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TEVET News

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Foreword

We welcome you to the 2018 Third Quarter TEVET newsletter. In the quarter, President Edgar Lungu addressed the Third Session of the 12th National Assembly where he applauded youth-led enterprises formed by TEVET graduates. Among the youth-led enterprises the President spoke about was Fredson Kasongo, former student of Mufumbwe Youth Resource Centre who is now a contractor in Solwezi and has engaged 360 workers. The 2019 national budget was also presented by the Minister of Finance, Magaret Mwanakatwe with education and skills training being priority in national development in the quarter. About K13 billion was allocated to education and skills training. During the budget presentation, the Minister of Finance expressed concern on distortions in the labour market that arose from mismatch between the demand and the supply of skills. A skills demand and supply survey to form the basis for designing curricula for skills development and maintaining an inventory of skills in the country was earmarked for action in 2019.

Further in the quarter, the Minister of Higher Education, Prof Nkandu Luo, toured Western province TEVET institutions. The Minister was displeased with poor supervision of TEVET infrastructure works by engineers, which constrained access to skills training. She urged engineers to put national interest first because many young people got frustrated by lack of skills to participate in the economy. Meanwhile, Workaid Zambia and Lusaka Youth Resource Centre partnered to provide toolkits to youth-led enterprises. The enterprises were formed by youths that were trained at Lusaka Youth Resource Centre in various skill areas. The youths combined their skillsets in forming enterprises to complement each other's technical and management abilities for the success of their enterprises.

We continue to welcome comments and reactions from our readers.

President Lungu applauds youth-led enterprises formed by TEVET graduates, as Government allocates K13 billion for education and skills development in 2019

By TEVET Newswriter

President Edgar Lungu is impressed with successful entrepreneurs coming out of the TEVET sector that are forming youth-led companies. Speaking during the Third Session of the 12th National Assembly, the President said there were interesting entrepreneurial achievements by TEVET graduates that became successful employers to fellow youths. Among the youth-led enterprises the President cited was formed by Fredson Kasongo, former student of Mufumbwe Youth Resource Centre. Fredson Kasongo is a contractor in Solwezi and employed 360 workers.

"There is also Carol Lubemba, a former student of Lusaka Youth Resource Centre, who now runs a restaurant and has employed six workers on permanent basis. These youths are a shining example of what can happen when a young person is given a skill," he added. He further said Government was reviewing the Higher Education and TEVET policies to provide a framework for assuring quality in tertiary education.

"Mr. Speaker, Government has continued to provide loans and scholarships to learners at all levels of our education system. In 2017, a total of 25,128 university and TEVET students were supported under the loans and scholarships board, the TEVET bursary, the Skills Development Fund and the Support to Science and Technology Project. The Skills Development Fund has also been instrumental in financing the review of over 79 curricula in the last year to align them to industry and the national diversification agenda," the President elaborated.

Meanwhile, the Ministry of Finance has allocated K13.3 billion for education and skills development, with K164 million going towards skills development in 2019. Speaking during the 2019 budget presentation, Finance Minister Margret Mwanakatwe said "in recognising the importance of education and skills training in national development, I propose to spend K13.3 billion in 2019 or 15.3 percent of the budget on this function.

Within this amount, I have allocated K601.6 million for university and college infrastructure, while K258.8 million is for the completion and rehabilitation of school infrastructure across the country. Mr. Speaker, under skills development, I have allocated K164.0 million to support Government's action, in collaboration with the private sector, in building a cadre of qualified personnel in artisan skills that are relevant to the needs of the industry."

The Finance Minister added that the economy continued to face distortions in the labour market due to a mismatch between the demand and the supply of skills; thus Government will in 2019 carry out a skills demand and supply survey to form the basis for designing curricula for skills development and maintaining an inventory of skills in the country. Skills are critical assets for individuals, businesses and societies that is why Zambia is increasingly prioritising skills training to ensure human capital for meeting national aspirations was developed.

Matching skills and jobs has become a high-priority policy concern, as mismatches result into underutilisation of existing human capital and lead to job vacancies not being filled in due to lack of appropriately skilled persons to fill them. Since the global economic crisis, skills mismatch has become more prominent and many employers report difficulties in finding suitably skilled workers, even in economies with high levels of employment. Zambia is repositioning itself against skills mismatches using research based evidence when it comes to curriculum development, training systems development, practical test projects and other assessments to ensure they are relevant to industry requirements.

The minister elaborated that education and skills development was cardinal to the development of human capital required for national development. The provision of education and skills to citizens should, therefore, receive utmost attention. In order to increase access to education and skills, Government will in 2019 continue upgrading, constructing and rehabilitating facilities at all levels of education.

Furthermore, a programme to upgrade 500 existing basic schools to secondary schools will be undertaken from 2019 to 2022 using low cost construction design as a way to increase enrolments at secondary level. Further, Government has launched the Zambia Education Enhancement Project that is expected to construct 82 high schools across the country. "This project is being implemented with support from the World Bank. In addition, the creation of an enabling environment for private sector investment in the provision of quality education and skills training shall continue," she said.

To increase access to education, the Finance Minister said Government would also ensure that the quality of education provision is improved. To this end, the major programmes will be pre- and in-service training of teachers, provision of teaching and learning materials and ongoing recruitment of teachers. Further, Government will prioritise redeployment of serving teachers to underserved areas with the right mix that includes science, mathematics and information and communication technology.

"Mr. Speaker, Government has been implementing a two-tier system which offers learners an opportunity to follow either an academic or vocational career path. Due to effective collaboration between secondary schools and Technical Education, Vocational and Entrepreneurship Training institutions, pupils are now able to take an increasing range of vocational examinations while they are still in secondary school. In view of the success scored using this approach to skills development, Government will provide additional skills training infrastructure in selected secondary schools across the country to scale up skill training," added Mrs. Mwanakatwe.

HE President Edgar Lungu

Poor supervision of TEVET infrastructure works by engineers irks Minister of Higher Education

By TEVET Newswriter

Prof Nkandu Luo (5th from Right) poses for a photo with Ministry staff, Kalabo District Commissioner (4th from Left) and others at Kalabo Trades Training Institute construction site.

Minister of Higher Education, Prof Nkandu Luo has expressed displeasure with the manner supervising engineers of TEVET infrastructure in the Ministry of Higher Education have conducted themselves. "Engineers are a letdown, they poorly supervise works and do not do certificates of completion on time, thus delaying completion of construction works. Delayed certificates of completion derail access to training and removal of school leavers off the streets. I am not happy seeing delayed construction works as it hampers the provisions of skills to the people, entrepreneurship activities and self-employment."

