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Working Paper

Blueprint for a Rural District Based ICT Center in Mahabubnagar, Telangana State, India

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Blue Print for a Rural District Based ICT Center Mahabubnagar, Telangana State, India

ICT India Working Paper #16

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BLUE PRINT FOR A RURAL DISTRICT BASED ICT CENTER

I. Executive Summary

This document outlines one of the Centers in operation as a part of the broader ICT Center Model¹. The concept that began with the goal of combining multiple Sustainable Development Goals (SDGs) to improve educational and employment opportunities for women resulted in ICT Center, including the fully functioning ICT Women’s Center in Telangana State, India. Powered by solar energy, where skills trainings offered in the areas of computer, English, life skills and environment, aim to prepare young women for future careers and job opportunities.

The document outlines various components after the first year of execution of the ICT Center. It outlays a blue print for similar centers that could be set-up in smaller towns in India. It explains the vision and the mission of the ICT Center, followed by the key elements in the set-up process of the Center. Budgets and budget narrative explain the financial component of this program. It explains some of the processes followed in the first year, including inviting visitors and their interactions with the trainees.

The report also outlays the Annual Calender and matches it to the curricular expectations at the Center. In addition, a vital strategy for the Center has been the solar panel installation, the data from which have been tracked since the beginning of the Center. The report presents the solar data and the energy consumption and reduction of electricity bills for the District Government.

The report finally presents the curricular plans and the changes from the first year of implementation of the ICT Center. The changes were informed by the feedback from the students in the previous batches along with some new additions including environmental education for 2019-20 academic year.

¹ <http://csd.columbia.edu/2018/05/03/under-one-roof-bringing-digital-skills-solar-energy-hope-for-future-employment-to-women/>



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II. Summary of Concept & Model

While the global trend advances further into faster and more efficient technology-enabled education, health, agriculture, energy and communications, there remain significant gaps that go unnoticed amidst the sweeping advancements in gender parity, electrification and opportunities for employment. Global access to electricity and access to mobile devices are synonymous to opportunities for growth that can impact education, health social and economic development²; however, there are stark variances depending on the region with marked disadvantages for rural areas and for women.

In addition to regional disparity, global data show how the glaring digital divide prevents women from accessing financial tools or new markets. Women are 36% less likely than men to own mobile money accounts³, while 114 million fewer women own a mobile phone, and women are less likely to use their mobile phones or access Internet than men⁴. One most obvious way to ensure economic wellbeing to improve lives is through employment which can lift families out of poverty—unfortunately, the World Bank statistics show that the global employment rates have been slowly declining since 1991 (61.8%) to 2016 (58.5%)⁵.

This landscape on electrification, connectivity, gender disparity and employment highlights severe inequities, but also presents a huge potential to tailor initiatives that bring together electrification via sustainable and renewable energy as a means to improve lives in marginalized areas—especially of women—for holistic growth and development. Taking all these factors into consideration, the ICT Model devised by [i4SD](#) and [CSD's Connect To Learn](#) teams envisioned concrete ways to provide income-generating skills for women through targeted skills training with the use of sustainable and renewable energy. The result is a comprehensive “ICT Center” model for Information and Communication Technology (ICT) for women’s entrepreneurship and empowerment in India now in operation in Telangana state. The Center brings a unique combination of sectors such as energy, education, gender to meet the Sustainable Development Goals (SDGs).

² <https://true-origin.com/posts/2017/4/2/week-3-mapping-electrification-needs>

³ Connect Women. Mapping the mobile money gender gap: Insights from Cote d’Ivoire and Mali. Accessed 24th April 2018
<https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/04/Mapping-the-mobile-money-gender-gap-Insights-from-Cote-d'Ivoire-and-Mali.pdf>

⁴ <https://www.gsma.com/mobilefordevelopment/programme/connected-women/women-and-mobile-in-india-realising-the-opportunity/>

⁵ <https://data.worldbank.org/indicator/SI.EMP.TOTL.SP.ZS>



This Center operation aims to address the disadvantages, faced particularly by women and those with limited exposure to education and skills training, keeping them in low literacy and digital literacy levels. Using digital tools in a solar-powered All Women’s Computer Center, women access information, train in digital competency areas as well as trade-related knowledge areas, and communicate with other women to become more aware of gender biases and injustices that often hinder their own growth. As individuals in a trusted community setting, the Center and its training target the means to improve economic and skills training for young women.



The location of the ICT Center in Mahbubnagar District in Telangana resulted from CSD’s long standing relations with the local district officials on implementing SDGs.

The project is in partnership with the local government. The Center’s building is given by the District Collector on a rent-free basis. The ICT Center uses multi sector strategies to address Sustainable Development Goals for Education (4), Gender (5), and Energy (7) with CSD taking the lead on education

contents with technical inputs from i4SD on the energy component.

Clean and renewable energy is utilized to power an educational space where women address the gender issues that impede on their growth while training in concrete digital skills and literacy pertaining to local market trades. Our idea advances the existing commitment of participants and ensures sustainability by comprehensively packaging the different components of this approach.

III. Aims and Objectives

The main objective of the Center is to be a training hub that facilitates entry into the local job market with relevant skills especially for young women who are often disadvantaged in accessing training opportunities.

The Information and Technology Center training will address:

- ICT skills, Cyber wellness, security, social media



- Personal and interpersonal development, communication (English included)
- Business and basic financial concepts and activities (marketing, product research, e-commerce, online banking, accounting tools, identifying funding opportunities)

More specifically, under one course, targeted competency areas will be presented through English, ICT, business and life skill areas. Each course will last six months, with the first three-month period (Level 1) focused on building foundations in basic conversational English and ICT skills along with foundational concepts in financial and life skills. The second three-month period (Level 2) will build more specialized skills in English and ICT according to a set of vocational tracks with more in-depth content on financial and life skills competency areas.

