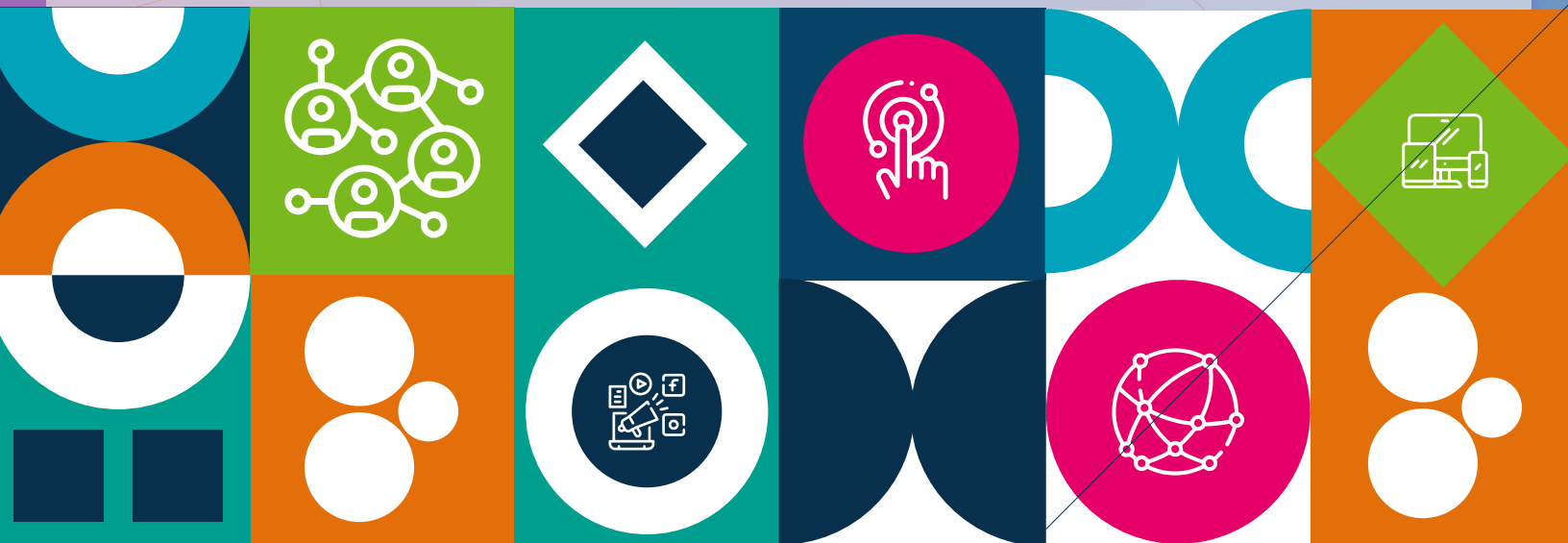# Creating Transformative Youth Digital Spaces:
ICT for Youth Employment, Education, and Climate Change

Insights from the Tanzania
Youth Digital Summit 2022
#TYDS2022

This report and the Tanzania Youth Digital Summit (TYDS) 2022 were made possible by the financial support and partnership of UNICEF and UNDP Tanzania through the Funguo program. TYDS is an ecosystem-led platform and event organized by Digital Opportunity Trust (DOT) Tanzania in partnership with the ICT Commission.

Recordings of TYDS sessions can be found on DOT Tanzania's YouTube channel.

For 20 years, DOT has mobilized and inspired underserved and disadvantaged young people with digital literacy, 21st-century skills, and the self-confidence that will enable them to thrive in an inclusive digital economy. DOT Tanzania trains youth to become digital ambassadors, social innovators, and community leaders who provide entrepreneurship and digital skills training to their peers through youth learning hubs and directly in their communities.

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KEY MESSAGES

1

Digital transformation is happening across every sector and at every scale.

To prepare, we must mainstream ICT and 21st-century skills in every project, program, and policy. A focus on digital inclusion will ensure all women, youth, and other underserved groups have equitable access to opportunities in the digital economy.

2

Tanzanian youth are positioned to lead the digital transformation.

Two key strengths of our youth population: first, power in numbers lends itself to a huge volume of new ideas; second, young people have a better base-level understanding and acceptance of technology.

They need greater support to include ICT in their employment activities, which will benefit young people, their communities, and national GDP.

3

DOT's youth-led model can help achieve these digital transformation goals.

For more than 20 years, DOT has been empowering young people with the digital literacy, 21st-century skills, and the self-confidence to thrive in an inclusive digital economy.

With our network of youth leaders, partner ecosystem, programming, recruitment strategy, and other social and educational capital, DOT can continue to scale new platforms for youth innovation across sectors with further partner support.

4

Learning to learn is a vital 21st-century skill.

The world is shifting from passive learning to active learning. To keep up, young people need the awareness, mindset, and drive to pursue self-guided learning.

The internet is particularly rich with resources to help them do this. DOT is in a position to nurture this skill in young people (and the people who work closely with them, such as teachers).

5

Digital freelancing is an untapped opportunity with real promise.

Digital freelancing platforms connect skilled, informed workers with opportunities in Tanzania and around the world. These platforms are exciting outlets for young people who want to be self-employed, supplement their income, or simply apply their digital skills in interesting new ways.

Digital freelancing also has the potential to help tackle Tanzania's youth under- and unemployment challenges. Further focus should be placed on ensuring young people can not only register for these platforms, but know how to market themselves, deliver quality work, and have the enabling ecosystem in place to succeed.

6

Tanzanian teachers need greater digital skills training so no students are left behind.

ICT has tremendous opportunity to attract, retain, and improve the quality of Tanzania's teachers. But we must look beyond ensuring educators have device access and wifi.

For example, programs should look at how teachers can use ICT to access online learning resources to create more dynamic lesson plans, manage student evaluations, and instil in students a 21st-century approach to problem solving.

Climate change is very important to youth, but further awareness raising is needed as a vital first step.

While the majority of youth at TYDS knew about climate change, they were not always clear about what it could be attributed to and how it affects their lives and communities.

Though there are opportunities to advance climate-smart technology solutions, ICT can first be used as a tool to educate young people about climate change so they can begin to weave sustainability measures into their lives and businesses.

7

8

We need to accelerate Tanzania's relationship with digital transformation and the digital economy.

The government has gradually been engaged in the discussion about the digital economy and is developing a blueprint. This contains some activities related to digital transformation. However, digital transformation is not happening fast enough.

There must be a concerted effort to raise the awareness of decision makers to adapt agile policy and skills frameworks that match the fast-paced digital transformation.

We also need a greater grasp of the root causes that underpin our current digital divide, and to provide strengthened support to groups focusing on digital transformation so all of Tanzania can benefit from digitalization.

Tangible actions for development partners and ecosystem enablers.

Digital transformation should be advanced within the development partner group and at bilateral levels. Too few development partners are interested in digital transformation, and are more focused on traditional streams of work. Digital transformation should be addressed within every program. If even 50% of donor projects included a digital transformation component, we would be going in a better future direction.

Government offices also need to embrace digitalization: Move from analogue to digital, and adopt more advanced technologies that are not yet being used.

9

The profile of forums like TYDS should be raised. Invitations can be extended beyond mid-level officials to high-level decision makers. Invite senior members of the government, at the level of permanent secretaries and ministerial directors, to sit in on more meetings and further engage with the discussions.

A LETTER FROM DOT TANZANIA

The world belongs to those who are technologically savvy. What an incredible opportunity that presents for young people in Tanzania and for our country.

Today, we can hardly imagine a time before we connected with each other on social media, shopped online, or hopped on a video call to catch up with friends or colleagues. With technology playing such an important role in our lives and work, every place and every sector has the potential to be a transformative youth digital space.

For 20 years, DOT has worked alongside an ecosystem of partners to shape the internet of humanity. That's what we like to call this exciting future—one where technology is not seen as the destination, but is instead the vehicle for young people to learn future-proof skills, create opportunities, and improve their lives and communities.

The digitization and virtualization of society scares and thrills me. But what I see most is the opportunity to build digital spaces that eliminate the pervasive inequalities in access and usage of the internet. These gaps, often witnessed along gendered lines, continue to drive the digital divide, not only in Tanzania but around the world.

Youth-centered platforms like TYDS help us to tackle these challenges. Together, we are reaching more underserved and disadvantaged young people with the digital literacy and self confidence to realize their potential in the fast-paced digital economy.

At TYDS 2022, we further expanded our efforts to reach even more Tanzanian youth across the country. Of note was our session in Kagera Region, with the support of Ms. Neema Lugangira, Member of Parliament representing NGOs on the Tanzanian Mainland. That puts the number of regions reached by TYDS at 11—and we are not finished yet!

This fourth year of TYDS was a testament to the social capital DOT Tanzania has built since 2013. I want to thank our 2022 funding partners, UNICEF and UNDP through the Funguo program, for co-creating this exciting opportunity with us. Our regional ecosystem partners helped us go wide and deep, hosting 21st-century skill building sessions for 3,800 youth in their innovation spaces and university halls. Streamed on social media and posted online, this library of resources extends the impact of TYDS beyond our event.

TYDS showcases how private-public partnerships can build value and deliver impact. Guided by urgency, collaboration, and a spirit of learning, DOT Tanzania pledges to continue ensuring the digital economy is equalized and inclusive for all young people.

Diana Ninsiima
Country Director, DOT Tanzania

Creating Transformative Youth Digital Spaces

Over the years, DOT Tanzania and the ICT Commission have witnessed how young people use technology to start and scale businesses, learn new skills, and impact their communities. With an unwavering commitment to digital inclusion, DOT is now looking at how its youth-led model can be applied in different sectors to create solutions at scale.