"Technical teams do not seem to attach seriousness to supervise construction works for early detecting of defects and timely completion, thus, some contractors tend to use shortcuts and cover up shortcomings on buildings. For example, some buildings have been built without ring beams and since supervising engineers did not inspect works on time, the contractor had plastered by the time they visited the site. The mistake was seen years after the building was in use. Although defects were identified later, it was too late. I wonder why the supervising engineers were paid for doing a bad job."

"We need to find a way to circumvent delays by technical teams to get works done and handover to Government for people to start using them. Some people do not feel for others. They are punishing fellow citizens. Rural penetration in skills development requires constructing more TEVET institutions to strategically develop skilled rural people."

The Minister further said there was an impression given that funding was the main problem in the completion of construction projects, but the major problem with infrastructure development completion in the Ministry of Higher Education was inertia, attitude and noncommittal to work by technocrats. "For example, the problem with having Kalabo Trades Training Institute operational is water. Engineers are failing to apply seasoned intellectualism on how delayed construction projects frustrate Government aspirations to development the country. Keeping Kalabo Trades Training Institute nonoperational is unlawful as it has destroyed many people's lives who would have obtained skills and utilised them to live decent lives."

"Our focus is on money. Thus, even things that require exercising our brains, we say we have no money. What money? An economist cannot do an in-depth economic modeling on the cost of delayed project completion and when challenged on why they are not doing their part, they will say there is no money. Do you need money to think? The problem is not always money, but irresponsible behaviour. There is too much inertia, bad attitude and lack of commitment."

"I will read the public finance policy to see how I can reprimand these engineers delaying Government projects. Do we really need to get where someone loses their job to get a desirable attitude from technocrats? Infrastructure has been vandalised at some trades training institutes being constructed such as Isoka due to unnecessary delays. The institute will have to be rebuilt because it is badly vandalised as time passed without completion. You find a situation where when technocrats are asked to go supervise works, they will ask for 14 days' night allowances for work that should be done in one day. We may need to take some of the engineers to Chainama to see how many children are on drugs, junta and marijuana because they have directed their energy towards social ills whilst training institutes that would have enabled them become productive after acquiring skills have been delayed to be completed."

Meanwhile, Prof Luo has urged Mongu Trades Training Institute to establish a business wing to serve as a production line to deal with maintenance and making desks, chairs and other products to sell to surrounding schools that do not have the capacity to make those products. "You have students in construction that can work on walls, floors and make wooden and metal products. This is not like any other institution, you are imparting hands-on skills that can be tested by producing different products."

"In Mongu you do not need to import timber. You have different types of timber for facelift the institution. Some learning environments do not inspire concentration in class. How do children pass when the environment is depressive. TEVET is meant to develop people with hands-on skills not theoreticians. We need artisans that are practical than who just theorise and do nothing."

Meanwhile, the Minister has directed the Directorate of Vocational Education and Training to provide funds from the Skills Development Fund (SDF) towards paying remaining payments to contractors at Isoka, Sesheke and Kalabo and Trades Training Institutes for them to be operational as per Government vision to increase access to training especially in rural areas. Prof Luo added that "an increase in SDF from Ministry of Finance will help complete much of the stalled works in the TEVET sector." Prof Luo said skills development was key in economic development. "We want to fill the space where engineers are supported by skilled persons that make Zambia a nation of doers not theoreticians."

Work Aid empowers 8 youth-led enterprises with start-up tool kits after training

By TEVET Newswriter

Start-up toolkits gives skilled youths impetus to become productive and earn income that in turn will improve their quality of lives upon leaving training," elaborated Youth, Sports and Child Development Minister Moses Mawere.

Having skills alone have not solved the challenge of poverty among youths. Thus, financing skills training has not worked as expected in poverty reduction as some of the skilled persons fail to find capital to put their skills into use. For instance, funded youths through the Youth Fund performed badly. But a combination of skills and start-up toolkits has proven more workable in actualising the aim of skilled youths forming enterprises. Start-up toolkits enabled skilled youths to start enterprises to help in poverty reduction. According to the Youth, Sports and Child Development Minister Moses Mawere "Government is changing the policy on Youth Fund to ensure most of it goes to toolkits for skilled young people because empowering skilled individuals had proven to be more effective than unskilled ones. Unskilled youths tend to use money for consumption, mainly because they use people to write business proposals who later claim 20% of the seed capital; making it difficult for them to payback or sustainably get a return on the investment. But skilled youths tend to put empowerments to good use especially start-up toolkits, which gives them impetus to become productive and earn income upon leaving training."

Speaking when Work Aid Zambia donated toolkits to eight (8) youth enterprises, Mr. Mawere expressed gratitude to Work Aid and encouraged youths to utilise such gestures to actualise Zambia's aspirations of self-employment. The youths who were given toolkits were trained in different skills at Lusaka Youth Resource Centre. The tools were for construction and fashion design. Since 2014, Work Aid has donated toolkits to 40 youth enterprises that are operating in different parts of the country. The criteria was that the youths were skilled and have formed a company. Additional 10 graduate enterprises were earmarked to receive toolkits from Work Aid in November 2018.

Mr. Mawere said stakeholder support such as from Work Aid and its partners in actualising empowerment aspirations of the nation played a major role in the creation of employment and development of skilled persons. Skills development is among Government priorities to ensure the country has adequate skilled human capital to meaningfully participate in economic activities, which could lead to productivity and economic liberation. "The Ministry of Youth, Sport and Child Development is broadening access to skills training by establishing at least a youth resource centre in each province," the Minister added.

He felt that extending the gesture of toolkits provision to graduates in other youth resource centres would result into more youth-led enterprises. "Most skilled youths lack tools. Thus, giving them toolkits, equipment, apprenticeships and internships for industry experience was an important aspect to the TEVET sector. Different stakeholders can do their part to develop desired quality of skilled persons in the country."

Work Aid has so far supported Chiyota, Kwilimuna, Mumbwa, Ngungu and Lusaka Youth Resource Centres with toolkits for graduates. Katembula and Lufyanyama centres are earmarked to receive the tools in next disbursement. Other youth-led enterprises have been supported through Mongu Trades Training Institute, Mulele Mwana Skills Training Centre, Dzithandizeni Trades Trust School and Chawama Skills Centre. Work Aid collaborates with others in tackling poverty by supplying disadvantaged people with the tools they need to acquire practical skills and become self-supporting.

The programme to give toolkits to youth-led enterprises has a monitoring component to provide feedback on how the enterprises were performing and highlighting interventions required to make the enterprises more viable. From the monitoring feedback, G-Hand Works Ltd in Mumbwa was an inspiring youth-led enterprise to Work Aid as it had employed 8 youths on the permanent basis after receiving toolkits in December 2017. The toolkits comprehensive enough to enable recipients of the tools to set-up reasonable workshops and start operating immediately.