The original design of the curriculum contents and learning goals are as follows:

English content will be folded into all class sessions and facilitation will take place primarily in English with explanations detailed in local languages as needed. Within each curriculum area, focus will be given on conversational English useful for everyday life and common scenarios. As learners progress, they will begin developing skills for more in-depth conversations about relevant social issues, such as environmental sustainability and media use. Learning activities will include class and small group discussions, question and answer, group presentations, role-playing, and writing exercises. Learners will be guided to conduct regular peer- and self-assessment. Trainees will be prompted to create correspondences, CV/resumes in English with practice of conversational English for various work-related scenarios.

ICT content will begin with foundational skills (one-to-one practice with a desktop computer, machine functions, Internet and browsing the web, basic word processing, spreadsheet, and slide creation functions using the Microsoft Office Suite). Activities will include conducting online research, creating email accounts and other useful online accounts (e.g. banking), using social media, typing letters and resumes, creating spreadsheets, transcribing, and creating slides. Learners will receive training in cyber wellness strategies to encourage safe and responsible computer and Internet habits. Throughout the course, trainees will continue to build digital skills and focus on working individually and in small groups to identify and practice using the right applications and online tools and resources to facilitate the work of learners' vocations.

Business/Financial Concepts will complement English and ICT content, with foundational concepts related to personal finance. This includes understanding finance from the perspective of behaviors and choices that affect decision-making, opportunity costs, savings, credit and interest. Hands-on activities such as visiting local banks and managing personal bank accounts will be incorporated. In the second part of the course, some simplified versions of case studies and scenarios will be introduced to exemplify multiple concepts at play, activating problem-



solving, as well as the understanding of various life situations and circumstances that need to be navigated through personal finance decisions.

Life Skills content aims to provide targeted, yet holistic set of skills that contribute to well-rounded professionals and personal development. Activities will focus on personal and interpersonal development (active listening, positive communication, decision-making, problem solving, coping with stress). After foundations of personal and interpersonal development, content on teamwork and leadership, as well as goal setting and action planning will be introduced. Combined with broader set of life skills, these concrete competencies related to setting goals, priorities, time management and taking action, will allow participants to become well-rounded individuals as well as professionals.

Furthermore, Life Skills content and activities will be crucial as they will serve as a tool to break down initial hesitation, fear or shyness in actively participating in the overall course. “Breaking the ice” and building a sense of community through relationship with peers as well as personal development presented through gradual activities, will facilitate the overcoming of initial barriers of participation.

The course contents will be further refined by the information of the key employers. A survey and focus group discussions with potential employers will form the foundations of the courses. The courses will be designed to meet the needs of the employers and interest of the youth. The meeting with the employers will be convened by the District Collector Mahbubnagar.

This “All Women’s Computer Center” run by women will be equipped with a photocopier, phone charging station and a cyber café. Services will be availed to the wider community users at minimal service fees in order to strike the right balance of accessibility financial sustainability.

Operationally, each year will mark a different phase of the project, as follows:

Year 1

- ICT Center is established with basic hardware and infrastructure, and generates income for the Center through services open to the wider community women (electricity, classes). The first cohort of women will be trained in computers and content areas outlined in above section.

Year 2

- Some women will become co-instructors and support existing and new cohort of Center women and users.
- Based on usage rates, Center expands hardware provision and infrastructural needs and maintenance.



Year 3

- Some women will take on Center operations as a part of their business. According training will be provided though scaled down as compared to previous first and second years of the project. Operations will include hardware management, solar-related maintenance management as well as financial and operational management.

IV. Early Recognition from the District

The Center received an award on 15th August 2019 in the presence of the State Government as the best Project in the District of Mahbubnagar. The ICT Center team were facilitated at the India'



V. Summary of Set-up Process

The Center has come together in a short time of six months, from the securing of funding to operation. The intense groundwork during that period included numerous infrastructural



assessments and installations, materials procurement and delivery, recruitment and stakeholder engagement along with several rounds of curriculum design and drafting of curriculum content.

The Budget for the ICT Activity was proposed as the following-

EXPENSE CATEGORY	Y1	Y2	Y3	TOTAL
International Travel	\$26,700	\$17,800	\$22,250	\$66,750
Domestic Travel	\$7,200	\$7,200	\$7,200	\$21,600
ICT Equipment	\$21,530	\$6,120	\$6,120	\$33,770
Classroom Needs	\$1,200	\$0	\$0	\$1,200
Solar Equipment	\$20,900	\$0	\$0	\$20,900
Additional Direct Costs	\$2,470	\$2,470	\$2,470	\$7,410
EQUIPMENT, OPS & TRAVEL TOTAL	\$80,000	\$33,590	\$38,040	\$151,630

Mahubnagar based Salaries	\$13,082	\$13,474	\$13,879	\$40,435
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Budget Narrative

International Travel – To cover the need for four round trips for key international staff from CSD and i4SD personnel to visit India during program design, setup, monitoring and evaluation

Domestic Travel- There will be a small amount of funds available for meeting the domestic travel of key personnel (local flights, train tickets, gas reimbursement for long-distance meetings, etc.)

ICT Equipment- To equip the ICT center with 20 computers, internet access routers, servers and all the necessary equipment to run the vocational training and online courses. However in the first week of the classes itself, there were more than 100 girls enrolled. Therefore, the District Collector bought another 5 desktops from the Government accounts. As the courses progressed, there was need for a White Board and ACs to cool down the top floor which the District Collector funded from the Government Accounts.

Classroom Needs- Additional materials to keep the classrooms functional, organized and clean



Solar Equipment- To cover the costs of installation of a 10 Kw solar system that will be grid-connected to provide reliable and cost-savings energy for the center. Additionally, street lights will be provided and powered to ensure a safe environment for women outside the ICT center. Monitoring equipment to track the energy consumption and savings will be installed as well

Additional Direct Cost- To ensure seamless operation of the center and training for the key local staff.

Year 2 and Year 3 budget for capital investments will not be carried forward since the bulk of the purchases were done in year 1. The bulk of the running expenses included only salaries.

