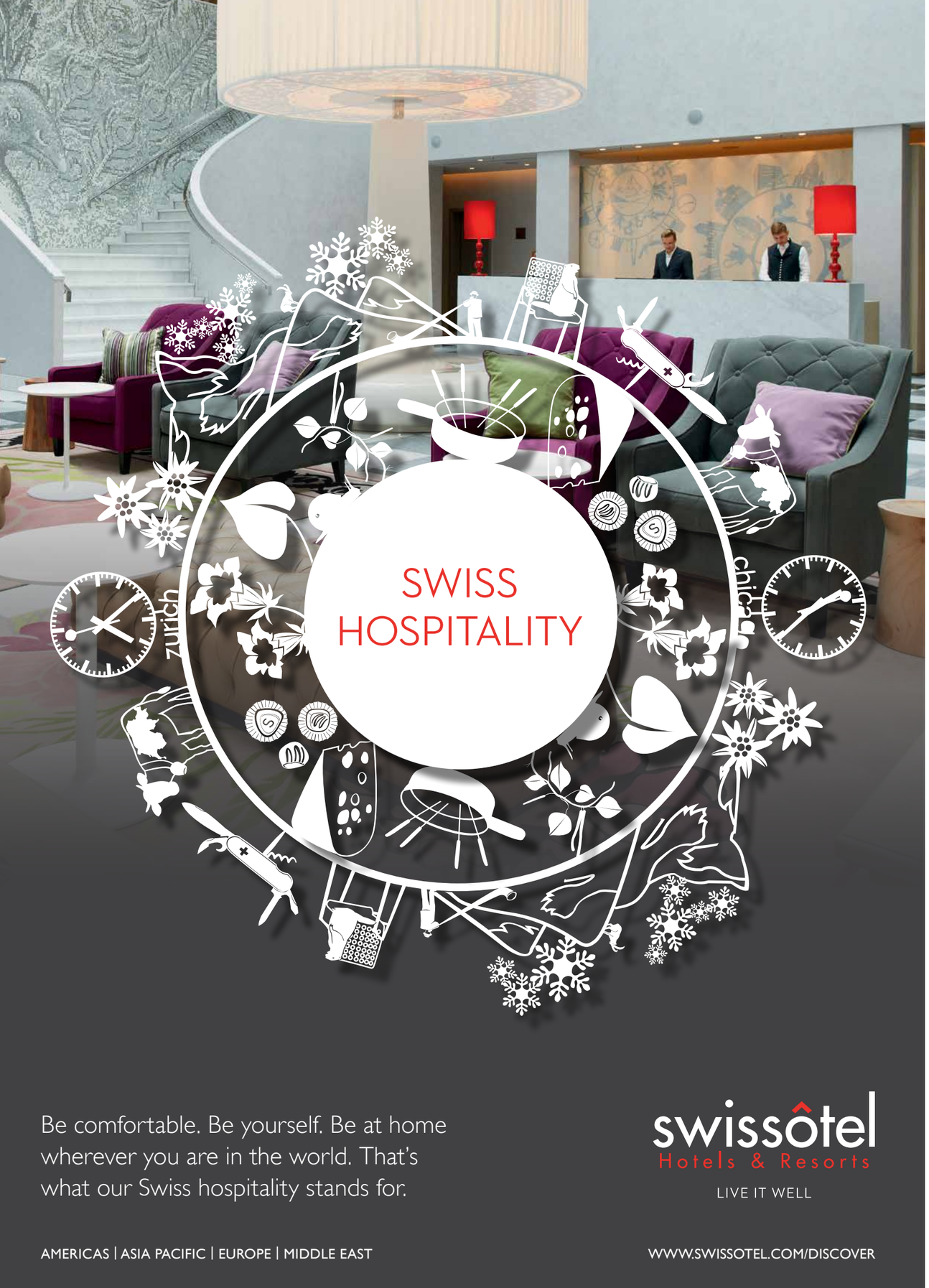
LEYSIN AMERICAN SCHOOL
EDUCATIONAL RESEARCH

Spotlight

ALPINE INSTITUTE
FALL 2018 EDITION



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WELCOME

A note from the director

Each year we bring hundreds of students from around the world to one of the most beautiful places on this fair planet. And yet it's easy to get caught up in the daily routine and not appreciate Leysin's spectacular surroundings. Our mission at the Alpine Institute is to connect young people with the world around them, right here, right now.

Sometimes an outdoor teacher's challenge seems as large as the peaks on our horizon. Take this feedback, for example, written by a student after one of our LETS Day field science outings:

"Today was a really bad day. We had to dig and take pictures of things, and you have to hike. I'm not interested at all in what we did, but some people like it because it's a new experience or it's an adventure."

Overcoming reactions like that lies at the core of our vision. We launched the Alpine Institute to inspire our students to love and to learn from Leysin's landscape—and to grow personally in the process. Our strong belief is that building a connection to one's local environment—while also developing physical strength and teamwork skills—is vital for growing a struggling child into a successful adult.

When we look for inspiration from our students, there's plenty to draw from. The same LETS Day that yielded the "bad day" comment above earned praise from others:

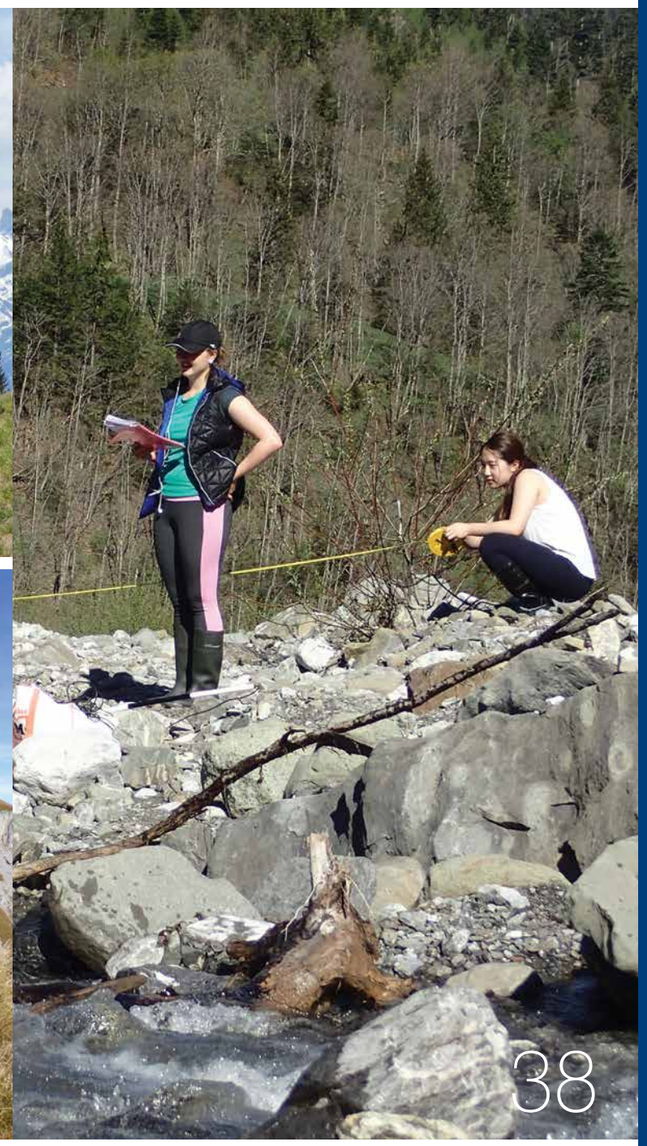
"It was just a lot of fun and a good laugh. I met and worked with people I didn't know before, which was cool. I enjoyed the leadership opportunity. I think it inspired me to try more leadership activities at LAS." There were many similar comments, heavily laced with words like "exciting," "important," "science," "tiring," "worthwhile," "beautiful," and "I hope we'll do this again next year."

So what exactly is the LAS Alpine Institute? The Institute is mostly a spirit, an inspiration. Teachers tap into this spirit, and it grows. Teachers open their classroom doors and their after-school activities to the changing forests, the crevassed glaciers, and the surprising history of our home—the place where for a few precious years our students will learn to breathe and to think.

Educationally, we're inspired by Kurt Hahn, the German founder of Outward Bound and the Duke of Edinburgh's International Award, who said, "It is the foremost task of education to insure the survival of these qualities: an enterprising curiosity, an undefeatable spirit, tenacity in pursuit, readiness for sensible denial, and above all, compassion." It's hard not to see the link here to LAS's mission of "developing innovative, compassionate, and responsible citizens of the world."

