Making Cents INTERNATIONAL

UNDERSTANDING THE TECHNOLOGY SKILLS TRAINING LANDSCAPE: FRAMEWORK AND TOOL

MAKING CENTS INTERNATIONAL AND MICROSOFT

MAKING CENTS INTERNATIONAL

Founded in 1999 by Fiona Macaulay, Making Cents International is a social enterprise based in Washington, DC that works closely with local partners in 50 countries around the world. By offering demand-driven consulting services and managing a knowledge management platform to increase youth economic opportunities, Making Cents supports youth, women, smallholder farmers, and vulnerable populations around the globe to start and grow businesses, participate in profitable value chains, access finance, and obtain meaningful work.

www.MakingCents.com
www.YouthEconomicOpportunities.org
www.youthEOsummit.org

MICROSOFT YOUTHSPARK

Microsoft YouthSpark is the company's global, company-wide initiative that aims to create opportunities for 300 million youth around the world by 2015 through partnerships with governments, nonprofit organizations and businesses. The goal of the initiative is to address the opportunity divide facing youth around the world – a gap between those who have the access, skills and opportunities to be successful and those who do not.

Through partnerships with governments, nonprofit organizations, and businesses, Microsoft YouthSpark aims to understand the challenges facing youth around the world and empower them to build the future they want by connecting them with greater opportunities for education, employment, and entrepreneurship. Together, we are empowering youth to do more, achieve more and be more.

FEEDBACK?

Please let us know how this framework and tool has been useful to you, ways it can be improved upon and anything else you would like to share.

Twitter: @MakingCentsIntl
Email: hello@makingcents.com
Phone: +1 202 783 4090

UNDERSTANDING THE *TECHNOLOGY SKILLS* TRAINING LANDSCAPE: FRAMEWORK AND TOOL

Making Cents International | September 2014

A LETTER FROM MICROSOFT AND MAKING CENTS INTERNATIONAL

Dear Colleagues, September 2014

Microsoft and Making Cents collaborated to offer this framework to support development of a common language and greater understanding of the unique role that each stakeholder can play in the youth workforce development field. Our hope is that they will contribute to greater cooperation, joint projects and increased youth economic opportunities created by information and communication technologies.

In our rapidly changing, hyper-connected world, the information and communication technology (ICT) industry is driving economic growth, innovation, and job creation. More than 50 percent of today's jobs require some degree of technology skills, and experts say that percentage will increase to 77 percent in the next decade.[1]

However, a significant percentage of the world's youth are being left behind. Young people age 15 to 24 represent 17 percent of the global population, but make up 40 percent of the world's unemployed or 73 million young people.

Despite these alarming unemployment statistics among young job-seekers, employers worldwide say they often cannot find people with the right skills needed to meet their business objectives, especially when they are recruiting for technology-related jobs.

For youth, developing technology skills that align with market demand greatly increases their chances of securing employment and achieving career success. In addition, for young entrepreneurs, technology skills and access to technology greatly improve productivity, help lower costs, and advance their businesses into higher value-added activities, thus enhancing their market competitiveness.

For enterprises, having well-qualified, technology-savvy talent results in higher productivity, faster growth, and expansion. And for nations, balancing the supply and the demand for technology skills leads to economic and social stability and overall prosperity.

Microsoft is committed to bridging the opportunity divide for young people today, as well as leveraging its human and financial resources, its networks of partners and suppliers, and its products and services to bring innovative, technology-empowered solutions to the youth workforce development field. Through the global, company-wide Microsoft YouthSpark initiative it aims to create education, employment, and entrepreneurship opportunities for 300 million youth by 2015.

As the initiative evolves, Microsoft will continue to enhance its contribution to youth employment and enterprise development in order to deepen its impact and build upon the progress seen to date.

We thank our colleagues from various organizations who contributed to this document and we look forward to your comments and feedback. We also invite you to learn more about the Microsoft YouthSpark initiative by visiting www.youthsparkhub.com where you'll find details about the more than 30 programs designed to provide opportunities to youth around the world.

Yours sincerely,

Yvonne Thomas

Yvonne Thomas
Director
Corporate Citizenship & Public Affairs, Microsoft

Fiona Macaulay

Fiona Macaulay
Founder & CEO
Making Cents International

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Information and communication technologies (ICTs) are changing the world of work, creating new jobs and business opportunities, transforming labor markets and educational systems, and significantly contributing to the social and economic development of nations.

The rapid rate of change in the skills required for technology-enabled employment, and self-employment, exceeds the ability of current educational and training systems to support well-functioning labor markets. This creates challenges, including high unemployment rates among young people coming out of the educational system, fewer opportunities for adults with out-of-date skills, and recruitment bottlenecks for employers that limit their chances to grow.

Workforce development programs must therefore become better at identifying and responding to patterns of demand for technology skills. This places a premium on better access to labor market information, stronger connections with employers, ready access to a comprehensive body of relevant training materials, and new strategies for working effectively with a diverse range of young people and disengaged adults.

For the purposes of this study, and considering the World Bank's related definition,[2] we refer to youth workforce development programs as intentional, systemic, and continuously improving sets of activities that train young people on technical knowledge, practical skills, and attitudes for gainful employment, entrepreneurship, or career-advancement. Because we know how important technology skills are for building new businesses and for obtaining both technology and technology-enabled jobs, we group workforce development initiatives using three criteria and provide tools for locating a youth workforce development program within this framework.

MAPPING YOUTH WORKFORCE DEVELOPMENT PROGRAMS

Youth workforce development programs can be categorized in three ways:

1. BASED ON PRIMARY TRAINING OBJECTIVES

- **Work-Readiness Programs.** The training objective is to develop basic skills (such as literacy, numeracy, digital literacy) and basic job-related technical skills and workplace behaviors that prepare a young person for future employment or self-employment opportunities; the target group is unemployed or underemployed youth.
- **Job-Entry Programs.** The training objective is to develop more targeted job-related technical skills and behaviors needed to help a young person move into a job or self-employment opportunity; the target group is unemployed or underemployed young job-seekers.
- **Career-Advancement Programs.** The training objective is to further develop job-specific technical skills and behaviors that prepare young people to move up in their professional careers or grow their businesses; the target group is employed or self-employed young people.

2. BASED ON MARKET ALIGNMENT

- **Demand-Aware Programs.** These programs include research and some employer engagement activities geared toward understanding general market demand for skills or the existence of general business opportunities for entrepreneurs; the training prepares youth for employment or self-employment in any of the identified industry sectors or job roles.
- **Demand-Aligned Programs.** These programs include research, deeper employer engagement, and customizing training to align with market demand for skills in a specific industry sector; the training prepares youth for employment or self-employment in a specific industry sector.
- **Demand-Driven Programs.** These programs include research, deeper employer engagement and commitments to hiring youth, and customizing

training to match the exact market demand for skills in a specific job role or niche business opportunity for entrepreneurs; the training prepares youth for specific job roles or business startup.

3. BASED ON SUCCESS MEASURES

- **Output-Focused Programs.** These programs focus more on tracking their activities rather than their results; they might count the number of youth trained (or served).
- **Outcome-Focused Programs.** These programs track short-term training results such as how many youth gained a skill certification or how many youth receive positive feedback from a mock interview done by an employer.
- **Impact-Focused Programs.** These programs track long-term training results, such as how many youth successfully transitioned into jobs, how many start their own businesses, or how many were admitted to college.