VI. Key lessons from infrastructure and Solar

The in-kind donation of the Center building by the District Collector and Magistrate of Mahabunagar (DC) went through initial assessment of DC-approved engineers to decipher the appropriateness of the structure for the proposed solar installation as well as the capacity to hold multiple and continuous classes. Along with the initial rounds of building assessment, the first inputs required were basic revamping of the Center. This

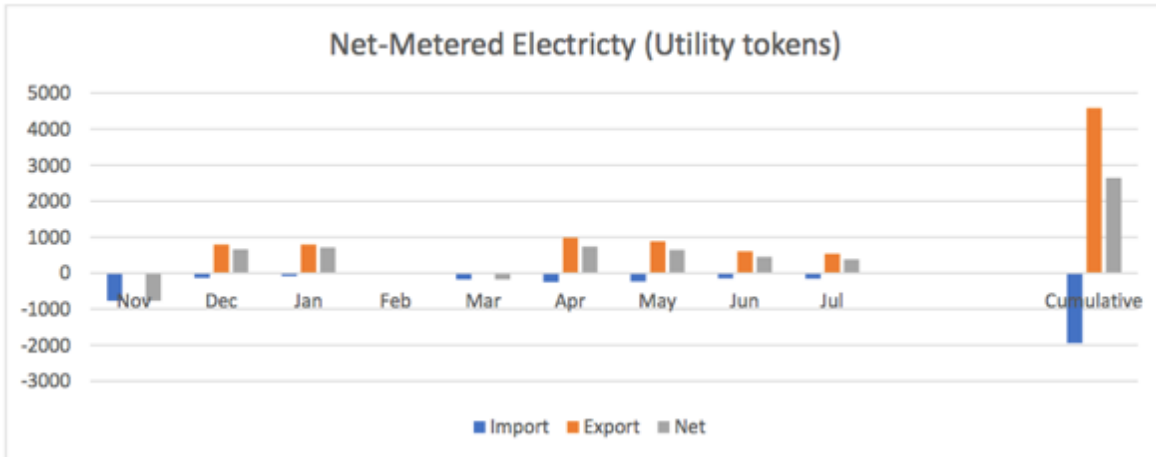


included structural revamping to accommodate the solar installation such as securing the surfaces of the roof for solar panel installation, repainting walls, putting up dividers, cubicle installations and setting up the interior classrooms. Based on a load survey, a 10kW rooftop solar installation with batteries was done for optimal solution to allow full autonomy of the Center. This energy capacity would also enable future extra income generation of the Center to sustain itself by selling excess of solar production to the grid on a net-metering basis; and/or incorporating further revenue streams such as battery charging, selling cold drinks, additional non-educational printing/computer materials, etc.



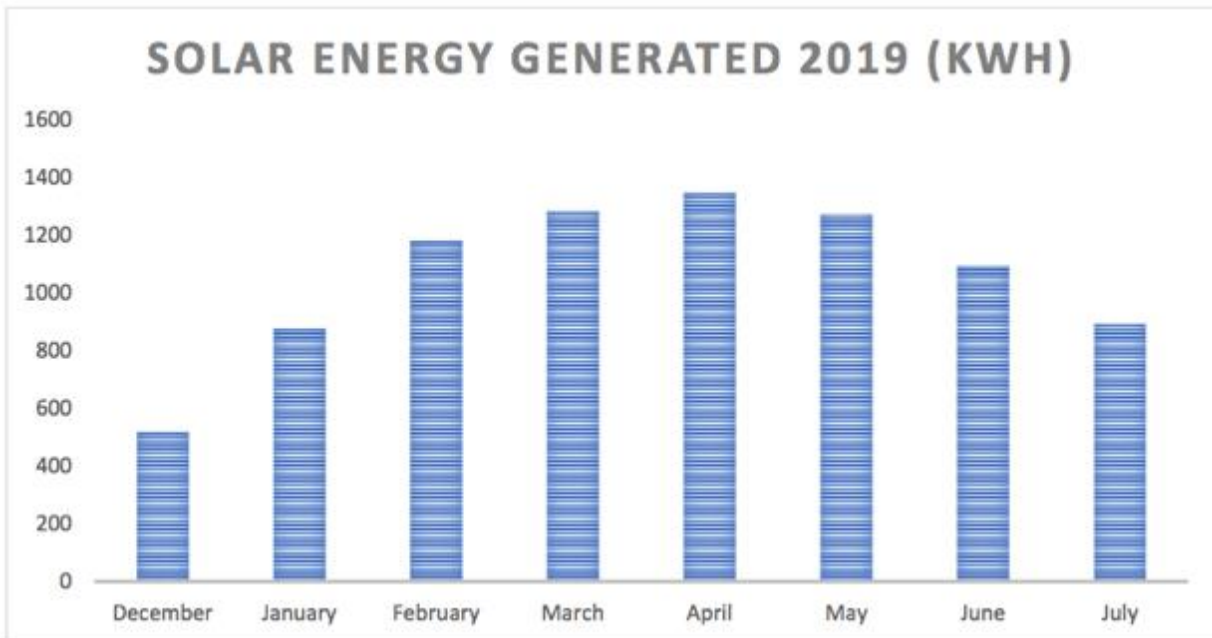
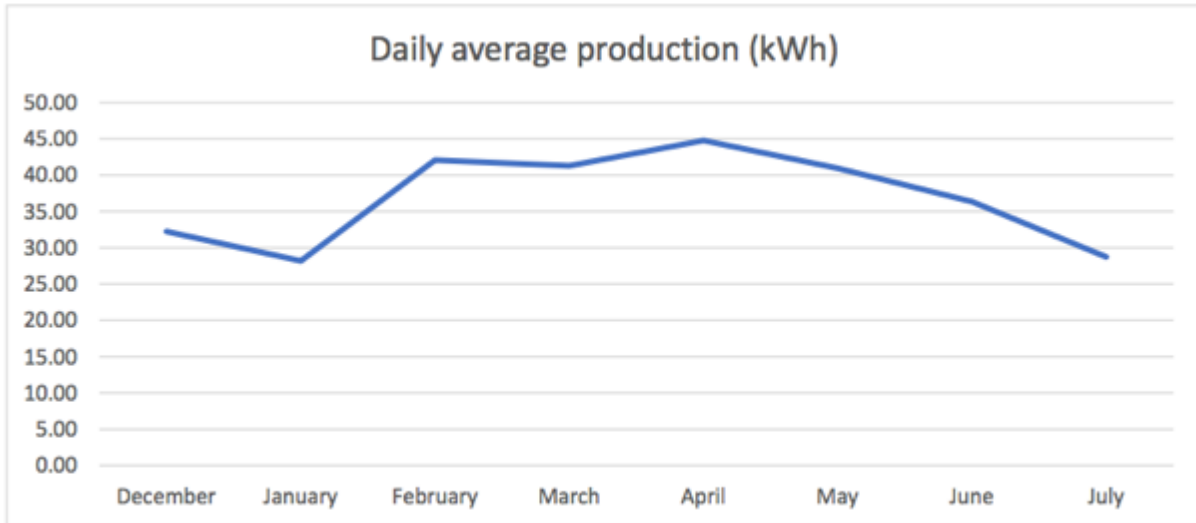
Summary of energy analysis Main takeaways:

- Installation of solar rooftop system (10kWp) on December 14th, 2019
- The ICT Center uses approximately 25-30% of the electricity generated by the solar panels
- 70-75% is exported to the grid on a net-metering basis
- There are still some fixed costs to be paid to utility, but we have enough credit that by the end of the year, the ICT Center should get paid back for the excess of electricity exported
- We are in discussions with the utility to fully understand the tariff scheme and the rules regarding the reconciliation of the accounts and bill adjustments
- Of course, there are already environmental benefits by switching to solar energy
- Challenges and next steps
- Once the tariff scheme and utility regulations are fully clarified we can run a basic cost benefit analysis of the model
- Our own smart meters to track detailed usage (including computer usage and other interesting operating metrics) were heavily delayed by customs and installation was not done by proper skilled personnel. They are working but need to be in sync with utility meters for a meaningful utilization.
- There are still room for productive uses of the extra electricity produced that can yield more benefits than the net-metered tariff paid by utility. (ie battery charging for street vendors or electric vehicles, etc)
- A new site visit may be needed to fully adjust the system, get all the data and coordinate with the utility. With the full data set we can have material to understand which parts of the design are scalable and what parts need to be adjusted (System size, net-metered vs extra batteries, etc).



Net-Metering and energy bills

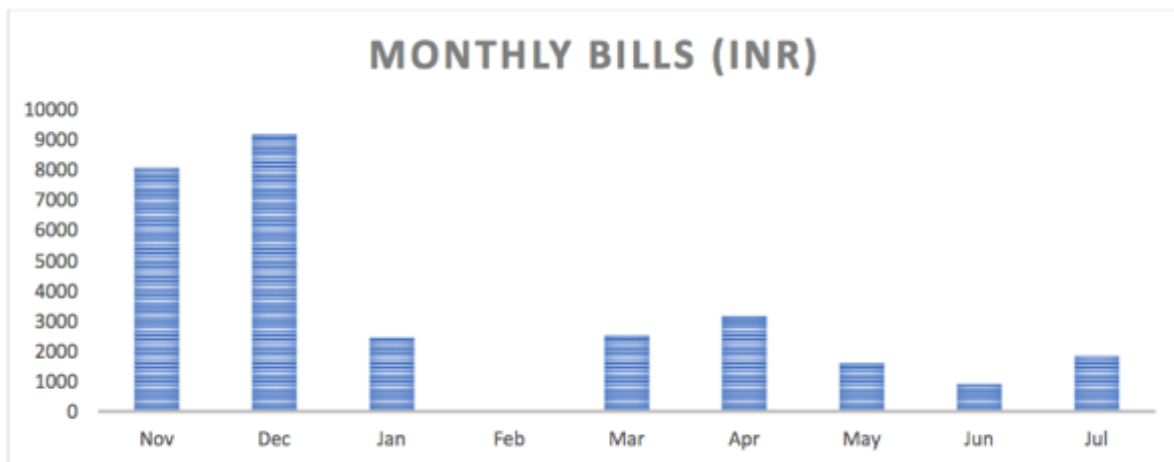
Month	Import	Export	Net	Amount billed (INR)
<i>Nov</i>	-768	0	-768	8,071
<i>Dec</i>	-131	790	659	9,184
<i>Jan</i>	-84	794	710	2,438
<i>Feb</i>	0	0	0	0
<i>Mar</i>	-179	1	-178	2,511
<i>Apr</i>	-246	984	738	3,168
<i>May</i>	-235	878	643	1,591
<i>Jun</i>	-148	601	453	904
<i>Jul</i>	-154	537	383	1,833
Cumulative	-1945	4585	2640	29,700





Production of solar energy by ICT Center

Month	Solar Energy Produced (kwh)
<i>December</i>	515.92
<i>January</i>	873.72
<i>February</i>	1177.94
<i>March</i>	1279.87
<i>April</i>	1343.31
<i>May</i>	1268.73
<i>June</i>	1090.04
<i>July</i>	890.49



VII. Regular Visitors at the Center

As a part of the mission of the Center, the girls are exposed to many visitors who interact with them. The idea behind it is that the students get some exposure into the lives of new people that they meet. As a part of this mission, the District Collector sent two of his interns from the Tata Institute of Social Services working on Sanitation and Nutrition Programs at the District. They came and spoke to the girls about their research and their work with the District Collector. Dr Nidhi Bindal, a Health-Economics Professor from Kean University, New Jersey also visited the Center and took interactive sessions with the girls. Her reflections are included in the Appendix.



VIII. Curriculum Content Updates

Based on the program assessment of trainees’ baseline competencies as well as time required for uptake of skills, the curriculum is being further integrated so that key skills can be focused, with additional practice and activities to be done as options outside of mainly scheduled class times.

The training modules are developed into **Computer Modules** (Computer, English and Business Skills) & **Training Modules** (English, Communication, Business/Financial Skills, Life Skills) are integrated.