There is no finer place than Leysin to connect with the natural world—the world that humans emerged from and that we'll always depend on. We hope that the following pages convey the passion we bring to our work with young people at the Alpine Institute.

JOHN HARLIN III
Director, LAS Alpine Institute
AlpineInstitute.las.ch



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LAS Educational Research
The Alpine Institute lives within LAS Educational Research. LAS Educational Research (LASER) is a center for professional development, action research, citizen science, curriculum development, and outreach.

The center supports LAS teacher research projects, including dissemination through international presentations and publications, and hosts student teachers and visiting scholars, representing nine countries and over two dozen projects to date.

Individuals and institutions interested in professional development in innovative education or partnering with us for research and development are encouraged to contact us.

Paul Magnuson, director
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For additional readings on citizen science and education, please visit "Library" at alpineinstitute.las.ch

Spotlight 2018 Edition

On the Cover: LAS Students on their International Award Adventurous Journey near Prafandaz, above Leysin. The peak behind is the Grand Muveran, 3051m.

OF CLIMBERS & FARMERS

Changing seasons, changing lives: Lessons in phenology from a mountain village

BY: JOHN HARLIN III

I don't recall the words we exchanged. I was just nine years old at the time, and that was half a century ago. My father was climbing a mountain across the valley, 20 kilometers distant. My mother, sister, and I were standing on our front porch with a walkie-talkie in our hands, conversing with Dad. That was memorable enough, but it was the storm that comes clearest to my mind, a thunder and lightning storm through which Dad's voice crackled on the radio. Storms were a regular part of our lives those years we lived in Leysin. And what with Dad's life ruled by climbing, and climbing ruled by weather, the elements could shape our lives like they did those of the farmers who shared their town with us.

Farming in Leysin consisted mainly of grazing cows on the alpine pastures around and above the village. The slopes were much too steep and the growing season much too tenuous at that altitude to do much else. Of course winter snow kept the cows from pasture. So they were led down to the valley below sometime in the fall, there to graze and do what cows do while the snow piled high around our house. We never much noticed when they vanished from the meadows.

• • •

Dad was climbing a new route on the Dents du Midi, seen here, when we spoke to him from across the valley by walkie-talkie. Fifty-two years later, I also climbed what became known as the "Harlin Route".

Remove one component from a kaleidoscope and you often never miss it.

But we did take notice when the cows came back the following spring. By then we were revelling in each budding bush and blooming bulb. But the surest sign of spring, to me at least, was the first sound of cowbells tinkling far below as farmers led their herds back up to alpine pastures. Each year a cow would get a bigger bell, which made a deeper clang, and the mixture of tones from this nomadic carillon was the sweetest sound I'd hear all year.

During the winter of the last year we lived in Switzerland, Dad spent six weeks on a mountain he'd intended to climb in nine days, the weather was that bad—the worst year for storms on record. The ropes they were using began to fray, and, finally, one broke while Dad was on it. That was the first day of spring, the day he died, but at the funeral service in Leysin, the snow was still falling thick. In the mountains, calendars are only guidelines, that much was clear. I suppose this is true everywhere, but climbers and Alpine villagers know it more than most.

With all the snow the cows stayed in the valley later than usual. But spring did come—it always does—and the bells that year symbolized changes for me: The family had decided to move back to America, the mountains suddenly being less essential in our lives. But the mountains have stayed with me ever since, and with them comes an awareness of the weather and of its changes through the year. The flash of lightning and the first sound of cowbells: These are the earth in motion.

Me at Dad's grave in Leysin in 2016

Epilogue: *I first published this essay in an American magazine in 1994. In 2014 I moved back to Switzerland to work for the Leysin American School, where Mom taught biology and Dad taught sports in the mid 1960s. I feel like I've come full circle.*

Alpine Club ski tour above the Cabane de Brunet

CHILDREN & NATURE

Inspiring youngsters to care about their planet

BY: STEPHANIE AMERI
Modern Foreign Languages Department Head

How hard is it for teenagers to believe that the climate is really changing when threatening droughts, huge tropical storms, and repeated floods have been on the news since before they were born? If you've always been told, from your youngest years, that ecosystems are disappearing and natural resources are being exhausted, how can you feel a sense of urgency? After all, it has always been like that.

As twenty-first century educators, it's our duty to help our students develop a real empathy for the environment. Ecological awareness is one of those key values that we need to transmit to the next generations. By encouraging a healthy lifestyle, field investigations, and critical thinking, we foster informed citizens as consumers, workers, and voters. Following the example of the Scandinavian udeskole (outdoor school), many LAS teachers feel that getting pupils outside the classroom, into the outdoors, and exploring their local environment will excite them about learning. When we take them out in the real world and abolish classroom frontiers, we enable youngsters to make connections and to see the relationships between ecological, social, political, and economic issues.

"Many LAS teachers feel that getting pupils outside the classroom, into the outdoors, and exploring their local environment will excite them about learning."

Does this turn them into responsible, determined, and intrepid citizens of the planet? We hope so.

For more on the benefits of connecting children with nature, we recommend exploring the worldwide Children & Nature Network:

www.childrenandnature.org

Students exploring the forest just below Leysin.

THE LAS ALPINE CLUB'S SKYLINE CHALLENGE

Transforming scenery into adventure, one peak at a time

BY: JOHN HARLIN III

A lot has been written about the pedagogical value of outdoor education, most of which I believe in. But for me, it usually boils down to moments like these, when a student exclaimed:

"This is the best day of my life!"

We were sitting on a rocky ridge strapping on our crampons when Simon uttered those words. And the day had only begun—most of our adventures were still to come.

Being outdoors is not all joy all the time—imagine pitching a tent with cold hands in a snowstorm—but sometimes the toughest parts are the ones we most remember, the ones we tell all the stories about. We founded the LAS Alpine Club to get kids outside having adventures they'll remember for the rest of their lives. No pedagogy required.

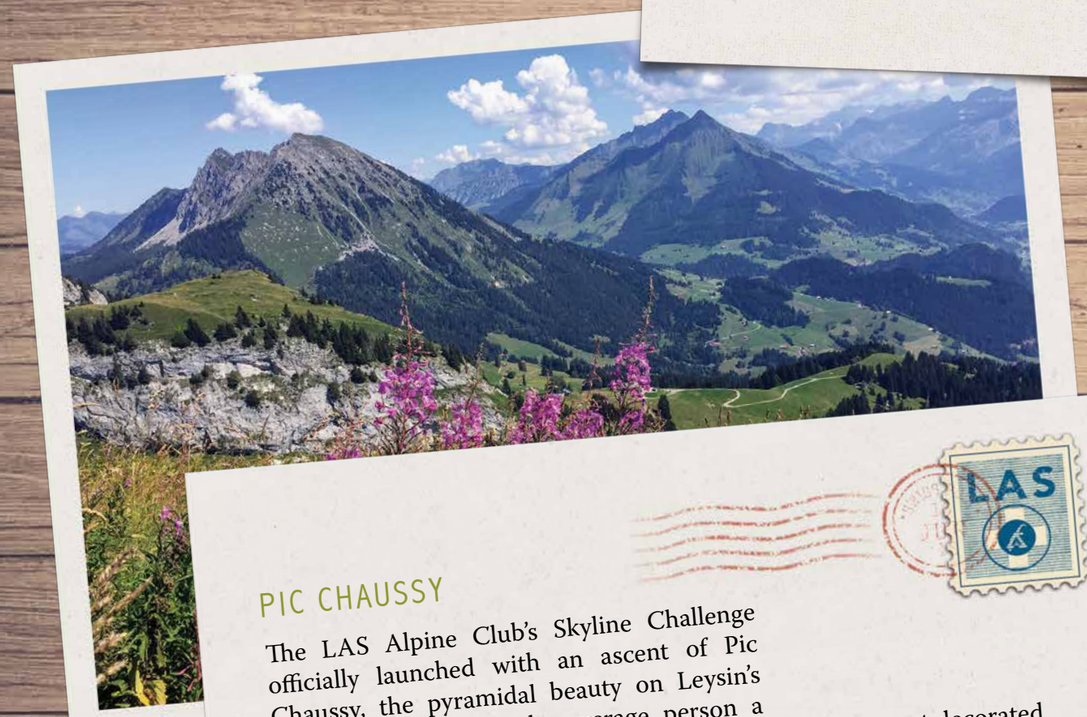
One big thread to the Alpine Club is what we've dubbed the "Leysin Skyline Challenge." As the name implies, we're inviting students to climb, hike, or ski as many peaks on our horizon as they have time and skills for. The Leysin view comes alive when you look out at a silhouetted peak and remember what it was like to be there. Each bump on the horizon becomes a visceral memory of kicking cramponed feet into its flank, swinging axes against its ice, stomping for hours or days with heavy packs along its trails. We remember the sweat, the awe, and the wonder we felt as we breathed deeply on these summits. From there we gazed back to our home village of Leysin. And from Leysin now, each time we look out at the sharply cut silhouette, we feel a part of it. For us, the hills are alive with hard-earned memories.