When locating a youth workforce development program in this framework, it is important to weigh the relative costs of training objectives, market alignment, and success measures on a program's effectiveness, efficiency, and overall results. Here are some examples:

- Youth training initiatives that are more complex and include more activities, such as job placement assistance or business startup assistance, usually deliver more job placements (or business startups), but they might be more expensive or take longer to complete.
- Training initiatives that focus on market demand for specific industry-sector or job-role opportunities invest more resources in engaging employers or researching market conditions, and so they generate more job placements or business start-ups, but these programs might cost more or take longer to complete.
- Training initiatives that set their goals and measure their success against all success measures (outputs, outcomes, and impacts) are more effective in reducing youth unemployment, are better aligned with market demand, and are highly accountable for the long-term well-being of their participants. These programs deliver high-quality results but might be more costly and train fewer youth compared to programs focused only on output measures.

The proposed framework aids in the mapping of existing youth workforce development programs and draws core principles, success factors, and lessons learned from a vast base of effective and efficient examples. It is a complex challenge to improve the effectiveness and efficiency of youth workforce development initiatives, and take them to scale, while ensuring their long-term sustainability. Technology can dramatically expand the resources available to nonprofits for delivering their services at greater scale and lower cost, for customizing their services to reach a more diverse range of clients, and for enhancing the management and evaluation of program performance.

INTRODUCTION

WHY IS TECHNOLOGY SKILLS TRAINING CRITICAL TO YOUTH NOW?

In our rapidly changing, hyper-connected world, the information and communication technology (ICT) industry is driving economic growth, innovation, and job creation. As the World Economic Forum's 2013 Global Information Technology Report[3] affirms, "Digitization—the mass adoption of connected digital services by consumers, enterprises, and governments—boosted the world economic output by nearly US$200 billion and created 6 million jobs." A recently published study by the Bay Area Council Economic Institute reports similar findings for the United States:

- Employment growth of high-tech jobs outpaced gains in all other occupations by a ratio of 27 to 1 over a 10-year period (2001 to 2011);
- For each job created in the high-tech sector, approximately 4.3 jobs are created in other industry sectors across all income groups;
- Employment projections indicate that demand for high-tech workers will be stronger than for workers outside the high-tech industry sector (at least until 2020).

However, a significant percentage of the world's youth is being left behind. Although young people age 15 to 24 represent 17% of the global population, youth unemployment accounts for 40% of the world's unemployed. The global unemployment rate is calculated at 12.6% in 2013, with 73 million young people labeled jobless worldwide, according to the International Labour Organization.[4] Furthermore, recent estimates indicate that almost one-third of the youth between the ages of 15 and 29 are inactive; that is, they are NEETS: not in education, not in employment, and not in training.[5] Even in a developed nation such as the United States, youth do not compete equally for economic opportunity: 5.8 million young people are inactive[6] and the youth unemployment rate was 16.3%[7], compared to the overall unemployment rate of 7.4% (July 2013 figures).[8]

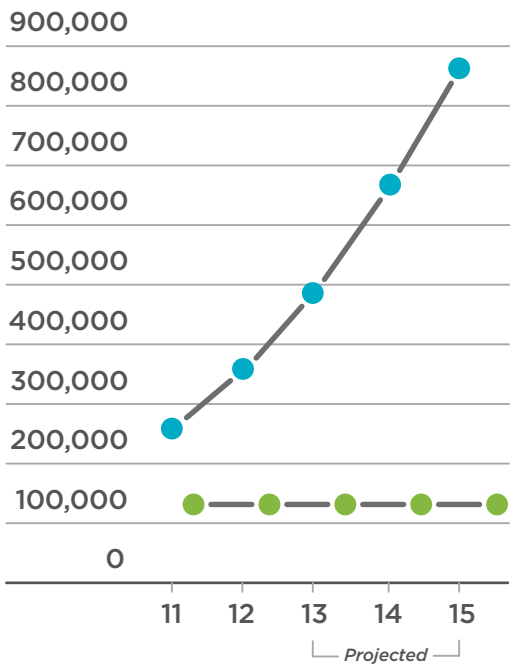
Despite these alarming unemployment statistics among young job-seekers, employers worldwide say they often cannot find the right skills needed to meet their business objectives, especially when they are recruiting for technology-related jobs.

By 2015, about 900,000 ICT job vacancies may go unfilled in the European Union, warns the European Commission in a recent report.[9] Another study[10] predicts that between 2010 and 2020, the American economy will create more than 120,000 additional computing jobs annually that require at least a bachelor's degree. However, the country's higher education system is currently producing only 40,000 graduates per year with computer science degrees.

SKILLS MISMATCH

The European Union lacks qualified candidates to fill jobs in the growing information and communication technology sector.

EU Information Technology Sector



Source: Europian Commission
The New York Times

In Russia, the estimated shortfall of IT professionals in 2012 was 200,000, and it's expected to worsen. APKIT (Information and Computer Technologies Industry Association) reports that the number of IT students in Russia is decreasing progressively: from 300,000 in 2009 to 250,000 in 2011, and is projected to be 120,000 by 2015.[11]

In various rapidly growing sectors in Ghana, Kenya, and South Africa, such as ICT services, business process outsourcing (BPO), banking and financial services, and retail, employment opportunities abound in technology-enabled roles. However, 30% of employers in Ghana, 58% in Kenya, and 90% in South Africa reported challenges in hiring youth for technology-enabled jobs.[12]

In fact, ManpowerGroup reported last year that 35% of employers worldwide were having difficulty finding employees with the right skill sets for their open positions. While this level has been roughly steady for the past several years, its 2013 survey found an increased sense of urgency among employers to get ahead of the talent shortage. According to ManpowerGroup, almost 60% of employers believe that young people emerging from the educational system lack the skills required for success in the workplace.

What are the skills that youth lack and employers require in their technology-enabled jobs?[13]

NEW SKILLS FOR NEW JOBS

As the economy becomes more dependent on digital technology, more and more jobs are becoming "digital jobs," jobs in which ICT is applied to "a new or existing activity or process."[14] Digitization may modify an existing job task, as when a clerk who used to process paper invoices becomes a technician processing online transactions at a computer workstation on another continent. Or it may create wholly new types of jobs, such as mobile application developer, geospatial analyst, or cloud architect. What these jobs have in common is that:

- They are enabled by ICT infrastructure, including computers, tablets, smartphones, and Internet connectivity.
- A significant element of the value-added in this work is in creating, manipulating, and sharing information rather than physical products.
- They are knowledge-intensive and require a distinct set of technical, analytical, and communication skills.[15]