In summary, the topics are organized as:

	Computer Modules C#	LIFE SKILL ENGLISH BUSINESS ENVIRONMENT (T#)
Level 1 (first 3 months)	ICT C1. Basics, Typing & Word C2. Cyber Wellness, Internet, SNS C3. Presentations C4. Excel	T1. Personal / Interpersonal Development / Self-confidence T2. Communication T3. Goal Setting English (vocabulary, conversation, expression) (folded into all modules) T3. Basic Financial concept/



		Business Communication/ Inventory & Data Entry T5. Background knowledge on environment topics (include Renewable Energy)
Level 2 (second 3 months)	C1. Shortcut functions C2. Email/Social Media marketing C3. Advanced PPT C4. Advanced Excel	Grammar/ Conversation folded into all modules T4. Leadership / Teamwork T3. Concepts: Budget (f) Case studies Marketing / Accounting T5. Design for Change Project: Feel & Imagine process
Post- Program Participation Options	Community Environment Action Management / Solar curriculum (research on renewable energy) Design for Change Project: feel & Imagine process: Do & Share process	Mentorship CyberCafe proposal Solar

English: Given the requests from learners and the noted low levels of conversational English, lessons will be devised to emphasize the spoken component and weaving in speaking English to all topics.

Computer skills requested from participants were accounting skills and specific job-preparation skills. Further, activities will need to be built for advancing skills in online research, creating email accounts and other useful online accounts (e.g. banking), using social media, typing letters and resumes, creating spreadsheets, and creating presentation slides.

Life Skills given the basic comfort established during the first 3 months of the course, the next phase will focus more on leadership and specific team building. Skills areas such as decision-making, problem solving, coping with stress, as well as goal setting and action planning can be introduced. Combined with broader set of life skills, these concrete competencies related to setting goals, priorities, time management and taking action, will allow participants to become well-rounded individuals as well as professionals. The Center hopes to raise a generation of leaders who can also become future managers and facilitators in a similar setting, or even as a junior support to the current managers at the Center.

Class Contents & Schedule

Although the new modules have been organized to group relevant themes and skills, the breakdown of individual content sections within the modules are incorporated into class sessions that best fit the feasibility of the classroom sections and pace as determined by the Facilitators in communication with trainees. As a sample, below is a class plan:

Sample Class Plan and Topics for Mahabubnagar ICT Center		
Week 1	Self Confidence / Teambuilding	Introductions / Common greetings and expressions / self-SWOT / goal setting / computer basics /



Week 2	Computer Basics	MS Word functionalities / commands / practice
Week 3	Inventory of Assets	Action words, CV writing vocabulary / business letters / creating flyers and embedding images
Week 4	Communication	MS PowerPoint / Effective sentences / effective presentations / communication skills
Week 5	Communication	MS PowerPoint presentations projects / public speaking
Week 6	Making Decisions	MS Excel / basic business/financial concepts
Week 7	Problem Solving	English Grammar / MS Excel / Solving problems in work situations
Week 8	Social Media / Communication	Email etiquette / Introduction to Social Media / Email accounts / cyber wellness
Week 9	Marketing	Marketing / networking / English descriptive words
Week 10	Leadership / Teamwork	Phone etiquette / scenarios and appropriate communication
Week 11	Presentations	Presentations / group project
Week 12	Employment	Expressions, group discussions, interview tips, interview preparation

Guest Speakers & Employer Relationship

The area needing most focus will be establishing relationship with the employers. Through the operations in the first phase, the team has been establishing contacts with external guest speakers who can develop online modules on life skills, public speaking contents, as well as e-mentorship wherever possible. These avenues will be further explored for the subsequent operations of the Center to bring in more expertise and knowledge in specific areas from which the participants can benefit.

Environmental Education - using Inquiry based learning environment

Classes are now being regularly conducted on topics like Conversational English, Basic ICT skills, foundation concepts in financial literacy and strengthening of life skills. Trainees are now getting used to the spirit and culture of the center which is helping them take ownership of their own learning. It is helping them come up with questions and some are even utilising computers at the center with their recently acquired computer skills, to independently look for answers.

To further develop this curiosity, our next plan of action is to start with the sessions on Environmental Education. The idea is to see how aware and concerned they are about their surroundings and motivate them to have an attitude to work both individually and collectively towards solutions of current problems and the prevention of new ones. The intention is to start an open dialogue that will help them stimulate their curiosity as well as engage with real world issues that transcend classroom walls. While the process of framing curriculum for Environmental Education is still an ongoing, few sessions were conducted to see the response from the girls and how that can be incorporated in the design of the modules.



During the introductory session, trainees were divided in small groups and were thrown a lot of questions ranging from current climate changes they are observing, to the use of plastic in houses. The approach was simple i.e. by using Inquiry based learning, making them aware of practices and attitudes around them toward the environment and helping them to inquire into those. The facilitator guided the discussion by interjecting at critical moments, asking the right kind of questions and creating a friendly environment so that girls can share their thoughts without any hesitations. The entire classroom became engaged in discussions, they were comfortable and sharing confidently. They were actively participating and were themselves driving the discussion. It was clear this was something they could relate to their everyday life experiences.

After discussing in their small groups now it was time to share their ideas with the larger group and they came up with lot of interesting ideas about what factors are responsible for climatic changes, different kinds of pollution and ozone layer depletion, increasing greenhouse gases and all of this resulting in global warming. The next part of the session was to help them think of the possible solutions to tackle these problems.

Girls came up with so many possible solutions, many of them already existing and few of them were very imaginative as one of the groups suggested “to collect all the garbage from the earth and transport it to some other planet”. At least now they were thinking of the possibilities, but with more brainstorming guided by right questions the discussion progressed from using “we statements” to “I statement”. The session left girls with the idea of them feeling important and being in a position to do something, starting with their own surrounding and eventually making things better around them.

The focus of environmental education sessions in future will be on transforming such ideas from classroom discussions to actionable steps that can be taken to resolve environmental problems in their community. This shall provide them with opportunities to employ the knowledge and skills they are acquiring at the center to understand the larger ecosystem, the contexts in which they are placed and their role in it. It shall inform their views on current societal norms toward the environment and help begin conversations around their acceptance and utility.