TYDS 2022 explored how, when harnessed by youth, technology and digital skills can bridge worlds and solve problems. After all, digital transformation has a role to play in every space, not just in the ICT sector.

At first glance, youth employment, education, and climate change may seem like three disparate, unconnected themes. We beg to differ, however. In the context of this report, each of these spaces has one key thing in common: Genuine progress demands that we apply principles of digital inclusion and gender equality.

Pulling through these threads will guarantee that all youth have equal opportunity to bring their creative energy and ideas to the table. From providing platforms for people to become digital freelancers, helping teachers create 21st-century classrooms, or raising awareness among youth about the challenges faced by our planet, the digital economy presents infinite opportunities. It is our responsibility to ensure all young people are able to grasp them.

"Due to the economic challenges caused by climate change and digital transformation, the world is transitioning from a knowledge-based society to a digital economy. We have a lot of work to do to prepare our country to harness the growth available through digital transformation."

- Hon. Eng. Kundo Andrea Mathew (Mb), Deputy Minister for Information, Communication and Information Technology

With 23 million people under the age of 18, Shalini Bahuguna from UNICEF Tanzania pointed out that Tanzania's youthful population is its strength. Young people are already playing a vital role in accelerating progress toward digital connectivity and promoting creative responses to social challenges.

As Christine Musisi from the United Nations Development Programme Tanzania shared in her opening remarks, we must now recognize youth as the drivers of the economy of this great country and the continent at-large. Let us not forget that an investment in young people is an investment in our country's future.

DOT has found its advantage in the network economy and in the relationships we have built over time—with young people and with our partners. We are fortunate to work with so many who are passionate about the things we do and fuel our collective impact.

Together, ICT for youth employment, education, and climate change represent key spaces where we see tremendous opportunity for digital transformation led by young people with the support of DOT Tanzania and our innovation ecosystem.

OUR REGIONAL PARTNERS

We've come so far in four years! From the first year of TYDS where we moved between a trio of universities in Dar es Salaam to 2022, where we partnered with nearly 20 innovation spaces and universities in 11 regions. Without partners to incubate and host sessions within communities, TYDS is just an idea.

As in previous years, ecosystem partners were supported to localize the themes of TYDS to best meet the needs of young people in their region. They also led in identifying local facilitators and recruiting youth participants.

TYDS has become an important platform to convene partners working at the intersection of ICT, youth employment, education, and now climate change. We look forward to continuing to work alongside our regional ecosystem partners to create inclusive and transformative digital spaces.

Dodoma	Iringa	Dar es Salaam	Arusha

Kagera	TYDS 2022 REGIONS	

Zanzibar	Kigoma	Mwanza	Tanga

Morogoro	Tabora

Partner Spotlight: Projekt Inspire

When it comes to digital opportunities, Tanga is an exciting place to be. The coastal city is on its way to becoming Tanzania's first "Science City" with the launch of a STEM Park and buy-in from city council.

TYDS regional ecosystem partner Projekt Inspire is one of the key players in this space. This was the second time the organization hosted TYDS, this year doubling attendance from 50 to 100 youth.

Projekt Inspire hosted two sessions, one on digital marketing and the other on digital technology. The topics were chosen based on advanced feedback the organization received from youth about what they thought would be helpful and their barriers to success.

Recognizing that the adoption of digital technologies depends on an enabling environment, Projekt Inspire used the TYDS platform to bring youth and government stakeholders together in dialogue. #DOTYouth beneficiaries trained by DOT community leaders presented their stories and experiences to Tanga city council members.

"We wanted to make sure our Tanga city government officials really understand the youth challenges and how they can help solve them," says Max George, Manager of Projekt Inspire's STEM Park. "Second, we wanted them to really understand what it means when youth are doing digital business, digital marketing, and creating digital technologies."

With TYDS currently held as an annual event, George hopes it can expand to offer more regular programming: "Having sessions in other months would keep updating and activating youth to make sure they're bringing impact to society."

Partner Spotlight: TAOTIC

This was the third year that TAOTIC, a local ecosystems-based social-tech venture builder in Morogoro, partnered with DOT Tanzania for TYDS.

Alongside the Sokoine University of Agriculture (SUA), TAOTIC offered a session called "Grow Your Career in the Digital Economy." More than 120 youth attended, including secondary school and university-level students, as well as recent graduates from SUA.

"We wanted them to see the possibilities that are out there, given that the world is moving to the digital economy," says Kiko Kiwanga, Founder of TAOTIC. "Most of the curriculum they're taught in schools is not updated. [Our session] was about what they would face in the real world."

This year, TAOTIC also offered an exciting post-summit opportunity for TYDS participants. In partnership with the Small Industries Development Organization (SIDO), TAOTIC is onboarding small and medium sized industries in Morogoro to a new hybrid accounting process management system. The project is a partnership with various business support services providers like SIDO Morogoro, TCCIA Morogoro, innovation hubs, and others.

TAOTIC used TYDS to recruit 15 youth who received training to join the organization's virtual assistant network. Those youth now have opportunities to earn monthly recurring income by performing image transcription and data entry validation for those subscribed to the accounting system—a powerful example of the income generating opportunities that exist for those with the right digital skills.

Overall, Kiko says the experience of partnering with DOT Tanzania for TYDS is getting better each year: "We were able to reach more youth and strengthen our relationship with local ecosystem partners."

St. Augustine University of Tanzania (Mwanza)

"[TYDS added value to the work we do because it showed] the power of digital platforms and skills to attain market share towards a service or product after identifying the targeted audience and customers."

Omuka Hub (Kagera)

"TYDS granted an opportunity to further our mission of accelerating digital inclusion in peripheral regions, with Bukoba being our home base. Localizing TYDS was meaningful and let us use catered training to better reach the demographics in need."

Institute of Social Work Innovation Hub (Dar es Salaam)

"TYDS assisted the Institute of Social Work (ISW) Innovation Hub to impart digital skills to the Institute's students and to help them engage in entrepreneurial activities. In this case, the ISW students become job creators and not job seekers."

Archbishop Mihayo University (Tabora)

"[TYDS] helped to minimize the digital gap that many youth have, especially in higher learning institutions. It gave youth a new perspective regarding digital technologies in learning and career development."

Pamoja Youth Initiative (Zanzibar)

"Partnering with DOT Tanzania was a great opportunity for Pamoja Youth Initiative to broaden its networks by working with other partners, particularly SMIDA, and to reach more young people to impart knowledge of digital skills which are critical in the 21st century."

Youth Relief Foundation (Tabora)

"Partnering with DOT to implement TYDS helped us to promote our organization to youth in Tabora and to other stakeholders. Youth were empowered and have realized the opportunities they can get through digital platforms."

Institute of Accountancy (Arusha)

"As an organization that works directly with nearly 20,000 youth, DOT greatly aids in preparing those youth for the digital world. Providing training for youth, particularly on how they secure jobs digitally, is extremely important as technology advances at an astonishing speed."

One message we heard loud and clear at TYDS 2022: Constant evolution and learning are central to success in the 21st century. In that same spirit, we are always looking for new ways to grow and improve TYDS to become the country's leading, most inclusive digital transformation platform.

Here are some of the challenges (and solutions) we worked through in 2022.

Reality 1

Inclusion is one of DOT's organizational values. For TYDS, this meant first, striving to reach a greater number of youth across Tanzania and second, ensuring our sessions were facilitated by an equal number of female and male presenters.

In 2022, our ecosystem partners also found it challenging to identify qualified local facilitators. Despite these challenges, we needed to make sure women were better represented in presenter and facilitator roles.

Actions

- **Actively identify female facilitators.** Instead of approaching companies and having them suggest a speaker, the DOT Tanzania team took the time to scout potential female speakers from within an organization. Many fields are still male-dominated, so additional effort was required to ensure an equal gender balance.
- **Trust partners to localize TYDS sessions.** In one case, a TYDS regional partner spent their budget on out-of-town facilitators versus live streaming and participant refreshments; in another region, the partner asked a #DOTYouth to facilitate. Allowing for greater localization is key for partner ownership and autonomy.

Results

1 We had a 50-50 balance of female and male speakers. This resolved a challenge we faced with TYDS 2021.

2 TYDS reached 11 regions alongside nearly 20 ecosystem partners. We mobilized the ecosystem and DOT's social capital and it paid off in terms of the platform's reach.

Lessons learned

- **Gender equality must be intentionally included in summit planning.** The search for event speakers can be a passive task. Organizers let companies propose speakers, and as a result offload the responsibility of maintaining a gender balance. Though identifying and inviting specific women as speakers took time, it was essential to ensuring a summit that truly had gender equality at its heart.
- **Always adapt and problem solve.** Certain partners and regions experience greater challenges because of various factors. While the easy answer may be to cancel that TYDS session, DOT Tanzania is open to experiment with new possible solutions each year. This is key to ensuring no region or its youth are left behind.

Reality 2

A key component of the TYDS research process is a series of focus group discussions (FGD) hosted following the summit. In the past two years, we have faced two challenges that affected the quality of data gathered at this stage in the research:

1. Connectivity: Network issues made it difficult to connect with youth during the discussions. This was especially true in rural regions.
2. Timing: Focus groups were conducted one to two weeks following the summit, and youth had not yet had the chance to act on the skills they had learned at TYDS.

Actions

- All FGDs took place over WhatsApp audio group call, which requires less bandwidth and is more widely used by young people. In previous years, participants faced a number of barriers in connecting to and using Zoom. We also capped each group discussion at four youth participants, which made the calls shorter and more dynamic.
- FGDs were held one month after TYDS to provide youth with the time to implement and see the result of the skills they had learned.