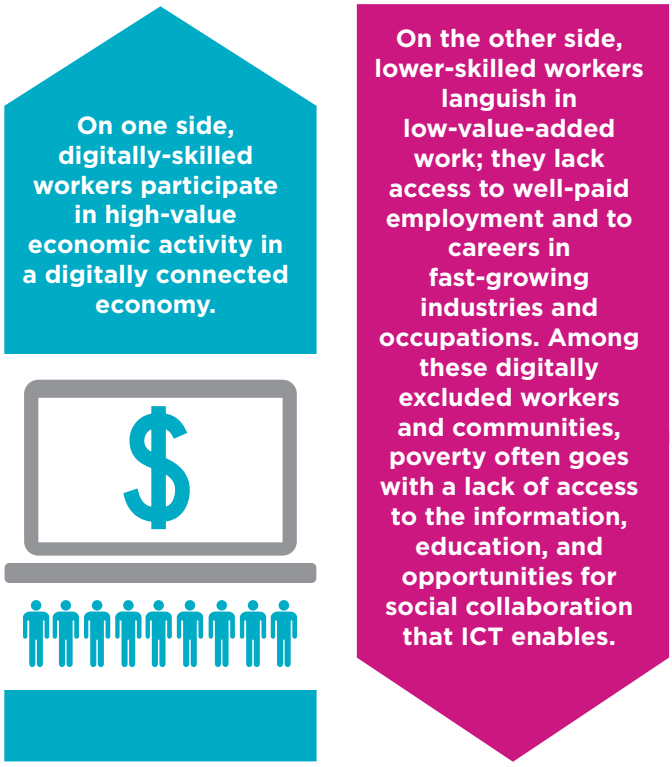
More than 50% of today's jobs require some degree of technology skills, and experts say that percentage will increase to 77% in the next decade.[16]

For the high-skilled technology jobs on the market, educational systems are struggling to adapt their curricula and teaching methodology to the rapidly changing requirements of employers. Also, a lack of career services prevents youth from recognizing those promising technology career opportunities.

On the other side, fast-growing technology-enabled jobs (which have replaced lower-skilled jobs) do not necessarily require a college degree, but rather, solid fundamental skills (literacy, numeracy, digital literacy) and relevant technology skills, such as the ability to troubleshoot a computer network or to write code. These technical vocational skills are typically best developed by combining classroom instruction with workplace-based learning, such as internships and apprenticeships. However, most young people have difficulty accessing relevant training and work experience programs.

Finally, for young entrepreneurs, technology skills and access to technology greatly improve productivity, lower costs, and advance their businesses into higher value-added activities, thus enhancing their market competitiveness. But many of them fail to acquire the right skills to develop their small enterprises successfully.

The knowledge and technical skills required for digital employment (and self-employment) are unequally distributed in the workforce and around the globe. The uneven availability of human capital and money to develop a technology infrastructure has caused a "digital divide". This divide sharply distinguishes the economic and life chances of people on either side.



If technology advances are aiding companies across industries and transforming how economic development unfolds in developing countries, where most of the world's youth population resides, technology should also be helping to connect youth to economic opportunity and sustainable livelihoods. Using technology to train young people on technical, cognitive, and non-cognitive skills required for in-demand jobs is proving to be one of the best ways to address both aspects of the challenge: high youth unemployment and employers' unmet talent needs.

For youth, developing technology skills that align with market demand greatly increases their chances of securing employment and achieving career or business success. For enterprises, having well-qualified, technology-savvy talent results in higher productivity, faster growth, and expansion. And for nations, balancing the supply and the demand for technology skills leads to economic and social stability and overall prosperity.

Educators, governments, youth-serving organizations, companies, and donors must work together to design, implement, and manage effective, scalable, and sustainable programs for youth workforce development that match employers' changing skill needs. Bridging the digital skills gap requires collaboration of all sectors to create well-functioning local and regional labor market ecosystems.

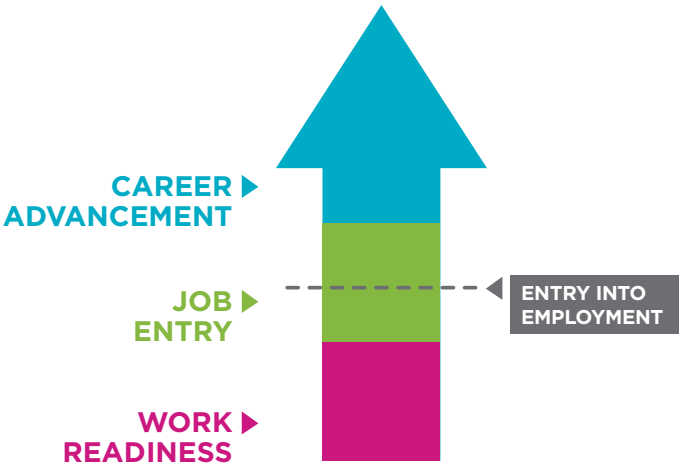
FRAMEWORK AND TOOL

Youth workforce development[17] programs deliver intentional, systemic, and continuously improving sets of activities that train young people on technical knowledge, practical skills, and attitudes for gainful employment, entrepreneurship, or career-advancement.

Three categories and ways to map programs are offered.

1. CATEGORIZING YOUTH WORKFORCE DEVELOPMENT PROGRAMS BASED ON TRAINING OBJECTIVES

The ultimate goal for all workforce development programs is the same: to help people become gainfully employed (or self-employed). One way to categorize youth workforce development initiatives that focus on skill building leading to technology related employment and self-employment is to examine their immediate objective. We can identify three major groups: **work-readiness**, **job-entry**, and **career-advancement** programs.



Work-Readiness Programs

These programs focus on developing the foundational skills (such as literacy, numeracy, and digital literacy), basic job-related technical skills, and workplace behaviors, but they do not provide job placement assistance to participants. Youth programs offering work-readiness training may also provide entrepreneurship education, career information, mentoring, and other support services to their trainees. Many work-readiness programs target younger youth in middle and secondary schools.

INJAZ al-Arab's "Steer Your Career" program harnesses the mentorship of Arab business leaders to hone the work readiness skills of university students in several countries in the Middle East and North Africa region. Delivered over 8 weeks in 90 minutes sessions, this training develops leadership, time management, communication, teamwork and job search skills through hands-on classroom activities, personal assessments, role playing, and reflection exercises, led by trained corporate volunteers. INJAZ al-Arab will launch a similar program for high school students in the next academic year.

Job-Entry Programs

These programs focus on the development of more targeted job skills and behaviors that are linked to a specific type of job role, industry sector, or employer. They often help young people obtain work experience through internships, apprenticeships, or co-op placements. Most of them provide job placement (and post-placement) assistance to program participants. They may also include mentoring and retention activities. These programs target young unemployed job-seekers.

Anudip operates in West Bengal, India. It provides market-aligned ICT and business skills development to poor rural youth, and successfully transitions its graduates into technology-enabled employment or self-employment. Anudip partners with local employers and its sister company, iMerit Technologies, to understand skills requirements and translate them into training modules. Anudip assists the graduates in securing at least two job interviews with partner firms. To date, Anudip has trained more than 15,000 beneficiaries and achieved a 75% job placement rate. Anudip's DREAM program trains, provides financial assistance, mentors, and offers multiple supports to unemployed women in starting and running their IT-based microenterprises.

