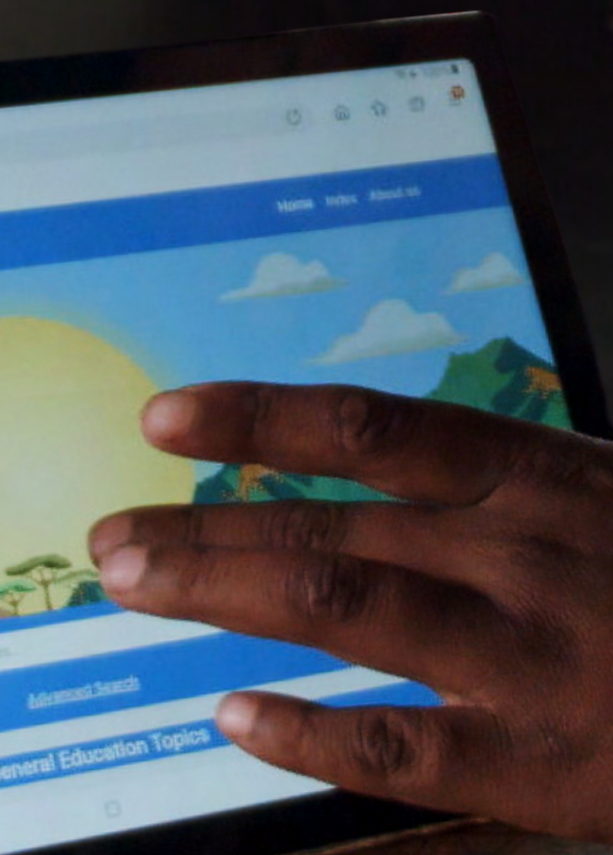


2023

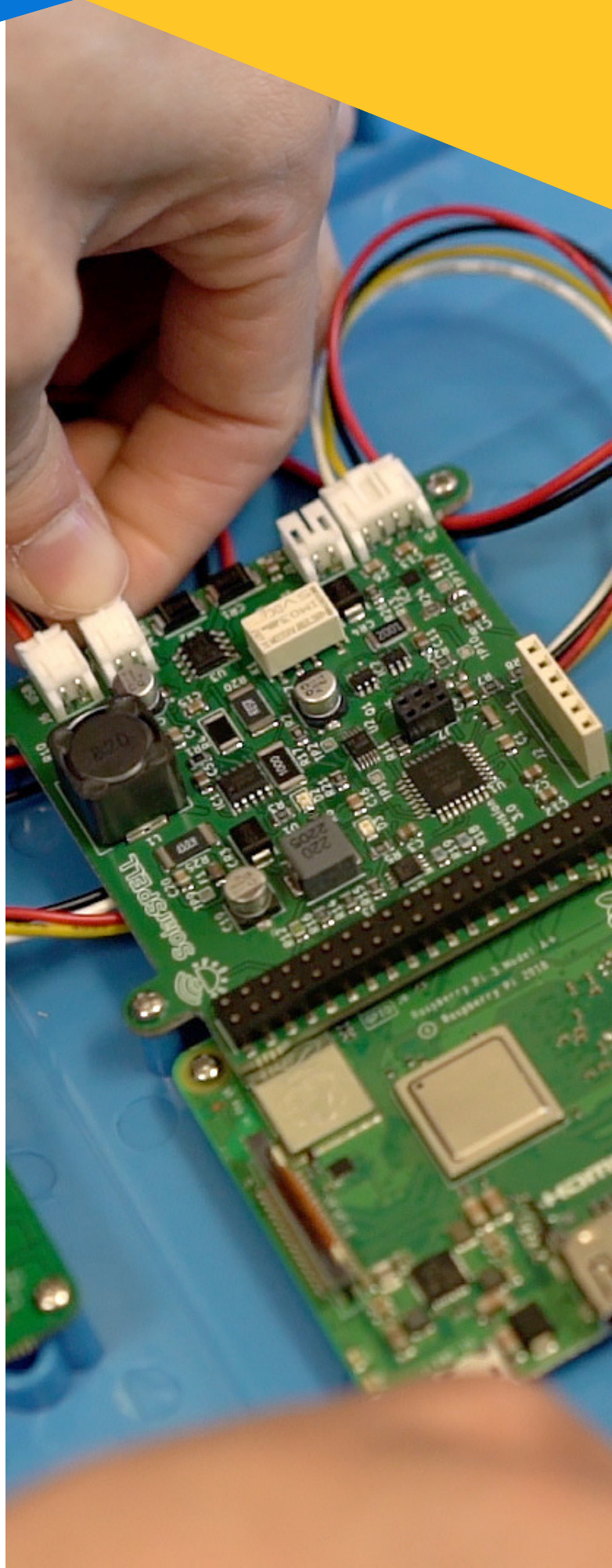
SolarSPELL

Annual Report



Contents

- 01** [Letter from the Director](#)
- 02** [About us](#)
- 03** [Impact snapshot](#)
- 04** [ASU student engagement](#)
 - 05** [Student spotlight - Rachel](#)
 - 07** [ExploreCSR](#)
- 09** [Project highlights](#)
 - 09** [NE Syria - Education](#)
 - 13** [Zimbabwe - Agriculture](#)
 - 14** [South Sudan - Education](#)
- 18** [Peace Corps news](#)
 - 19** [Lesotho - Education](#)
 - 24** [Student spotlight - Allison](#)
 - 28** [Curate-a-thon](#)
 - 29** [Malawi - Health](#)
- 33** [Program updates](#)
 - 33** [Content curation](#)
 - 35** [SolarSPELL Training Course](#)
 - 36** [Monitoring + evaluation](#)
 - 37** [Student spotlight - Paye](#)
- 42** [Our team](#)
- 42** [Partners and supporters](#)



Letter from the director

Dear SolarSPELL Supporters,

After three years of preparing for the end of pandemic travel restrictions, our team was thrilled to launch four new library collections in 2023, expanding into three new countries! We began the year by training the first cohort of Peace Corps Volunteers in Lesotho since posts were evacuated in 2020.



Our team next visited Malawi to train students, faculty and staff at the Kamuzu University of Health Sciences on the SolarSPELL Health Library. Then it was on to Zimbabwe, where our team introduced our brand new Agriculture Library to Foundations for Farming, a world leader in promoting conservation agriculture. Finally, in April we hosted education officials from the Autonomous Administration of North and East Syria for a training-of-trainers before they returned to pilot SolarSPELL's first Arabic-language library.

But we didn't stop there! We also unveiled a new-and-improved digital SolarSPELL Training Course to better support our trainers in their communities, and we collaborated with ASU nursing students to develop an evidence-based practice workshop for our Health Library trainings. With the help of Returned Peace Corps Volunteers, our team made big advances in data collection and processing to improve our monitoring and evaluation. All the while we continued curating content, advancing partnerships and preparing redesigned SolarSPELL hardware to launch two more library collections at the start of 2024.