Results

1 The calibre of conversations was higher than in previous years, likely because youth felt more comfortable using WhatsApp and experienced fewer network issues.

Youth who dropped off the call were able to easily rejoin, and we had active participation, including from youth in rural areas.

2 In speaking with youth one month later, we found they had the opportunity to implement the skills they had learned.

As an outcome, FGD participants were better able to reflect on how the TYDS sessions had impacted them.

Lessons learned

- Design for inclusivity. Usage of video platforms like Zoom and Google Meet have increased since the COVID-19 pandemic began. But these platforms can still be exclusionary. For similar discussions or other online outreach to youth, ask: what platform has the lowest barrier of entry for the most number of people. Let that answer guide the way. For TYDS, it was WhatsApp.
- There is value in waiting. Our initial instinct was to conduct FGDs as soon after the summit as possible so participants would have the sessions fresh in their mind. Waiting for a month to elapse, FGD participants were still able to clearly describe what they had learned from TYDS sessions, and we had the added benefit of hearing how they applied those skills.

This report was written based on the insights shared both during and after the Tanzania Youth Digital Summit, hosted between 16-19 August 2022.

TYDS 2022 featured both in-person and virtual sessions hosted by innovation hubs and university partners. The event was attended by 3,862 youth (aged 15 to 35 years) in 11 regions across Tanzania.*

Of that total number, 2,662 attended online and 1,200 participated in a physical session hosted by DOT Tanzania or one of our ecosystem partners.

Data collection & analysis

The primary quantitative data collection tool for TYDS is U-Report, a messaging tool developed by the UNICEF Office of Innovation. Through the platform, DOT Tanzania created two surveys, one to gather youth voices on climate change and the other, their thoughts on online opportunities. Both surveys reached a large number of youth from across Tanzania: the climate change survey had 7,326 responses and the online opportunities survey had 7,101 responses. Youth completed these surveys both during and after the summit.

Additionally, TYDS participants had the opportunity to complete pre and post-summit assessments through Google Forms. The pre-summit survey had a total of 572 participants (15% of total participants); 236 youth completed the post-summit survey (6% of total participants).

Due to the small sample size, the outcome of these surveys should be viewed as a snapshot of youth opinions rather than trends that are indicative of the experience of all Tanzanian youth.

Qualitative data was collected through six focus group discussions hosted one month after TYDS 2022. Twenty-one youth (48% of whom were young women) from across the 11 TYDS regions participated in these 1.5-hour discussions.

Each had attended at least one TYDS in-person session. These discussions were hosted virtually using WhatsApp audio calls and were facilitated by a DOT consultant from Canada, with Swahili translation support from a DOT Tanzania team member.

*Arusha, Dar es Salaam, Dodoma, Iringa, Kagera, Kigoma, Morogoro, Mwanza, Tabora, Tanga, and Zanzibar

FEATURED YOUTH VOICES

A few of the TYDS participants and Tanzanian youth whose experiences are shared in this report.

Gundelinda Mushy

Gundelinda teaches biology and geography at Makundusi Secondary School in Mara region, Serengeti district

Gibson Kawago

Gibson is an environmentalist, social entrepreneur, and founder of WAGA Tanzania, a company in Tanzania that creates affordable battery solutions from recycled trash.

Ashura Babi

Ashura is one of the co-founders of Gigspace Tanzania, a freelance platform that connects businesses in East Africa to skilled individuals online.

Abdalah Hamad

Abdalah is completing a tourism degree at the University of Zanzibar and runs his own small tourism operating business.

Joan Henry Francis

Joan is a web developer, and lifelong learner based in Dar es Salaam.

Baraka Mafole

Baraka has been a digital freelancer for three years and supports other young people to work online through his initiative, Sanuka Kidigitali. He is also the founder of Jukwaa Africa.
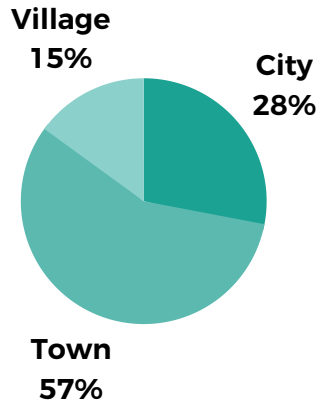
ABOUT OUR PARTICIPANTS

Some figures from the pre- and post-summit assessments. U-Report data around online freelancing and climate change is explored later in this report.

Gender of TYDS participants
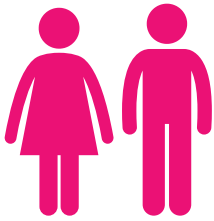
Women: 39%
Men: 61%

Participant location

Village 15%
City 28%
Town 57%

Data bundles and public wifi are the most common ways in which TYDS participants access the internet

92%

63%

Participant daily device access by percentage*

Education level
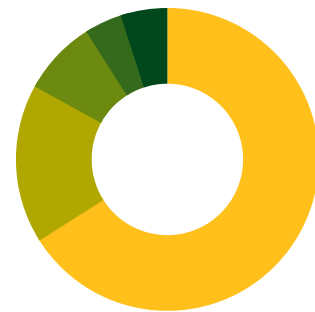
66% university degree
17% diploma
8% secondary school
5% vocational education
4% post-graduate diploma

3 out of **4**

participants said they think digital skills can improve their employability or ability to be self employed

99%

of TYDS attendants said they would recommend the summit to their peers

*youth were able to provide more than one answer

ICT FOR

YOUTH EMPLOYMENT

EDUCATION

CLIMATE CHANGE

ICT FOR YOUTH EMPLOYMENT

The digital economy presents dynamic opportunities for young people to employ themselves and positively impact their communities.

As an annual platform, TYDS supports youth to leverage the opportunities presented by digital transformation, and creates a space for young people to gain vital skills that will make them more agile and resilient in the digital economy.

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Un- and underemployment remain a challenge for young people in Tanzania and this will likely continue as the country's youth population reaches nearly 30 million by 2030 and 60 million by 2050.

While finite formal sector jobs exist, opportunities in the science, technology, engineering, and mathematics (STEM) fields are abundant. TYDS is helping to bridge the divide between these opportunities and the skills and mindsets currently held by young people.

The topic of ICT for youth employment is timely. "There are a lot of changes happening in Tanzania and outside the country, and so far when we talk about the digital economy and digital transformation some things are not clear," explains Dr. Hassan Mshinda, former Director-General of the Tanzania Commission for Science and Technology (COSTECH), now a consultant with Fondation Botnar.

He adds: "TYDS is one of the platforms that can contribute to informing the ecosystem on what is happening."

Since 2019, with the support of Global Affairs Canada through DOT's "Daring to Shift" project, DOT has worked to advance the theme of ICT for youth employment through the digital jobs pillar. Building on these experiences, this first section explores what we heard from partners, panelists, and participants at TYDS 2022.

Focus on: Digital inclusion and youth employment

DOT is committed to ensuring all young people have equal access to the tools, knowledge, and networks to create opportunities within the digital economy. In 2021, TYDS focused on supporting young entrepreneurs, particularly those in informal/offline sectors and in rural areas, to apply digital skills to start and grow their business online.

A strong network of regional ecosystem partners helped TYDS reach even more underserved youth in 2022. Going forward, it's important to remember that digital skills will benefit everyone—from the software engineer riding the wave of the fourth industrial revolution in Dar es Salaam to the salon owner in Shinyanga.

One TYDS participant, Nasra Mkoko, shared her experience as a soap maker in Kigoma. After TYDS, she created a WhatsApp business account to advertise her product, which has helped her generate interest and get new customers. She says that most youth, especially in rural areas, use digital platforms only to keep up with friends and show what is happening in their lives. "Youth need awareness of how useful social media can be in business and in work," adds Nasra. "If they know that then everything else will follow."

In 2022, TYDS expanded its focus to host sessions about digital freelancing and microwork—exciting, emerging opportunities within the labour market.

As you will read in the coming pages, both present countless opportunities for young people to apply their creative energy, so long as they have the awareness and understanding to seize them.

Online work could be a particularly powerful equalizer for young women in Tanzania. DOT has heard year after year that female business owners are often constrained by traditional gender norms, and that many still need their family or husband's permission to run errands or leave their home.

In rural areas, World Bank research has found that women are almost always either self-employed or unpaid, leaving a gaping need for appropriate income generating activities.*

Digital freelancing and microwork introduce the opportunity to work from home and generate income with only a smartphone and internet connection. These opportunities are also more flexible, meaning they can be pursued while women balance the many other demands put on their days.

Though we must work to change environments and systems that keep women out of the workplace and in their home, the digital economy presents a promising first step towards gender and economic empowerment.

Youth voices on ICT and employment

A desire to gain new ICT skills was the reason why 72% of youth participants attended TYDS. Their other key reasons were because they were expecting to get jobs after the summit and because they wished to be empowered by the discussions.

In post-summit focus group discussions, we were interested to hear how TYDS participants had applied what they had learned at the summit. We asked young people to describe what specific actions they had taken a month after the event:

"We opened a WhatsApp group where members discuss issues, and an Instagram and Facebook page. All of these help us share what we do with more people."

- Khalfan, recent graduate and founder of the Afyabora Nutrition Organization in Morogoro

"I started looking for customers for my yogurt business. I am now in the research process and doing business planning. Before TYDS I had a number of business ideas. The summit helped me clarify which path to choose."

- Eddah, student and business owner from Iringa

"TYDS taught me how to take risks and turn challenges into opportunities. After TYDS a friend and I started a mobile money transfer business and we're already seeing profits."

- Lucy, second year business student from Tabora

"I was introduced to Pinterest. I now use it to look for visuals to get an idea and inspiration of what I want to paint.."