LAS students have so-far ascended nine of our skyline peaks, while staff members scout more each year in quest of future routes for the students to follow. Along with LAS's traditional annual ascent of Leysin's most iconic peak, the Dents du Midi, the most popular Alpine Club outings have been to glaciers on our closest 3,000m peak, Les Diablerets, where students drop into crevasses and use ice gear to climb back out (under the supervision of professional mountain guides). The next most popular have been trips into the little-known limestone caves above Leysin. And then there are "via ferrata" climbs, which ascend steel ladders bolted to faces, including our backyard Tour d'Aï (also with a mountain guide).

We're particularly excited to blend adventure with science, taking kids into the mountains to research glaciers, to count chamois, to find the highest trees, to measure and take pictures of places most scientists have a hard time getting to. Alpine clubs around the world have a centuries-old tradition of supporting adventurous scientists who've brought back knowledge from the world's remote places. We're excited to develop this spirit in high school students as they explore the peaks and valleys surrounding Leysin.

If talking about science appears to bring us back to pedagogy, that's because there's so much learning that takes place on a mountain. It can't be helped. I've written books about the techniques involved in hiking and climbing, the teamwork, the friendships, the leadership. But these are skills that come with the territory when you're out having fun. Mountains bring out the best in you, no matter your age.

Please join us on a sampling of our Skyline adventures in the following pages.

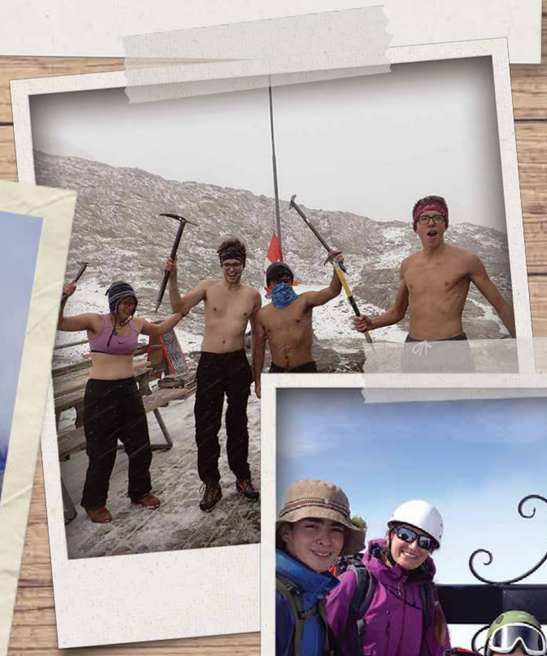


PIC CHAUSSY

The LAS Alpine Club's Skyline Challenge officially launched with an ascent of Pic Chaussy, the pyramidal beauty on Leysin's sunrise horizon. For the average person a mountain just sits there looking pretty—like a paper cut-out decorated with clouds. But to those who've actually stood on top, perspectives change and the view comes alive with memories of having been there. Pic Chaussy's popular hiking trail makes a perfect introduction to mountain hiking because anyone with a little grit can power their way to the summit. From here you look west to Leysin and across to peak after peak on our spectacular skyline. Who could not dream of making memories on all of them?

LES DIABLERETS

Imagine walking up a glacier and stepping across holes in the snow. You look down between your feet and you can't see the bottom—the hole opens into a giant mouth that disappears into the darkness. The mouth wants to swallow you, but you laugh as you jump across it, knowing that you're safely tied in and your friends would stop your fall if the snow broke away. Welcome to the summit glacier on Les Diablerets, the highest peak in our home canton of Vaud. The wildest part comes during the descent, when we visit the really big crevasses that split the glacier into a maze of ice fins and improbable slots. We lower ourselves into a big crevasse in order to experience the joys and challenges of vertical ice climbing. Slamming ice axes and crampons into the steep walls, we claw our way back to the sunshine. The Diablerets is an annual LAS tradition: we're back each year with spikes on our feet, picks in our hands, and ice in our sights.



CHAMOSSAIRE

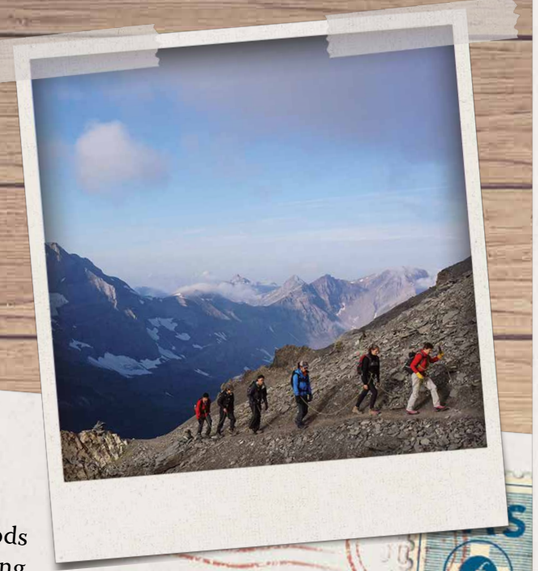
Skiing off piste (off the groomed trails) is not for everyone. A lot can go wrong—so there's much to learn to stay safe. And sometimes the snow quality is awful. That's when your skiing skills have to be top-notch, so you can bust through the crud no matter how deep. Fortunately, LAS students who sign up for the annual Off Piste and Avalanche Awareness course have skills to match any terrain. As always, we rely on a professional mountain guide to make sure we've learned our avalanche-rescue techniques—and, better yet, that we've learned how to avoid avalanches in the first place. For that, the guide teaches us about a mountain's dangers and about signs that a slope is safe to ski. It's all worthwhile because when great off piste comes magically together, it's the best skiing in the world, as we've discovered on the eastern flanks of Chamossaire.

DENTS DE MORCLES

Clack go the bindings. Rrrip go the skins. Flip goes the stomach. We've just torn the "skins" from our skis (used for hiking uphill) and we're now ready to point our tips down the mountain. But wait a minute: This looks steep. The powder is deep. But we trust our mountain guide. The first practice day took us far above the ski lifts to one of Switzerland's most spectacular mountain huts, Cabane du Fenestral. Out the window we saw the sun set and then—next morning—rise on Mont Blanc, the highest peak in the Alps. Way too early on Sunday, we were already huffing and puffing ever higher up the mountain. Half our team continued to the summit of the Dent de Morcles, one of Leysin's most awe-inspiring skyline peaks. The other half opted for off-piste powder skiing—turn after incredible turn.

TOUR D'AÏ VIA FERRATA

"Via ferrata" means "iron way" in Italian and refers to cables, ladders, and handholds that are bolted to the side a cliff to allow passage. It's the safest way for a non-climber to experience the vertigo of a vertical world that's usually reserved for advanced rock climbers. The Tour d'Aï's via ferrata is one of Leysin's most popular summer tourist attractions for the adventurous. But off season, when LAS climbs it, we can be alone on the wall. All winter long when we're skiing from Berneuse we can point to the Tour d'Aï and tell our friends: "We climbed right up the side of that wall!"



DENTS DU MIDI

The ancient Celtic weather gods smile on us most years, allowing mass LAS ascents of the most beautiful peak on our horizon: the Dents du Midi. The mountain is called the "teeth of noon" because its ragged summit dominates the southern skyline of villages on Lake Geneva. On Saturday we hike five hours uphill to a mountain hut, where we sleep like sardines on long wooden bunk beds. The alarm goes off at 5:40 am for breakfast and the climb to the summit. From the top we can clearly see Leysin nestled below its own distinctive peaks, the Tours d'Aï and Mayen. All told, we ascend almost 2,000 meters from the bus to the summit. Then comes the hard part: down, down, and down some more. But it's always a fantastic experience that we'll remember for the rest of our lives. Now, every time we look at that big peak to the south, we'll smile and remember the day when we stood on top of the world.

Dents du Midi

Bryon Caves

TOUR DE MAYEN

We see it prominently from the top of Berneuse and towering above us from Lower Sporting, and yet few visitors imagine hiking to its summit. You might call the Tour de Mayen the neglected step-sister of its near twin, the Tour d'Aï: It's simultaneously one of the greatest and loneliest of peaks in our backyard. For students, the summit itself is optional if the trail seems uncomfortably steep toward the end. There's amazing alpine beauty every step of the way, with no shame in stopping at the altitude of one's choosing.