"The main aim of Work Aid is tackle poverty in a practical way by providing tools and equipment to vulnerable but viable projects. Our commitment is to bridge the gap during the transition of setting up these youth-led enterprises with the goal of having them being self-sustainable," elaborated Work Aid Country Representative Emmanuel Zulu. The organisation believes that self-help was a key driver of sustainable development, and the re-use and re-cycling of the world's resources was pertinent in sustainability be it in terms of having long term sources of income or futuristic production of goods and provision of services that ensured forthcoming generations' wellbeing was not compromised by actions taken in production systems today.

Mike Hangoma who is among the youths that started enterprises after receiving toolkits from Work Aid advised recipients to put them to good use. "It is very easy to sell the tools to established construction companies. Some of these tools are not found in Zambia, thus they are hotcakes. But selling them will only bring money once and leave the recipients languishing. It pays more putting them into good use. Where you are stuck, get back to Lusaka Youth Resource Centre for help or inquiry from previous recipients that have gained industry-experience to get around hitches when starting an enterprise."

Mike and his partners run a construction company known as AFCON Construction Ltd.

"If you cannot be responsible when a student, you may be irresponsible in industry too" – Prof Luo

By TEVET Newswriter

Minister of Higher Education, Prof Nkandu Luo, has urged students to be responsible in taking care of property of training institutions. During a tour of Kaoma Trades Training Institute, Prof. Luo said "teach each other how to live. If you cannot be responsible whilst in college, even after leaving college you may be irresponsible. Have a culture of keeping your institutions clean."

She said TEVET institutions had a diversified skills that could be utilised to safeguard learning institutions. "We should not wait for the Minister to pronounce how we safeguard these institutions." She added that accommodation for girls was problematic and it limited access to training for ladies, which was against parity issues. "The Ministry of Higher Education will build a block of students' hotel for girls."

Prof Luo urged Kaoma Trades Training Institute to consider coming up with programmes that resonated with resource endowments. "For example, people here are good at thatching, weaving and building, which the institution should consider adding to their programme portfolio to benefit the populace in line with their livelihood. People easily fit into training programmes that relate to their sources of livelihood."

She further said training institutions should have sick bays and has urged Kaoma Trades to work on having one. "We will discuss with the Ministry of Health to provide a nurse and a visiting doctor from Kaoma General Hospital." Prof Luo also urged the institution to put up an incinerator for disposal of sanitary pads. "We will provide you money for a water storage facility, it that amount, there will be an amount for putting up an incinerator."

The Prof directed the institution to procure a bus from the money realised from the self-help initiative meant for construction of a students' hotel. She also directed the institution to take male students to a rented house and female students into the hotel. "Boys have fewer needs, thus they are better off be placed in the rented property."

Over the students' request for TEVET graduates to be considered for jobs in Government as teachers, the Minister contended that people lacked proper understanding of TEVET and its role in job creation. "TEVET is more practical than university education, which is theoretical. It prepares learners to enterprise, identify opportunities, have access to resources [such as land] and to put their skills into practice."

Meanwhile, Director Vocational Education and Training, Alex Simumba advised Kaoma Trades principal to provide requirements to address water storage at the institution. Mr. Simumba pledged that by end of 2018, the water storage facility would be done using resources from the Skills Development Fund. He further said a hotel for female students will be built by Government to augment the institution's initiative to save resources from self-help income generating activities.

Mr. Simumba called for a meeting to agree on professional and support staff structures the institution requires in pursuance of the possibility of them being added to Government payroll. He added that one of the fundamental issues in TEVET institutions was poor maintenance of institutions. "We have urged principals to be part of maintenance committees to ensure institution infrastructure is well taken care of."

And a students' representative, Inonge Sitali, applauded Government for increasing bursary allocations at Kaoma Trades. She said the opportunity gave young people chance to be skilled, especially in rural institutions where poverty levels were higher.

At Mongu Trades Training Institute, Prof Luo said training institutions were meant to school learners in totality to ensure they adequately apply themselves in society. "These are schools. Schools are used to nurture learners into responsible citizens. If learning environments are filthy, when they get into the labour market, they may keep places as filthy as the places where they were trained from. Charity begins in these schools."

Prof Nkandu Luo addressing staff at Kaoma Trades Training Institute during her tour of TEVET institutions in Western province.

She said the habit of using money as an excuse for not having things done properly should end. "You always ask, when is the money coming? Money will not come until proper costing of what is required is done by the institution. There are things that can be done without money. Cleaning windows, fixing door handles or keeping an inspiring learning environments do not require funding from Government. Students can clean or fix door handles. We need to prepare these students for the world-of-work where they will make a difference."

The Minister contended that training institutions were important pillars in transforming lives. "Nurture virtues that enhance young people's employability and responsibility. Industry needs skilled persons with attributes that keep work places conducive for production efficiency. Schooling means acquiring a skill and attributes needed to contribute to productivity."

She said for an institution training in carpentry, the quality of desks and chairs should be inspiring. "Lack of supervision, attitude and dirtiness is contributing to untidiness of learning institutions. Leaving naked power cables is risking students' lives and buildings catching fire. I feel the teaching staff does not understand the meaning of schooling. It is the total transformation of a human being. How can you bring quality into the industry without appropriate principles, attributes and attitudes being imparted on learners?"

She added that mindset change was required to improve learning environments in these training institutions. "Poor management of institutions is the typical problem in most of these institutions. These institutions have been turned into having single interaction point, that is, in class. Outside class, there are no sports activities nor career centres that exposed students to critical thinking, self-presentation and other pertinent attributes. We have students who have no spaces for relaxing or exchanging ideas and nurture their rational ability in order to defend their ideas when challenged."

Skills Development Fund:
A long term financing vehicle to improve many areas of the TEVET sector

By TEVET Newswriter

R-L: Ministry of Higher Education Director Vocational Education and Training, Mr. Simumba and TEVETA Acting Director General Mr. Takaiza

Director for Vocational Education and Training (DVET), Alex Simumba, said Skills Development Fund (SDF) was a broad based financing strategy of infrastructure, equipment and other peripheral skills training in Zambia in line with development ambitions enshrined in several national aspirations such as the Seventh National Development Plan (7NDP), Vision 2030, and SME growth, productivity and job creation through entrepreneurial undertakings.

"The SDF is a sustainable way of funding TEVET. As long as the funds are flowing, the Fund is a sustainable methodology of financing TEVET. The Government has an agenda to improve per capita income, reduce poverty, narrow inequalities, enhance inclusiveness in the development agenda and value addition for increased value of exports. Achieving these objectives requires skilled individuals to attain them. The SDF is speaking to these aspirations, especially in relation to 7NDP, Vision 2030 and Sustainable Development Goals (SDGs)," he explained.