- Hemad, artist and entrepreneur from Kagera

"I learned how to create social media accounts and use them to communicate my location and business hours. I also use them to talk with customers and it has helped my customer service."

- Ruweida, bakery owner in Zanzibar

Based on their experiences and attendance at TYDS, we also wanted to hear from young people about the skills they think are most important to succeed in the digital economy.

Here is what they had to say, in order of most common answer:

- Digital marketing platforms like Canva
- Social media usage for business
- Customer service
- Soft skills (like communication, collaboration, leadership, and self-discipline)
- Personal branding
- Online safety

Entrepreneurial mindsets to move past the skills mismatch

Look at the reasons for high youth unemployment numbers and research will often point to the "skills mismatch"—graduates and other youth who have a degree but lack the necessary experience and skills to gain formal sector employment.

TYDS speakers did not deny that the skills mismatch exists, but more than ever we heard how this can no longer be used as an excuse.

The importance of a growth mindset and "learning to learn" took centre stage at TYDS. Also known as "metacognition," various TYDS speakers shared that young people need the awareness and drive to pursue self-guided learning.

Social entrepreneur Ian Tarimo summed it up best when he said "If you need something in this age of technology,

there is nothing you can't access without desire." But desire and drive are traits that must be cultivated.

Self-guided online learning requires a certain level of digital literacy so as to avoid scams, inappropriate content, and privacy issues. Young people also need to know the specifics of what they're wanting to learn—which is easier said than done.

"YouTube is a free news information and learning resource, but it's flooded with lots of materials. Someone needs to be very keen and clear in knowing what they're looking for," explains Gibson Kawago, founder of WAGA Tanzania.

As a maker of recycled battery solutions, Gibson used YouTube to learn about everything from battery technologies to the ways in which electronic waste pollutes the environment.

This personal pursuit of learning set him apart from his electrical engineering classmates because it helped him move beyond theory to apply what he was learning. Gibson's willingness to experiment and create are key 21st-century skills that offer a model for any young person.

Learning to learn is not all about personal growth—there is huge potential for youth to translate learning into earning, using their new skills to compete for jobs, grow their business or, as we'll explore in the next section, pursue digital freelancing opportunities.

TYDS panelist Cindy Adem also talked about the importance of young people blazing their own path based on an openness to evolve and adapt. Cindy is a product manager currently working to develop a learning platform targeted to low-income teachers. "Trust the process and know it is okay to have several careers in one lifetime. You can change your mind so long as you're strategic about it and willing to learn and do what it takes," she told participants. "Just because you go to school for one thing doesn't mean it has to be your entire life."

Taking the initiative to embrace constant learning and change is an essential mindset shift for digital freelancing and online work opportunities.

Digital freelancing and the future of work

Microwork and online freelancing are game-changers for youth employment. These are internet-enabled tasks that can be completed by any worker with an appropriate device and internet access.

Global trends presented by Zahra Nensi, International Development Leader for Deloitte East Africa, spoke to the findings of a survey conducted with Gen Z and Millennials globally about the future of work. It found that the rising cost of living, climate change, and unemployment were the top concerns for today's youth.*

Globally, these circumstances are leading to what is being deemed "the great resignation" where youth are channeling their entrepreneurial energy to start their own businesses and work as freelancers.

Zahra said the private sector needs to evolve to create and design jobs for the future that are more hybrid and compelling to young people.

One assumption that is often made in Tanzania is that young people turn to entrepreneurship and freelancing because of high levels of youth unemployment.

But a TYDS U-Report survey conducted with over 7,100 youth found that the primary reason respondents are interested in pursuing microwork or freelancing opportunities is to supplement their income, with a smaller group reporting they are motivated to use these means of work as their primary source of income.

This suggests that young people are not convinced that microwork or freelancing could earn enough to replace the salary of a full-time formal sector job or other income generating activity.

It seems to indicate that young people need greater awareness of microwork and digital freelancing opportunities.

Post-TYDS focus group discussions supported this hypothesis, with few youth knowing about digital freelancing platforms and an unfamiliarity with the term "freelancing."

Additional U-Report findings

57% of youth had yet to take on a microwork or digital freelancing job

86% of young people were interested in getting more involved in microwork and freelance opportunities

Youth were most interested in performing vocational or handyman tasks, followed by info-finding roles

Those who do know about digital freelancing are excited. "I think freelancing is an amazing opportunity for someone to explore their own creativity and to seek independence in the workplace," said Joan Henry Francis, a software engineer based in Dar es Salaam. She has created an account on Upwork and plans to soon start advertising her web development services.

When asked what support she would need to pursue digital freelancing, Joan was clear that greater awareness is the first step: "Freelancing in my country is new since most people are used to formal employment. Sites like Fiverr and Upwork use a rather different approach since you need to build your online presence and credibility."

Awareness not only means knowing a platform exists, but also being reassured that it is secure. Several TYDS participants expressed concerns about privacy and security related to payment gateways. Since spaces like ecommerce and digital freelancing are newer for young people, additional efforts must be taken to legitimize the platforms and how people can remain safe online.

When it comes to raising the profile of digital freelancing and microwork in Tanzania, there's also the need to reach beyond traditionally online occupations.

Ashura Babi, founder of Gigspace Tanzania, says there can be a misconception that freelancing is only possible for certain occupations.

She says this is often reinforced by the target audience of online training: "Digital skills training focuses too much on professions that are already familiar with freelancing—graphic designers, digital marketers—as opposed to a human resource manager who can draft a contract, a lawyer, or an accountant. We're finding it hard to make these people understand they can be freelancers, too."

Overall, digital freelancing and microwork open exciting doors for young people, but further awareness raising and education is required for them to take full advantage of these opportunities.
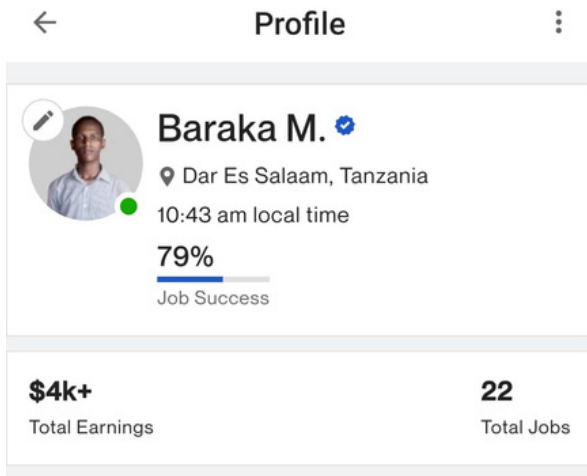
Left: A screenshot of Baraka's Upwork profile

Digital freelancer spotlight: Baraka Mafole

In three years, Baraka Mafole has become one of Tanzania's best known digital freelancers—and now he is supporting other youth to follow in his footsteps. The TYDS panelist first turned to freelance work after disqualifying from university and finding it impossible to find formal sector employment.

Googling "how to make money online," Baraka came across digital freelancing. Borrowing funds from a friend, he enrolled in a Udemy course about digital marketing. Less than a month later he landed his first client on Upwork writing blog articles and product reviews.

"Freelancing has changed my life. It helped me to earn enough to support myself," says Baraka, who has made more than US $4,000 from online platforms like Upwork, Fiverr, and Freelancer.com. "I could buy a laptop and can now pay for my school fees so I'm back to university with the money which I got from freelancing."

Baraka soon realized there was an appetite from other youth to learn about digital freelancing.

Together with a friend, he founded Sanuka Kidigitali, an initiative to help people identify, learn, and monetize digital skills. Baraka also shares advice and opportunities with his more than 30,000 followers on Twitter and is the founder of Jukwaa Africa, a company that builds solutions to the challenges faced by creators in Africa.

Through Sanuka Kidigitali's virtual and in-person sessions, Baraka has shared his experiences with thousands of Tanzanian youth. To help them secure their first digital freelancing job, the initiative connects youth with experienced freelancers who can mentor them on how to apply for jobs, determine their pricing, and find appropriate clients.

Digital freelancing opens a world of possibility for Tanzanian youth—so long as they know about the opportunities and how to grasp them. Concludes Baraka: "People lament youth unemployment but there are a lot of job opportunities, not only in Tanzania but in the world.

Here's what Baraka and Sanuka Kidigitali hear from youth about their main challenges on digital freelancing platforms:

- Trust: Many young people have been scammed online and so they do not trust digital opportunities.
- Issues securing first job: Finding client #1 is the most difficult part of starting on a digital freelancing platform. Baraka says it is easy for youth to lose hope.
- Lack of fairness: Freelancers outside of Tanzania and Africa often get paid more money for the same work.
- Payment: Most digital freelancing platforms use PayPal as their preferred payment gateway. However, freelancers in Tanzania cannot receive PayPal payments, leaving freelancers in situations where they are not paid or are forced to find a person outside of the country who can serve as a "middle man" for the amount.
- Cost of data: Data costs in Tanzania are high compared to the purchasing power of young people. Data bundles and stable internet are key for people to be competitive in the digital economy, but Tanzania isn't there yet.

Soft skills for the digital world

Regardless of their livelihood, digital skills are not the only competencies a young person needs in the world of work.

Though not a deliberate focus of TYDS, every year we hear from panelists and participants about the importance of soft skills in complementing digital expertise.

Head down and eyes staring at a screen, it can be easy to overlook the importance of social and emotional intelligence skills like communications and networking.

"If you don't have the skills to talk about what you've done, you've almost failed before you've begun," said Cikay Richards, former Executive Director of the EU Business Group TZ during a TYDS panel. "Learn new skills and IT but do not forget the basics that you need on a daily basis to stand out."

As someone who employs young people through his social enterprise, Tai Plus, Ian Tarimo also spoke to the importance of social skills: "There are people who are the best in Tanzania but they had poor relationships and were toxic [in the workplace]. We had to let them go even with their technical skills."