Cathedral Cave

CAVING BRYON

Every year students discover their local mountains from the inside out. Leysin was built on a mountain of limestone, which over time water dissolves into a network of caves—you might say it's like Swiss cheese set in stone. We hike from Les Fers (a favorite winter ski hangout) uphill to a couple of short caverns, one of which is called the "Cathedral". In the first one we can stand up the whole way, but the second requires crawling briefly on our bellies and then slithering along a narrow twisty slot. At the back of the cave we turn off all of our headlamps to experience the darkest of darkness, where you can't even see a hand in front of your face. But the kids' favorite part of a sunny afternoon? Sliding on a snowslope on the way down.

THE INTERNATIONAL AWARD

Go for bronze (or silver or gold) on a backyard Adventurous Journey

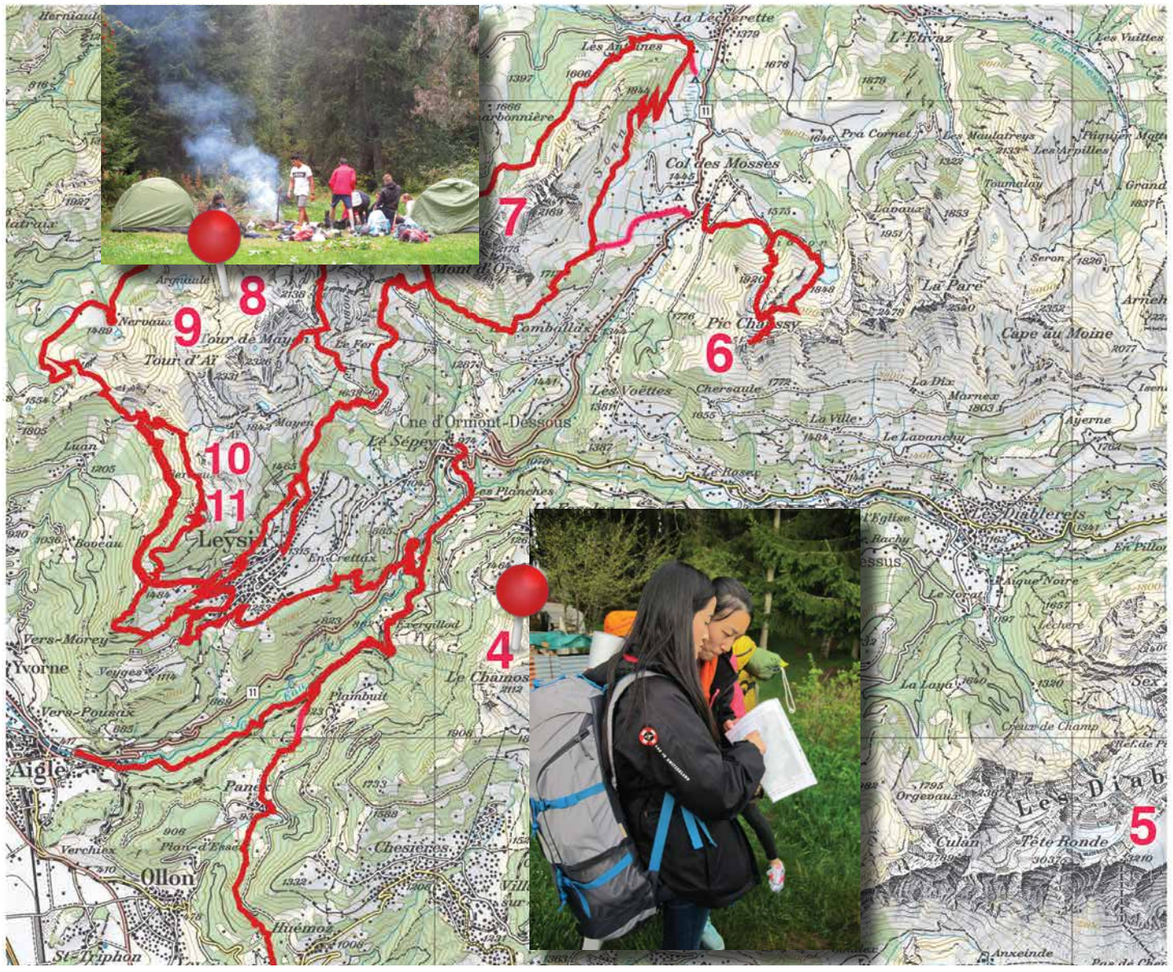
BY: JOHN HARLIN III

Rain pounded hard onto the nylon tent walls in a campground not far from Leysin. Inside those dry cocoons a half-dozen hungry LAS students huddled in their sleeping bags waiting for enough of a lull that they could step outside to fire up their gas stoves and cook dinner. This "Silver Award" team was spending its second night out, with another full day of hiking to come so that they could fulfill the "Adventurous Journey" segment of their International Award. "Bronze Award" level students spend only two days on the trail and were headed home when the rain struck.

For most young people, dry weather camping is adventurous enough. But Swiss mountains don't care whether hikers are comfortable, so our campers learned to live with the rain, emerging from their tents when eventually their hunger grew strong enough. Because this was a "Qualifying Journey," the students had to do everything on their own with no help from adults. We teachers simply watched as they lit fires with wet wood and cooked meals to replenish their bodies after a long day of hiking.

While the camping trips (officially "Adventurous Journeys") attract the most attention, sleeping outside is only a fraction of the full International Award experience. The Award's true purpose is to help young people develop life skills, in particular the perseverance required to set long-term objectives and reach them over time. The International Award requires participants to set goals and then work for six months to a year (depending on the Award level) toward achieving those goals. They must devote at least one hour per week toward developing a skill, another hour weekly toward physical recreation, and a third hour toward public service.

In the United Kingdom the program is known as the Duke of Edinburgh Award, named after the Queen's husband, who founded it in 1956. Since then the Award has spread to over 100 countries and 8 million participants, most of whom have never heard of Edinburgh, let alone know how to pronounce it ("edinbra"), hence the rebranding as the "International Award." The Award is widely recognized by universities and employers as proof that a young person has the dedication needed to stick with a task to completion. Each year almost 50 LAS students take on the challenge.



The Adventurous Journey component of the International Award comes in three parts: 1) Initial training in map reading, compass work, first aid, and campcraft; 2) a Practice Journey to learn what it's really like to hike for hours with a backpack on and to sleep under the stars (or sometimes rain); and 3) a Qualifying Journey of two or three days with no help from adults.

At LAS we keep our Adventurous Journeys close to home, often hiking straight from our dorms—and, a day or two later, hiking right back into them. Why get in a bus to drive somewhere over the horizon when there's so much adventure to be had right on our doorstep?

SwitzerlandMobility partners:
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Switzerland. get natural.

MOUNTAINEERING ACTIVITY

Have helmet, will travel

BY: MAT MCLEOD
LAS Physics Teacher

Throughout the year the LAS Alpine Club offers a wide variety of trips into the mountains. Under the supervision of internationally qualified mountain guides, students can experience the incredible alpine environment in a style many only dream of. Professional guides help their clients to enjoy adventurous activities in a safe and controlled manner. But some students want to learn mountain skills for themselves. Where do they turn?

The after-school Mountaineering Activity at LAS offers diverse outdoor adventures geared toward learning new skills so that eventually students can take responsibility for their own safety. Sometimes we climb, sometimes we hike, sometimes we glide across ropes set between trees or canyon walls. Other times we snowshoe, or practice mountain rescue techniques, or "dry-tool" on rock walls (using ice gear without ice). One week we might ascend ropes using specialist equipment or maybe just a cunning knot, the next week we might learn how to place protection into a rock face and lead other students on a climb, or maybe we'll navigate with a compass, or rappel off a bridge, or climb through a cave. The list goes on.

Requiring the ability to push oneself beyond perceived limits, to try new things and to learn new skills, our after-school activity doesn't appeal to everyone—in fact, it appeals to very few. But those who enjoy these things return year after year. These photos show why.

> "...our after-school activity doesn't appeal to everyone—in fact, it appeals to very few. But those who enjoy these things return year after year. These photos show why."

ADVENTURE SCIENCE

Middle schoolers take to the trees for their daily dose of vitamin N(ature)

BY: JOHN HARLIN III

To have an "adventure" implies taking risks to pursue exciting, challenging experiences. To engage in "science" implies systematically observing the natural world with the goal of understanding how it works. The LAS middle school's "Adventure Science" class bridges these worlds.