Mr. Simumba noted that most training institutions in TEVET used old equipment, thus proceeds from the SDF would improve the quality of equipment and other training aids as well as promoting increased entry of the girl-child entry in the fields of science and technology through special funding under the Fund.

He said the Fund would grow as the industry grew, especially when investments increased in the country since contributors to the SDF were those investing in the private sector. The resources are disbursed within four parameters namely; SME/informal sector training, human capital development, infrastructure development, and long term training in TEVET (pre-employment scholarships).

Mr. Simumba commended the industry for the contribution to the SDF and overall skills development arena. He further said an implementation manual have been developed, which covers windows where players can access the funds. "Government wants results from the SDF, thus transparency is key in ensuring the funds have the right impact. Parents can take their children to have skills and develop the country."

And Acting TEVETA Director General, Cleophas Takaiza said TEVET faced a number of challenges some of them resulting from low financing. He said the challenges have been in forms of quality, quantity and training on old equipment. Mr. Takaiza added that the SDF would help improve equipment and the development of curriculum relevant to industry. "The fund will help quality delivery of TEVET in relation to industry requirements. The different windows through which the funds can be accessed seek to address skills mismatches and gaps either for in-service staff or those entering TEVET from the secondary school system. Those directly coming from the school system can be funded under one of the windows by way of meeting their tuition fees," he elaborated.

The Acting Director General argued that whereas TEVET produced skilled persons, the industry complained of them not being appropriately trained to contribute to the labour market as most institutions' training environments were deteriorating. "There was a near point of desperation because the picture of the quality of TEVET was getting worse. Old infrastructure including equipment installed in our training institutions compromised TEVET in many ways. For example, teaching and learning materials, infrastructure expansion and acquisition of training equipment has been problematic in TEVET for a long time. With SDF there is hope to change the landscape of skills training in Zambia."

He said re-skilling and up-skilling human capital was one of the financing parameters of the SDF that sought to improve SMEs' competitiveness, enhance their ability to utilise raw materials, improve their product quality, and entrepreneurial activities. "SMEs are major contributors to the economy and their enhanced skills levels would improve the country's productivity." He further said funding informal sector and out of school youths would benefit the larger proportion of Zambia that lacked skills.

"Leaving this big chunk of the population unskilled can spell doom to the country because they will invest their time and energy in deviance instead of contributing to societal wellbeing. Thus, funding the informal sector means empowering them with skills and with additional support, there is a likelihood that some of them will grow their businesses and move to formal sector and contribute substantially to the Zambian economy in their localities." Mr. Takaiza argued that since training institutions carried out training needs analyses for them to be funded, it increased the likelihood of the training to address specific skills gaps that would trigger improved productivity.

Why Open Learning is of Increasing Importance not just for Distance Providers?

By TEVET Newswriter

President and CEO of the Commonwealth of Learning (COL), Professor Asha Kanwar, contends that when looking at the question "why Open Learning is of increasing importance and not just for distance providers," reflection had to be made on the meaning of open learning today. Prof Kanwar adds that opening learning entails looking at two pillars of openness that are i) relevance for both distance and campus institutions and ii) exploring the possible ways forward.

During the Open Learning Conference Pretoria, South Africa, Prof Kanwar put it that an understanding of what open education meant was pertinent. Right from the early days of correspondence courses and external degrees, the thrust has been to throw open the ivory towers of higher education. Policy makers from developing countries saw open and distance learning as an opportunity for democratising education and reaching the unreached. Though we date the origins of Open Learning to the 60s, the foundations can be traced right back to philosophers such as Confucius who proposed the principle of "providing education for all people without discrimination".

Globally, the concept of open education has wider connotations. It could refer to "education for all," which means providing universal primary education, open educational resources, open access research, open textbooks and open data. It also includes not just formal education but non-formal and informal learning at all levels. In short, the term open learning covers the entire spectrum of lifelong learning, an essential requirement for the creation of a learning society.

According to a United Nations Development Programme 2016 report, in Sub-Saharan Africa only 8% of the relevant age group have access to tertiary education as compared to the 70% Gross Enrolment Ratio (GER) in Organisation for Economic Co-operation and Development (OECD) countries. As per a recent Commonwealth of Learning survey of 27 open universities in the Commonwealth, it was found that in 2016, the collective enrolment in these institutions was 4.4 million. While this is a significant number, it does not help us advance the Gross Enrolment Ratio. This can only happen if all institutions, both campus and distance, adopt open learning. Key three aspects interrelated aspects of openness consider are: access, content and technology. All three are common to both distance and campus provision.

First, the issue of access. Today even campus universities like Massachusetts Institute of Technology (MIT) have opened their doors to anyone anywhere in the world through Massive Open Online Courses (MOOCs) and micro-credentials. Anyone who successfully completes a set of MOOCs under the Micro-Masters scheme can receive credits and exemption for one semester of study at MIT. 33% of students in the US take at least one online course which indicates the convergence of campus and distance learning provision. COL is working with campus universities in Malawi, Namibia, Nigeria, Eswatini (Swaziland), Uganda and Zambia to support the integration of open distance and online learning for increased access.

Open learning also means inclusion. In South Africa 80% of disabled people aged 20-24 are not in tertiary education (Van der Merwe, 2017) — UNISA has established an Advocacy and Resource Centre for Students with Disabilities. The Open University of Tanzania is helping people with vision disabilities to access ICTs for learning. Access therefore is not only about increasing enrolments but also about promoting flexibility, diversity and inclusion.

The second dimension of openness is availability of quality content. Affordability and costs are a key barrier to access in tertiary education. For example, students in South Africa spend approximately US$1400 for first year textbooks. However, their book allowance for students on a Bursary Scheme is about US$280. Because of this, many students cannot buy textbooks. Does it matter? A study in 22 sub-Saharan African countries shows that textbooks are effective in improving learning; providing one textbook to every student in a classroom increased scores by 5–20%. A Commonwealth of Learning study on open textbooks in Antigua and Barbuda has shown that students in Antigua State College not only saved money but also improved learning outcomes by 5.5%. Open educational resources can help us reduce costs and improve effectiveness. The Cape Town Declaration in 2007, a major milestone in the Open educational resources movement, identifies other dimensions of openness. It refers to open technologies that promote more collaboration and flexibility.

The third pillar of openness is technology. We have witnessed major developments in the previous decade—MOOCs with their flipped classroom and global reach are increasing access but have they embraced 'openness'? Blockchain technologies can help promote new ways of credentialing and accreditation. Artificial Intelligence is opening up new ways of teaching and learning. Artificial Intelligence techniques can simulate one-to-one human tutoring to provide timely feedback, all without the presence of a human teacher. As we know, timely feedback is essential for learner engagement and retention.