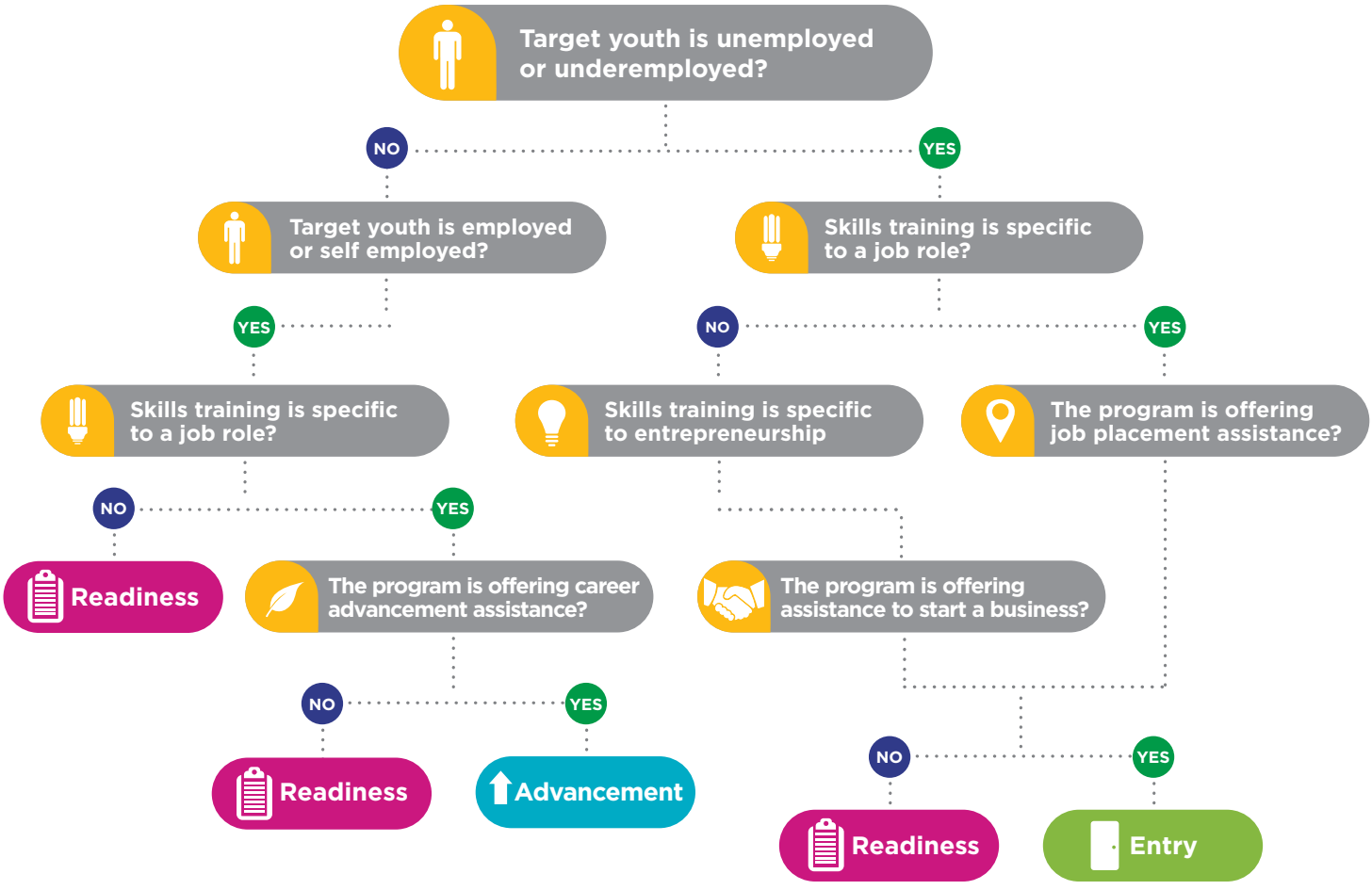
Career-Advancement Programs

These programs focus on continuing education, training, mentoring, and development of complex skills, which lead to better employment or business growth. These programs target employed or self-employed youth.

Under its Global Women's Economic Empowerment Initiative, launched in 2011, **Walmart** and its partners are targeting 60,000 women employed in 150 factories and helping them develop communication, negotiation and other management skills necessary for advancing their careers. Out of this pool, 8,000 high-potential women are also being trained in leadership skills. The program is operating in India, Bangladesh, El Salvador, Honduras and China.

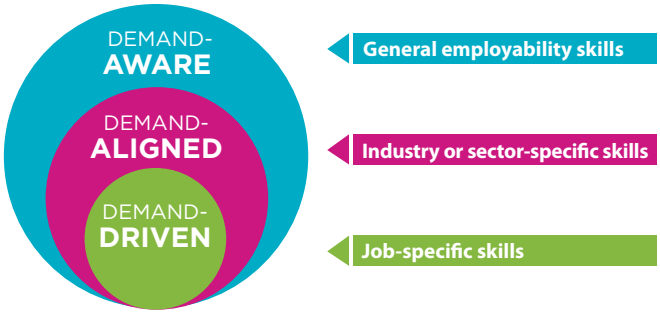
MAPPING YOUTH WORKFORCE DEVELOPMENT PROGRAMS BASED ON TRAINING OBJECTIVES

We offer the following decision tree as a tool for categorizing youth workforce development programs based on their training objective.



2. CATEGORIZING YOUTH WORKFORCE DEVELOPMENT PROGRAMS BASED ON MARKET ALIGNMENT

The ultimate success of any workforce development program depends on whether or not it trains people for in-demand jobs or business opportunities. Another way to categorize youth workforce development initiatives is to examine the degree to which their training activities are aligned to the market demand for specific skills. We identify three major groups: **demand-aware**, **demand-aligned**, and **demand-driven** programs.



Demand-Aware Programs

These programs focus on general market demand for skills. They usually prepare young people with the skills required for employment (or self-employment) across multiple economic sectors where there are jobs. To understand market demand, these programs usually perform one or more of the following activities:

- A desk review of secondary data sources and publications;
- Focus groups or surveys of local employers;
- Consultations with employers active on an advisory board.

Trust for the Americas, in partnership with Microsoft and a group of local training providers, targets unemployed youth-at-risk (ages 15-29) to deliver its POETA model of ICT skill development. This program operates in Argentina, Brazil, Colombia, Costa Rica, Peru, and Mexico and consists of intensive work-readiness, basic ICT skills, and civic engagement training, which leads to improved employability across various sectors and job roles. (demand-aware) In Peru, the local training partner also provides specialized courses for the retail sector. (demand-aligned)

Demand-Aligned Programs

These programs focus on a specific industry sector or a small number of industry sectors with similar skill requirements. To prepare young people for employment (or self-employment), these programs customize their training modules and align them with the skills requirements of sector-specific employers. Usually, these programs also invest in the following activities:

- Working with employers in a specific sector to more closely align the skills training component to the particular needs of that sector;
- Providing training by instructors who are experts in a selected sector or have working experience in that sector or job roles.

Microsoft Partner Apprenticeship Programme: In the UK, Microsoft collaborates with ICT sector companies within its supply chain, training providers and the UK government to train and certify young apprentices (age 16-24) for various ICT job roles. Apprenticeships are an effective approach for young people to develop job relevant skills, while working and earning a living. Intensive 1-2 weeks long training modules are delivered online or in residential training centers, separated by longer periods of on the job learning. Microsoft regularly consults with its employer-partners to determine which skills and certifications are required for success in their ICT entry level jobs. Over the last 4 years, this program has successfully trained more than 5,000 youth, with 94% retention rate.