Adventure Science students climb trees to discover what lives high in their branches. To do this, they learn how to throw a rope over a limb, then climb the rope using special knots. They build campfires to measure the carbon content of different plants so they can estimate how much carbon is stored in a forest or meadow. They search for wildlife trails in the forest so they can set camera traps to take pictures of animals. They dig pits in the soil to learn what lives below.

"In our outdoor classroom students sit on logs sketching pictures on paper; this trains them to see more deeply..."

In our outdoor "classroom," students sit on logs sketching pictures on paper; this trains them to see more deeply than they would without drawing. They explore every square meter of our Beau Reveil Forest searching for new species to observe on the iNaturalist app. They record phenology—when plants bud and bloom—on the Phenoclim app. When the weather's too uncooperative, we watch documentaries about seasonal forests and then students make their own mini documentaries about the trees they've been studying—videos we send to NASA's GLOBE Program for all the world to see.

Fortunately, indoor days are rare. The whole point of Adventure Science is to be outside discovering nature in our own backyard with our own senses. We learn that adversity leads to adventure, that fog in the forest sharpens our minds.

Eco Club making Earth Day poster.

ECO CLUB

Guiding students onto a path of environmental enlightenment is not for the faint of heart

BY: STEPHANIE AMERI

Modern Foreign Languages Department Head

When you decide to launch an Eco Club at your school and involve teenagers in the process, you will need to fill your inner tank with three main fuels: love, patience, and positivity. You will rely on these as you organize your team and define your goals and strategies together—all the while listening, supporting, and guiding young people along their eco internship. You, the idealistic adult, will need to bear in mind that the students are not signing any contracts. It is you who is committing yourself to planting the seeds of sustainability in their inner selves. You don't have much time to do so: Tomorrow your club members might leave to join the badminton or astronomy club instead.

You might be lucky enough to have youngsters join purely for idealistic reasons. These are likely the few who were brought up with environmental values and have grown aware of the natural habitats around them. But most of your kids will join to complete their "Creativity, Action, Service" requirements for the International Baccalaureate, or to fulfill their International Awards Service hours, or because you inspire them as a teacher, or even just because they have to sign up for an afterschool activity and chanced on your offering. No matter their motivations, the point is that they're here now, and now is when you must make the most of this precious time together in order to spread an ecological message.

Currently the LAS Eco Club counts between 10 and 12 students gently guided by one adult, myself. Eco Club members, between 12 and 18 years of age, come from multiple continents and diverse backgrounds, carrying their geographical and cultural heritage in their backpacks, including their personal environmental standards, stereotypes, and prejudices.

We began by forming an Eco Committee and designing our official Eco Club logo, projects that helped to bond us as we discussed our mission. We then planted trees and crops to celebrate our unity under the banner of being defenders of the environment. Teaming up with the Gardening Club, we prepared soil and plants for the winter. This led up to Christmas, which we honored with a school survey aimed at raising awareness on how easy it is to celebrate Christmas more sustainably. We made a little movie that we shared in our full school assembly to inspire our community to consider new behaviors.

In the winter we discussed carbon footprints, including trash, transportation, food, and resource waste. (Oh yes, idealistic adult, you'll need to ensure that your team has the terminology to successfully research online—empowering them with change is first to empower them with vocabulary.) We finally selected an issue we felt needed to be addressed more urgently than the others: recycling trash in our dormitories, particularly PET plastics and paper. We surveyed the current situation, took pictures, and analysed data before creating a survey that we sent to all the dorm heads to gauge their interest. The goodwill and cooperation of dorm heads is essential to accomplishing anything inside their buildings. The Eco Committee then briefed the school's Managing Director on our findings, and he in turn connected us with the school's Facilities Manager. We are currently discussing next steps forward with her team.

As we were searching for practical solutions, we presented little skits and videos during assemblies to show the LAS student body how to use recycling bins properly. We used repurposed materials to create our displays and explanatory posters, which we hung in the hallways of our dorms and campus buildings.

During Globe Day, the Eco Club presented alongside LAS's young citizen scientists. Eco Club members especially enjoyed sharing their achievements and plans with several visiting schools from Switzerland and elsewhere in Europe. The encouragement we received that day gave us new wings.

Among our most cherished successes was the complete abolition of single-use plastic bottles, glasses, plates, and cutlery in LAS's Berneuse Challenge and its end-of-ski-season party, two major events involving the entire school. We were very happy to decrease our carbon footprint thanks to a joint effort to promote reusable material and to limit trash.

Our next big step is to join the Eco School Foundation, thus solidifying LAS's commitment to forming more ecological young citizens and contributing to a more sustainable world. By carrying out their "Seven Steps Toward an Eco School," we hope to earn a coveted Green Flag within two years.

Those steps are to:

1. Form an eco committee
2. Carry out an environmental review
3. Make an action plan
4. Monitor and evaluate
5. Link to the curriculum
6. Inform and involve
7. Produce an eco code

As the idealist adult coaching these young eco defenders, I enjoyed every debate we had in our weekly meetings. It's a joy to see how far we can go by reflecting together. This gives me new hope for the future and a renewed faith in what can be achieved by empowering new generations with a positive attitude toward change. Check back in a couple of years when we hope to be waving the Green Flag over Leysin!

REINVENTING OUR GLOBE

Adventures in self-regulated learning

BY: PAUL MAGNUSON

Director of LAS Educational Research (LASER)

In 2015 we launched a small student conference called Globe Day. The idea was to offer an annual science event where students present posters of their projects and listen to short keynote speeches by scholars. Originally the conference was purely for LAS students, but in recent years we've been joined by a half-dozen international schools that have brought nearly 60 students and teachers each year, many of whom presented their own posters. We're expecting more and more schools to join us in coming years.

We call it "Globe Day" because the concept was originally inspired by NASA's "Global Learning and Observations to Benefit the Environment" (GLOBE), a citizen science program that aims to put student-collected data into the hands of scientists.

Our primary themes have been citizen science by students, STEM in education, and big issues such as those addressed by the Global Issues Network. The one vital, consistent element for each Globe Day is to give students the opportunity to actively participate in a conference with their peers. The conference is in itself a valuable experience, and is made even richer by student involvement as they conduct independent research and distill their findings into a quality poster. Presenting work in public is a skill that will serve our students their entire lives.

At the beginning the projects that fed into Globe Day itself were completed in science classes. But as the conference grew, the format and learning evolved, too. In 2017-2018 we tried something big and new. We divided all 9th and 10th graders into two large groups of 45 students each, with approximately eight teachers per group. Middle School students had their own separate projects.

There were a few things we did not want to do. We decided that the exercise would not be graded and that we wouldn't have quizzes or tests. We certainly didn't want to lecture, scroll through Powerpoint slides, or pass out worksheets.

There were also some things we were quite sure we did want to do. We wanted students to direct themselves, to self-regulate. We also wanted them to dive deep into important questions about the environment, the future, and the globe. We wanted students to work in collaborative groups. We also wanted students to speak articulately about the ideas they were presenting because of their interest in the ideas, not because of the threat of a poor grade.

We used the first four meetings to explore potential topics, form small groups, and practice how we wanted students to work together.

To explore topics, we placed a few big, thorny questions at the top of large posters, spread out on tables in the cafeteria. For example:

Planet Earth is a finite place, but we are treating it as if it were infinite. One solution is to look to outer space for raw materials ... and a new place to live.

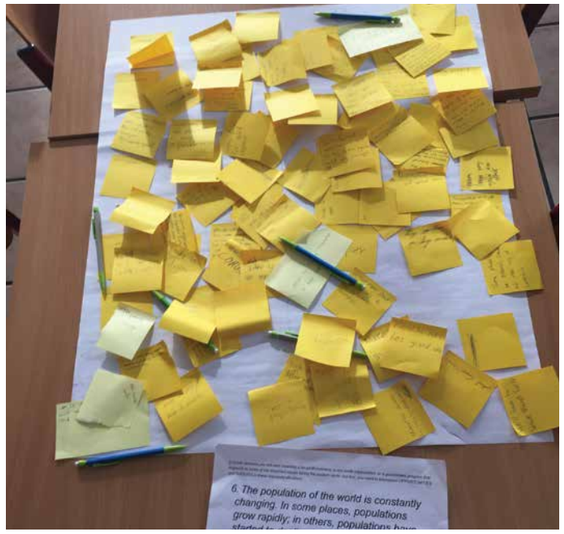
Many say that teaching and learning in school is largely outdated. One school in France has no teachers, no terms, and no grades, yet attracts over 40,000 applicants for 1,000 spots. What is the future of school?

