**Promoting Deaf Literacy in Nigeria through the Documentation of Indigenous Sign Language**

**Project Summary**

The goal of this proposal is to produce a multimedia documentation, including a video and smart book, of the lexical signs of the endangered indigenous Nigerian Sign Language (NSL). Lexical signs will focus on vocabulary from various aspects of Nigerian life and culture, such as family, food, cooking, farming, animals, etc. The signs will be augmented with a collection of free social discourse between individuals who use NSL to communicate. This will serve as a guide for how the language works structurally, and how the NSL lexical items interact in phrasal and sentence formation.

In this project, we will video-record indigenous Nigerian Sign Language used in Abuja Deaf Center, which we believe represents the different dialects of the language. Deaf signers of NSL found in Abuja Deaf Center make up to 15% members of that community, who migrated from the different regions of the country, where they must have acquired the local signs. We will do a complementary recording in Kaduna in the core Northern State, and in Ibadan in the Southwest, both of which have a significant deaf population. We will adopt and adapt the modified Swadesh Wordlist version to record a corpus of indigenous signs, targeting up to 7600 words and expressions. We will annotate the video and the metadata for online upload and archiving.

We will create a user friendly signed language app that will work in both large and small devices including personal computers, tablets, and smart phones, and we will upload several short videos on YouTube with open access. For distribution to deaf individuals, families, and deaf schools, especially in the rural areas with no internet, we will replicate the software app unto hundreds of regular SD cards for phones and tablets, burn several CD and DVD plates for Schools for the Deaf across the country, and Special Education Units of Ministries of Education.

We have collaborative relationships and ongoing sensitization forums with families, schools for the Deaf, Ministries of Education, and the Nigerian National Association of the Deaf (NNAD). We will leverage on the existing relationships with the above-mentioned stakeholders to intensify sensitization on the need to teach deaf children in their own indigenous signs. With our proposed Early Intervention Program in place, our deaf and hearing volunteers that can sign will work with families that have newly diagnosed deaf children to teach the deaf infants in the indigenous Sign Language. our volunteer team will ensure the distribution of the SD cards to all the Schools for the Deaf in the country. We are currently compiling a list of the schools for online publication.

In summary, this project will document lexical signs of the endangered indigenous Nigerian Sign Language (NSL) within a Deaf community in Abuja with a representation of the various regional dialects. Socio-cultural expressions, including free discourse, Deaf proverbs and experiential stories will also be documented and will serve as a guide for understanding how NSL works structurally. The community consists of 97 Deaf adults plus hearing family members, most of whom use a form of English sign as learned in school. Only 15% are literate in NSL.

**Project in Details**

This project will document Nigerian Sign Language (NSL) lexical signs and collections of free social discourse through the production of a multimedia video which will be made accessible to language scholars and the broader linguistics community. The video will contain at least 7600 lexical signs, including nominals, verbals, adjectivals, etc., which will be analyzed according to the four parameters of signed language description – handshape, movement, location, and palm orientation. The video will also contain socio-cultural expressions, including free discourse, Deaf proverbs and experiential stories, which will serve as a guide for better understanding how the language works structurally, and how the lexical items interact with each other in phrasal and sentence formation. In addition to production of a multi-media video, documentation will also take place through the publication of a book identifying and describing NSL signs. The smart book and mobile-friendly video will be available for posterity to prevent the language from dying a total death. Both the video and the smart book will also be used to educate Nigerian’s about this endangered indigenous language through dissemination to Nigerian schools for the Deaf, to language users, and to Deaf associations directly through mobile phones, tablets, and personal computers.

A large amount of video footage containing myriad socio-cultural expressions, including free discourse, and sharing of Deaf proverbs and experiential stories through NSL sign will be generated throughout the duration of the documentation period. The video footage will be edited and annotated to include captions and voice interpretation, where appropriate, and with adequate metadata for archiving. This video will be archived for preservation in several institutions. The goal is to have a collection of discourse in which lexical items are elicited. In addition, video containing a target of at least one thousand lexical signs will be analyzed and documented. These two sets of video footage will be archived separately.