IX. Key Post-Pilot Phase Reflections

Upon launching ICT Women’s Center in December 2018, the Center has gone through more than three (3) full months of operation from mid-December 2018 to late March offering classes to more than 100 young women. Even as the operations continue with new cohorts (batches) formed and taking courses through March and April, the courses are designed to be 3-months



in duration for each cohort. Having completed the initial 3 months, the management teams in New York and Telangana take this post-pilot phase to reflect on various aspects of operations and management to adjust and pave way for the continued operations going forward.

Annual Calendar

The project team has learned that there are many interrupted days affecting the attendance of intended target group due to academic and annual holidays, examinations, combined with seasonal patterns (such as students returning to their hometowns outside of Mahabubnagar during summer months).

Month	Days Off	Reasons	Fit for Classes? (Yes/No)	Comments
January	1	Holiday	YES	
	2-8	Exams		
February	0	N/A	YES	Full month of uninterrupted days
March	4	Maha Shivarathri Holiday	NO	Instead of fixed cohorts, we should think of doing seasonal environmental work during these months
	5-8	Exams (Inter)		
	21	Holi Holiday		
	12-31	Academic Holiday (Inter)		
April	1-30	Academic Holiday (Inter)	NO	Need ideas for summer months / perhaps a new target group
	22-30	Academic Holiday (Degree)		
	22-30	Exams (Degree)		
May	1-31	Academic Holiday (Inter)	NO	Need ideas for summer months / perhaps a new target group
	1-31	Exams (Degree)		
June	1-7	Exams (Degree)	?	Depending on when students return to Mahabubnagar
July	0	N/A	YES	Full month of uninterrupted days
August	15	Holiday	YES	
September	2,10	Holiday	YES	
October	2,7,8	Holiday	NO	
	9-21			
November	7-9	Diwali	YES	
	21,23	Holiday		
December	24,25,31	Holiday	YES	
	26,27,28	Exams		

Based on the calendar, the following considerations need to be given and decided by the project team:

- **TO DO: Set plan for start & end for the new full 3-month course**



- Questions to consider:
 - Given our current capacity, how will we schedule **Course Part I** (taking in new cohort) versus the more advanced **Course Part II** for continuing participants?
 - When current Batch finishes in May, should we hold off on June as re-orienting period to do sessions and start the “intensive” full 3-month course from July to September, then October to December/January?
 - For example, in the current schedule, **July-September** is the best cycle for minimal interruptions.
- **TO DO: Set plan for how to utilize Summer months:**
 - Set target group and activities to be done at the Center for Summer months, even if it is minimal:
 - For example, a non-intensive program or topic-programs on environment or a program similar to a summer camp
 - The target for this would be the populations who will physically be still in Mahabubnagar even during summer months
 - Part of the summer months should be used for **annual reflections for next year’s planning and curriculum/program/operation adjustments**
 - Summer months should be used to **identify any new group of mentors, speakers and/or potential employers – and to schedule them into the curriculum**

Management & Operational

The project team has learned various aspects of running the Center in the pilot phase. Some considerations going forward are as follows:

TO DO:

- **Landing Page on computers:** Even participants who use Internet for the first time is drawn to entertainment in using the Internet, because they are the first available images on landing pages. For this reason, to encourage typing practice and learning concrete skills whenever possible, the landing page will be set as the typing page.
- **Cyber Wellness and Security** is an important topic that will be given foremost importance in introducing participants to Internet use (this can be the 1st session).
- **Promotional materials to share with community and local institutions:** Business cards or brochures can be printed in Telugu to share with women in Mahabubnagar



for future women's classes. This can also be used to talk to potential employers and recruiting local speakers.

Energy & Connectivity: Consumption & Production Trends

After one year (tentative) of operation, the project can begin to introduce Energy training and management to certain individuals with strong leadership skills as well as commitment to continuing in the Center.

- These energy trainings can first be introduced as a training to identified individuals, then be introduced in the curriculum for a broader group.

Pre & Post Measures

Learning Gains: The initial metrics and assessments that were set in place were difficult to monitor with drastic changes in the attendance patterns and adjusting of Batches. Given the first pilot phase, some indicators that should be kept or modified are outlined below:



ICT CENTER PROJECT_i4SD_CSD_MAHBUBNAGAR

IMPACT		Dec-18						
INCREASE THE	Outcome Indicator 1	BENCHMARK	Baseline	Midline	Endline	Target (date)	Tools	
Increase access to vocational training with employable skills for local job market (Information and Communications Technology - ICT)	# of students who enrolled in the classes							
	Outcome Indicator 2							
	% of students who attended majority (ie. 75%) of the classes	90%						
	Outcome Indicator 3							
	% of students who completed the courses	90%						
OUTPUT 1	Output Indicator 1		Baseline	Midline	Endline	Target (date)	Tools	
Increased number of youth able to execute concrete ICT skills	(SDG Indicator 4.4.1.) % of youth and adults with ICT skills by type of skill (C4 - C11)						Computer Competency Assessment 1 is for baseline / 2 is for endline	
	C1 Able to type in English						Typing Test	
	C2 Able to type in local language (Telugu)						Typing Test	
	C3 Enter data in spreadsheet						Typing Test	



Computer-related activities to measure ICT skills are as follows:		
C4	Copying or moving a file or folder	Computer Competency Assessment 1
C5	Using copy and paste tools to duplicate or move information within a document	Computer Competency Assessment 1
C6	Sending e-mails with attached files (e.g. document, picture, video)	Computer Competency Assessment 1
C7	Using basic arithmetic formulae in a spreadsheet	Computer Competency Assessment 1
C8	Connecting and installing new devices (e.g. a modem, camera, printer)	Computer Competency Assessment 1 & 2
C9	Finding, downloading, installing and configuring software	Computer Competency Assessment 2
C10	Creating electronic presentations with presentation software (including text, images, sound, video or charts)	Class assignment / Project
C11	Transferring files between a computer and other devices	Computer Competency Assessment 1 & 2
C12	Awareness of Cyber Wellness concept	Computer Competency Assessment 2