Then we asked students to rotate from table to table, adding sticky notes with further, deeper questions. At the following meeting, the questions and the sticky notes were spread out in the cafeteria again, but this time students went to the questions that they were personally interested in. They rearranged the questions into three different approaches for addressing each issue: Government; Non-governmental organization; and Business.

For example, the first issue, using up the earth's resources and having to look to outer space, could be explored from these three perspectives:

League of Space Nations: Research which countries are currently working on space programs and to what extent their agenda is to get resources from outer space and/or to colonize outer space. Describe how advanced their plans are. Illustrate and defend predictions

- While working in a large group with multiple faculty members provided a decidedly different atmosphere than regular classes, it didn't necessarily support the creative buzz we were hoping for, nor did the number of available faculty members provide as much value as we had thought. At times teachers were tripping over each other, asking the same student groups the same questions.
- Our visible learning—with the poster-size Kanban boards of Doing and Done—were largely ignored after the first week or two of work. We suspect that we didn't spend enough time focusing on the boards' purpose. We have found in other classes as well, however, that these expanded "To Do" lists are not as helpful as we would like.
- We still need to work on the right mix of structure, outcomes, and student freedom. We can of course tell ourselves that we need to give students the room to experience firsthand the freedom of self-direction, including making their own decisions. This is valuable. But we also want to ensure that students reach a certain proficiency in the content of the curriculum. We fell short with several groups.
- One set of teachers decided to form their own working group. They took on a significant problem of their own and worked alongside the students on their solution, creating a poster presentation just like everyone else. We thought that this type of modeling would pay rich dividends. Unfortunately, not many students noticed that a set of teachers was working side-by-side with the students, motivated only by pure fascination for their topic. Perhaps if the students witnessed this type of teacher collaborative engagement more than once it would have more impact.



about how colonizing space will turn out, based on the research you find.

Earth Lives! Political Action Committee: You are members of an organization that is concerned that plans are underway to save the human race by colonizing other planets. Your concern is that it is only the wealthy who will be able to afford settling on other planets … leaving the majority of humans on a dying Earth. If EVERYONE has to survive on earth, you are sure there will be more money and more projects to save Earth … and most of humanity. Make the case that settling in space is a bad idea.

SpaceX R&D Team: Humans will be visiting and building permanent settlements on Mars in the next 10-20 years and SpaceX aims to bring them there and make it happen. Your research and development team has been tasked with developing prototypes of robotic gardeners that can grow plants autonomously in Martian conditions and provide food for a future colony.

To form groups, we collected student preferences on index cards. A group of teachers convened later to create the working groups.

We wanted learning to be self-regulated, by student groups. Drawing on work from our colleagues John Miller and Willy Wijnands, we prepared poster-size organizational charts for students with a checklist of expectations and columns titled TO DO, DOING, and DONE to make progress visible. We also created bars across the bottom of the poster for students to mark how many weeks had passed, the percentage of the tasks they felt they had created, and with which teachers they had conferenced.

To practice the type of group work we were envisioning, we led two games for the large group of students. One game worked well, illustrating for the students and staff that short planning meetings before attempting a task, as well as short debriefing meetings after working on a task, can significantly improve the group's performance. The other game was fun, but in the end a little less effective. The goal was to demonstrate that doing two tasks at the same time is generally slower than focusing on single tasks, one after the other.

For the next several weeks students were set to work on their own, with the assistance of faculty members who moved from group to group. While we would love to report that our self-actualized students needed no further assistance or external motivation to consider their selected problems in depth and to create an interesting and insightful poster session for the conference, that would be stretching the truth—a lot. Some student groups worked well together, but nearly all groups, despite the visual learning tools, fell into the common traps of moving slowly in the first weeks and trying to finish quickly at the end; of scratching the surface of an issue and calling it good; and of entertaining themselves more than digging in for serious learning.

As we've seen again and again, self-regulated learning requires a whole lot of attention from teachers, albeit not in the traditional lecture-format way. Being a "guide-on-the-side"—a coach—is hard. It takes lots of practice. But we're committed to learning how best to go about it.

Most students completed their posters and presentations before the conference. Two groups even applied to present their proposals in a conference breakout session in addition to the standard poster session.

As in past years, the quality of visuals and presentations varied from group to group, and the solutions that students worked on showed varying degrees of attention, creativity, and practicality. In response to the problem we provided as an example earlier—treating Earth as if it were disposable and thus needing to find solutions in space—some groups were content just to suggest space travel to new colonies. This "solution" makes for great movies, but it trivializes a deeply serious issue. Other groups thought harder, presenting solutions to plastics in the ocean, to schooling in the future, and to ways to provide a greater portion of Earth's population with a clean water supply.

Despite the challenges of this free-range approach to education, we know that in the end we modelled self-directed learning for the students, gave them many opportunities to shine, gave them a safe place to fail (and hopefully learn from that failure), and pulled off a conference with a strong component of student engagement in a number of important subjects. As long as we keep our eyes and ears open, and discuss freely our successes and challenges, we will continue to learn as a faculty, and we will continue to demonstrate to our students that learning is not a box to tick, but a habit to form.

Plastic Away: Think Global, Act Local

We are founding a business that will utilize natural resources to provide a more eco-friendly alternative to plastic for Third World countries. To achieve this we will manufacture organic/biodegradable material that can be used for things like bottles, bags, and wrapping paper. These materials will exclusively use resources that are already available within each Third World country, including its local trees, plants, and other local materials. This will create jobs for the local population and thereby boost their economy. Partnering our business with existing NGOs and local governments will encourage companies to work side by side to find solutions to this global issue. Our slogan is: "Think Global, Act Local!" —Nicky, Kinjal, Globe Day 2018

LETS STUDY LEYSIN

The Local Elevation Transect Survey introduces students to a genuine field science experience right in their backyard

BY: DAN PATTON
LAS Science Teacher

LETS Day is a chance for students to be citizen scientists and to contribute meaningful information to the scientific community. It is a chance to take the ecological pulse of our local environment each spring and fall, and to collect evidence that can be used by students and professional scientists alike in order to make predictions about the impacts of climate change on our environment. Most of all, LETS allows us to learn from the most amazing classroom of all: the beautiful Swiss outdoors.

LETS stands for Local Elevation Transect Survey, which we typically abbreviate to LETS Study Leysin, or just LETS. The goal is to explore how ecology changes as we move up the mountain from the valley at 500m to the summit of the Tour d'Aï at 2,300m. Along this vertical transect there are many changes in vegetation and animals, including passing through timberline to the alpine zone, where no trees grow at all.

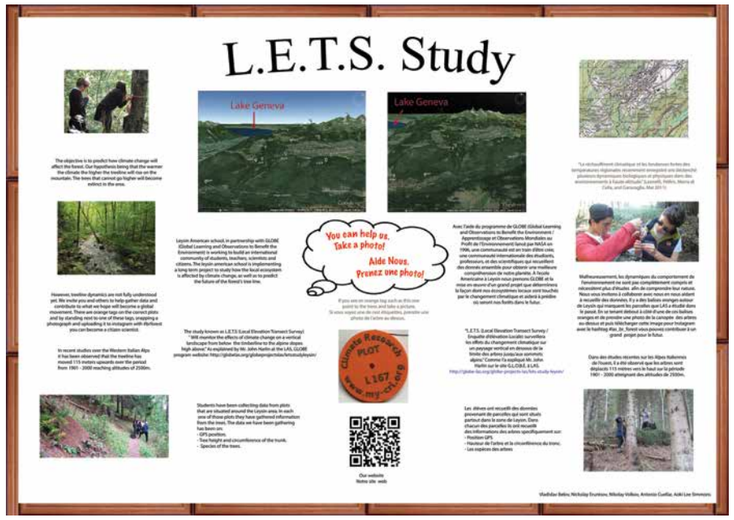
By carrying out this study over many years, our ecology work will turn into a climate study as well. If the climate continues to warm on its current projection, then plant species are expected to migrate uphill, and timberline will climb ever higher up the mountainside. As a mountain school, LAS is perfectly positioned to follow these changes and to contribute to scientific understanding of the process.

The LETS study provides an insight into how science works in the real world, including the importance of following standard protocols when collecting data. Any individual student can only take a small amount of data. The collective group, however, can gather a very large amount of information. But this data is useful only if everyone collects their data in the same way—i.e., follows the same protocols. Once collected, everyone has access to the whole data set. Hypotheses can be tested using data from across the whole mountain without any individual needing to visit every plot in order to collect its data.