On top of communication and networking skills, TYDS panelists shared that young people need to have the self awareness to be intentional about creating an environment where they can learn and grow.

Princely Glorious, founder of Ona Stories, told TYDS participants that the people they surround themselves with, the places they go, and the things they read and consume really matter.

According to Princely's panel remarks: "The potential that you have is one side of the equation. The other side of the equation is your environment. What have you surrounded yourself with? You need to take stock of this."

Dr. Riziki Nyello, head of the Innovation Lab at the Institute of Social Work in Dar es Salaam, identifies the lack of soft skills as a pressing issue in the labour market.

"Several studies show that most graduates adequately possess hard skills but have inadequate soft skills such as confidence, innovation and creativity, communication, and being team players," he says.

"They can know Canva, but they still need to persuade other people with their ideas."

The call to action is clear: digital skills programs must embed the offline soft skills that will support young people to move through their days and their lives.

This hard and soft skills balance has been central to DOT's approach from the beginning. It was insightful to hear so many at TYDS speak to its continuous importance when it comes to succeeding in the digital economy.

Digital entrepreneur spotlight: Ashura Babi

When Ashura Babi graduated from university she experienced the same challenge faced by millions of Tanzanian youth: finding full-time employment.

Seeing freelancing as an opportunity to take things into her own hands, Ashura dabbled in content creation and social media for local hospitality businesses.

Encountering several hurdles, Ashura decided to build her own freelancing platform to address the challenges head-on. Gigspace Tanzania was the result—a platform that connects Tanzanian freelancers with clients across East Africa.

International platforms like Fiverr have opened a world of freelance work for people everywhere.

But they don't consider the unique local circumstances of individual countries like Tanzania.

Localization for the Tanzanian market is a key selling point of Gigspace. "We thought it would be nice to have a platform where people could get paid locally and communicate in a language that they're familiar with," says Ashura.

Tanzanian freelancers often face payment issues because PayPal is not accepted and many don't have bank accounts. Gigspace freelancers are paid through mobile money transfer, with the platform taking a small commission from every project.

Another benefit of using a Tanzanian platform is that clients hire freelancers who really understand their context.

That could mean working with an accountant who is familiar with filing online taxes through the Tanzania Revenue Authority or finding a graphic designer who can create a poster that looks familiar to a local audience.

Ashura is the first to admit that freelancing and purchasing services online are still relatively new concepts in Tanzania. "Many people don't understand the word 'freelancer.' I don't even know how to say it in Swahili because it's not something we've been doing," she laughs.

Outstanding challenges include building trust with clients and freelancers by creating payment systems that protect both parties.

Gigspace holds onto project payment from clients and only releases the funds to the freelancer when their work is delivered in a satisfactory manner.

Companies use the platform knowing they'll get a full refund if a project isn't complete, and freelancers avoid having to chase a client for payment.

When it comes to the future of freelancing in Tanzania, Ashura is hopeful. She thinks it could soon be seen as a viable alternative to formal sector employment and an answer to the under- and unemployment faced by youth.

"It really now depends on the players in the ecosystem and what they're telling freelancers," says Ashura. "If we keep sticking to the same story that freelancing is only about digital marketing, then it's going to take a while. We have to change our language so people understand there's more to it than just that."

A TYDS session at Projekt Inspire in Tanga

Next steps: DOT support beyond TYDS

DOT Tanzania has worked at the intersection of ICT and youth livelihoods since 2013. Based on what we heard from youth and presenters at TYDS, here are three ways DOT could support the ecosystem further.

1

Build further partnerships to continue impacting youth with digital skills
Several TYDS participants and partners expressed a desire to have the summit become a year-round platform. While TYDS sessions are dynamic, they represent just a drop in the bucket of everything there is to learn when it comes to digital skills—young people have an appetite for greater programming and want it to happen more frequently. There is also the need to focus on intermediate-level digital skills to support those who are already familiar with the basics.

2

Develop targeted messaging to communicate online work opportunities
Understanding and awareness of digital freelancing and microwork is in its infancy. Rather than taking a "one-size-fits-all" approach to communicating these possibilities, DOT could develop programming that targets the three personas of young people that emerged during TYDS discussions:

1. Youth with digital skills who need support in determining the services they could offer, registering for, and establishing themselves on online freelancing platforms.
2. Youth in rural areas where the understanding of digital freelancing opportunities is low and issues like connectivity and device access create additional barriers.
3. Youth with experience in traditionally "offline" professions who could benefit from sessions that address how their skills could translate into online services.

3

Scale programs that focus on both digital and soft skills
Supported by the Government of Canada, DOT's Daring to Shift project supports #DOTYouth leaders across Tanzania to implement programs that take a holistic approach to 21st-century skill building. As that program comes to a close, DOT Tanzania is looking for new partnership opportunities to continue this important work.

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Tanzania's education sector is at a crossroads. Nearly three years since the COVID-19 pandemic started, educators everywhere have had ample opportunity to look back on the lessons learned.

The pandemic accelerated the shift to blended (online/in-class) learning that was already underway. Stakeholders are now reflecting on how technology can be used to create new learning experiences, improve the quality of teachers, and meet Sustainable Development Goal 4: inclusive and equitable quality education for all.

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Though Tanzania's COVID-19 response did not involve school lockdowns or an overnight pivot to online classrooms, global trends point to a steady growth in digital learning.* Tanzania is still in the early stages of gathering the nation-wide data it needs to determine a coherent, collective response.

According to 2021 research led by UNESCO, sub-Saharan Africa needs to recruit 15 million teachers by 2030 to ensure all youth have access to quality education.[†] This is felt acutely in Tanzania.

Tanzania's demand for new teachers is higher than in any other country in sub-Saharan Africa.[‡] Tanzania will need more than 160,000 new primary level teachers and 368,000 new secondary education teachers to meet 2030 education demands.

The UNESCO report calls on the international community to focus on the support and preparation that will help build a skilled teaching workforce. As we heard at TYDS, ICT must be part of the equation. Though ICT has not historically factored into conversations around transformative education, this could change with bold public-private partnership.

* "Global Digital Education Content Market Report 2022." 2022: link.
† UNESCO. "Closing the gap: Ensuring there are enough qualified and supported teachers in sub-Saharan Africa." 2021: link.
‡ Of the 26 sub-Saharan African countries included in the 2021 UNESCO analysis.

Recent conversations around the World Bank-supported Digital Tanzania Project suggest that part of the budget should be directed towards education—reviewing existing curriculum and determining how technology can feature into the overhaul.

Tanzania's recently released Education Sector Development Plan (ESDP) for 2021–2025 is a progressive and promising framework in support of this discussion. The ESDP has added "science, technology, and innovation," as a sub-sector within the plan, recognizing the need to ensure ICT is embedded in everything that is done within learning institutions, rather than keeping it as an isolated initiative or program.

Henry Kulaya, an education consultant who supported the Ministry of Education to create the ESDP, says the current state of ICT and education in Tanzania paints an "encouraging picture."

He points to the Ministry of Education's appetite to develop a national edtech strategy, supported by EdTech Hub: "This is powerful because [edtech] has been very adhoc up until now. This strategy would go beyond just equipment to look at how tech could enhance educational outcomes at a national level."

The ESDP is explicit in its call for ICT to improve the quality of Tanzania's teachers. It advocates for continuous professional development (CPD) for teachers using a learning management service launched by the Tanzania Institute of Education.

Greater CPD would enable teachers to upskill throughout their career, particularly when it comes to 21st-century skills.

It is also intended that teachers in Tanzania be equipped with a tablet to give them an opportunity to access the learning management system for their CPD, as well as to encourage their use of ICT in the classroom. It is anticipated that the tablets used for the most recent national census will be donated to teachers once the data-collection exercise is fully completed.

But we know that it is not enough to simply give teachers access to technology and expect it to solve all their challenges. "The biggest misconception about ICT in education is that it's the end goal, but really it's just a means to an end. It can be a methodology. Technology is just a vessel—it's really about how we apply it," said Faraja Nyalandu, founder of Shule Direct and Ndoto Hub, during a TYDS panel entitled "Embracing ICT and 21st-Century Education: Are We There?"

So how do we strike a balance when technology and digital skills are transforming the way we teach and learn? As we heard from Ndekezi Maarifa, a TYDS facilitator and DOT's regional program development manager (East Africa): "The 21st-century classroom has changed because the student has changed. Learning has to really adapt to the needs of students and the context in which they are learning today."

According to Henry Kulaya, that means a mindset shift where ICT becomes a core competency for students, akin to literacy and numeracy. "It's not enough to have an ICT lesson in a computer class. What we need is every opportunity to instil digital skills. That's the only way it's going to work," he says.

Within this expectation, Tanzania's teachers need to be prepared to integrate ICT into everything they do.

ICT for education is a space DOT has explored in other countries. Of note, DOT Lebanon has implemented a program called TeachUp! since 2014. It was with some of the best practices and lessons learned from their experience that we developed the ICT for education content at TYDS 2022.

DOT Tanzania, too, implemented TeachUp! until 2018 in Technology Vocational Education and Training Authority (TVETs)

through support from the Human Development Innovation Fund and UKAID.

TYDS was a chance to reconnect with some of our partners working in the education space. It all comes back to our mission of reaching more underserved youth across Tanzania—who better to prepare them for the digital transformation than the teachers at the front of their classroom?

But first, we must ensure no teacher gets left behind when it comes to ICT and education.

Focus on: Digital inclusion and 21st-century learning

In the context of ICT and education, the digital divide takes two forms. The first relates to infrastructure, and making sure students and teachers have access to devices and internet connectivity.