This was a huge year for the ASU SolarSPELL Initiative, and we couldn't have accomplished it without your support! We look forward to another year of working together to empower learners globally.

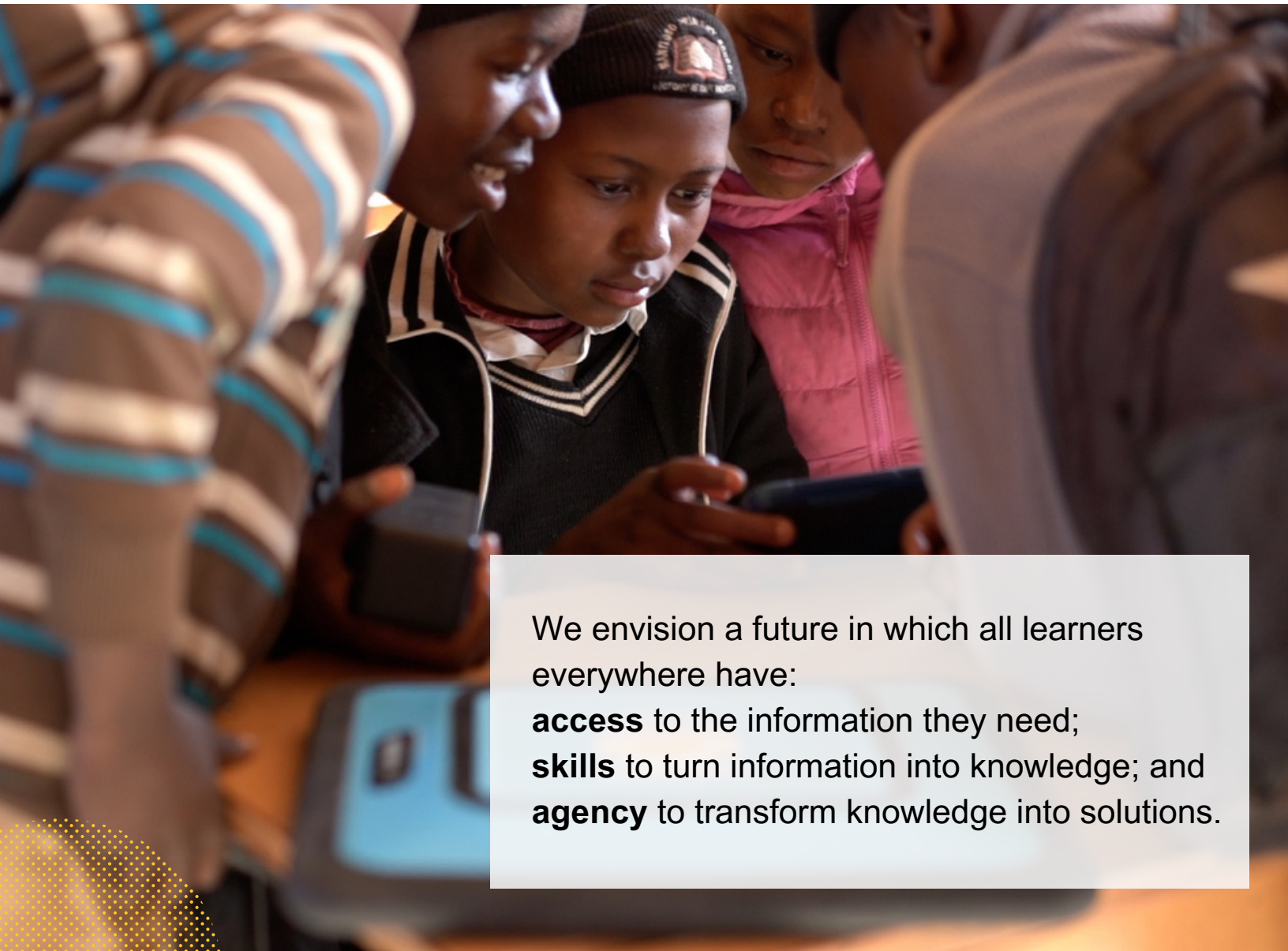
A handwritten signature in black ink that reads "Laura Hosman". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Laura Hosman

About us

How we change lives

SolarSPELL empowers offline communities globally by providing localized digital libraries and building the information literacy and digital skills that people need to make informed decisions, increase their self-reliance and improve their quality of life.



We envision a future in which all learners everywhere have:
access to the information they need;
skills to turn information into knowledge; and
agency to transform knowledge into solutions.