A DAY IN THE LIFE OF THE LOCAL ELEVATION TRANSECT STUDY

The following tale shares the LETS experience. It's based on one day in a particular year, but the pattern repeats every spring and fall with different grade levels participating.

A morning in early October finds the halls of the Savoy building packed with students decked-out in jeans, t-shirts, and hiking boots instead of their customary uniforms. They are toting meter sticks and sack lunches instead of laptops and side-satchels. This is not a day for sitting in traditional classrooms and learning in a traditional way, but for going outside, for experiencing nature. And what a glorious fall day it is: The leaves have just a touch of yellow, the mercury is predicted to hit the low 20's (Celsius), while a vivid blue sky reigns overhead.



The first stop on this busy day is a brief group meeting. Thirteen groups, each consisting of about 10 students and two teachers, will travel by foot, van, cog train, and even telecabine, to 13 different locations stratified by elevation. At the group meeting students do an equipment check and a journal entry, where they jot their thoughts in response to the prompt: Describe the forests of Leysin. In education lingo this is called "activating prior knowledge"; the idea is to get the proverbial mental juices flowing. By asking students what they think they are going to see, teachers are creating the cognitive place for students to file away what they actually do see. A follow up question asking about the forests back in their home countries produces some interesting contemplation, especially from Middle Eastern students.

SCIENTISTS WEIGH IN

Before leaving the walls behind and venturing out into nature, students head to the library and theater to be inspired and encouraged by the words of local forest ecology experts from Chamonix's Center for Alpine Ecosystem Research and the University of Lausanne. Students watch, listen, and ask questions as professional scientists passionately present their case for getting regular citizens involved in scientific data collection. In a field traditionally dominated by men, seeing two successful women scientists on the stage impresses girls in the audience. Evocative geographical images showing how the forests are changing and are predicted to change in the near future is impactful as well.

HEADING TO THE FIELD

Finally it is time to head to the field. With the bright autumn sun reflecting their facial expressions—broad smiles on some and looks of apprehension on others—group after group file out of Savoy and into the great outdoors. Since a key feature of the LETS study is to examine the differences in the forest at different elevations, about half the groups head uphill while other groups head down. Laden with picks, shovels, and other specialized tools, the groups raise a few eyebrows from local Leysin folk as they walk through the town.

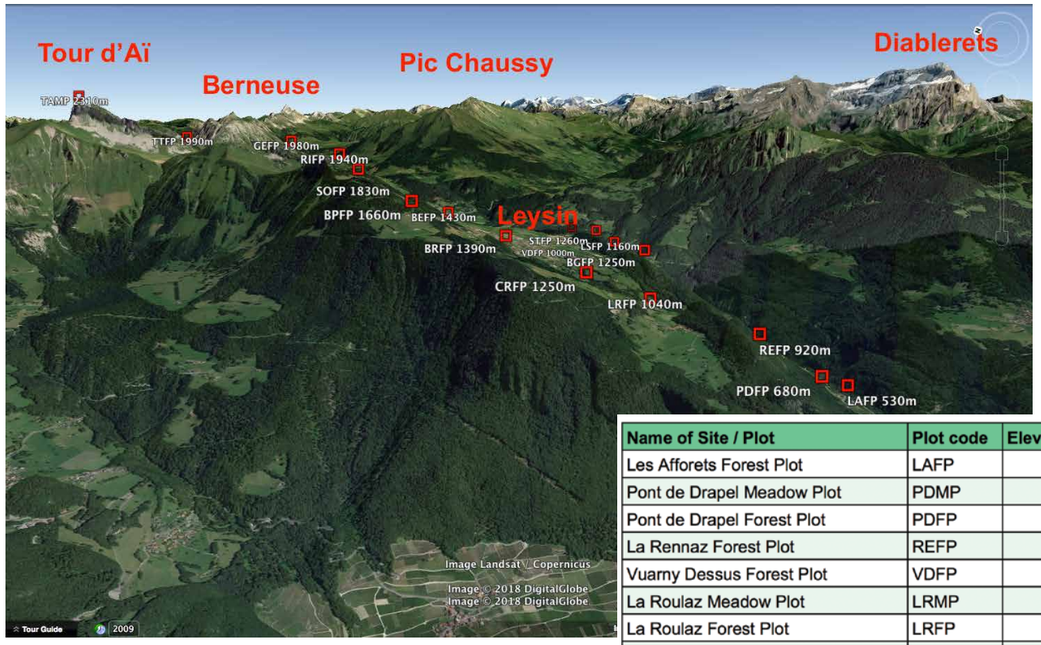
COLLECTING DATA

Once on location students immediately get to work setting up the boundaries of the study site. The goals for the day are to identify and measure the trees, take extensive photographic evidence, and collect a series of soil samples from standard 30x30-meter plots of forest.

Students first roll out and fasten a series of eight 30-meter strings. This is not an easy task considering the steep and rugged nature of our local mountain forests. When this job is complete, the forest floor has been divided into nine squares, each 10x10-meters. From there smaller teams get to work measuring, photographing, and digging in order to collect their data. After a quick lunch and a bit more effort, all the scientific field work is done and students return the site to its original condition.

BACK HOME AGAIN

Dirty and tired, but with spirits high, students finish the day back in the Savoy building where one more task, this one requiring more brains than brawn, awaits. They are asked to write down their responses to the question: How can the data you collected today be used to help Leysin adapt to climate change? Science is and always has been a collective endeavor. It works best when thoughts and information are shared, ideas are critiqued, and from this interchange new understandings emerge. In this day and age, with powerful communication and information-crunching machinery, the work of citizen scientists, like our very own students, will lead to scientific breakthroughs. Through initiatives such as the LETS study, LAS is on the cutting edge of this growing scientific movement.



A THANK-YOU MESSAGE FROM THE ORGANIZERS

A special thanks goes out to the math, geography, English, art, administrators, and support staff who have been flexible and supportive of this initiative. Without the help of the entire teaching community, these special days would not be the successes they've been.

STAY TUNED

In coming years we will introduce art, math, social studies, and other fields to LETS Study Leysin. Yes, LETS has its roots in science. But science exists as a tool to help us understand our world. And isn't that what all curious people say about their own fields of interest, whether it's art, history, or math? In the real world all things are connected, all perspectives are valuable. And so it is with our LETS study, where we're pioneering new ways to teach global themes locally.

Name of Site / Plot	Plot code	Elevation
Les Afforets Forest Plot	LAFP	530
Pont de Drapel Meadow Plot	PDMP	620
Pont de Drapel Forest Plot	PDFP	680
La Rennaz Forest Plot	REFP	920
Vuarny Dessus Forest Plot	VDFP	1000
La Roulaz Meadow Plot	LRMP	1040
La Roulaz Forest Plot	LRFP	1040
Lower Suchet Meadow Plot	LSMP	1140
Lower Suchet Forest Plot	LSFP	1160
Deer pen Meadow Plot	DPMP	1190
Deer Pen Forest Plot (new)	DPFP	1200
Cemetery Road Forest Plot	CRFP	1250
Boule de Gomme Forest Plot	BGFP	1250
Suchet Trail Forest Plot	STFP	1260
Village Train Meadow Plot	VTMP	1270
Beau Reveil Forest Plot 1	BRFP1	1390
Beau Reveil Forest Plot 2	BRFP2	1390
Beau Reveil Meadow Plot	BRMP	1390
Belle Epoque Forest Plot 1	BEFP 1	1430
Belle Epoque Forest Plot 2	BEFP2	1430
Bois de Prafandaz Meadow Plot	BPMP	1650
Bois de Prafandaz Forest Plot	BPFP	1660
Le Temeley Forest Plot	LTFP	1720
Temeley Forest Plot	TEFP	1720
Temeley Meadow Plot	TEMP	1720
Solacyre Forest Plot	SCFP	1830
Solacyre Meadow Plot	SOMP	1830
La Riondaz Forest Plot	RIFP	1940
Geteillon Forest Plot	GEFP	1980
Top Trees Forest Plot (Tour d'Ai)	TTFP	1990
Tour d'Ai Meadow Plot	TAMP	2310

THE PHOTOVOICE PROJECT

Studying connections between citizen science, nature, and young learners

BY: JOHN HARLIN III & STUDENTS

Two researchers from the nearby University of Neuchâtel—one a social-cultural psychology professor and the other her graduate student—are exploring how our LETS Study Leysin project affects learners. Their research has recently begun and we don't know where it will lead. Still, the following pages of images and insights from 11th grade IB students on Group 4 Day might give us a clue. (We've also added a few student quotes from autumn LETS Days.)