Demand-Driven Programs

These programs focus on a specific job role or a small number of similar job roles for a specific employer or group of employers. Their training modules are highly customized to the specific job descriptions and skills requirements of a particular company. Usually, these programs rely on additional employer engagement activities, such as:

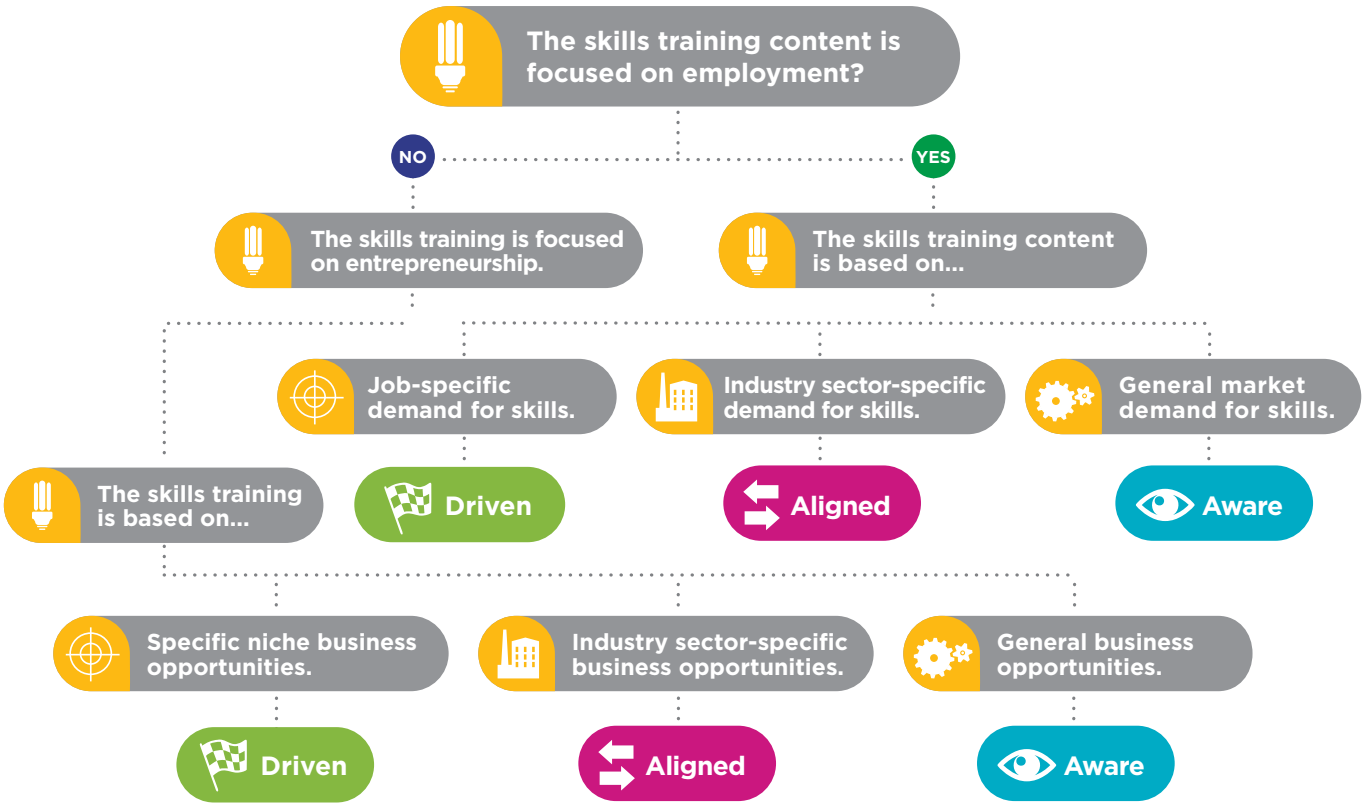
- Developing partnerships with a small group of employers willing to help and co-design (and at times co-deliver) customized skill training;

- Securing internships, apprenticeships, and other workplace-based learning experiences from local employers, and customizing training programs to prepare program participants for those assignments;
- Engaging employers to pre-commit to hiring young people trained to the exact skill requirements of their job openings;
- Conducting a dual training program in cooperation with selected employers, in which program participants alternate between instructor-led classroom and employer-led workplace learning;
- Embedding the training program inside the employer's facility while developing a very close relationship with that employer's human resources department.

NairoBits Trust, a youth workforce development organization founded in 1999 in Kenya, targets out-of-school youth (ages 17-25) and provides ICT-based vocational training through Digital Design School. This program is demand-driven because NairoBits Trust partners with Web development companies to understand and meet their specific skills requirements in target job roles. It is a job-entry program with a 90% success rate in transitioning its graduates into technology-enabled jobs with partner firms.

MAPPING YOUTH WORKFORCE DEVELOPMENT PROGRAMS BASED ON MARKET ALIGNMENT

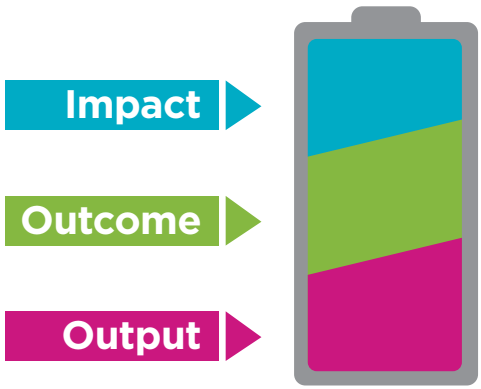
We offer the following decision tree as a tool for categorizing youth workforce development programs based on their market alignment.



3. TRACKING AND STRENGTHENING THE EFFECTIVENESS OF YOUTH WORKFORCE DEVELOPMENT PROGRAMS

Program effectiveness is defined as the degree to which a program meets expectations or delivers expected results. To understand the effectiveness of a youth workforce development program, we must compare its results to its goals. For tracking and evaluating performance, programs might focus on one or more of the following measures:

- **Output measures.** These are linked to program activities. They describe what the program does rather than what results from it. Output-focused training programs might count how many youth they recruit for and retain in the training, broken down by demographic variables such as age, gender, schooling status, level of household poverty, or place of living.
- **Outcome measures.** These are linked to the immediate difference that a program generates. Outcome-focused training programs might track indicators of successful completion of training, such as attainment of job-related credentials, skills certification, or the securing of positive feedback from an employer-conducted mock interview.
- **Impact measures.** These are linked to the longer-term benefits that a program generates. Impact-focused training programs might track the number of participants securing an entry-level job or forming a business startup, along with lagging measures such as job retention, wage increases, participation in continuing education and training, or business growth.



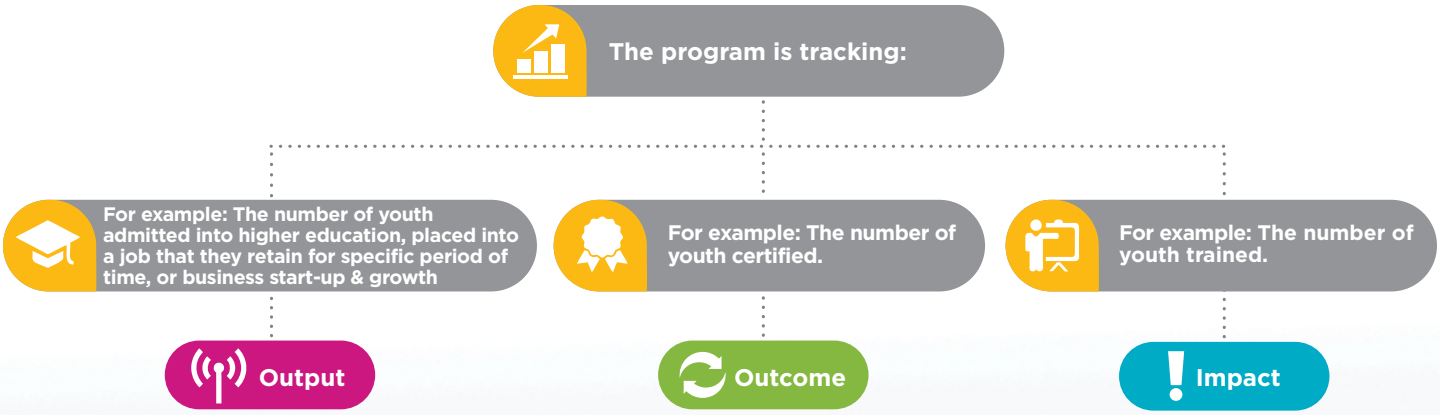
Indonesia-based **YCAB Foundation** empowers youth through holistic development programs in which education and access to finances converge to enable true independence in a sustainable way. Since 1999, YCAB foundation has served more than two million young people. In 2011, YCAB partnered with Samsung Electronics Indonesia to build two engineering vocational training centers for underprivileged youth (18-24) with the goal of improving their skills to meet the industry needs. YCAB trains 200-250 students per year (output), and achieves 60% graduation rate (outcome). Young graduates are then placed in internships with Samsung or other local companies. About 50% of graduates secure full time jobs (impact). YCAB tracks its graduates for one year after program completion.