Both campus and distance providers are addressing the common challenges of access, affordable content and improved learning outcomes. How can we learn from each other? What is the way forward? One, all institutions will need to embrace open policies and open education practices. Two, we can never truly open up learning unless we have robust and innovative mechanisms to recognise and accredit learning across jurisdictions. Finally, technology by itself does not expand access and we can reach the unreached only when technology is placed in an appropriate social, economic and political context and both teacher and learner are empowered to use the technology effectively.

Training where people live: Lukashya Trades empowering villagers in fish farming in Chief Mwamba

By TEVET Newswriter

Fish is a favourite source of protein among many Zambian households. It has a ready market. Fish suppliers do not need to go far to find the market for both fresh and dry fish. However, Zambia has a shortfall of 180, 000 tonnes of fish to meet the demand. The current fish-farming output is around 100 000 tonnes of fish. The delicacy of fish makes people cry whenever there was a fish ban for taking away their source of protein and income for those in the fishing value chain.

Teaching people how to raise fish is among the solutions being sought to avert the fish shortage. With fish farming training, people can acquire appropriate skills to raise the fish and harvesting when it matures. They will thus earn income throughout the year from the fish business than depending on fish in rivers, lakes and streams, which has seasons for catching it. During fish ban period, fish becomes hard to come by, prices go up and those whose business is selling fish are deprived of their income.

Lukashya Trades Training Institute stepped in to train villages in fish-farming and sought financing for their training after undertaking a training needs analysis. The funds were sourced from the Skills Development Fund. "We looked at availability of water in the province, fishing history of the area, economic value of fish and fish business to the people in the area and abundance of land for fish ponds, explained Lukashya Trades Principal Monica Kanini.

The training institution trained 32 villagers in fish farming in Northern Province after recruiting students to undertake fish farming training on campus proved problematic. "Training villagers who have lived partly earning a livelihood on fishing and selling fish was more ideal as they have land to undertake fish farming within their localities," argued Mrs. Kanini. The training in fish farming resonated well with villagers who are familiar with fishing.

She indicated that when the training institute first introduced the fish farming programme at the campus, the programme could not attract learners as people in urban setting did not see the skills being helpful in the urban setup compared to rural people. Lukashya Trades thus explored the possibility of taking the training to rural areas particularly Senior Chief Mwamba's area. The Principal added that "we had to follow those whose lives revolve around fishing in the rural areas. We went where they live. We taught them how to construct fish ponds in the villages after identifying sites and type of fish to rear there. We then secured fingerings for them to start keeping the fish."

The training programme included identifying sources of water and channeling the water to the fish ponds. Since villages do not have water reticulation systems, natural streams were used to feed water into fish ponds. The area were the training was done has abundant water that flows throughout the year. The trained villagers use natural resources within their means to undertake fish farming. Two groups were formed for training and fish management purposes. The idea is for the groups to split further until each individual can have their own fish pond.

The process of the training involved making furrow to channel water to ponds. The villagers made the ponds and furrows as part of training. Sieves were made to prevent other aquatic beings such as insects, monitor lizards and others from entering the fish ponds and eating up the fish. About 1, 500 fingerings were planted in each of the two fish ponds in the village. The trainer, Phillip Phiri said with natural water, fish diseases were low. For example, from the total number of 1 500 fingerings, only 3 died.

Mr. Phiri further explained that the training institution used a model of forming cooperatives in fish farming to meet the demand for fish, meeting challenges in managing the fish, processing it such as drying and other logical problems that emerged. Fish farming is labour intensive and forming groups eased pond construction and management of the fish. The idea is that from the group of 16, they will break to individual level. They will work together in construction of new ponds. As a way of putting their skills and knowledge into practice. They use local materials which they are familiar with and available in their areas so that they don't get stuck looking for exotic materials."

"To fertilize the water, we exposed them to different options such as use of cattle manure, goat, pig or chicken manure. Since we also taught them poultry management and the groups keep chickens, the manure from chickens input into fish farming. Their knowledge of what to use in different circumstances to undertake fish farming activities will help them to fall on more workable options," argued Mr. Phiri.

One of the beneficiaries (Gift Soneka), said they started with training and went through land identification of where to put up fish ponds. We never thought we will have a chance to have a skill in rural areas where no training facilities are in place. The training is helpful because poverty in rural areas makes conditions of living very hard, cutting off our children from school. Skills training in rural areas will improve lives and status of rural areas. For example, instead of depending on cassava production, since our training involved both rearing chickens and fish, we will have a diversified sources of income."

Fish farming in Zambia (aquaculture), is a new undertaking in many parts of the country. However, it has gained prominence of late with most Zambians taking on fish farming. Meeting fish shortages requires having more people engaged in aquaculture at small, medium and large scales. Importing fish can be averted by investing and training people in fish farming, preservation and linking them to markets such as shopping malls. The fish can be sold fresh, smoked or dried.

Gift Soneka one of the beneficiaries of the fish farming training in Chief Mwamba's area at the fish pond near her house.

The Search for Mining Talent: Expertise and skills transfer - Pinnacle to Industry success

By TEVET Newswriter

Zambia is endowed with a vast amount of mineral resources which need to be properly utilised for the benefit of Zambians. However, mining investment usually comes with a lot of challenges and pressures on governments from investors. "Zambia, like many other resource-rich developing countries, has a huge challenge to ensure that the country receives an appropriate share of the economic rent, and at the same time attracts and sustains the much-needed foreign investment. Therefore, it is imperative that Zambia has a pool of well-trained, exposed and experienced professionals in various aspects of mining to manage such complex systems", says former Mines and Mineral Development Minister, Christopher Yaluma.

Skills development is an investment for Zambia's long-term competitiveness of the sector, the companies and its shareholders, and ultimately for its contribution to the nation's economy and society. The experience of the Zambian mining sector has shown that previous efforts in the area of skills development have been poorly coordinated and not designed in a cohesive or sustainable manner. The situation has been exacerbated since privatisation of the mines, according to the Zambia Mining Skills Education Trust.

A recent publication by the Zambia Chamber of Mines, titled "Searching for Talent-Skills and Employment in the Global Mining Sector" explains that it is the exponential growth in global mining production in the last 20 years that has drained the global talent pool; the industry has become the victim of its own success. That is why identifying, nurturing and training tomorrow's mining talent have become the number one priority for the world's mines. In Zambia, for example, this involves scholarships, formal skills-transfer programmes, and the investment of millions of dollars in high-tech training centres to keep up with rapidly evolving mining technology.

"Alleviating the skills shortage in the short term means facilitating the smooth entry of expertise into the industry, and recognising the crucial role it plays both in skills transfer and in allowing mines to function at global levels of competitiveness," Nathan Chishimba, Chamber of Mines President was quoted as saying.