The research is being carried out by Dr. Laure Kloetzer, an LAS visiting scholar and an assistant professor in sociocultural psychology at the Institut de Psychologie et Education, Université de Neuchâtel. Alongside her research on refugee migrations, Dr. Kloetzer explores engagement, informal learning, and creativity in citizen science. She also chairs the European Citizen Science Association's working group on learning and education, which the Alpine Institute's John Harlin co-chairs. She and her graduate student, Virginia Eufémi, are investigating the subjective experience of Group 4 and LETS Days on students. They're exploring connections between the ordinary experience of classroom education and the extraordinary experience of outdoor education. She's also interested in students' experience of nature and how this might change during the course of their LETS activity. Is engaging in LETS measurably meaningful to students? Dr. Kloetzer aims to find out.

Kloetzer and Eufémi's primary research tool is the "Photovoice" method: All students are asked to take pictures of personally important moments during the day, even if it's a picture of their mid-morning snack. On return to the classroom, they are asked to choose the most significant pictures and answer those two basic questions: "Why did you choose this photo? What does it represent?"

Let's listen in.

It was amazing encountering snails as large as this one. Seoul is a very busy city with barely any forests left for the citizens to enjoy. It was an amazing experience for me to get out into nature and see all sorts of life forms. I would never experience such things in Seoul.

—Anon, 2018

"This picture gives a glance what some of the students' tasks were. It shows Yada recording data."

—Andrei, 2018

"The best part of my exploration was climbing the mountain. I like hiking pretty much, but I am always lazy to walk to a place, so I am happy to have had this experience. I ate my sandwich in the mud under a huge tree and later I almost fell off a cliff. It was fun."

--Wenji, 2016

"This photo represents the importance of sunlight to the life of the forest."

—Eduardo, 2018

"This picture shows a little silver fir that we found in a region of norway spruces and sycamore maples. For me, this small tree represents an outsider in a tree society. It was also interesting to discuss how the seed of this tree got to this region if there is no silver fir nearby."

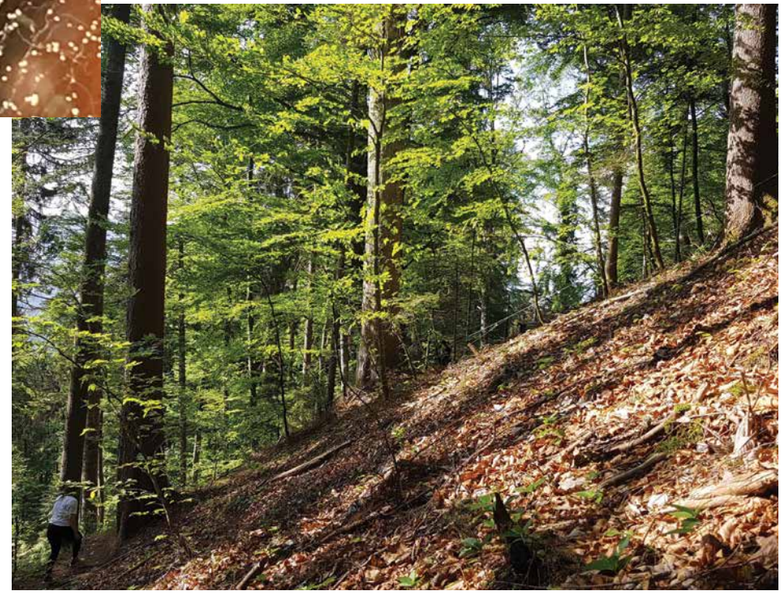
—Sonya, 2018

"To calculate the carbon content of the trees, we first had to measure their heights using trigonometry. It was a new experience for me, as I have never applied what I have learned in school to real life. It allowed me to realize that what I learn in class can actually be applied to real life."

—Anon, 2018

"This is my favorite photo of the day. It is a spider behind its web. It was super difficult to focus on the subject because we did not have a lens to adjust. Nevertheless, it manages to show the spider and its creepy/scary 'vibe'."
—Antonio, 2018

"The weather in Switzerland really differs from weather in Moscow. In Moscow it is always dark and we have very little sunshine. I believe it really makes your mind think another way."
—Andrey, 2018



"This picture conveys the beauty of the nature around us and offers a break from our technology addicted lives."
—Nikolai, 2018

"This picture reminds me that technology is not always right. The app told me this was poison ivy. If so, we would have been in big trouble. Mr. Harlin assured me it wasn't."
--Madison, 2018

"I think that if we do it every year for many years, the scientists will be able to compare the results and see the difference. Using the samples we did, they can make a conclusion about how the weather and nature are changing."
—Kamila, 2015

"To me this is the most amazing part of the whole event: Getting out there and hiking along with my friends. In this picture we were having such a good time as a group. Nature is so much better than being inside of any classroom (no offense) and this picture represents that feeling of excitement."
—Antonio, 2018

"When we were halfway to our plot we had to stop and take a break to drink something and rest for a couple of minutes. In my group we are all kind of lazy and not very fit, but in the end, even though we took a couple of breaks, we made it!"
—Veronica, 2018

CREATING STUDENT CITIZEN SCIENTISTS

How LASER Resident Scholar grants are enhancing science learning at LAS

BY: RACHAEL PASSANT-COY
LAS Biology Teacher

Tomorrow (as I write this) is Citizen Science Day. This global event reinforces how even here in a small village high in the mountains of western Switzerland we can be part of a worldwide movement. This movement is one that seeks to transform ordinary citizens into genuine scientists, whether it's for a day or a lifetime.

Weaving the "citizen science" movement into formal education inside schools is relatively new. But our aim is similar to the goals of other forms of "experiential learning": to enhance student understanding of scientific processes and associated uncertainties, to create a sense of achievement, and to engage young people inside the big picture of "science in society."

"Citizen science" has been defined as "the collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists." It involves students simultaneously in science and in wider global issues; this engagement can influence a high school student's future professional life. Citizen science often transforms "studying science" into something that feels more meaningful and tangible to students: "doing science." Such experiential learning within a global community of researchers makes students feel like they're part of something greater than themselves.

I'm a biology and chemistry teacher in LAS's IB program. In 2017 I received a LASER Resident Scholar grant so I could help integrate our Local Elevation Transect Survey (LETS Day) into the science curriculum in grades 9 and 10, the "Prep Years" at LAS. In 2018 my grant was extended to include additional citizen science projects for all grades from 7 through 12. Some of these will be embedded into LETS and others into the general science curriculum at LAS.

In the first year we developed lesson plans, teaching materials, and teacher trainings for grades 9 and 10 that are being applied to LETS Day events, both in spring (IB) and fall (Prep Years). We're trying to inspire students to become independent thinkers, to develop curiosity about Leysin and its environment, to understand and develop skills needed for carrying out a scientific survey, to learn syllabus content, and to contribute to a citizen science project. That's a lot of personal growth to roll into one program.

LETS Study Leysin was first developed in spring 2015 for the IB Group 4 Project. Since then, LETS has been extended to the Prep Years even as it's increasingly being integrated into the IB curriculum in Biology, Environmental Systems & Societies (ESS), and Physics.

During the first year of my LASER project, I grew intrigued by the many opportunities to integrate LETS into the whole-school curriculum, including cross-curricular teaching with math, art, and social studies. These connections still have a ways to go, but already are bearing fruit.

The second year of my LASER project develops a "menu" approach to integrating diverse citizen science projects into both LETS and the broader 7-12 curriculum. This compendium of projects will engage our students with professional scientists, in part by developing local data sets that can be used within large-scale research programs.

The foundation for these efforts is the world's largest repository of citizen science projects, SciStarter.com, which features more than 1,400 projects worldwide. Using SciStarter's "project finder", as well as Europe-specific resources such as Scientix.eu ("The Community for Science Education in Europe") and GLOBE.gov Europe, we're identifying citizen science projects that suit our needs in Leysin.

We're also building on our existing work with CREA (the Center for Alpine Ecosystem Research in Chamonix) with Dr. Christophe Randin at the University of Lausanne, and with Dr. John Williams (National Polytechnic Institute in Oaxaca, Mexico, and the University of California at Davis). And we're reaching out to additional scientists at such organizations as the Swiss Federal Research Institute (WSL), which studies forest, landscape, biodiversity, natural hazards, and snow and ice in Switzerland.

Through our work with the European Citizen Science Association (ECSA), European Cooperation in Science and Technology (COST), and many other citizen science project facilitators, universities, and scientists, LAS is constantly increasing opportunities for LAS students to learn science by doing science that contributes to humankind's understanding of how our world works.

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