Until recently, the endangered status of NSL has been misunderstood by foreign scholars due to the lack of well-researched information about the use of NSL in schools and in daily life. In fact, the undue presence of the signed English variety, the only signed language taught in Nigerian Deaf schools for almost six decades, has put NSL at risk of permanently falling out of use. However, there is one isolated Deaf community, the Deaf Center located in Abuja, Nigeria, where 15% of members from different tribal affiliations within the country still use the indigenous NSL. We will record the NSL signs used there and the varieties used around Kaduna Polytechnic in the North, and College of Special Education, Ibadan, Oyo and compare them to the varieties we recorded at the Abuja Deaf Center as a guide to better incorporate all the varieties of the indigenous signs that are in use. In addition, the socio-cultural practices, including free discourse and daily interactions will also be documented by video and will be used as a guide to better understand how NSL works structurally and in daily communication.

It is important to document the indigenous Nigerian Sign Language (NSL), which is suffering from the imposition of a foreign signed language taught in Deaf schools, and to create technology-based innovation for its distribution and acquisition across the deaf communities. We make this proposal for the following reasons:

Contrary to scholarly assumptions, NSL is neither taught nor permitted in Deaf schools, thus it is endangered. Since the introduction of Signed English to Nigeria by Andrew Foster in the late 1950s, and its adoption in Deaf education by the Nigerian government, NSL has continued to disappear. We have encountered very few Deaf signers who use NSL. Documenting NSL is the only option available to ensure it is preserved.

Until recently, the endangered status of NSL has been misunderstood and misrepresented by foreign scholars due to the lack of well-researched information. NSL has been described in the academic literature as a dialect of ASL, or as having derived from it. This misunderstanding has contributed to its diminished relevance in Nigerian life and culture and has negatively impacted it to the point of extinction.

Disease and illness between the ages of 0 and 5, a critical pre-linguistic period, is the cause of 75% of Nigeria’s Deaf cases. This results in children having little or no language acquisition through their early linguistic development until they enroll in school, where they are taught MCE. This cycle has led to a population of Deaf individuals with poor linguistic and cognitive development, and a confused linguistic identity. As the prevalence of early childhood illnesses increases, Deaf people have become a significant minority linguistic/cultural group in Nigeria (Asonye, 2017).

The primary users of the local signs are not literate in another language; thus, we are including secondary language users to provide translation/interpretation into English sign. This will also allow for comparative analysis. We will use the modified Swadesh Wordlist to collect an adequate amount of vocabulary - adapted to feature culturally identifiable and universal vocabulary, to be classified according to various fields. Since NSL is a visual-manual language not ye documented, we will also document gestures made by signers and interpreters as language components, facial expressions, mannerisms, gestures, and body language accompanying proper signing to ensure broad understanding. Since members of the Deaf Center migrated from different linguistic and tribal regions, we will be aware of possible influences spoken languages may have on the indigenous signs. All entries will be made descriptively, with adequate information describing each sign.

NSL has been described in the literature, especially by foreign scholars, as a dialect or derivative of ASL. However, we have refuted this claim in our studies (Asonye, 2017; Asonye, Edward and Emma-Asonye, forthcoming). NSL is a natural signed language – a visual language, whose mode of rendition is manual. The four parameters for signed language description applies to NSL, and they will be used in the analysis for this documentation. The language exists in a multicultural, multilinguistic environment. However, NSL grammar has not been developed due to its lack of use. This research project will study and document the lexical signs of NSL with a combination of word-by-word alignment and morpheme-by-morpheme correspondence glossing (Leipzig glossing, 2015). Indigenous and other related local stories will be used to collect socio-cultural discourse to further examine the structure of the language.

The equipment for this documentation project is quite simple. Only a few basic pieces are necessary to carry out documentation: two motion picture cameras (that will take still pictures) and their accessories, a lighting system, one desktop and one laptop computer for immediate data transfer, one high resolution lavalier microphone for audio enhancement translation, and a Printer. The budget justification describes each in detail.

There are three stages to this documentation project – pre-production, production, and post- production. Elements of the pre-production include preparing the script, selecting, and training the crew (the deaf signers, interpreters, and helpers). The production stage will require a time manager to manage time, participants, and the script. A minimum of 6 hours of recordings will be captured daily. All files will be immediately transferred at day’s end. The post-production stage will focus on editing video files, including graphics, captioning, and still images, archiving, and software app production. Each of these stages will be completed within a 24-month project period.

The video materials and other software produced will be deposited in State libraries and will serve as important study materials for further development and strengthening of NSL. The following institutions who offer Deaf education would agree to host the materials in their libraries: University of Ibadan, and College of Education, Oyo. All materials generated will be deposited in open source online archive, disseminated widely to Deaf schools, and made available to project participants and their hearing families. Materials will also be made available to the State Ministry of Education, Ministry of Women Affairs, and Social Development.