Mining Requires Very Specific Skills

Safety demands high standards. Mining is one of the highest-risk industries in the world. Men and women work in dangerous conditions, both above ground and below, in extremes of temperature, and in close proximity to heavy machinery and equipment. The stakes are high; and so are the skills required. A typical mine employs geologists, metallurgists, technicians, mechanics, environmental experts, doctors, nurses, paramedics, financial managers, accountants, managers, superintendents, overseers, and engineers of all stripes – mainly mining, electrical and chemical. Only the best make it into the industry. This includes mine artisans – such as riggers, boilermakers and mechanics – who face rigorous selection criteria. For example, Mopani's Training Centre in Mufulira, and the FQM-sponsored Solwezi Trades Training Institute in North-Western province, will only accept applicants with top marks in mathematics, science and English.

Modern technology has made mining productive, efficient and relatively safe. Low-grade ore, often located in remote regions, can now be mined profitably, safely and with less damage to the environment. This benefits employees, shareholders, communities and governments. But high technology also means high skills. Cost and complexity make mining skills intensive. It takes about a billion dollars to start a new mine and a couple of million dollars a day to keep it running. The life-cycle of a mine – from exploration and construction to ramp-up, full production and rehabilitation – is measured in decades, and requires a wide range of high level skills. Ore bodies are often complex, and it's not always obvious where the rich grades are.

Rising Demand for Mining Skills

There is a global shortage of mining skills. The shortage was ranked as the number-one risk facing the industry by professional services company Ernst & Young.

The main factor driving demand for mining skills over the last 20 years has been the rapidly increasing number of mines being built and expanded around the world to meet the growing global appetite for metals and minerals, particularly from China. This rapid growth in new mining production has been particularly strong in emerging economies in Africa, Asia and South America. Zambia itself is a good example: since privatisation in 1997, nearly $15 billion of new mining investment has seen the expansion of existing mines and the creation of new ones. Zambia's copper production has tripled since then, and the once-backward North-Western province has boomed to become Zambia's main copper-producing region.

Mobility of High-Level Skills

Experienced people are in demand, and change jobs and countries. Supply and demand when something is in short supply, it tends to be in great demand – and mining skills are no exception. Mining companies the world over are struggling to find the right candidates with the right blend of skills and experience. "There was a time when you could easily find four or five people to fill a high-level position," Johan Jansen, immediate past CEO of the Copperbelt based Mopani Copper Mines told mining for Zambia. "Now you battle to find just one." And even once you've found someone, it's not always easy to keep them, Jansen said.

Great Benefit to Zambia

The inflow of foreign mining expertise into Zambia over the past 20 years has been of great benefit, enabling the country to rehabilitate and refurbish existing mines, construct entirely new mines, and help existing mines operate at global levels of efficiency and competitiveness.

An example is FQM Kansanshi's $900-million, technologically advanced smelter, which started operating in 2015. It was constructed in record time, thanks in large part to a 3 000-strong team of highly qualified welders from Asia – known as Coded Welders – who specialise in the construction of this kind of infrastructure. Many of them had worked together on similar projects in other parts of the world. As soon as the construction was complete, they left Zambia for the next international project requiring their skills. The smelter was then brought to full production in an unprecedented five months. The smelter is one of the most advanced of its kind operating anywhere in the world today. It employs around 750 people, and they include a small core of international experts from countries such as Australia, New Zealand, South Africa, Canada, Russia

The furniture factory in Kalumbila. The factory employees a number of local residents and has trained them up as carptenters. The factory is self sustaining and operates contracts selling high end furniture to the mine and other local businesses.

and Kazakhstan. The staff often joke that "it's like the United Nations in here".

Tackling the Skills Crisis

The focus is on training, as well as hiring international expertise. Multiple training initiatives In the face of the global mining skills shortage, a dedicated focus on training has taken hold in the world's mining companies. It targets both new and existing employees, and includes ongoing education, coaching, mentoring and first-hand exposure to different mines and mining technique.

Funding and building training institutions ,as part of a drive to broaden the available pool of graduates in mining-related disciplines, mining companies in many countries provide financial assistance to schools and universities. In Zambia, mining companies provide financial assistance to the University of Zambia's School of Mines, in the form of books, bursaries and the maintenance of vital infrastructure. They also accept students – up to 20 at a time – on internships before they graduate so that they can gain exposure to modern mining technology and techniques.

As part of a vision to create a centre of excellence for the mining industry in North-Western province, FQM Kansanshi has teamed up with the then Ministry of Science, Technology and Vocational Training [now Ministry of Higher Education] and invested more than $3 million in the joint development of a technical training facility dubbed SOTTI – Solwezi Trades Training Institute. Since starting in 2014, SOTTI has turned out more than 400 graduates – including many from Barrick Lumwana – in metal fabrication, electrical power and heavy equipment repair. Mopani has gone even further and invested more than $20 million in the construction of a technical training school of international standing in Mufulira. With its high-level lecturers and high-tech equipment – including simulators – the centre focuses on coursework that prepares students for the market.

Coaching and mentoring Coaching and mentoring typically involves assigning an understudy to a more senior person, in the context of a formal skills transfer programme.

The Need to Take Advantage of Skills Development Fund

Government through parliament enacted act no. 46 of 2016 to establish the skills development levy of 0.5% payroll based, the government clearly stated that they will work in consultation with the private sector in the management of the levy at national level. Surprisingly, a full year has passed and as private sector we do not even know how much money the ministry of finance has received through this levy and whether the funds are being released to the relevant ministry, the ministry of higher education that should also release the funds for national skills development as intended.

The Zambia Federation of Employers (ZFE) has since appealed to the ministry of finance to be remitting the skills development levy funds to the relevant ministry each month and publicize the figures to social partners. "we are eager to engage on transparent mechanisms of making the funds yield the intended results in the national skills development agenda," – Wesley Chikwanda Chishimba, President of ZFE says.

From the perspective of the mines, the challenge is to secure the right kind of expertise – whether international or local – for the skills transfer to happen. From the perspective of the country, the challenge is to have the right policies and procedures in place that acknowledges the need for high-skill migration, but does so in a way that focuses on knowledge transfer and efficiency. Courtesy: http://mines.org.zm/tag/skills-training/

Education systems can stifle creative thought.