Strengthening the effectiveness of a program usually focuses on enhancing the quality rigor of success measures being used at the output, outcome, or impact level. If a program is tracking only output measures, it would enhance its effectiveness by also considering outcome measures. If a program is already tracking both output and outcome measures, it would enhance its effectiveness by incorporating impact measures in its evaluation strategy.

Among donors and other investors in youth workforce development, the trend is to focus more on outcomes and impacts than on just counting outputs. To steer youth-serving organizations in this direction, donors are using new models of funding, such as “pay for performance,” under which training providers are rewarded for meeting pre-established target outcomes or impacts, as opposed to being paid a fee for service.

MAPPING YOUTH WORKFORCE DEVELOPMENT PROGRAMS BASED ON MEASURES OF SUCCESS

We offer the following decision tree as a tool for categorizing youth workforce development programs based on their success measures.



STRENGTHENING THE EFFICIENCY OF YOUTH WORKFORCE DEVELOPMENT PROGRAMS

Program efficiency is defined as the degree to which a program delivers its results compared to the resources (financial, human, and time) necessary for obtaining those results. For youth workforce development initiatives, this typically involves comparing the relative cost of services with the relative gains made (in terms of both outcomes and impacts).

When evaluating youth training programs, it is important to compare their efficiency based on similar outcomes or impacts. For example, a well-designed work-readiness program that serves large numbers of youth and has solid employment outcomes (without providing any job placement assistance) may be more cost effective than a relatively high-cost job-entry program that serves much fewer youth and provides extensive job placement services. In this example the comparison is based on the cost per participant employed.

Efficiency is also closely linked to sustainability and scalability, with more cost-efficient programs ultimately being those more likely to be sustained by participant, employer, or public funding (versus donations). Labor efficiency and time efficiency must also be taken into account. For example, a program using hundreds of volunteers may be very cost efficient but labor intensive, since it is time-consuming to recruit and manage volunteers.

PRINCIPLES AND SUCCESS FACTORS FROM EFFECTIVE YOUTH WORKFORCE DEVELOPMENT PROGRAMS

Ideally programs meet three essential measures of quality (core principles). Effective youth workforce development programs must be:

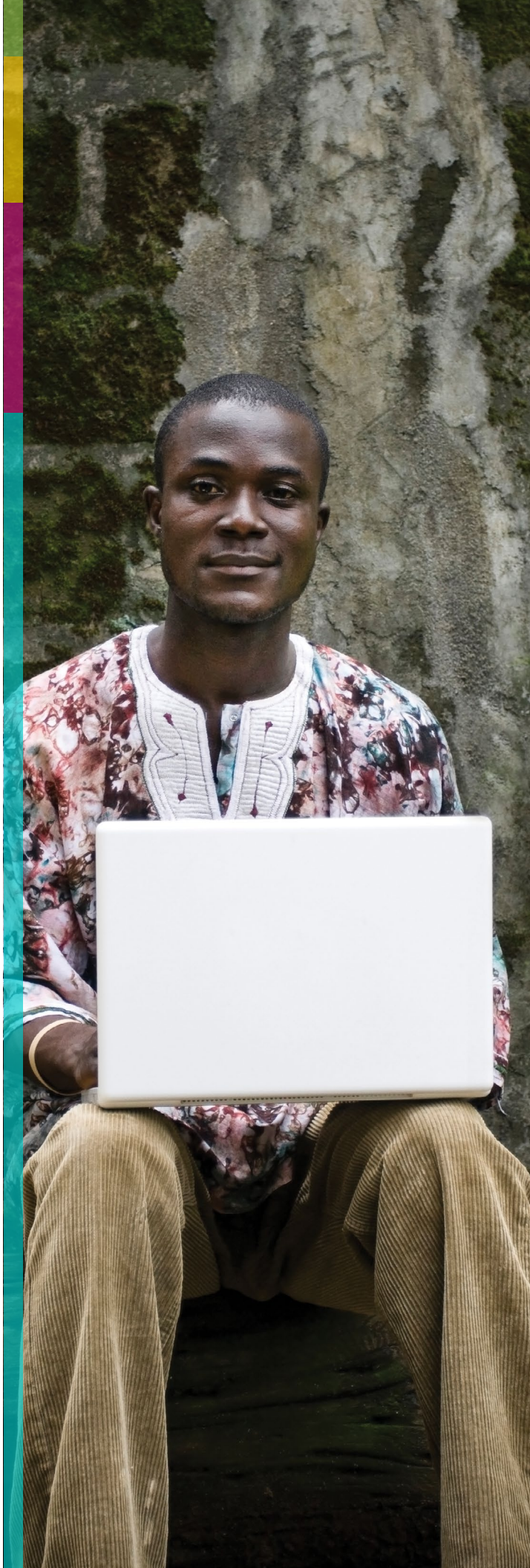
1. **Intentional.** The program has a well-defined objective and can be clearly categorized as a work-readiness, job-entry, or career-advancement program; it deliberately uses activities to achieve market alignment; and it tracks well-defined output, outcome, and impact measures.
2. **Systemic.** The program can compare and contrast its design with others in its category or other categories; it belongs to a broader "system" of various workforce development programs that could have different target groups, different activities, and different objectives, but they all contribute to the same goal of improving employability of youth.
3. **Continuously improving.** The program can increase its effectiveness or efficiency consistently by examining its data and taking appropriate actions, achieving gradual or sudden progress.

A review of various effective youth workforce development initiatives reveals three major **common success factors**:

1. **Aligning program activities with market demand.** Effective youth workforce development programs must align with the demand for current and future skills. For example, training-to-employment programs (job-entry) train youth for readily available jobs in the market and equip them with the skills employers expect in job candidates. On the other side, training-to-enterprise programs train youth to build and run their small enterprise under specific market conditions and train them in the necessary skills. Career-advancement programs train young people with the skills needed to take their career to the next level in terms of growth and complexity. These programs must first gauge fluctuating market demand in real time and engage in long-term and meaningful partnering with employers.