Data types collected for the project include video and audio recordings, texts (including notes, translations, and transcriptions), geospatial data, and images, including digitized drawings. Raw data will be collected using commonly available file formats consistent with the more standard requirements and US Library of Congress recommendations, including .wav for audio, .mp4 for video, .tiff for images, and MS Word, plain text, XML, and PDF for text data. Raw data will be archived with copies, utilizing compressed file types as needed to facilitate web publishing and online public access. Audio files will be migrated to .mp3 format for online publication, and images will be converted to .jpg format.

Data collected for this project is estimated to be 11 TB of video data and 2-3 TB of other data types. The Solver will implement a series of standard operating procedures to support data management. Documented procedures will include detailed instructions for setting up recording equipment and verifying completeness of recordings at each session’s end. Written instructions for consistently translating and transcribing each session will also be available to all field research assistants. Electronic files and folders will hold data from a single session. Top level directories for every session will contain a plain text README metadata file which will adhere to IMDI metadata schema and will include per-session information about the data collectors, translators and/or transcribers, the session date and time, equipment used, and some demographic and identifying information about participants.

Adequate measures will be put in place to secure data during in-field production. All computer and external hard drives will be encrypted, and all data will be backed up according to a documented schedule. We will also ensure sufficient hard drive capacity by setting up periodic data shipping schedules to the University of New Mexico (NM) where the Solver is currently serving a Research Scholar. And data will be backed up to local UNM storage facilities. Multiple SD cards will be used for permanent backup.

Project data will be archived for a minimum of 10 years at libraries in Abuja, Lagos, Oyo States, and at UNM. Additional archives may be established within the UNM Digital Repository to increase the presence of the language. The UNM Digital Repository is an open access, publicly accessible Open Archives Initiative (OAI) compliant repository maintained by the UNM Libraries. Data Curation Librarians will be responsible for curating and preparing data for archiving, will provide daily file integrity and format verification, and will create and maintain technical and administrative metadata using the widely-adopted Metadata Encoding and Transmission Standard and Preservation Metadata Implementation Strategies metadata standards. These additional metadata include digital file signatures and checksums for bitwise integrity validation and chain of custody documentation.

During this innovation, we will periodically create short videos documenting the life of Deaf members in the local signed language, with English captions, and will post them on YouTube. We will also create short lifestyle-type videos that include footage of Deaf community members as they engage in various cultural ceremonies and practices. These videos will be paired with local music and will help shed light on Nigeria’s Deaf. Using social media is an innovative approach to bringing about awareness of and disseminating information about the importance of language preservation.

This innovation will be assessed based on the following expected impacts:

* **Acceptability**

The extent to which the innovation is accepted in the deaf community, especially by deaf adults, who use the English signs. Studies for instance, Schmalings (2003) show that the introduction of the foreign signed language by Andrew Foster, in the Hausa deaf community created some confusion between deaf adults who were literate in the local signs and the deaf adults who eventually learnt the foreign signs in school. In the same manner, we expect that some deaf adults, who use the English signs learnt in school may want to reject the indigenous signs presented by our innovation. Nevertheless, we hope that our collaborative relationship with the Nigerian National Association of the Deaf (NNAD) will resolve and dissolve whatever concern that may arise from some members of the deaf community.

The extent to which the innovation is accepted in the school system for Deaf education. For over 6 decades, a foreign signed language has been officially used for Deaf education in the Schools for the Deaf as approved by the Federal Government, and for all this period of time, the indigenous Nigerian Sign Language has been suppressed. We observed in the course of our studies, that many of the government workers at the Special Education Unit know little or nothing about signed language and the deaf people. Our innovation will be assessed by the level of its acceptance by the school system, and the government at large. However, we rely on the strength of our sensitization for the smooth selling of the innovation to the school system.

* **Use for Education**

In addition to accepting our innovation, in the schools, and in the deaf community, it will be assessed by its use for deaf education and for the implementation of Early Intervention Program for deaf children. In other words, deaf educators, and teachers will learn the indigenous Signs and use them in the classroom. In addition, our volunteer workers who are literate in signed language will work with families that have deaf babies and infants to help them develop their linguistic competence in the indigenous Sign. They will transfer their knowledge of the English Sign to the indigenous Sign.

