Developing an offline digital library for South Sudan - the SolarSPELL Health: nursing and midwifery library

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Introduction

Qualified healthcare professionals are sorely needed in East Africa[1], and schools lack crucial and up-to-date medical training materials such as textbooks, manuals, instructional videos, and other resources needed to educate nurses and midwives.

The SolarSPELL initiative, based out of Arizona State University (ASU), is developing an offline Digital Nursing and Midwifery Library to empower nursing and midwifery educators and students at the Juba School of Nursing and Midwifery (JSNM) in South Sudan. While visiting Juba in 2019, the co-founders of SolarSPELL and an ASU Edson College of Nursing and Health Innovation professor saw first-hand the lack of infrastructure and resources in hospitals and healthcare training facilities. They learned that students and clinicians share limited, and often outdated textbooks, and that there was minimal access to medical or nursing libraries.

An in-field partnership established with local NGO EmpowerKids - South Sudan, helped the team start the necessary conversations with local health-focused entities, like the University of Juba, the College of Physicians and Surgeons, and Health Pooled Fund of South Sudan. Education and practice leaders shared that medical and nursing students are not educated in evidence-based practice, because healthcare education in South Sudan lacks the library resources to support access to the medical and nursing literature. Based on these conversations, the SolarSPELL team visited the Juba School of Nursing and Midwifery and launched the process of developing and preparing an offline, digital library for nursing and midwifery students.

The SolarSPELL (Solar Powered Educational Learning Library) is an offline digital library that mimics an online experience by generating its own offline WiFi hotspot to which any WiFi-capable device can connect. This enables users to freely surf the library's expansive, yet localized, content, without the need for internet or electricity, or costly infrastructure improvements. Until recently, the SolarSPELL initiative has primarily focused its efforts on providing libraries with content targeted for primary and secondary schools. Indeed, there are currently approximately 15 primary and secondary schools within the Juba-area using SolarSPELL libraries; a SolarSPELL Teacher Training Centre was established at the Juba Girls Secondary School in June 2019. During the COVID-19 pandemic, while schools have been closed and lessons moved to being given over the radio, SolarSPELL libraries have been brought to multiple schools around the Juba area, allowing thousands of parents to come to the schools at coordinated times, to download their children's textbooks and supplementary educational materials, allowing the learning to continue from their homes.

Developing a digital health library for nurses and midwives

Given the positive results we have seen in the education sector, the SolarSPELL initiative has begun expanding its efforts to the health sector, with its first health-focused library to be specifically targeted for nursing and midwifery students. According to the World Health Organization (WHO), nurses and midwives are often the first and only point of contact for communities.[1] SolarSPELL offers the opportunity to eventually expand and support health education across East

Africa in schools lacking reliable, robust, or any access to internet and electricity.

We hope that with the SolarSPELL Health: Nursing and Midwifery Library, educators at the Juba School of Nursing and Midwifery will be able to provide a more comprehensive and engaging learning experience for their students. We plan to conduct prospective evaluation to assess the impact on students' educational outcomes and how to reduce the shortage of nurses and midwives in the community. This SolarSPELL digital library developed for Juba School of Nursing and Midwifery will include high-quality, health-focused educational materials to supplement the current nursing and midwifery curriculum with a variety of written and video resources and interactive modules that will provide educators and students with the information they need to deliver enhanced care in their communities. Figure 1.

When the WHO declared 2020 the Year of the Nurse and Midwife[2], no one could have predicted that 2020 would also be the year of a global pandemic. The eyes of the world refocused on the nursing profession in the face of COVID-19.

Due to the pandemic and travel constraints, in-person training for the Juba School of Nursing and Midwifery's instructors and students on the use of the Digital Nursing and Midwifery Library has been delayed. However, the SolarSPELL team has continued collecting and curating library content relating to the educational needs in South Sudan. Among the SolarSPELL team, outside of ASU, are two South Sudanese university students, Winny and Grace, who interned during the Summer of 2020. They have been able to contribute to the project remotely from their universities in Texas and New York, respectively.

Winny says, "What I like most about SolarSPELL is the end result of each one of their projects...someone somewhere gets to have access to educational materials that they would otherwise not be able to get." Winny helped curate content for the Digital Nursing and Midwifery Library and feels that the new library is going to be helpful to the students since it contains many of the books that they need to fulfil their degree requirements.

Grace also curated the content for the digital library and was most excited about a resource she curated about adverse childhood experiences and how that shapes a child's long-term health. She says, "This resource is needed in South Sudan because childhood experiences shape their future and lifestyle. Children face and experience a lot of abuses and these abuses are not addressed and this later causes depression and psychological problems."

SolarSPELL Co-Founder and ASU Faculty, Dr. Laura Hosman has always included ASU students in every aspect of the SolarSPELL initiative because students are

Figure 1. Students at Juba School of Nursing and Midwifery get the opportunity to try out the SolarSPELL digital library (Credit: The SolarSPELL Initiative, Arizona State University)

critical to its success. ASU students not only contribute to work in the field but they also learn from opportunities to engage globally, behave entrepreneurially, carry out real-world work with purpose, and transform society.

These are some testimonials from ASU students who have been involved in the project:

Mpho, an ASU student, is currently studying Applied Biological Sciences. She attended most of her primary and secondary schooling back in her home country of Botswana and understands first-hand the importance of SolarSPELL in resource-constrained communities. She says, "It brings me great joy to know that future health-care practitioners of South Sudan will have a wide range of resources to use as they learn and acquire all the necessary information that they need to become qualified in their fields."

SolarSPELL also has two Family Nurse Practitioner (FNP) students, who are nurses obtaining their Doctor of Nursing Practice (DNP) degree and have provided insights not just from their schooling, but real-world experiences. FNP student, Amira, says, "What we take for granted here, such as access to up-to-date educational materials, does not come as easily in South Sudan. In addition to this, we have had to tailor the content to what is realistic and applicable in their country. I am thankful to be a part of this project and I hope that this library is useful to the nursing and midwifery students."

Several ASU Biomedical Engineering students who had previously been working on other SolarSPELL digital library projects also spent Summer 2020 with the content curation team for the Nursing and Midwifery library. Karla, one of these students, says "[It] has taught me a lot about the health content needs in different parts of the

world, specifically South Sudan, and just how critical it is to have access to relevant health resources especially for those preparing as healthcare professionals."

SolarSPELL is continuing to work on the development of the SolarSPELL Health: Digital Nursing and Midwifery Library for the Juba School of Nursing and Midwifery. As soon as travel is possible, the team plans to return to South Sudan in 2021 to deploy the library, training teachers and students to incorporate the SolarSPELL library into lesson plans and incorporating evidence-based practice into learning and practice. Until then, the team continues to improve the library. We are always open to recommendations for open access digital resources that can be added to the SolarSPELL library. If you have questions about the project or would like to offer resource ideas, please email solarspell@asu.edu.

References

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