2. **Working collaboratively with partners** (usually across sectors). Best-practice youth workforce development programs promote strong partnerships with employers, educators, governments, and other youth-supporting organizations and donors (or all of these). Preparing young people for sustainable livelihoods and successfully moving them onto career paths requires expertise, resources, and support from all labor market actors. Effective programs find ways to engage partners in mutually beneficial cooperation.

3. **Comprehensive approach in both designing the program and running the program.** It is obvious that including youth in designing solutions for youth makes programs better aligned with their primary target, the young person and that engaging employers early on helps programs to better align their training with actual skills required by employers. Studies show that a comprehensive approach to training youth, in which programs focus on job-related skills as well as behavioral skills, job placement, and post-hire support, generates better overall results.



CONCLUSION

This landscape review addresses what defines effective and efficient training providers, funders, and other youth workforce development actors; to understand the technology skills that employers in local markets demand and entrepreneurs require; and then translate this information into effective technology training content and delivery.

This resource presents a new framework for mapping youth skills training programs based on their training objectives, market alignment, and measures of success. It also offers a tool—an algorithm for categorizing any youth skills training initiatives—within this framework. We have analyzed a host of existing youth workforce development programs against the framework and derived core principles, success factors, and lessons learned from effective and efficient training initiatives. For governments, foundations, employers, practitioners, and other interested stakeholders, the implications of this study are as follows:

- Today, technology skills are an integral and critical part of youth development programs leading to technology-enabled employment or self-employment;
- Youth workforce development programs have various degrees of alignment with market demand for skills that youth must possess for achieving sustainable livelihoods;
- Often, youth-serving organizations are challenged with understanding the technology skills required to succeed in building careers or businesses, and with translating those market expectations into effective training content;
- High-performing youth training programs are intentional, systemic, and continuously improving;
- Effective youth training programs strive to achieve high market alignment, to work in collaboration with various partners, to engage youth in all steps of program design and implementation, and to provide comprehensive supports to their program participants;
- When youth training initiatives increase in complexity and deliver additional programmatic activities, such as job placement assistance or business startup assistance, they become more effective in moving youth to employment or self-employment, but they also become less cost-efficient;
- When youth training initiatives increase their focus on market demand for specific industry sector or job role opportunities, they invest additional resources in engaging employers or researching market conditions, and so they become more effective in terms of employment outcomes but less cost-efficient;
- When youth training initiatives set their goals and measure their success against relevant outputs, outcomes, and impacts, they become more effective in reducing youth unemployment, better aligned with market demand, and highly accountable for the long-term well-being of their program participants. As a consequence, these programs deliver high quality but lower quantity of results, and they are more costly compared to programs that focus only on output measures;
- Designing and implementing high-performing youth training programs that are scalable and sustainable requires the collaboration and contribution of all workforce development stakeholders.


WE DAY

GLOSSARY OF TERMS

BPO: Business process outsourcing (BPO) is a subset of outsourcing that involves the contracting of the operations and responsibilities of specific business functions (or processes) to a third-party service provider.[18]

cognitive skills: The abilities to gain meaning and knowledge from experience and information. Cognition is more than just learning information, it's the ability to think about new information, process and speak about it and apply it to other, previously acquired information.[19]

cooperative education (co-op): A structured method of combining classroom-based education with practical work experience. A cooperative education experience provides academic credit for structured job experience.[20]

digital job: Created through the application of information and communications technologies (ICT) to a new or existing activity or process. Digital jobs generally include performing information-based tasks that build the individual's capacity for future work. A digital job can be distinguished from other jobs such as manufacturing because the core product produced by a digital jobs worker (sometimes called an "information worker" or "knowledge worker") is information or knowledge, as opposed to physical objects or services such as a haircut or a meal. The core tools for information workers are ICTs, such as computers, databases, smart phones and the internet, which they use to manipulate and manage information. Digital jobs exist in almost every sector of the economy, including healthcare, agriculture, education, finance, media, manufacturing, retail, telecommunications, manufacturing, and public services provided through the government.[21]

digital literacy: Having the knowledge and ability to use a range of technology tools for varied purposes. A digitally literate person can use technology strategically to find and evaluate information, connect and collaborate with others, produce and share original content, and use the Internet and technology tools to achieve many academic, professional, and personal goals.[22]

digital skills gap: A digital skills gap exists when there are not enough skilled digital workers to meet market demand.[23]

digitally-enabled employment: Jobs that require a basic level of digital skills.

digitization: The process of converting information into a digital format.[24]

entrepreneurship: The process of identifying and starting a business venture, sourcing and organizing the required resources and taking both the risks and rewards associated with the venture.[25]

information and communications technology (ICT): ICT refers to technologies that provide access to information through telecommunications. It is similar to information technology (IT), but it focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication media.[26]

internship: A temporary position with an emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid.[27]

NEET: A young person who is "not in education, employment, or training."[28]

noncognitive skills: Skills such as memory, attention, planning, language, and thinking skills. Noncognitive skills include emotional maturity, empathy, interpersonal skills, and verbal and nonverbal communication.[29]

self-employment: An individual works for himself or herself instead of working for an employer that pays a salary or a wage. Self-employed people earn income by conducting profitable operations from a trade or business that they operate directly.[30]

technology-enabled job: A job that exists due to the rise of technology but is not a high-skilled technology job (e.g., data entry, desktop computer support).

technology job: A position in the technology industry that provides the basis for chip production, information and communication systems, and computer systems. Technology companies are the developers and manufacturers of products that drive the increasing efficiency and production of cell phones, computers, televisions, and other communication and information systems.[31]

technology skills: The ability to use computers, software applications, databases, and other technologies to achieve a wide variety of academic, work-related, and personal goals.[32]

technology training: Training for jobs that require digital skills.

unemployment rate: The percentage of economically active people who are unemployed by International Labour Organization (ILO) standard. Under the ILO approach, those who are considered as unemployed are either (1) out of work but actively looking for a job or (2) out of work and waiting to start a new job in the next two weeks.[33]

workforce development: A national, regional, provincial, or sector-based coordination and management scheme that enables citizens to acquire relevant knowledge, practical skills, and attitudes for gainful employment in a particular trade or occupational area.[34]

youth: Young people ages 15 to 24.[35]

ENDNOTES

1 US Bureau of Labor Statistics.

2 Tang, Jee-Peng, Robert McGough, and Alexandria Valerio. (2010). *Workforce Development in Developing Countries*: A Framework for Benchmarking. Washington, D.C.: World Bank, Human Development Network.