* **Increased number of Signers**

One of the major factors that sustain deaf stigmatization is absence of communication between the Deaf and Hearing, this is a common factor in Nigeria, and much of African countries, because most hearing people do not know about signed languages and have little or no interest in signing. We also believe that the scarcity of signed language use in the society is key to the gross lack of interest of the hearing people in learning signed language. People do not need to go to schools for the deaf to learn signed language. Our innovation will be judged by its impact in increasing the population of hearing signers by increase signed language presence in the society, especially in the religious, public and private sectors that deliver services to deaf people, for instance, hospitals, schools, churches, etc.

**The Technology**

The proposed hardware and software technology for our innovation include but may not be limited to:

* Online video upload on Youtube, our website, Facebook and other media outlets.

As earlier stated, we will create short videos documenting the life of Deaf in Nigeria, signed in the indigenous language and will post them on YouTube periodically. We will also create short lifestyle-type videos that include footage of Deaf community members as they engage in various cultural ceremonies and practices. These videos will be paired with local music and will help shed light on Nigeria’s Deaf. This is one strong innovative approach to bringing about awareness of and disseminating information about the indigenous signed language.

* Signed language video app for everyday learning

We will create video app that will help people learn the language much easily. This app will contain segment by segment lessons designed for any beginner. The documentation and the app have two parts – the lexical part and the discourse part. While the lexical part is a rich list of lexical signs in the language, the discourse part presents real time signing – monologues, dialogues, etc.

* Smart book

The signed language app will be used to create a graphic based smart book (or eBook) that makes learning attractive to infants and their caregivers and, also to younger deaf children in schools for the Deaf. This smart book can play on any big and small devices.

* SD Cards and CD/DVD plates

For the benefit of people living in rural areas without internet, and with limited electricity, we will copy the software into SD cards compatible with both big and small devices. Additionally, the CD/DVD plates will be created to readily play in the acceptable format for the country.

* Online archives at relevant archival banks

 In addition, project data will be archived for a minimum of 10 years at libraries in Abuja, Lagos, Oyo States, and at UNM. Additional archives may be established within the UNM Digital Repository. The UNM Digital Repository is an open access, publicly accessible Open Archives Initiative (OAI) compliant repository maintained by the UNM Libraries. Data Curation Librarians will be responsible for curating and preparing data for archiving, will provide daily file integrity and format verification, and will create and maintain technical and administrative metadata using the widely-adopted Metadata Encoding and Transmission Standard and Preservation Metadata Implementation Strategies metadata standards. These additional metadata include digital file signatures and checksums for bitwise integrity validation and chain of custody documentation.

**Project Stakeholders**

Since 2014, we have established relationships with local and national Nigerian Deaf communities, including Deaf schools, Deaf associations, signed language interpreters, and family members, such as parents of Deaf children and children of Deaf adults (CODAs). We have hosted several community engagement outreach efforts and collected deaf demographic and signed language data. The Abuja Deaf Center belongs to the Abuja Association of the Deaf, an affiliated body to the Nigerian National Association of the Deaf. It is a central daily meeting point for deaf residents in Abuja, Nigeria. Many deaf individuals converge at the center morning, afternoon, and evening to do business, meet friends, and have communal meals. We have received approval from Ministries of Education in Imo, Lagos, Abuja, Rivers, Enugu, and Ebonyi to document signs using students and teachers in their states. Parents of Deaf children have also agreed to collaborate.

The Solver will hire up to two dozen Deaf signers from the Abuja Deaf Center who use NSL to serve as primary language consultants, and secondary language consultants who understand NSL but also use English Sign currently used in deaf schools. These two groups will work with hearing interpreters to provide information about the language.

In 2017, we launched our “CODAs and Parents Must Sign” Campaign as part of the 2017 International Week of Deaf activities. Hearing and Deaf members fully participated in the program, which was initiated to create awareness among the hearing about learning NSL to communicate with their Deaf relatives. However, there are no documented materials for learning NSL to date, making this documentation project even more critical. In the wake of 2018, we had a meeting with the national executives of Nigerian National Association of the during which time an agreement was reached to collaborate in the needed documentation and promotion of indigenous Nigerian Sign Language for Deaf education. Prior agreements had been reached with Abuja Association of the Deaf (AAD) and Lagos Association of the Deaf (LAD) in 2017.

We are currently on regular talks with the executives of NNAD on their role in the success of the proposed innovation. A WhatsApp platform was created between the NNAD executives and the project personnel of S-DELI. We will engage the deaf adults in the documentation process, as some of them will be hired as language consultants, in the sensitization of the larger deaf body, and in the distribution of the innovation materials. But beyond that, we will seek to train interested and eligible deaf individuals on the theories and practices of signed language documentation and signed language linguistics. We will equally encourage and support younger deaf individuals to take linguistic related courses in the universities, as this will help to sustain the further documentation and development of the language. It is interesting to know that we are not aware of any indigenous deaf individual who is studying linguistics related courses whether home or abroad.