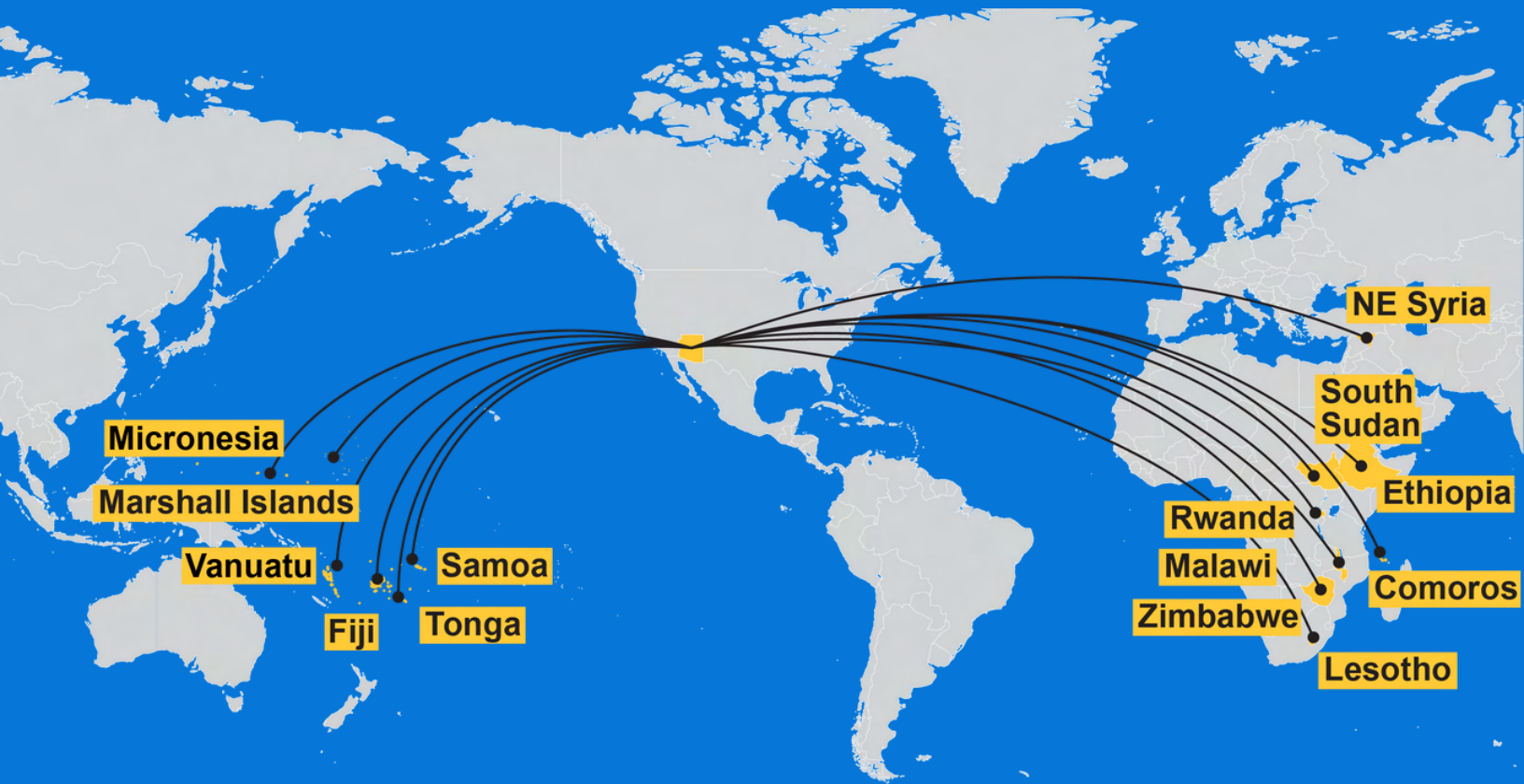
Impact snapshot

SolarSPELL launched its first pilot in 2015. Here's how many people we've reached since then.



487 Libraries implemented

across **14** countries



832
People
trained



300,000
People reached

ASU student engagement

Student success is central to our mission, and students are central to SolarSPELL's success around the world. This year students from across nine ASU colleges, plus students and recent graduates from universities around the world, joined the SolarSPELL team via internships, capstones and project-based courses.

Many supported the ongoing development of our library collections — curating content, tagging metadata, and refining offline modules. A number of students took on software and hardware design, tackling the SolarSENSE project to connect soil sensor data to information from our Agriculture Library. Still others worked on communications, videography and redesigning our digital SolarSPELL Training Course. And four Returned Peace Corps Volunteers focused their efforts on making our data collection and analysis more robust and efficient.



This spring, students in our project-based class (EGR 598) engineered a soil sensor rod for the SolarSENSE project and created an assembly tutorial for SolarSPELL's new library hardware.



Student Spotlight

Nursing student makes global impact

Rachel Thompson, a Doctor of Nursing Practice student at ASU has always been interested in global health. “Everyone deserves fair and equal opportunity to have the highest level of health,” she said. Rachel joined SolarSPELL in fall 2020, her first semester, to curate nursing and midwifery content for our new Health Library.

She later pivoted to help us curate and develop resources on evidence-based practice (EBP), including a PowerPoint presentation that faculty could use to teach EBP to their students. EBP is a process used to review, analyze and translate the latest scientific evidence to help nurses make informed decisions in patient care. When SolarSPELL launched our Health Library with the Kamuzu University of Health Sciences in Malawi (KUHeS), Rachel led a workshop on EBP for faculty, staff and students, tying the information back to the types of content available on the SolarSPELL library.

While the university curriculum already includes research courses, attendees were enthusiastic about the systematic approach offered by EBP. “Incorporating evidence-based practice modules and information into the curriculum can help students become more knowledgeable, skilled and confident health-care providers,” said Patrick Mapulanga, senior assistant librarian at the KUHeS campus in Lilongwe. “This can lead to improved patient outcomes and better quality of care.”

“SolarSPELL is an incredible organization, and this experience was life-changing in many ways for me. I am so grateful to have had the opportunity to work alongside the team and travel to witness the impact SolarSPELL is making halfway around the world.”

— Rachel, ASU Doctor of Nursing Practice (DNP)





Atharva was one of two exploreCSR participants who joined us as a fellow this summer to investigate the use of AI to link soil sensor data to information within the SolarSPELL Agriculture Library.

Computing for good

ExploreCSR workshop 2023



In our third and final exploreCSR workshop, supported by Google Research, seven ASU students learned about SolarSPELL as an initiative using computing for good. They then spent six weeks tackling the challenge of how SolarSPELL could use machine learning (ML) to link data from the SolarSENSE soil sensor to actionable information in our digital Agriculture Library, all while operating offline.

This would provide farmers with relevant guidance, based on real-time measurements, to improve the health of their soil. After both teams pitched their solutions in our final session, two students joined our team as fellows, spending their summer developing this feature and proving the feasibility of the concept.

Our project-based humanitarian engineering class displayed their work on the SolarSENSE soil sensor rod and SolarSPELL assembly process at the ASU Polytechnic School's Innovation Showcase.



Industrial design student Brandon Le was featured at the Salone Satellite exhibition in Milan for his housing design for the SolarSENSE soil sensor.

Project highlights

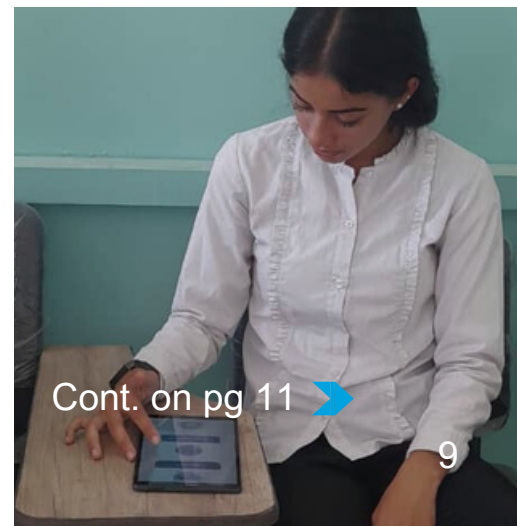
From curating content for new collections to implementing libraries in new locations, our team continued to expand both our offerings and our reach this year. Here are just a few of the highlights.

NE Syria

Education Library

After decades of oppression and civil war, the Autonomous Administration of North and East Syria (AANES) has been working to design a new school system that celebrates diversity, counters extremism and promotes gender equality. In 2023 we launched a pilot project to test whether SolarSPELL might help them achieve this vision.

We began developing the library in 2021 — our first in a language other than English — working with the AANES Department of Education to curate and tag open-access resources in Arabic, Kurdish and Syriac. We also translated and modified the user interface to be more intuitive to Syrian users.





“It gives me much hope for the success of the program to see that it is truly by students for students.”

— Dilber Youssef, Deputy Director, AANES
Education and Training Authority





Then in April of 2023, we had the honor of hosting two senior education officials from AANES, Dilber Youssef and Bahjat Mohammed Hussein, here at ASU's Tempe campus for a five-day train-the-trainer workshop.

The AANES team returned to Syria, bringing SolarSPELL libraries to three secondary schools in the Hasekah region and training more than 60 teachers at each school on how to use and integrate the library into their teaching. A few months later, our partners conducted surveys and interviews to help us evaluate the project's impact. ASU students have begun translating and transcribing the responses into English for our monitoring and evaluation team to analyze in 2024.