Children across Tanzania want to use apps and web-based tools to supplement their classroom learning. Some can do this using a laptop or tablet, but others do not have access to devices or internet.

We see a similar spectrum of understanding, comfort levels, and technology access when it comes to Tanzanian teachers.

There are teachers who are supplied with tablets and wifi in the classroom and then there are those working in communities with no electricity. When it comes to technology and 21st-century skills, we need to take a human-centered design approach to meet the realities of everyone.

The second form of digital divide relates to whether young people and educators become active or passive users of technology. As we heard at TYDS, passive users are those who simply consume media or complete digitized worksheets. Active users, on the other hand, are engaged participants and contribute to the learning experiences of others.

This may be a Tanzanian teacher collaborating with a counterpart in Senegal using digital platforms, or a student making YouTube videos to educate their peers. The act of creating original, context-specific content is especially important in a country like Tanzania where most learning materials come from outside the country and region.

Going forward, we must commit to bridging both digital divides, those related to infrastructure and those linked to how students and teachers engage online.

The "Embracing ICT and 21st-Century Education: Are We There?" panel at the TYDS 2022 opening ceremony

Moderator: Given Edward Panellists (l-r): Henry Kulaya, Faraja Nyalandu, Nancy Angulo, Jamie Proctor

Creating transformative digital classrooms: Where do we start?

There are so many ways for students and teachers to become active participants in 21st-century learning environments.

As we heard from teachers and other education stakeholders at TYDS, bringing 21st-century learning and pedagogy approaches into Tanzania's classrooms is not necessarily best accomplished through sweeping solutions like "iPads for all" or even creating online classroom experiences.

Instead, we should look at how teachers can use ICT to:

- Access online learning resources to create more dynamic lesson plans
- Manage student assignments and complete evaluations
- Disseminate learning materials and connect with students outside the classroom
- Encourage their students to adopt a 21st-century approach to problem solving

When it comes to ICT and education, the emphasis has often been on imparting digital skills for students. This has created an imbalance wherein students demand the use of technology in the classrooms but teachers don't know how to use it.

This is a key challenge currently faced by Dr. Riziki Nyello, head of the Innovation Lab at the Institute of Social Work in Dar es Salaam. "There are ICT modules taught to students in computer labs, but if we want to scale up digital programs at the Institute we should engage instructors on how to effectively utilize the digital resources we have," he says.

Dr. Riziki says the first step is to raise awareness among academic staff that ICT should be part of their academic life. This could be done with online webinars where instructors connect with other academics to learn how to apply digital skills in teaching—an opportunity for DOT and other partners to act on.

As an ecosystem focused on ICT and education, we need to become better at how we support teachers to start from where they are at and grow from there. It can be intimidating to integrate technology into the classroom, and yet we know it's absolutely essential to the future of education and student success.

The remainder of this section will explore the abundance of possibilities in the ICT for education space, how to approach them through the lens of digital inclusion, and the online and offline skills teachers need to succeed in today's digital classroom.

Teacher spotlight: Gundelinda Mushy

One month after TYDS, secondary school teacher Gundelinda Mushy is already finding ways to use her new digital skills to access learning materials and inspire her students.

Gundelinda teaches biology and geography at a school in Mara region, Serengeti district. Her school does not have laptops or internet, but she's found other ways to weave the digital skills she learned about at TYDS into her teaching.

Since attending TYDS, she has started to look online for learning materials from teachers in Mara region as well as other parts of Tanzania. So far she has connected with another teacher in Tanga, with whom she is in regular contact over WhatsApp.

Though her students do not usually have access to phones or laptops, Gundelinda tries to encourage them to learn digital skills when they're able.

"When [students] go on holidays and access phones and laptops from their elders I say they should use them for their studies," says Gundelinda. "Digital skills are not taught at most schools here in Tanzania. But I learned the world cannot run without them, so I've started educating young girls and boys on ICT so they won't be left behind."

Finally, Gundelinda adds that DOT should provide digital awareness to young people from nursery school so that they can grow and master digital skills since it is inevitable that they will need them.

Gundelinda in her classroom at Makundusi Secondary School in Mara region

Enabling environments for student-centered learning

Teachers are key figures in a young person's life. How can they use technology to make their jobs easier, be more effective in the classroom, and reach students in a more compelling way?

Through its experiences in East Africa and the Middle East, DOT has learned four components that should be present to create enabling environments in schools:

1. Accessibility - of technology for teachers and students
2. Devices - whether it is laptops, tablets, or smartphones
3. Connectivity - ability to connect to the internet in schools and learning places
4. Resources - having the right space, learning materials, routers, etc.

Fortunately, several of these components have been promised by the Tanzanian government. National ICT plans include targets for broadband coverage, rural electrification, and increased research and development. Private sector players like Vodacom and Tigo have also signed internet connectivity agreements with certain schools.

But without all four components together, challenges will remain.

"Once you provide the connectivity or tablet, if you have nothing to use it for then it's a wasted investment and zero learning will happen," said Jamie Proctor, Tanzania Country Lead for EdTech Hub, at a TYDS education panel.

Instead, Jamie told TYDS participants that we need to look at the data around what is working in Tanzania's classrooms, ask why that is the case, and how to scale those approaches.

Another TYDS speaker, Nancy Angulo with the UNESCO Inclusive Policy Lab, added that decisions should be based on recently collected data, since a substantial amount of decision making in Tanzania is still based on decade-old research.

For best results in creating enabling environments for students and teachers, Jamie suggested edtech projects designed by multidisciplinary teams, for example, a policy maker, technologist, and user experience researcher—all of whom could work with students and teachers to iterate on initiatives that benefit the end user.

Core skills and competencies for 21st-century learning

At TYDS we also learned about the core skills and competencies educators need to be effective 21st-century teachers.

This was discussed during a TYDS session specifically aimed at educators entitled "How to Integrate 21st-Century Teaching in Education." Attended by primary school teachers to university lecturers, the session generated much interest.

Drawn from that session, in the next page you will hear the skills that are integral to factor into future digital skills programs for teachers.

Future proof skill 1: Mastering online productivity tools

Online productivity tools can transform teachers' lives. DOT facilitator and teacher Ndekezi Maarifa promoted a range of free resources during his presentation at TYDS.

With teachers being asked to do so much, not only can online productivity tools make them more productive and effective, but it can also lead to a better learning experience for students.

Consider how:
- Dropbox could be used to organize learning materials
- Canva could be used to create visually-dynamic lessons to teach in class
- Google Docs could be used to write lesson plans and collaborate with other teachers
- Zoom could be used to meet with students virtually

And YouTube, the world's most popular video platform, is a valuable tool for teachers to find learning resources to share in class or assign to their students.

Mastering online productivity tools will also mean teachers are more agile in the face of challenges. Should another pandemic shut down schools in Tanzania, educators could turn to a video platform like Zoom to continue face-to-face instruction with students; should their laptop be stolen they can rest easy knowing their lesson plans are safe in the cloud.

No single workshop could ever cover the full range of available digital tools. Which leads into the next future proof skill—the ability for teachers to take the initiative to seek their own tools and learning opportunities.

Future proof skill 2: Learning how to learn

As we heard in the ICT for youth employment section of this report, learning how to learn is one of the greatest competencies of our time. But doing so requires a mindset shift, an awareness of the learning resources that exist and, the digital competency to seek these growth opportunities in the world's largest library: the internet.

In schools across Tanzania (and around the world), learning remains a passive task. Students absorb information shared by teachers, and learning is predominantly assessed based on memorization versus application of skills.

It is the equivalent of students being fed meal after meal without ever having the opportunity to prepare food themselves. Can we really expect them to suddenly cook a meal when they graduate?

The internet is a knowledge-based society and learners—whether they're teachers or students—have a responsibility to continuously upskill using platforms like Coursera, Udemy, and YouTube.

Self-directed learning is a future proof skill, one that will mean youth and educators are more resilient and adaptable in the fast-paced digital economy. With new tools, platforms, and skills becoming relevant each and every year, the future belongs to those with the capacity and openness to learn them.

Future proof skill 3: Monetizing your teaching experience

Teachers can be digital freelancers, too!

Every teacher has lesson plans and learning activities they've developed. Digitizing this content—even using a simple tool like Google Docs or Canva—turns these materials into something that can be sold to teachers looking to supplement their own resources.

Teachers can also consider publishing courses on Udemy, an online learning platform.

Opportunities are particularly abundant for teachers in Tanzania and sub-Saharan Africa, as a growing number of educators across the continent seek learning content that is more context-appropriate.

Supporting educators to generate additional income from their learning resources may help with teacher retention and recruitment. It is easier to be persuaded to remain in professions that are financially lucrative and rich with opportunity. It will also help bridge the second digital divide—encouraging teachers to be producers of online content rather than simply consumers.

Participants at the TYDS opening ceremony in Dar es Salaam

TYDS participants in Zanzibar (above) and in Iringa (below)

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Next steps: DOT support beyond TYDS

TYDS was a positive first step in the ICT for education dialogue. The platform helped us to discuss global education technology trends and how they could apply in Tanzania—particularly in the context of emerging from a global pandemic. We also began to hear from teachers and learners about their experiences and pain points.

DOT looks forward to further advancing this conversation alongside our partners, private, and public sector stakeholders. Here are a few specific ways in which we believe DOT could contribute to the next steps:

1

Research and design a teacher-centered approach to 21st-century skills
In support of the Education Sector Development Plan, further research could be conducted to understand the gaps teachers are facing in integrating technology and 21st-century skills into their classrooms.

With our social capital and human-centered design methods, DOT is well placed to shape a pilot program that builds on TYDS and these findings.