OUTPUT 2		Output Indicator 2.1	Baseline	Midline	Endline	Target (date)	Tools
Increased number of youth knowledgeable with applicable business and financial literacy skills	B1	% of students who have the knowledge to open a bank account					Debrief after bank visits
		Output Indicator 2.2					
	B2	% of students who can do basic accounting calculations					Class Assignment/Project
		Output Indicator 2.3					
	B3	% of students who can do financial planning / budgeting					Class Assignment/Project
		Output Indicator 2.4					
	B4	% of students who understand basic financial concepts (as defined by program)					Formative Assessment in Course PowerPoint
OUTPUT 3		Output Indicator 3.1	Baseline	Midline	Endline	Target (date)	Tools
Increased number of youth able to use English in professional ways	E1	% of students able to converse in basic English to describe daily events and tasks at work					Interview assessment
		Output Indicator 3.2					



E2	% of students able to write business correspondence	CV, cover letter
Output Indicator 3.3		
E3	% of students able to verbally handle customer queries and complaint	Interview assessment
Output Indicator 3.4		
E4	% of students able to verbally describe product and company	Interview assessment

OUTPUT 4	Output Indicator 4.1	Baseline	Midline	Endline	Target (date)	Tools
Increased employment of youth upon completing vocational training courses	SDG indicator to be specified for project population. % of youth (15-24 years) labor force that is employed in formal and/or informal work, with formal and informal work being counted separately. The labor force comprises all persons within the above age group currently available for work and actively seeking work, and the sum of those that are employed and unemployed.					Program monitoring / Center Operation Documentation

OUTPUT 5	Output Indicator 5.1	Baseline	Midline	Endline	Target (date)	Tools
Increased access to electricity in learning programs and community,	Number of classes held as a result of solar mini grid					Center Operations documentation



enabled by
clean, renewable
solar energy mini
grid

Output Indicator 5.2

Number of youth accessing the ICT Center to use electricity (charging, etc.)

Output Indicator 5.2

Number of community members accessing ICT Center to use electricity

X. Scaling-up

Given the early success of the Center, the District Collector Ronald Rose and the ICT Center team discussed scaling-up the Center in multiple locations. The ICT Center team proposed mini satellite versions of the Center in more rural blocks. However, the District Collector mentioned that there is still un-met needs in Mahbubnagar town itself. He suggested two more locations in the town where there are students who could utilize the center's services. One of the locations are given below. The initial model was only for girls, however since ICT Center services could be well utilized by boys as well, the new venues will also include boys availing of the services. In terms of the budget, the District Collector will be putting in capital investments from the Government budget and only the running expenses, (salary for 1-2 facilitators) will be covered by the ICT Center team.



Center for Sustainable Development (CSD) is positioned at the heart of the Earth Institute at Columbia University, whose research and innovative solutions support governments and organizations around the world to achieve the Sustainable Development Goals. The education arm of the Center, Connect To Learn, is an initiative of CSD, Ericsson and Millennium Promise



whose mission is to address the lack of universal access to quality education, with an emphasis on the marginalized - especially girls - in resource poor settings globally.

i4SD (Infrastructure for Sustainable Development) is a social impact design firm that uses innovation to change the way infrastructure systems are designed and operated. Their mission is to enable universal access to affordable and modern infrastructure services: Energy, Water, Transport & Connectivity. *i4SD* brings together traditional master planning, IoT technologies and public-private partnerships to deliver sustainable infrastructure projects providing access to essential services in traditionally undeserved areas.

Appendix

Mahbubnagar, Telangana, India, ICT Visit, July 2019



By Dr. Nidhi Thakur

This is a report that I have been penning within me since the day I stepped into the ICT, in Mahubnagar. I finally get to put it in paper.

First off, the ICT location struck me as remarkably favorable to the agenda on hand. It is not just a top floor all to itself, but that the building is in its own compound, complete with a well-defined and maintained boundary wall, and gates. Hence any concerns about women's privacy are all well-answered. There is enough parking space for visitors to park the kind of vehicles most popular there, two wheelers, and occasional cars. While the premises are well-maintained, clean and sanitary and that is impressive, what I found almost God-sent (though surely there is beautiful planning behind it) is that the ICT is located right next to a Girl's hostel and a Girls' college. There is no better way to draw attention to the kind of work ICT wants to accomplish (that of women education and empowerment) than to simply go and locate itself as immediate neighbor to such a large pool of women. I was told by Mr. Akula that him and his team on the ground, will post flyers or give short oral presentations about the ICT services soon. I hope they do that.

Second, I was impressed by the two women facilitators, both of whom most importantly wear a positive attitude representing responsible desire to grow. They are energetic, bi/tri-lingual and hail from the area and therefore have a natural ability to empathise with the student body. I immensely appreciate that one of the two facilitators is Hindu and another is a hijab-donning Muslim lady. This combination very well-represents the demographics of the area. I understand that it need not always be so, and in fact to the extent that I represented a fairly liberated, almost an atheistic way of life, I still feel I was able to connect very well with the students there. Nonetheless, to the extent that the facilitators are there daily, I am sure it helps for the students to see that their leaders are in many ways like them, and have made it big in their own ways.

Third, and most amazing, were the girls/women who attend there. Full of a beautiful desire to learn new things, including technology, they represented the essence of programs like ICT. Girls felt at ease there, felt like they were being touched by a format that can truly empower them, if not always to get a job, but to become more informed individuals.

In fact my visit to the ICT was based around this concept. Since I was there for two days only, I wanted to address as many students as I could on what they needed to understand as the basic of their empowerment. And thus through 4 sets of classes, we touched on topics of self-confidence, job preparation, sexual harassment, conduct, hygiene and habits, all enmeshed into each other. The response of the students was beyond gratifying. They came for repeat lectures and wanted to hold on to every word being said. It was a great journey for myself too, as I found myself recounting events and incidents from my own life, from which we could draw inferences for the class. And I think in admitting my own foibles, I was able to connect with the girls even better.