In the meantime, we have continued curating additional content for the library and building out an Arabic-language version of our digital SolarSPELL Training Course (STC). While the pilot is set to conclude in mid-2024, we have already begun discussing expansion to more schools in the region.



60
Teachers
trained



10 SolarSPELL libraries



About 500 schools have been damaged or destroyed by ISIS. Yet the AANES is not diplomatically recognized, making it ineligible for many forms of foreign aid. Dilber and Bahjat emphasized the importance of collaborations like ours to enable the administration to rebuild and galvanize its education system.



Zimbabwe

Agriculture Library

March 2023 saw the official debut of the SolarSPELL Agriculture Library. After two years of collaborating with Foundations for Farming (FFF) to curate content, our team trained 13 FFF Agriculture Trainers how to incorporate the library into their work promoting Conservation Agriculture techniques. At the training we also unveiled the interactive digital lessons our team created based on FFF's curriculum.

Since our training coincided with one of FFF's week-long workshops on Conservation Agriculture, we had the opportunity to demonstrate these interactive lessons to both FFF staff and workshop participants. All who explored the lessons expressed the value they will provide by bridging the gap between the tremendous amount of information participants learn during the intensive workshop and how much they can retain for when they return home and try to train others in this new approach.

South Sudan

Education Library

The SolarSPELL initiative has been partnering with EmpowerKids–South Sudan since 2018 to train teachers to implement our offline digital libraries at their schools. Over the last 4 years, seven schools in the Juba area have been equipped with SolarSPELL libraries, with teachers receiving training at the Juba Girls School Teacher Training Center, a first-of-its-kind regional SolarSPELL training center. In May 2023, EmpowerKids–South Sudan hosted a Monitoring and Evaluation Workshop for 20 teachers and 6 students to learn more about their experiences using the libraries.



6,441
Resources
accessed

Cont. on pg 16 ➤

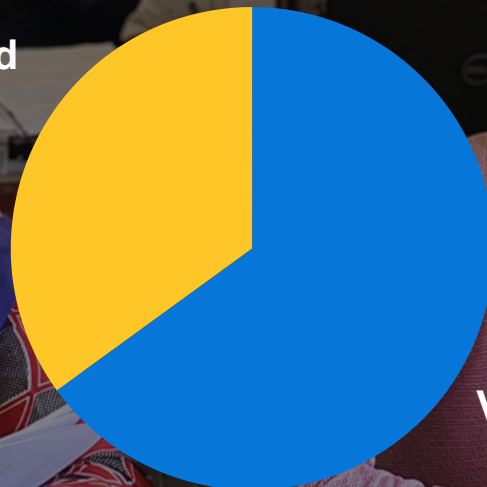
“

“The most positive outcome of using the SolarSPELL library is that we are seeing an improvement in learning, in the performance of our learners. Since introducing this, our school has become one of the best schools in Juba currently, which has never been the case before.”

— Monday, Secondary School Teacher, South Sudan

100% of teachers reported feeling more prepared to effectively do their job

Improved
35%



Very improved
65%

”
“I had a student that came to our school from a school that had no SolarSPELL. He continues to come to our school, download textbooks and share them at the school he is at now.”

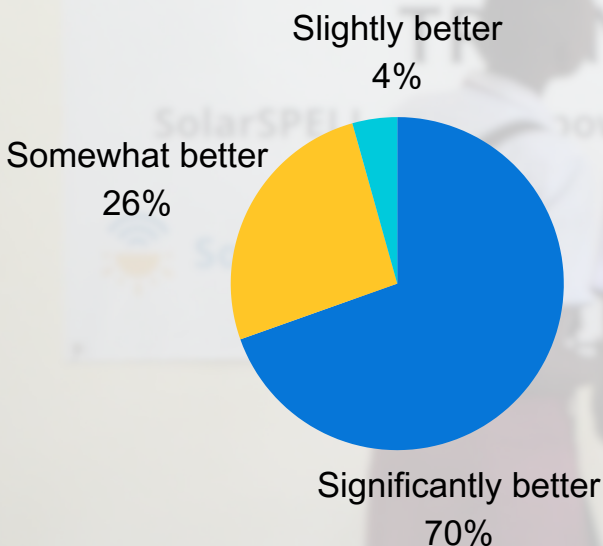
— Joseph, teacher, South Sudan

100% of respondents reported that school attendance rates had improved, and 87% found the SolarSPELL very useful in supporting students' education. Usage data collected from five of the seven schools revealed that a diverse range of 6,441 resources had been accessed.

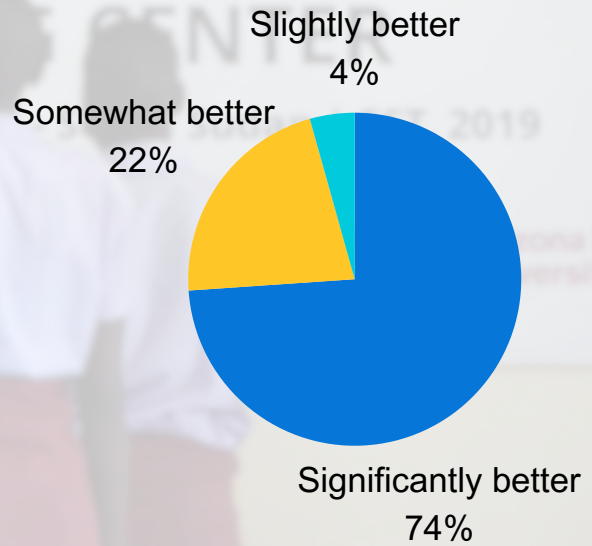
Educators testified to improvement in both academic outcomes and student engagement since implementing the digital library. And students expressed high levels of motivation due to the convenience and accessibility offered by SolarSPELL, which enables them to access information anywhere and anytime. Teachers also reported feeling more prepared and equipped to deliver effective instruction, resulting in improved teaching quality and student outcomes. Overall, the findings underscored the transformative potential of SolarSPELL libraries in addressing educational challenges and driving positive change in learning outcomes across diverse school settings.

100% of teachers felt that their students' digital literacy and information literacy improved

Digital literacy



Information literacy





“I am particularly interested in history, and with the SolarSPELL I’m able to access a lot of history on mysterious places...The SolarSPELL library has helped me expand my knowledge on world cultures. It has helped me a lot.”

— Esther, Secondary School Student, South Sudan

Peace Corps news

We first began working with the U.S. Peace Corps in 2015 and signed a Global Strategic Partnership with the organization in 2020.



Since expanding to Lesotho and Malawi this year, SolarSPELL has now partnered with nine Peace Corps posts to introduce libraries across East Africa, Southern Africa and the Pacific Islands. Using a train-the-trainer model, we provide Peace Corps Volunteers (PCVs) and their local counterparts with the tools to facilitate long-term, confident use of SolarSPELL libraries in their communities.