2

Utilize DOT's ICT and education programming to contribute to Tanzania's continuous professional development framework
DOT has observed the trends in ICT for education in several countries. In Lebanon, for example, DOT's digital technology teacher curriculum generates ample interest as a large percentage of schools have not yet been digitized.

Drawing on experiences from the wider DOT network and the ready-to-be-localized TeachUp! curriculum, DOT is well placed to develop and adapt content that could be included as part of Tanzania's learning management service or facilitated across Tanzanian schools with teachers of all skill levels.

3

Serve as a convening leader within Tanzania's education sector
TYDS is a platform to bring together young people, government leaders, private sector officials, and other stakeholders to talk about digital inclusion and skills.

As a national convenor, DOT could do something similar in Tanzania's education sector, stepping into a leadership role to arrange dialogues, be a one-stop-shop of resources for teachers to learn 21st-century skills, and a research hub to continuously determine how to best impact students and teachers using technology.

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TYDS 2022 was DOT's first effort to link the ICT and climate change agendas. Both are emerging priorities for Tanzania, and we must find ways to better understand these complex spaces, individually and together.

Consistent with global trends, research points to the effects of climate change continuing to intensify in Tanzania.*

Rather than creating sector-by-sector responses, DOT foresees the need for every project, program, and plan to consider climate change as a cross-cutting theme, similar to the mainstreaming that has been done with gender equality.

Today, many of us apply a gender lens when designing an initiative to articulate how it will support women's empowerment. Similarly, applying a climate change lens will ensure a project has either neutral or positive impacts on the environment and will consider how the changing planet affects all sectors and communities.

Though organizations and institutions each have their thematic areas of focus—be it health, education, urban development, youth livelihoods, innovation, etc.—we must look at how climate change will exacerbate and compound the challenges we seek to address in these respective spaces.

Climate change will continue to affect "business as usual" operations and presents an existential challenge we all need to invest time, funds, and energy into.

ICT has the potential to help raise awareness about climate change and spread the word about how to prepare and respond to environmental emergencies. This is particularly important for those who are most vulnerable to the effects of climate change.

*Federal Ministry for Economic Cooperation and Development. "Climate Risk Profile: Tanzania." 2021: link.

Youth voices on climate change

Climate change is a nascent space for DOT and many other ecosystem partners. TYDS 2022 research aimed to support the development of baseline knowledge around how youth understand and perceive the effects of climate change so as to better create programming that meets young people where they are at.

Our most wide-reaching effort to poll Tanzanian youth on their understanding of climate change was a 2022 U-Report survey conducted with the support of the UNICEF Office of Innovation.

The mobile survey reached over 7,300 young people from across Tanzania, 98% of whom identified spending the majority of their time in a rural area.

Here are the U-Report findings about climate change

68% of youth said climate change is "very important" to them personally

79% either agreed or strongly agreed that climate action and technology solutions can go hand-in-hand

48% reported not having a good understanding of how technology can be used to take climate action

Focus group discussions let us probe deeper. TYDS participants were asked two questions: (1) what do you understand about climate change and (2) how are you experiencing it in your life?

The most common understanding of climate change was that it involves a shift in temperature, seasons, or weather patterns over a prolonged period of time. Below are examples of what we heard:

"Twenty years ago my home place had huge rainfall and people used to cultivate a lot during the spring. Nowadays we receive very little rainfall. We also had glaciers on Kilimanjaro, but due to climate change nowadays there is no huge amount of snow."

- Gundelinda, secondary school teacher in Mara region, originally from Kilimanjaro

"Climate change affects the seasons of the earth and can dry up water sources. This can impact energy production in the country because we are using electricity generated from water."

- Rocky, welder and entrepreneur in Tanga

"Climate change has different effects, like intensive drought and temperature rise in different regions. We have seen farmers not getting good production. A lot of education is needed for the future generation of farmers about how to overcome climate change."

- Jumatatu, university student in Dodoma and CEO of Youth Tech Solution

Unsurprisingly, TYDS participants connected climate change to what they were seeing and feeling in their lives and businesses:

"Climate change affects my business because I buy clothes for a specific season. In June, you buy clothes for the cold season and when the cold does not come I still have the stock. So the temperature mix-up is affecting my business."

- Jacob, clothing retailer in Dar es Salaam

"I use products like maize and groundnuts to make my nutritional flour. If rain does not come, drought happens, and the prices in the market go high. If this happens I have to sell my flour at a higher price. This affects the business because people are reluctant to buy."

- Diana, recent graduate of the human nutrition program at Sokoine University of Agriculture in Morogoro

"Where I'm staying in Dar es Salaam it has been really, really hot, and we believe that is because of climate change. The change in heat is really disturbing because it becomes difficult to concentrate on the different activities that I do."

- Joan, software engineer in Dar es Salaam

While each of these examples are linked to climate change in one way or another, conversations revealed that there is a significant knowledge gap between cause and effect.

For example, in one case a young man from Mwanza identified that COVID-19 was a consequence of climate change due to air pollution. In another, a female TYDS participant from Kigoma said that climate change was responsible for the rising water levels in Lake Tanganyika, but that this was not connected to an increase in rainfall. Another young person linked climate change with stomach bug issues that occur during mango season.

Additionally, of the 21 focus group participants, only two mentioned that human activity contributes to climate change. Based on these conversations, we believe awareness raising around climate change is the most important first step for partners or educators working in this space. Conversations suggested the need for greater education around:

1. What climate change is
2. The science behind how it is actually affecting people's lives
3. How a young person could change their behaviour or create new solutions to mitigate the effects of climate change on their own lives and in their communities

As shared later in this section, there are a number of opportunities youth have already identified related to climate change. But first, let's explore how values of inclusion are key in using ICT to raise awareness around climate change.

Focus on: Digital inclusion and 21st-century learning

Technology and digital skills can unlock tremendous opportunities in the world of work and in learning environments. But digital inclusion and awareness raising are critical so people can take full advantage of those opportunities.

Simply put, a young person cannot take action on climate change if they do not know what it is or how exactly it is affecting their life.

Knowledge about climate change is still in its nascency in Tanzania. Given the current context, the most effective way to integrate the ICT and climate change agendas is to use digital tools and platforms to reach more young people with information about climate change and offer practical guidance on what to do about it.

The innovation and passion of youth will pick it up from there. As early adopters of technology and creative thinkers, young people empowered with greater environmental knowledge could bring a new wave of technology-enabled climate-smart innovations.

Technology is here to stay and so is climate change. It is critical that we integrate the two.

Just as the digital divide disproportionately affects young women, climate change also has a greater impact on women, children, refugees, and other disadvantaged communities.

Continued efforts to bridge the gender digital divide will help ensure those most vulnerable to climate change are able to access online information about their personal health and safety.

Equipping more young people with digital and 21st-century skills will also enable them to mobilize their ideas and creativity to solving the urgent challenges presented by our changing planet.

Youth could also be trained as citizen scientists and green ambassadors, monitoring and reporting how climate change is impacting their respective communities. This locally-collected data could be key in creating comprehensive, equitable approaches for rural parts of Tanzania.

The "Youth at the Centre of Climate Smart Solutions: Opportunities and Constraints" panel at the TYDS opening ceremony

Moderator (right): Reynald Maeda
Panellists (l-r): Hellena Sailas, Gibson Kawago, Haika Simon

How to talk with youth about climate change

Climate change can be an overwhelming subject and is a relatively new topic for most Tanzanian youth. Despite an abundance of scientific research demonstrating the ways in which human activity is impacting the planet, leading with these global data points is not the best way to approach this topic with young people.

So how should we talk with Tanzanian youth about climate change? Gibson Kawago has a few ideas. Gibson is a young climate leader and founder of WAGA Tanzania, a social enterprise that recycles lithium-ion batteries into new battery solutions (read his story on page 49).

For two years, Gibson worked at STEM Park in Tanga, Tanzania's first science centre. In this role, he frequently talked to young people about the importance of environmental conservation.

Note already the deliberate language choice—environmental conservation—which makes the matter sound like something an individual can act on, versus the big picture, more ambiguous issue of "climate change."

"From my experience at STEM Park, you shouldn't teach people about climate change," starts Gibson. **"It should be talked about through a Q&A session. Ask a young person 'how do you experience climate change? Let them explain what they understand it to be and how they're seeing it in their lives."**

Gibson's approach speaks to why DOT codesigns its programs in collaboration with youth: Young people are the experts in their own lives. Encouraging them to share their understanding and experience of climate change is empowering and less intimidating.

It helps avoid approaching this complex topic like a lecture where a young person is made aware of all the things they don't know. Instead, active listening will help stakeholders gauge where a young person is at in their understanding and the issues that matter to them.

Gibson identified two other ways in which information about environmental conservation could be more widely shared with youth:

First, use social media influencers to communicate the message.
Young people are more likely to trust information coming from their peers versus a larger company or organization whom they may think is trying to profit.

Second, link climate change and green jobs through more forums like TYDS.
Youth are interested in attending conferences to find employment opportunities and grow their skills.

Events can grab participant attention by talking about the possibilities that exist within the blue and green economy—satisfying a young person's desire for work and an organization's efforts to talk about climate change.

TYDS participants also spoke about the importance of connecting awareness with action. For example, Gundelinda Mushy, a teacher at a secondary school in Mara region, pairs her lessons about climate change with tangible measures that students can take to conserve the environment.

Together with her students and those she supervises through her school's Malihai Club, they plant trees, discuss alternative sources of energy, and talk about the importance of taking public transportation and using electric vehicles, when possible. "It's my hope that in the days to come they'll be good ambassadors to the environment," she says.

Climate change is a collective challenge facing the world. In the spirit of entrepreneurship and youth creativity, TYDS framed the issues through a lens of what new opportunities solving these problems could create.