Inspired by their eagerness and by my own desire to truly understand their educational conditions, I made an impromptu visit to the library in the adjoining Girls' College. I met with



the librarian there, and saw first hand that while the system is in dire need of many books, it is still a system that is at least there, even if in a bare bones format. The girls are allowed 3 books at any one time. That number is certainly small, but then again, it is good to see the system there. The District Collector apparently had made a recent liberal grant to the library from which a huge set of books had been stocked. There are computers that Girls can access during working hours to browse through the national library system etc. However, those computers are obviously not enough in number, and also do not have a facilitator showing them what to do. To that extent ICT again appears as a beautiful fit to the needs of the college students. I was lucky enough to be in time for a small certificate distribution ceremony for those who successfully completed the 3 months training in the earlier batch. I was extremely fortunate to get to have a brief meeting with the absolutely fantastic Distt. Collector (Mr. Ronald Rose) accompanied by his deputy Distt Collector. Mr. Rose's enthusiasm for the ICT was beyond infectious. I felt honored to have gotten a chance to have the local chai with him, despite his busy schedule.

The most important thing that came out of my visit and discussion with Mr. Rose: having a daily or weekly skype/video session with the girls. I recall this is something that Dr. Iyengar had mentioned once in the past too. I will be happy (and honored) to contribute to this part of the project.

About the teaching material that we need to provide to the facilitators: The class size is quite big, so to keep everyone's attention, there should be ample role-playing material, or class has to be interactive, seeking the input from the students. Besides, it is clear that the kind of alertness and self-awareness that we are trying to instill in the girls, is something very new to them. Hence, they will have to gradually be brought to imagine these scenarios through lots of hypothetical situations, which are contextual.

Last but not the least, I want to be sure that we are not promising them the stars! In a 3-months course, there is only this much that they can learn. Perhaps they could come back for more, but currently with long wait-lists we do not have the facility to accommodate returning students. So, not sure what we can do about this. Also, we should tie up with more job-placement systems, so that we can demonstrate the need and efficacy of an ICT type immersion. However, at the same time we must ensure that ICT certificates must not simply be awarded for attending the course. Or the certificates should have 3 levels:

Successfully Attended.

Successfully Attended with Satisfactory Work.

Successfully Attended with Excellent Work.

Hopefully, this will keep the girls more motivated to do their best too.



[ps: A minor point: The ICT, Mahbubnagar is in need of a white/blackboard for instructors to be able to write on.]





**D. Ronald Rose, I.A.S.,
Collector & District Magistrate
MAHBUBNAGAR**



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D.O.Lr.No.Peshi/18/2018, Date: 17-04-2018

Dear *Nadaro / Sir*

I am writing this letter to endorse the literacy initiative by the Center for Sustainable Development at the Earth Institute, Columbia University. In my role as the District Magistrate and Collector in Mahbubnagar district, Telangana State in India, I have been working with Dr. Radhika Iyengar to implement the Telugu Language Literacy approach for one Block -20 schools. I have been overseeing the literacy project for more than 3 years now.

Dr Iyengar approached me to showcase her knowledge and skill of using cognitive-neuroscience based model of improving local language literacy for early grades. I found the model very compelling as it was based on grounded research. We first started to implement the program in 10 schools. The year long project showed remarkable results in language skill improvement for grades1-3. Therefore subsequently, we have asked the model to be scaled to 20 schools in Nawabpet Block of Mahbubnagar district.

My Education staff and I have been overseeing and providing support to the literacy project. Dr. Iyengar's team brings in the technical expertise of designing the study and using the science to create a contextualized model to suit Telugu language learning. The Government's education staff has been providing technical inputs to monitor the project on the ground and over see the implementation of the project. The Government staff has also helped with organizing teacher training. I am also proud to say that we printed the exercise books designed in collaboration with Dr Iyengar to ensure that all children in the project schools have a book each to read and practice from.

This has been a very fruitful collaboration. The children have reciprocated by showing tremendous improvement in learning Telugu language. The project is a collaborative effort with the technical input from the Center for Sustainable Development and the implementation support from the District Government. We hope to scale-up the approach to learning Telugu in all of the primary schools in the District. We value this collaborative project and wish to support and encourage this venture in any way we can.

As the Government officer under which the literacy project is being implemented in my district, I strongly endorse the researchers from the Center for Sustainable Development for the 2018 Library of Congress Literacy Awards.

Happy to answer any questions that you may have.

with kind regards

(D.Ronald Rose)

To
The Selection Committee,
2018 Library of Congress Literacy Awards.



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Date: 25.06.2018

TO WHOM IT MAY CONCERN

This letter is to show my commitment towards Center for Sustainable Development at the Earth Institute's proposed project on "ICT Let development". Dr. Radhika Iyengar and I have discussed "Women led ICT Center" as a way to promote SDG 5 on women and girls empowerment. I have been discussing this concept with Dr. Iyengar for more than 3 months now and truly feel that Mahabubnagar will benefit from such an ICT Center. It will help provide women employability skills through the courses taught. This will include English language and computer literacy skills along with other foundational skills needed for any kind of profession. We will be particularly targeting youth and women who are currently out of the formal education system. The project is geared towards making "lifelong learning" opportunities a reality in a rural India setting.

This will be a 3 year project. The government will be providing a space to run the Center. We will be identifying a local entrepreneur who will take this on as a business. This income-generating venture will be able to provide to pay for its maintenance as well as the trainer/facilitator salary.

I will try to get Hyderabad based IT companies interested in devoting volunteer time or donating equipment to the Center. This project will run on a smaller budget in the first year and will be expanded based on the need in the 2nd and 3rd year. As a scale-up plan, I will try to replicate this Center's model in other areas in the district.

Mahabubnagar government offices will be involved in regular monitoring and supervision of the center. We can host the various trainings conducted by IT companies as well as Center for Sustainable Development's research team also. We will also convene meetings with local businesses to understand their needs so that the Center run courses can address those specific needs. We are excited to learn from the renewable energy model of the project to be replicate the concept across sectors.

Please let me know if you have any questions or concerns.

With *Regards*.


(D. Ronald Rose)