Peace Corps Lesotho

Education Library

Our team kicked off 2023 by launching our Southern Africa Education Library with Peace Corps Lesotho — training their first new cohort of Volunteers since the post was evacuated in 2020. These ten Education PCVs and their local teacher counterparts returned to their schools with a SolarSPELL Library and the skills to train their fellow teachers how to use it effectively.

When our team returned to conduct follow-up surveys and interviews six months later, we also had the opportunity to host our first refresher workshop with not only the PCVs and counterparts, but also their school principals. During the workshop, we previewed some of the new content we'd added to the library, including our redesigned digital SolarSPELL Training Course. But we dedicated much of our time to troubleshooting challenges and sharing best practices.

Cont. on pg 21 ➤

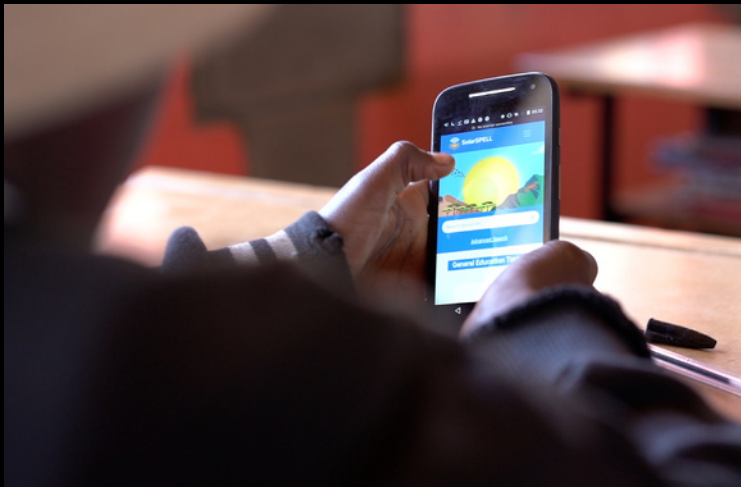


Derin, right, a Peace Corps Volunteer in Lesotho, discusses the SolarSPELL Education Library with his school's principal during a follow-up workshop.

'M'e Matseba Leboea, who teaches first through third grade, explained how she had used SolarSPELL in class when teaching English. "I was trying to help my learners get used to different accents," she said. "So I had them listen to audio stories from the SolarSPELL." Meanwhile, PCV Madison and her counterpart 'M'e Mabatloun Serobanyane shared their experience working with parents and local leaders to establish a community library at their school, with SolarSPELL at the center.

After the workshop, our team visited three schools to get a closer look at how they're using SolarSPELL libraries. After letting us observe how she used SolarSPELL in her computer skills class, 'M'e Serobanyane told us how she felt the library was helping her students become self-directed learners: "Helping them with the SolarSPELL to find out things by themselves is a good thing because they are going to get used to knowing how to do research on their own, and then when they go to high school, they'll be used to those kinds of things."





“

“When the SolarSPELL is used effectively, it changes our approach to teaching. It also changes the learners...It has made learners love learning because using devices to them is learning in a fun way ... they get skills through that fun, and those skills will be with them forever.”

— 'M'e Matseba Leboea, primary school teacher in Lesotho





Student Spotlight

RPCV returns to Lesotho with SolarSPELL

Allison Hoops was just a few months into her Peace Corps service in Lesotho when she was evacuated due to the COVID-19 pandemic. She never dreamed that enrolling in ASU's School for the Future of Innovation in Society (SFIS) would give her the opportunity to return just three years later to the country she'd fallen in love with.

After starting the SFIS Global Technology and Development (GTD) program and learning about SolarSPELL in one of her courses, Allison quickly began volunteering with our team, curating content for our East Africa Education Library and then helping our team build out more robust monitoring and evaluation tools.

In her final semester, she dusted off her Sesotho language skills and joined our team in Lesotho and Malawi — along with fellow GTD graduate students Libbie Farrell and Ben Keller — to work on her applied project, a documentary about SolarSPELL's impact in those countries. "I knew that this was a story I really wanted to share with other people — the story of SolarSPELL bringing access to information to places in the world that still don't have access to things that we take for granted in a hyper-connected country," said Allison.

Cont. on pg 26 >

Monitoring and evaluation intern Allison Hoops earned the SFIS GTD Personal Achievement Award in spring 2023.





Her commitment to this project didn't end with her graduation. A few months later, she joined our team again for a follow-up trip to Lesotho to continue work on the documentary and to screen an early cut of the film with the community that stars in it. "I don't think I understood the impact that it would have," she said. "And I've gotten emotional quite a few times watching the audience."

For Allison, working with SolarSPELL has not only given her a chance to learn new skills and give back to the people of Lesotho; it's also forever shaped her worldview: "I won't take for granted the access I have to information or libraries... that's something I'll continue to advocate for as time goes on — for more access to communities getting electricity, to ensuring that schools have the resources they need to ensure their students a quality education through libraries, through computer labs, through empowered teachers."



After graduating, Allison joined our team in Lesotho to continue work on her film 'The Sunflower Kids' and to host a showing at the primary school where most of it was filmed.



“I know what I learned here I’ll use for the rest of my life — from using data-informed decision-making to the value and importance of including local partners and communities in every step of the project.”

— Allison Hoops, ASU GTD, SolarSPELL Intern 2023





177
Resources
tagged

Peace Corps Curate-a-thon

In 2023 we teamed up once again with the Phoenix Peace Corps Association to host our first hybrid Curate-and-Tag-a-thon, giving ASU students a chance to connect with Returned Peace Corps Volunteers (RPCVs) over a shared interest in service.

This group of local RPCVs and ASU students — including participants in the Peace Corps Prep program — helped us both curate new resources and tag existing content with metadata for our Southern Africa Education Library and Health Library collections. Together they tagged 177 new resources and found 30 websites from which to source future content.