Green and blue entrepreneurship opportunities

The climate crisis presents a range of opportunities for young people to innovate and create new jobs and community solutions. TYDS 2022 focused on highlighting to youth the possibilities that exist in green and blue entrepreneurship. But first, what do those terms mean?

Green entrepreneurship

Socially inclusive initiatives that provide economic opportunities while also prioritizing environmental well-being. This includes activities that reduce carbon emissions and pollution, improve energy efficiency, and prevent the loss of biodiversity.

Blue entrepreneurship

Socially inclusive initiatives that provide economic opportunities while also protecting and restoring marine and coastal environments. Blue entrepreneurship promotes the better stewardship of ocean resources.

When it comes to green and blue entrepreneurship, some TYDS participants made clear that the first step for them would be to gradually incorporate environmental principles into their existing activities, versus building new blue and green ventures from scratch.

Discussed most frequently during TYDS and post-summit focus group discussions was the potential for green entrepreneurship in Tanzania's agricultural sector.

According to Tanzania's National Sample Census of Agriculture 2019–20, 65% of households in the country are involved in agricultural activities* and smallholder agriculture remains the main livelihood for people in rural regions.

With the majority of these farmers depending on rainfall, climate change-induced weather fluctuations have led to unpredictable harvests which has contributed to food insecurity.

Despite these challenges, TYDS participants and speakers pointed to ways of tapping into green entrepreneurship opportunities—to improve their agricultural activities or to find alternative income generating streams.

*The United Republic of Tanzania. "National Sample Census of Agriculture 2019/20." 2021: link.

This was a focus of Haika Simon's presentation to TYDS. Haika is a climate resilience officer with the United Nations Association of Tanzania and was a panel speaker in the "Opportunities for Youth in Green and Blue Entrepreneurship" session.

She highlighted how climate change affects all sectors, but that agriculture, livestock, and fisheries are particularly rich with possibilities for youth-led businesses.

One young woman suggested that taking advantage of green entrepreneurship means informing herself and her peers on more climate-resilient means of agriculture: "Youth are educating each other on shifting cultivation," described Eddah William, a TYDS participant who practices agriculture in Iringa.

"The farming extension officers have advised us to plant climate resilient crops like cassava and encourage people to keep food in the house so they don't face food insecurity if it doesn't rain."

Examples of opportunities in the green and blue economy

- Raise awareness about the effects of climate change using social media
- Collect and recycle plastic waste found in oceans
- Create an app that helps people more easily choose public transit over driving
- Develop more efficient charcoal briquettes to limit deforestation
- Use drones to deliver products to rural areas

In Zanzibar, bachelor of tourism student Abdalah Hamad said he's seen many of his peers turn away from agriculture and towards blue entrepreneurship because of the effects of climate change: "Our main economic activity used to be based on farming, but it needs lots of rain. Since the climate keeps changing, the yield is not enough to survive."

Instead he and a few friends started a small business working with local tour companies. Abdalah references the leadership from the president of Zanzibar, Hussein Mwinyi, in promoting the blue economy: "Most people these days say 'no, we don't want to go into agriculture, we want to engage ourselves in the blue economy where we can work in the tourism industry and fishing.' This is helping improve the lives of everyone here in Zanzibar."

Finally, and to come full circle with the ICT and climate change connection, TYDS participants pointed to how opportunities in the digital economy could help youth reduce their environmental footprint.

Said Jumatatu Chiwa from Dodoma: "Instead of cutting trees and making charcoal, youth can engage themselves in different forms of online marketing or use platforms to earn money instead of doing things which are not favourable to the environment."

For formal sector workplaces, TYDS presenter Francis Omorojie suggested that businesses should look at how digitization can reduce the unnecessary use of resources.

For example, Francis recommended using an online tool to get e-signatures or sharing documents via a cloud-based platform, rather than printing sheets of paper.

One TYDS regional ecosystem partner has another way that they mainstream environmental sustainability into the businesses they support.

TAOTIC, a local ecosystems-based social-tech venture builder in Morogoro, ensures every company they support has a sustainability dimension built into the business. Similar criteria could prove invaluable for other incubator spaces or accelerators looking at how to contribute to mitigating the effects of climate change.

Green entrepreneurship is a logical progression for many of the young social innovators DOT has supported over the years.

For those youth who are already identifying a problem or gap in their community, green and blue entrepreneurship urge them to go a bit further, considering how their business could positively impact the well-being of the planet as well.

Climate leader spotlight: Gibson Kawago

Gibson Kawago spent his childhood tinkering with circuits and motherboards. "At the end of the day I could get a radio functioning from a motherboard that I picked from the trash," recalls Gibson. "Every time I got a hissing sound from a speaker, for me that was an achievement."

Gibson grew up in a village in Iringa with no electricity. People had to travel 32 miles to charge their mobile phones and students would do homework to the light of polluting kerosene lamps. How many other people were facing these same challenges, he wondered.

These personal experiences planted the seed for entrepreneurship and environmentalism. Fast forward to 2022, and Gibson is the founder of WAGA Tanzania. The social enterprise collects and recycles lithium-ion batteries from old laptops, turning them into affordable battery packs and power banks.

YouTube videos and online platforms like Coursera were instrumental in Gibson's learning journey, and complemented his theory-based electrical engineering classes at the Dar es Salaam Institute of Technology.

"I thought 'let me get as much information as possible' because you can't chase what you can't see," says Gibson of his online learning. "I had to understand how others are [working with lithium-ion batteries] and how I could add value based on what is available in my environment."

This search to use what was accessible in Tanzania meant Gibson needed to find a cheap source of lithium-ion batteries. He thought of how many university students buy second-hand laptops and need to replace the battery.

Gibson and Tesla engineer Walter Minja after TYDS (left); Gibson tinkering in his workshop in Dar es Salaam (right)

"The laptop batteries are trashed with organic waste in places where women who do small-scale agriculture gather manure. This manure is used to produce vegetables, but they're grown in a place where lithium-ion batteries have leached hazardous materials into the soil," explains Gibson.

Despite research that talks about the long-term health effects of electronic waste, Gibson says it can be difficult to get people to change their behaviour based on consequences that may come in 10 years time. All the while, children play among the trash and young men scavenge for scrap metal with bare feet.

"Part one of WAGA Tanzania is solving the electricity problem in my village and part two is taking the batteries out of the environment because people are dying and are not aware of what's happening," Gibson expands.

Through WAGA Tanzania, Gibson aims to always look at the "whole ecosystem" of his process—big picture systems thinking that is vital to creating climate-smart innovations. This means continuing to research the life cycle of batteries to see how his solutions can minimize social and environmental problems faced in Tanzania.

A speaker on the TYDS panel "Youth at the Centre of Climate Smart Solutions," Gibson's remarks were so impactful that a professor in the audience connected him with an engineer from Tesla who was in Tanzania on holiday. The next day, the engineer visited Gibson's workshop.

"He has now been sharing with me what to study on battery technologies," says Gibson of the connection. "TYDS helped me to reach a person who I would have never been able to reach personally."

Next steps: DOT support beyond TYDS

DOT has always believed in the tremendous power of young people to create their own opportunity. Climate change is the challenge of our generation, and who better to innovate and build a more sustainable future than the very youth who will have to live in it.

Based on what we learned from youth and presenters at TYDS, here are three ways DOT could lead in integrating the ICT and climate change spaces:

1

Level-up #DOTYouth
DOT has an extensive network of young social innovators in Tanzania. Having already gone through at least one DOT program, these youth are primed with the mindsets and digital skills needed to succeed in the digital economy. Inviting them to participate in training related to green and blue entrepreneurship is a logical way to further support them to scale their community impact.

2

Ensure information then implementation
DOT has partners across Tanzania and is well-positioned to take the lead in developing education activities related to ICT, climate change, and digital inclusion.

Using our social capital, DOT could also continue to convene youth and other stakeholders to talk about climate change. Once education and engagement sessions are underway, DOT and its partners could assess how to best support youth to go beyond information to implementation of new ideas.

3

Apply DOT's codesign approach to the climate change space
TYDS demonstrated that youth have different degrees of understanding when it comes to climate change and opportunities related to green and blue entrepreneurship. It's essential to tailor programming to meet their needs.

DOT codesigns its programs to be representative and inclusive of all views and skill levels. There is a tremendous opportunity for us to apply our peer-led training approach to this space.

CONCLUSION

Everywhere can be a transformative youth digital space

ICT is no longer an add-on or a nice-to-have. When harnessed by an empowered young person equipped with digital literacy and 21st-century skills, technology can be a tool to build a future that is more inclusive, collaborative, and sustainable.

Whether it's creating youth employment opportunities, supporting Tanzania's teachers, or enabling more people to learn about and design climate-smart solutions, TYDS 2022 demonstrated how every sector can be a transformative digital space—and that every young person has the ability to change lives and solve community challenges.

With the support of its ecosystem partners and funders, TYDS has become a platform for youth to not only listen and learn, but to truly have a say in creating a transformative digital future. By amplifying their voices—and bringing together public and private sector stakeholders to hear what they have to say—we hope TYDS can continue to be an outlet to advance discussions around digital inclusion and 21st-century skills.

As ICT Commission Director General Dr. Nkundwe Mwasaga said in his remarks at TYDS: "I can promise the summit of next year is going to be amplified. [...] I want to make sure the Commission becomes a commission that listens to what young people need in their lives."

Tanzania's innovation ecosystem has a collective responsibility to ensure digital transformation and digital inclusion move beyond buzzwords to be integrated into every sector and space. Only then can we create transformative youth digital spaces designed by young people, for young people.

www.youthdigitalsummit.org