Here is how to do things differently

By TEVET Newswriter

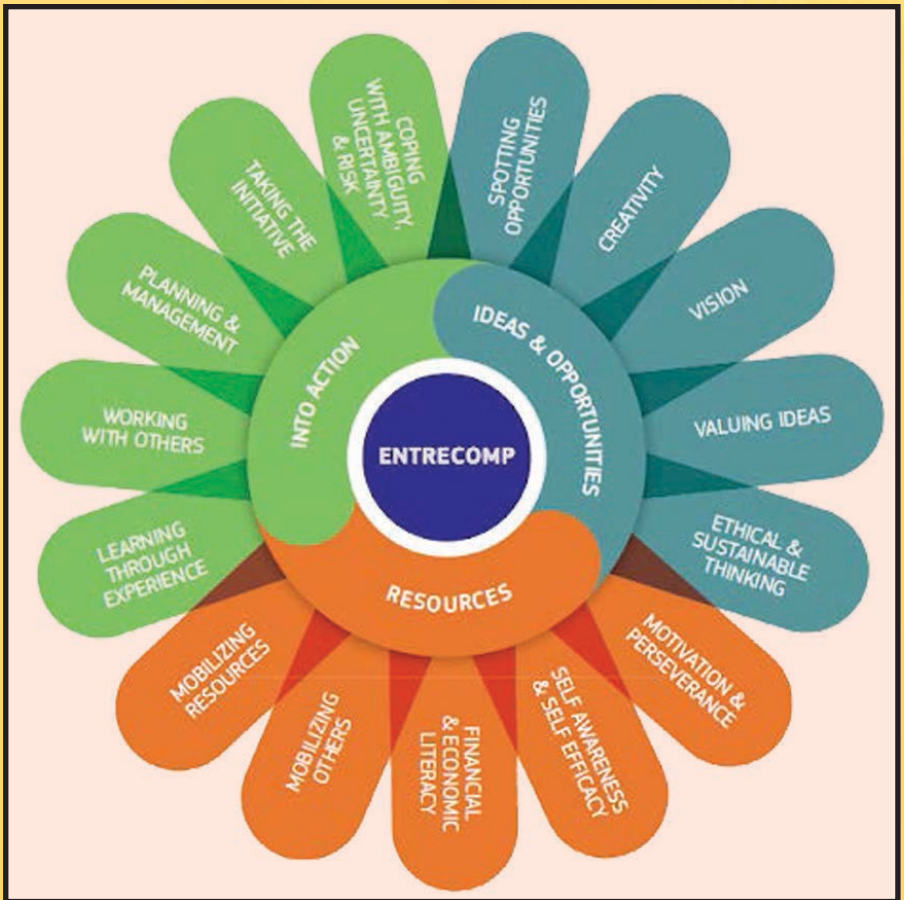
There is a deep mismatch between skills the education systems nurture and the needs of society. In typical Western education systems, results indicated that "since 1990, creative thinking scores have significantly decreased". This is so because traditional education does not sufficiently value innovative and entrepreneurial thinking. Most of the education systems in fact dumbs down the creative genius that learners were born with, according to a test developed by the National Aeronautics and Space Administration (NASA).

Yet creative skills and mindsets are indispensable in a workforce that should be responsive to change and capable of finding new solutions to complex problems. The World Economic Forum has identified social abilities such as coordinating with others and persuasion and complex problem-solving skills, as essential in the knowledge-based workplace of the near future. This is an era of autonomous cars, reusable rockets and artificial intelligence, yet students are still learning in an education system that was setup for factory workers some 200 years ago. What should be done instead is focusing on skills-building to any learner either a learner pursuing compulsory education or in lifelong learning in TVET up for success.

Entrepreneurial education as solution

Entrepreneurial education teaches the important skills of innovative and creative thinking, helping people develop a flexible "growth mindset" that can adapt to new problems. It is not about teaching business skills such as accounting and pitching. But what it means to be entrepreneurial in this context is "what mindset does an entrepreneur have, how does s/he stay motivated, how does s/he solve problems, and get people to see and follow her/his vision?"

These kinds of skills are useful beyond the job market. They give people the tools to be active citizens in a complicated and fast-changing world, and should be a priority in the global education policy. Because entrepreneurial education includes life skills as well as business skills, it prepares people for the world of work and self-employment. It means learners can act upon opportunities and ideas and transform them into value for others, whether financial, cultural, or social.



Summary of entrepreneurial attributes the world today requires. Courtesy: Word Economic Forum.

Despite the importance of this mindset, according to a 2016 Eurydice study, no country has made entrepreneurial learning mainstream within education, no country effectively assesses student learner outcomes, and few countries have embedded experiential learning to develop this mindset and skills.

What would it look like to teach creativity as entrepreneurial skill?

Currently, creativity is often limited to one-off activities such as brainstorming or mind-mapping, rather than a continual emphasis on creativity throughout learning. Research into creative mindset development indicates that a minimum of four to six months' continuous development is required to develop the neural or cognitive capacity and enhanced plasticity [adaptability] required to be creative.

Ideally, this learning should extend across the whole age range of formal and non-formal education. Short-term "stun and run" creativity activities such as brainstorming or mind-mapping have limited value. Yet established entrepreneurship education programmes prioritise experience of the business start-up process. These programmes are not demonstrating positive impact in terms of the student perception of their own entrepreneurial capacity or their interest in following an entrepreneurial career.

There is a focus on the process of business development rather than a specific focus on the creativity needed to continually innovate; while this is valuable, it may miss a significant opportunity to equip individuals with the innovative and creative-thinking capacity they need. Education neuroscience [science that deals with the structure or function of the nervous system and brain] indicates that without a sustained deep-learning approach, the levels of creativity will continue to fall as children progress through formal schooling. Prevalence of competition-based formats linked to start up or business ideas is detrimental to learner development in terms of self-belief, entrepreneurial skills and ethics. Entrepreneurship education has coalesced around an understanding that winning is a goal, yet research shows that this is patently not the case.

The impact of teaching creativity

The impact that sustained teaching of creative and innovative thinking has on many learners can be broken down into various areas:

Creativity as a skill: learning more is ineffective unless you can relate and link it to something else – if we so wish, we can think of the brain's neurons as inherently "sociable" in that they wish to contact other neurons that they already know and are comfortable with. But creativity is about creating new connections; by teaching divergent thinking. By so doing, we enable new connections in unexpected ways.

Creating innovative business models: equips young people with the skills to respond to the business opportunities they identify, equipping them with the competencies to adopt and create innovative business models aligned to their particular product or service. When it is started by them, they are more likely to nurture the idea into actual business sustainably.

Contributing to higher youth employment: provide opportunities to consider important but incidental aspects such as drop-out rates and difficulties relating to what teachers often describe as "difficult to teach pupils"; specifically, it responds to the skills gap identified, within Europe and beyond between the needs of employers and those of school leavers

Creating new markets and new jobs: new jobs and new markets are heavily reliant on innovation and spotting opportunities. By teaching entrepreneurial skills such as spotting opportunities, ethical and sustainable thinking and vision; new ideas for communities and start-ups will emerge, increasing employability of young people and developing the entrepreneurial and innovative skills required by employers.

How could it work?