3 http://www3.weforum.org/docs/WEF_GITR_Report_2013.pdf

4 International Labour Organization (ILO), "Global Employment Trends for Youth 2013."

5 World Bank. (2013). Human Development Statistics.

6 http://www.opportunitynation.org/news/entry/study-15-of-us-youth-out-of-school-work

7 http://www.bls.gov/news.release/youth.nr0.htm

8 http://www.bls.gov/news.release/archives/empsit_08022013.pdf

9 http://ec.europa.eu/digital-agenda/en/news/grand-coalition-digital-job-creation-closing-gap-2020

10 Integrated Postsecondary Education Data System, U.S. Department of Education NCES, available at https://webcaspar.nsf.gov

11 Project Harmony in its proposal to YouthSpark, Microsoft internal document, 2014.

12 http://library.iyfnet.org/sites/default/files/library/RockFdn_ICTYouthJobs.pdf

13 ManpowerGroup, "The Great talent Shortage Awakening: Actions to Take for a Sustainable Workforce," April 2013, downloadable at: http://www.manpowergroup.com/wps/wcm/connect/manpowergroup-en/home/thought-leadership/research-insights/?WCM_Page.ResetAll=TRUE#.UhZNjVnD_mg

14 Rockefeller Foundation, "Digital Jobs in Africa: Catalyzing Inclusive Opportunities for Youth", 2013.

15 Ibid.

16 US Bureau of Labor Statistics.

17 Tang et al. (2010). *Workforce Development in Developing Countries.*

18 Wikipedia

19 About.com Child & Parenting

20 Wikipedia

21 http://www.rockefellerfoundation.org/our-work/current-work/digital-jobs-africa/digital-jobs-defined

22 NYC Department of Education

23 CapGemini Consulting, The Digital Talent Gap: Developing Skills for Today's Digital Organizations

24 WhatIs.com

25 Wikipedia

26 TechTerms.com

27 Wikipedia

28 Wikipedia

29 ehow.com

30 investopedia

31 wikinvest

32 Association of College & Research Libraries

33 ILO definition in wikinvest

34 World Bank, *Benchmarking Systems for Workforce Development.*

35 ILO

BIBLIOGRAPHY

12 for Life, 2014. http://12forlife.com. Accessed March 10, 2014.

Accenture, "Skills to Succeed," 2014. http://www.accenture.comus-en/company/citizenship/Pages/skills-succeed.aspx. Accessed Feb. 10, 2014.

Bay Area Council Economic Institute, "Technology Works: High-Tech Employment and Wages in the United States," San Francisco, Dec. 2012.

Capgemini Consulting, "The Digital Talent Gap: Developing Skills for Digital Organizations," 2013.

Cisco, "Cisco Networking Academy," 2014. http://www.cisco.comweb/learning/netacad/index.html?url=/resource/lcms/cnams_site/english/generic_site_areas/library/course_catalog/PTCacheInclude.html. Accessed Feb. 10, 2014.

CompTIA, "State of the IT Skills Gap: Full Report," March 2012.

CompTIA, "Women Set on the Path to Success with a Career in IT," Feb. 2104.

Dev Bootcamp, 2014. http://devbootcamp.com. Accessed May 10, 2014.

Digital Divide Data, 2014. http://www.digitaldividedata.org. Accessed Feb. 10, 2014.

Education Development Center, 2014. http://www.edc.org. Accessed Feb. 10, 2014.

Education for Employment (EFE), 2014. http://efe.org. Accessed Feb. 10, 2014.

European Commission, "The Grand Coalition for Digital Job Creation: Closing the Gap by 2020," working paper, Jan. 2013.

Genesys Works, 2014. http://www.genesysworks.org. Accessed March 10, 2014.

Goldin, Nicole, "The Global Youth Wellbeing Index," Center for Strategic and International Studies and International Youth Foundation, pub: Rowman and Littlefield, 2014.

Harji, Karim; Best, Hilary; Essien-Lore, Eme; and Troup, Sarah et al., "Digital Jobs: Building Jobs for the Future," The Rockefeller Foundation, 2013.

Hilton Worldwide, "Travel with Purpose," 2014. http://cr.hiltonworldwide.com. Accessed Feb. 10, 2014.

INJAZ Al-Arab, 2014. http://www.injazalarab.org. Accessed May 10, 2014.

International Labour Organization, "Skills and Entrepreneurship: Bridging the Technology and Gender Divide," brochure, 2008.

International Youth Foundation, 2014. http://www.iyfnet.org. Accessed Feb. 10, 2014.

International Youth Foundation and The Rockefeller Foundation, "Analysis of ICT-Enabled Youth Employment in Ghana, Kenya, and South Africa," Oct. 2013.

JPMorgan Chase & Co., "New Skills at Work," 2014. http://www.jpmorganchase.comcorporate/Corporate-Responsibility/new-skills-at-work. Accessed March 10, 2014.

Making Cents International, "2013 State of the Field in Youth Economic Opportunities,"

Microsoft, "2013 Citizenship Report," 2013.

Microsoft, "Building a 21st-Century Workforce," policy brief, 2014.

Microsoft, "Microsoft IT Academy,"2014. http://www.microsoft.comen-us/itacademy/default.aspx. Accessed May 10, 2014.

Microsoft, "Microsoft Partner Apprenticeship Program," 2014. https://mspartner.microsoft.comen/uk/Pages/Training/apprenticeships.aspx. Accessed May, 2014.

Microsoft Partners in Learning and SRI International, "Innovative Teaching and Learning Research: 2011 Findings and Implications," 2011.

Nairobits, 2014. http://www.nairobits.com. Accessed May 10, 2014.

Olenik, Christina, Caroline Fawcet, and Jack Boyson, "State of the Field Report: Examining the Evidence in Youth Workforce Development," USAID, Feb. 2013.

Partner of the Americas, "A Ganar Alliance", 2014. http://www.partners.net/partners/History1.asp. Accessed May 10, 2014.

Pathways in Technology Early College High School, PTECH, 2014. http://www.ptechnyc.orgsite/default.aspx?PageID=1. Accessed March 10, 2014.

Taqeem Fund for Evaluation in Youth Employment, "M&E implementation at Education for Employment (EFE), Morocco," case study issue 1, 2013.

TechAmerica Foundation, "Definition of the Tech Industry," 2013.

The MasterCard Foundation, "Economic Opportunities for Youth," 2014. http://www.mastercardfdn.orgyouth-learning/eoy. Accessed Feb. 10, 2014.

The Rockefeller Foundation, "Digital Jobs Africa," 2014. http://www.rockefellerfoundation.orgour-work/current-work/digital-jobs-africa. Accessed Feb. 10, 2014.

The Trust for the Americas, "Partnership in Opportunities for Employment through Technology in the Americas (POETA)," 2014. http://trustfortheamericas.orgeconomic-opportunities/. Accessed March 10, 2014.

The World Bank, "Stepping Up Skills for More Jobs and Higher Productivity," Washington DC, June 2010.

The World Bank, "The Adolescent Girls Initiative," 2014. http://web.worldbank.orgWBSITE/EXTERNAL/TOPICS/EXTGENDER/0,,contentMDK:21914520~pagePK:210058~piPK:210062~theSitePK:336868,00.html . Accessed March 10, 2014.

The World Bank, "What Matters for Workforce Development: A Framework and Tool for Analysis," Systems Approach for Better Education Results (SABER) working paper series number 6, April 2013.

United Nations Conference on Trade and Development, "Information Economy Report 2012: The Software Industry and Developing Countries," 2012.

USAID and International Youth Foundation, "Ensuring Demand-Driven Youth Training Programs: How to Conduct an Effective Labor Market Assessment," United Nations, Switzerland, 2012.

Walmart, "Global Responsibility", 2014. http://corporate.walmart.comglobal-responsibility/. Accessed Feb. 10, 2014.

Bilbao-Osorio, Beñat; Dutta, Soumitra; and Lanvin, Bruno, "Global Information Technology Report 2013: Growth and Jobs in a Hyperconnected World," World Economic Forum, Geneva, 2013.

YCAB Foundation, 2014. http://www.ycabfoundation.org. Accessed May 10, 2014.

Year Up, 2014. http://www.yearup.org. Accessed Feb. 10, 2014.

Making Cents INTERNATIONAL

UNDERSTANDING THE *TECHNOLOGY SKILLS* TRAINING LANDSCAPE: FRAMEWORK AND TOOL