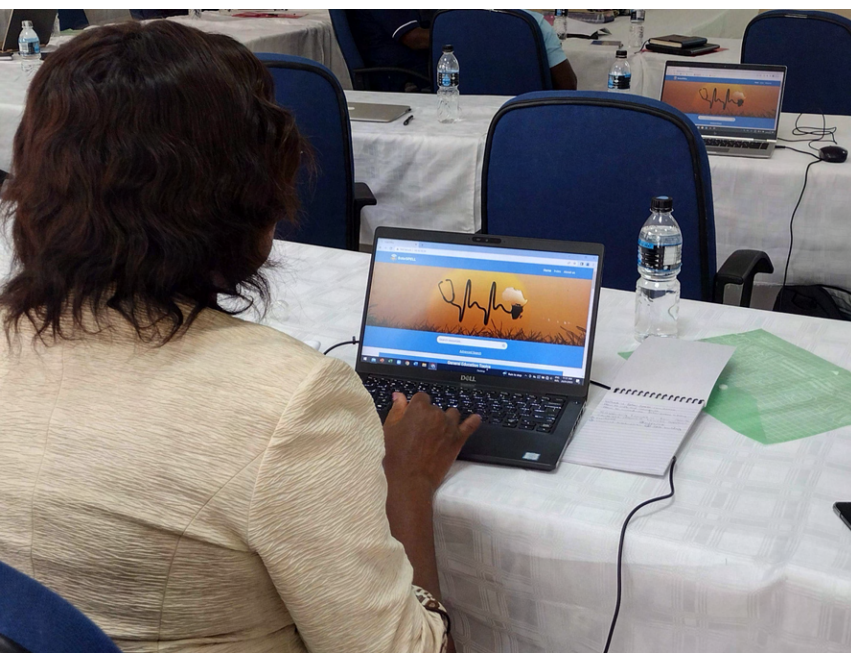


Peace Corps Response, Malawi

Health Library

To support healthcare students and professionals in Malawi, we teamed up with the country's Peace Corps Response Advancing Health Professionals program to pilot the SolarSPELL Health Library with the Kamuzu University of Health Sciences (KUHeS). We trained administrators, librarians, faculty and students on two university campuses, where they made the libraries available on campus and for students to bring on their rotations at clinics around the country.

When we followed up six months later on our monitoring and evaluation trip, 100% of our 91 survey and interview respondents reported that they felt more confident or better equipped to do their job— whether as nurses, students, lecturers, faculty, or librarians — from using the SolarSPELL library. Interviewees also consistently mentioned that it saved them from paying for data to Google information, that its videos were invaluable for learning new procedures and that it improved both evidence-based practice and patient care.





“

“We needed to perform a catheterization, and I didn’t have those skills, but after watching and downloading the videos on the procedure and then getting the real patient, I was able to do it effectively.”

— Martha, 2nd year Nursing Student, Kamuzu University of Health Sciences



We also learned that nurses and doctors — not just students — were using the libraries at the remote hospitals and that KUHeS faculty were using the library to write academic papers. Faculty members also noted that the teams of students who had the SolarSPELL libraries were more impressive to the hospital staff, and did better on their assignments than those who didn't.

“The nursing care we provide to patients is different now: it’s being updated by using the SolarSPELL,” said 2nd year nursing student Annes. “For example, we have videos on how to provide the care in practice. Because of that we are able to manage the conditions. We're able to get the information and then practice it on the ground.”



100%
reported being
better equipped
to do their job
with SolarSPELL
library

“I saw a great change in my students: they were able to say I got this information from such, such, such reference. So definitely, they are able to implement evidence-based practice using the information that they get from the SolarSPELL.”

— Dr. Noel, Lecturer, Kamuzu University of Health Sciences





Program updates

As always, our team continued to do the crucial behind-the-scenes work of improving our collections, training and impact evaluation. Some of our biggest highlights were the creation of dedicated data analysis teams and the launch of our redesigned digital training course.

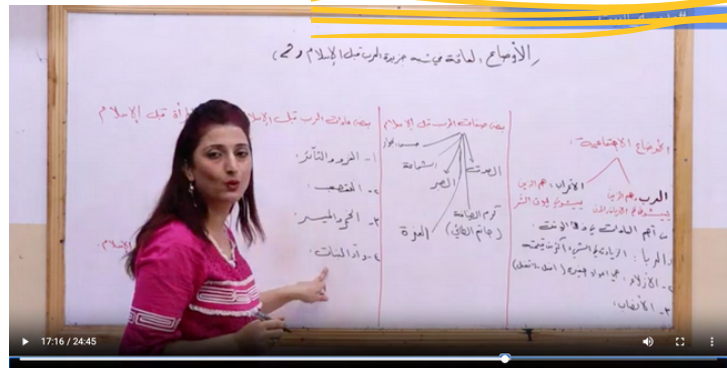
Content Curation

With the support of students from ASU and beyond, our team curated thousands of new resources for our Southern Africa Education, NE Syria Education, East Africa Health, Hopi Health and Rwanda Agriculture collections.



Plus volunteers at our spring Tag-a-Thon and Peace Corps Curate-a-Thon boosted our efforts to find new resources and make them searchable in our libraries.

Our partners also made massive contributions to our content curation in 2023. We worked with the Education Outreach team at Arizona PBS to add resources from their Learning Media library — which provides free, curriculum-aligned educational resources in various languages — to our Education collections. B2R Farms interns curated and translated 150 resources to help us provide more local language content in our Rwanda Agriculture collection. And from NE Syria, the Education Commission created and shared 561 educational videos, which they also tagged with metadata in three languages (Kurdish, Arabic, and Syriac).



SolarSPELL Training Course

Two years after launching our first digital SolarSPELL Training Course (STC) with educators in the Marshall Islands, our team unveiled a new-and-improved STC to Peace Corps Volunteers and their counterparts in Lesotho. Intended to serve as a tool for in-field trainers — both to sharpen their own skills and to help them teach others how to use the SolarSPELL library — the STC complements our in-person training by providing role play activities, quizzes and helpful resources.

In response to user feedback, we teamed up with master's students from ASU's Mary Lou Fulton Teachers College to redesign the course to be more accessible and engaging. Perhaps the most exciting new addition to the course is the final section: Becoming the SolarSPELL Trainer. This section contains an abundance of brand new resources, activities, downloadable PDFs and examples to help library users plan a SolarSPELL training at their school or in their community.



Resources Outline

Table of Contents

Track 4: Becoming the SolarSPELL Trainer

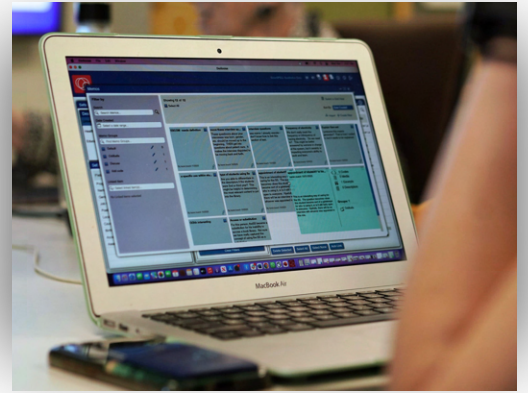
- [Introducing SolarSPELL to students, teachers, and community members](#)
- [Leading a SolarSPELL training](#)
 - [Assessing trainees' needs and skills](#)
 - [Suggested training agenda](#)
 - [Training best practices](#)
 - [Develop a training plan](#)

ASU Arizona State University SolarSPELL

2 of 40 Next

Monitoring + Evaluation

Our team made massive improvements in 2023 to our monitoring, evaluation and learning processes, dedicating more time to data analysis than ever before.