Deaf individuals and the Nigerian deaf community are at the center of our innovation, because this is about their language, and about them, and so we must carry them along. Sensitization workshops are currently being planned with the members of Abuja Association of the Deaf, which might take place before the commencement of the proposed innovation. Other sensitization forums will take place periodically both during and after the documentation, which will focus on educating the deaf body on the linguistics of signed language, and the importance of indigenous signed language use for Deaf literacy. The deaf body both at the regional and national levels will work with our team to sell this innovation to the school administration, the legislators, and the government at large.

**The Project Head**

The Project Head has a doctoral degree in Linguistics and Communications, with a variety of specializations ranging from applied linguistics, linguistic analysis, fieldwork linguistics, language documentation, sign language linguistics, and communication disorders. He has undergone significant online and physical video training, including shooting documentaries, video editing, captioning, etc., and has been working with Deaf and hearing signers in Nigeria since 2014, collecting large volumes of signed language video footage which are being analyzed for comparative studies. He has also established strong collaborative relationships with Deaf and hearing signers, including Deaf adults from the Abuja Association of the Deaf (AAD), whose members will participate in this documentation project as language consultants, Nigerian National Association of the Deaf (NNAD), several Ministries of Education, Parents of Deaf Children (PODCs) Abuja, Lagos and Imo State.

The Project Head will provide pre-production training to Deaf participants and interpreters in the concepts and practices of language documentation, the linguistics of signed language, ethics of language documentation, community engagement, how NSL works, the use of ELAN, and how to participate in the documentation project, collect data, and annotate a signed language. This may be the first time that an indigenous Deaf person is trained in linguistics and signed language documentation. Two students from the University of New Mexico and two Nigerian linguistics hearing students will be hired to support the project. Younger Deaf persons will be encouraged to study linguistics or signed language-related courses in higher education, charting a course for the education of indigenous Deaf scholars in linguistics.

This documentation project will take place in Nigeria and the US. The Solver is aware of the ethical laws regarding research in these two countries, especially research that involves human subjects. Although this research involves minimal risk of harm to participants, attention will be given to their safety, and to possible conflicts of interest among participants during training and production. Important materials, including written consent forms, will be conveyed to language consultants who cannot read in English. All participants to appear in videos will have fully consented. We will employ transparency, avoid deceptive practices, and equally treat our participants with fairness and kindness.

In addition, Team S-DELI currently has the capacity of about 60 young volunteer members across Nigeria, USA, and UK within the ages of 20 to 45 years and from various professional and career field, including linguistics, medical and health sciences, early childhood education, law, signed language interpreters, etc. These volunteer members have developed the passion for the documentation of Nigerian Sign Language. S-DELI is a research-based nongovernmental organization registered with the Corporate Affairs Commission in 2014, started working in Nigerian deaf communities since 2013.

**The Flowchart**

**Flow Chart of Information for Proposed Innovation**

Deaf & Interpreter Participants

Team S-DELI

Legislators

Schools for the Deaf

Families, deaf children,

Hearing people

Regional & grassroot deaf associations

**Team S-DELI & NNAD**

Nigerian Sign Language Documentation with technology-based innovation

NNAD

**Estimated Budget**

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| **Estimated Budget** |
| **S/N** | **Description**  | **Quantity**  | **Cost in USD** |
|  | Replacement wage for Project Head | 3 months | 8,333.34 |
|  | Wages for deaf participants, signed language interpreters & technical support from the University of New Mexico | 3 months | 11,972.11 |
|  | Video camera and other production equipment |  | 4,785.63 |
|  | Roundtrip airfare for 2 from Albuquerque to Abuja  | 1 | 5,000 |
|  | Internal transportation  | 3 months | 5,000 |
|  | Supplies/consumables for production |  | 17,690 |
|  | Hiring of hall for training of participants  | 7 days | 2,152.5 |
|  | Hotel accommodation in Abuja  | 7 days  | 2,544 |
|  | Lunch for the team production team | 3 months | 3,432 |
|  | Administrative cost  | 3 months | 3,567 |
|  | Duplication, distribution to families, communities, schools, etc.  |  | 12,823.42 |
|  | **Total**  |  | **77, 300** |