For the first time, we established student teams to work on both quantitative and qualitative data analysis. We also brought on our first full time data analysis graduate fellow Paye Kialain, featured below, over the summer to help us improve our quantitative data pre-processing and analysis. And with the help of ASU Mirabella resident Karen and Global Technology and Development student Ryan, we updated our surveys and interviews and began using new software, allowing us for the first time to compare our qualitative data across all of our projects and programs.





Student Spotlight

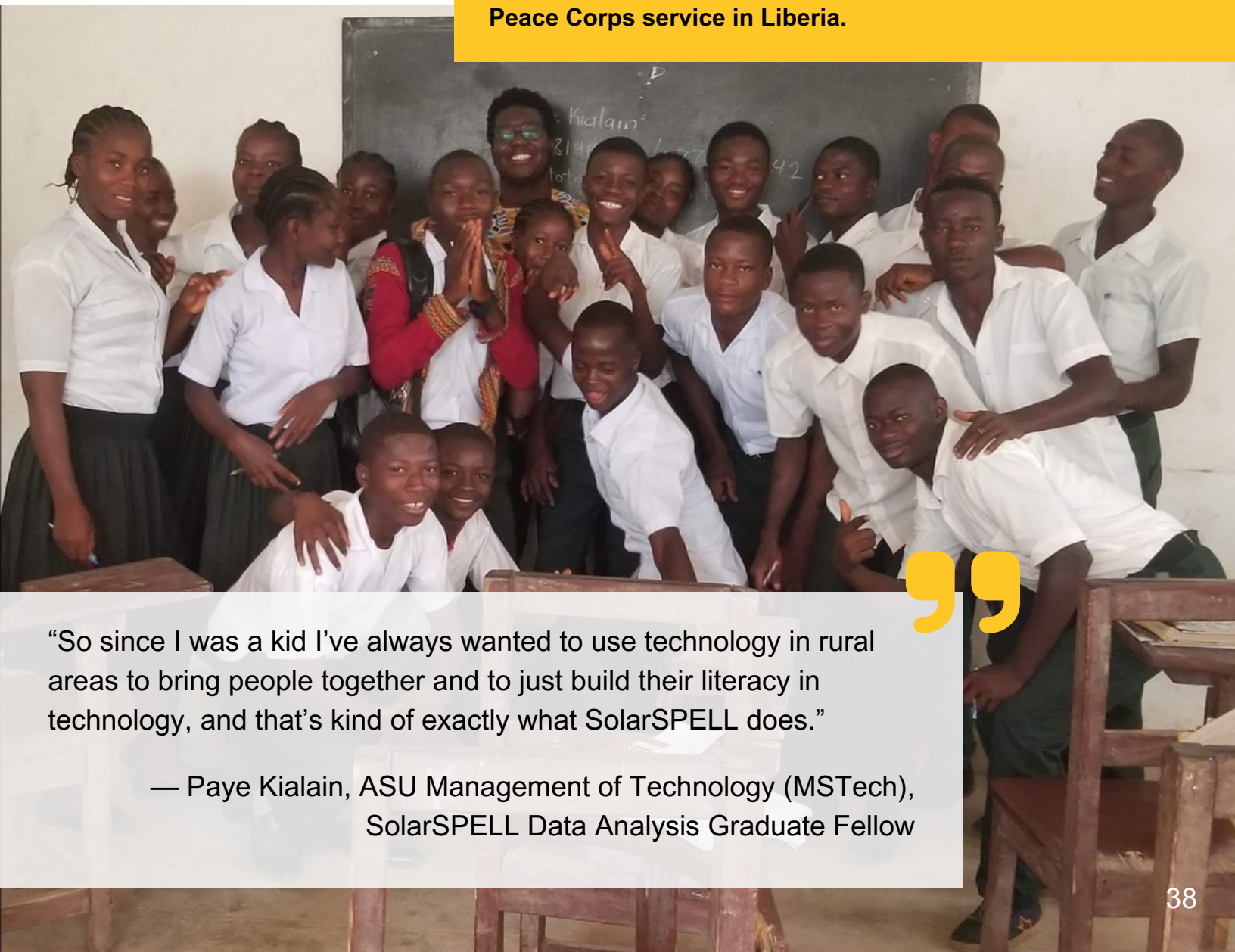
Graduate fellow uses data to empower

Having grown up in a missionary family, Paye Kialain said he learned early on the power of technology to unite communities and alleviate poverty. It quickly became a throughline in his later work — from teaching middle school math and science as a Peace Corps Volunteer in Liberia to pursuing a graduate degree in ASU’s Management of Technology program.

He joined the SolarSPELL team in his first semester, when he began volunteering his time to help curate localized resources for our Education Library. After that he began supporting our monitoring and evaluation efforts, particularly by lending his technical expertise to improve data analysis and process automation. Over the summer semester, he joined us full time as our first data analysis graduate fellow, leading data analysis interns and supporting software interns working on machine learning for our Agriculture Library.

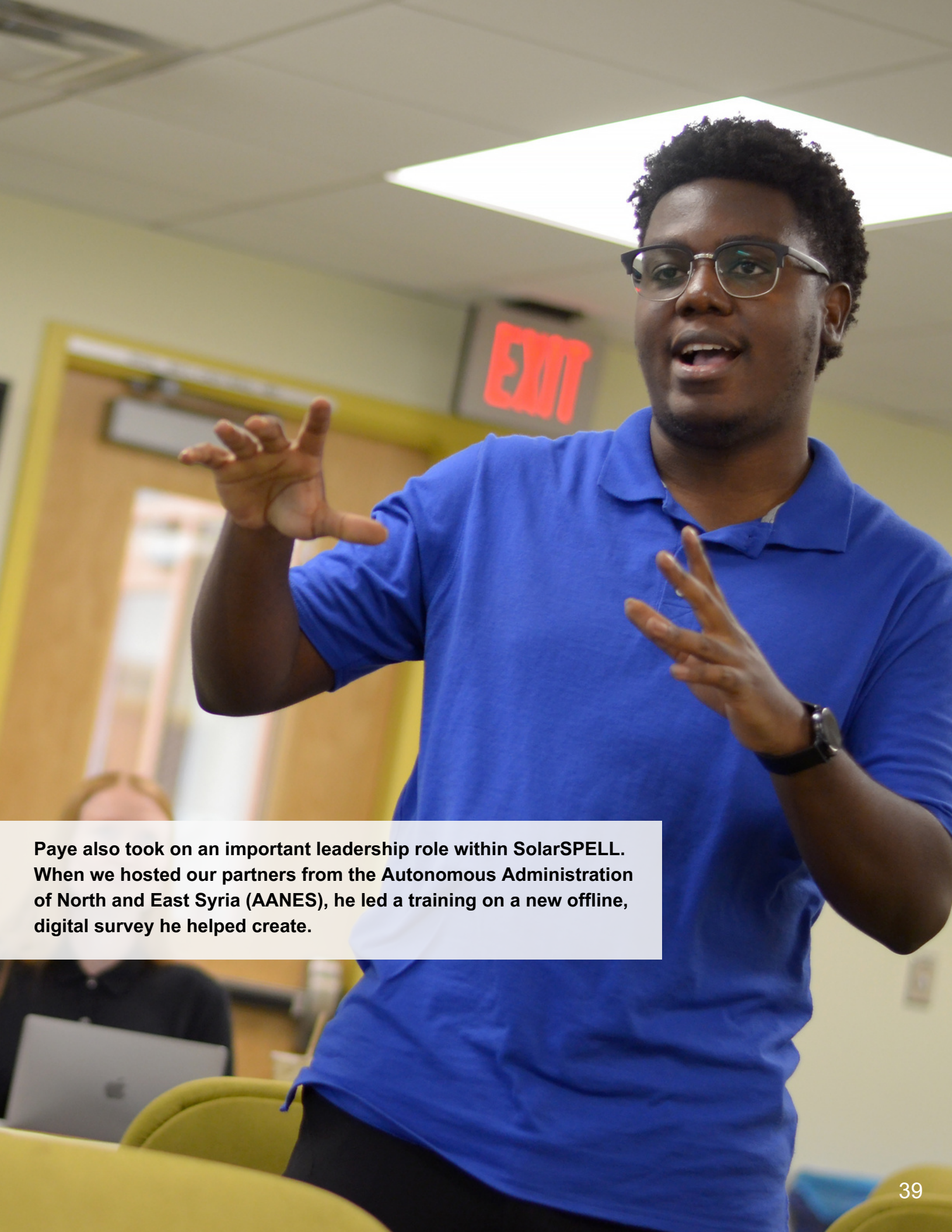
Effective monitoring, evaluation and learning (MEL) is crucial for our team to be able to measure our impact and determine how we can better serve our partners and users. In addition to helping us refine our surveys and more effectively analyze the data they hold, Paye also worked on code to automatically process quantitative data from our surveys, making our data analysis far more efficient. “The Management of Technology program is super broad, but since I’m concentrating on data science, doing data analytics for real world data and trying to improve real world initiatives, it’s directly related to what I’m in school for right now,” said Paye.

Paye Kialain poses with his middle school students during his Peace Corps service in Liberia.



“So since I was a kid I’ve always wanted to use technology in rural areas to bring people together and to just build their literacy in technology, and that’s kind of exactly what SolarSPELL does.”

— Paye Kialain, ASU Management of Technology (MSTech),
SolarSPELL Data Analysis Graduate Fellow



Paye also took on an important leadership role within SolarSPELL. When we hosted our partners from the Autonomous Administration of North and East Syria (AANES), he led a training on a new offline, digital survey he helped create.

Our Team



Laura Hosman
*Co-founder and
Co-director*



Bruce Baikie
*Co-founder and
Co-director*



Heather Ross
*Co-director,
SolarSPELL Health*



Sara Jordan
*Library Information
Specialist*



Rachel Nova
Project Manager



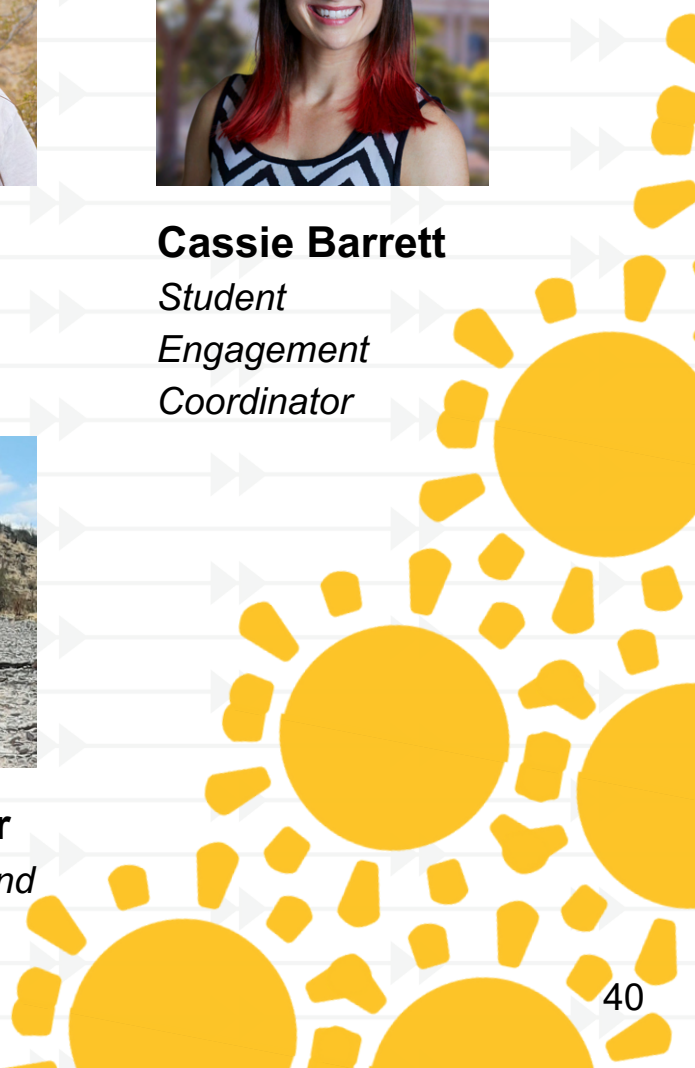
Cassie Barrett
*Student
Engagement
Coordinator*



Abby Johnson
*Communications
Specialist*



Jacob Shaeffer
*Web Developer and
SysAdmin*



In recognition of her contributions to advance public health, Heather Ross, co-director of SolarSPELL Health, was inducted as an American Academy of Nursing fellow this year, one of two from Arizona!



Partners + supporters

Arizona State University

ASU Coverdell Fellows
Program

ASU Education for Humanity

Autonomous Administration
of North and East Syria
Education Commission

Bridge2Rwanda

EmpowerKids-South Sudan

City of Phoenix Crisis
Response Program

Foundations for Farming

Hopi Cancer Support Services

Joan T. & S. Rex Lewis
Foundation

Kamuzu University of Health
Sciences (KUHeS)

Kwajalein School System,
Marshall Islands

Peace Corps

UNHCR, the UN Refugee Agency

Voice of America - Let's Learn
English Program

WiRED International



Towela Nyika, Advancing Health Professionals Coordinator for Peace Corps Malawi, won an Innovation Award from Peace Corps for her work with SolarSPELL and KUHeS.

Get involved

Join our journey!

The SolarSPELL Initiative is made possible by the contributions of donors, partners, volunteers, and our team of ASU students, faculty and staff. We invite you to be a part of SolarSPELL's story by giving your time, leveraging your area of expertise, sharing about SolarSPELL with your networks, or making a financial contribution.

Together, we can provide communities with the knowledge they need to solve the complex problems they face and work toward creating a sustainable, equitable future for all. To learn more and stay connected, please visit our website, subscribe to our newsletter and follow us on social media.



solarspell.org



team@solarspell.org