But what should happen instead? Entrepreneurship education needs to be embedded across subjects in mainstream education for every learner in compulsory education – and for everyone who wishes to build these skills beyond. There are great practices out there spearheaded by educators, business people and policy-makers. It is important to listen to educators who foster entrepreneurial skills and get inspirations successful entrepreneurs' ideas and tools they utilised. Entrepreneurship toolkits are needed to outline how it should be taught, assessed and transplanted into the industry to ensure creation of youth-led start-ups.

Some regional blocks such as the EU, fund projects to actualise entrepreneurship education and sustainability of enterprises outside the learning environment. For example, the EU-funded CRADLE project (Creating Activity-Designed Language-Learning Environments for Entrepreneurship Education) aims to develop a new teaching methodology for primary schools is employed a cross-curricular, activity-based, student-centred, exploratory teaching and learning approach, focusing on the simultaneous development of foreign language and entrepreneurial skills among young pupils. The implementation of the CRADLE methodology starting in primary schools is increasing the benefits of transporting the acquired skills into secondary school and, ultimately, beyond school boundaries into the pre-professional and professional world. Courtesy: https://www.weforum.org/agenda/2018/04/education-systems-can-stifle-creative-thought-here-s-how-to-do-things-differently

Careers for the Future: Jobs for 2020 and Way Beyond

By TEVET Newswriter

Questions are being asked today about top careers for the future and how they will everything change. The other question is on whether it is possible to prepare today for the jobs of tomorrow. Many of people would love to have definitive answers for these questions. But nobody can say for sure what the future holds. The best that can be done is make assumptions based on past and current trends. The assumptions can help people imagine some pretty astonishing possibilities.

One known thing is that change will keep happening. The world will experience social, cultural, economic, environmental, and technological changes. Some of these changes can be foreseen (such as the likely impact of climate change). But many of them cannot be predicted. New challenges will arise without any warning. Some of the unforeseen changes will lead to positive new discoveries that solve long-standing problems.

So predicting the top jobs for the future requires understanding that all kinds of variables will interact in complex and surprising ways. Many of tomorrow's jobs will likely result from today's scientific and technological advances. But most jobs of the future probably do not exist yet, and a lot of them have not even been imagined. In fact, according to one assumption, almost two-thirds of today's kindergarten students will eventually have occupations that do not currently exist.

Of course, many of today's occupations will continue to be part of the future, but they will undergo changes just like everything else. And many occupations will transform into something entirely new—or disappear altogether. It is a lot to think about, let alone visualise. After all, many people have a natural resistance to change and uncertainty. We might feel a little too safe or comfortable with the status quo.

That is why it can pay to explore and imagine career possibilities like the ones listed below. They can reveal new paths forward or suggest ways that you may want to adapt in order to prepare for the future's most interesting or plausible scenarios. Many occupational categories are already changing and overlapping with one another, which is a process that may accelerate. But do not let that overwhelm you. This article will show you several good career options to start considering.

Many kinds of tradespeople and professionals are in high demand today and will probably continue to have great opportunities over the next few decades. Other kinds of workers are doing jobs on the leading edge of technology and cultural change. For them, opportunities are not widespread, but they could be very soon. The following examples represent several existing jobs that may be top careers for the future.

1. Solar Energy Technician

Like wind energy, solar power will continue to be a major part of humanity's transition toward a clean-energy future. The cost of solar energy keeps dropping year after year, so it is becoming much more affordable for businesses and homeowners. In cities all around the world, solar energy technicians are enjoying stable employment in a growing industry that makes a positive difference.

2. Wind Energy Technician

With climate change threatening to severely damage the world as we know it, it will become more important to move to clean energy sources. Reducing carbon and methane emissions means transitioning away from fossil fuel sources like oil, coal, and natural gas. That means wind energy will likely be a big part of the future. It is already an industry that is grown a lot. And it will likely grow a lot more, meaning that skilled technicians will be needed to help with the installation, maintenance, and repair of giant wind turbines.

3. Nurse Practitioner

Because of an aging and longer-living population, the health care system may have trouble keeping up with the growing influx of patients. Many regions could experience severe shortages of doctors. They will need more non-physician health professionals with the ability to diagnose and treat patients with various acute and chronic conditions. Registered nurses who get the right kind of advanced education at the graduate level can become nurse practitioners and help fill that void.

4. Software Developer

Computers, robots, and mobile devices are useless without the well-engineered software that gives life to the sophisticated hardware it runs on. As the Internet grows and machines get smarter and more

connected to us and to each other, the need for talented software developers will expand. Mobile app development, especially, is considered one of the best careers for 2020 and beyond.

5. Physical Therapist

With more seniors in our communities, the need for physical therapy professionals will increase. Many seniors end up requiring some form of physical rehabilitation, pain management, mobility assistance, or therapeutic treatment as they age.

6. Data Analyst

Thanks to computing advances and a cultural shift toward more tracking and measuring, the amount of data that gets collected every year grows by an astonishing amount. Organisations of every type now have the ability to gather so much detailed information that it's becoming more and more difficult for a lot of them to figure out what it all means. They need professionals who can not only collect the data they need, but also spot patterns, identify past and current trends, and forecast future probabilities.

7. Digital Content Specialist

One of the major cultural revolutions that keeps getting more entrenched is the move toward more dynamic, digital, interactive, and on-demand media. Because of digital devices that keep us constantly connected to almost any kind of information or entertainment we want to consume, the need for fresh content that breaks through the noise is never-ending. Organizations in every industry are discovering that generating new digital content is becoming a major key to sustaining their effectiveness. That is why digital content specialists—with all kinds of different job titles and abilities—are increasingly in high demand, especially with the growing popularity of remote work and freelance gigs. To prepare for this type of position, it is smart to get training in areas like Internet marketing, writing, and multimedia and digital arts.

8. Information Security Analyst

As our modern way of life gets more intertwined with computers and dependent on information technology (IT), we all become more vulnerable to cyberattacks. So far, we've been lucky that criminal hackers have not shut down critical infrastructure on a very large scale or for an extended period of time. But that day is probably coming unless we have enough computer security specialists to help the government and essential organizations protect their networks and IT systems. Cybersecurity is a world-wide issue, and the bad guys keep getting more sophisticated in their attacks.

9. Computer Systems Analyst

The reasons for getting an education in computer science will probably continue to multiply as information technology grows more complex and intertwined with everything in our lives. That growing complexity is why more and more organizations will likely need systems analysts going forward. Companies will need help choosing and implementing the best hardware and software, including (potentially) robots and artificially intelligent machines.

10. Biomedical Engineer

Professionals in this field are already starting to revolutionize the health care industry. In fact, biomedical engineering is probably one of the best careers to get into if you want your work to have a positive impact in the years ahead. After all, biomedical engineers are involved in all kinds of cutting-edge research and development. For example, many of them get to design things like sophisticated medical devices, artificial organs, bionic body parts, and biological implants.

11. Mechanical Engineering Specialist

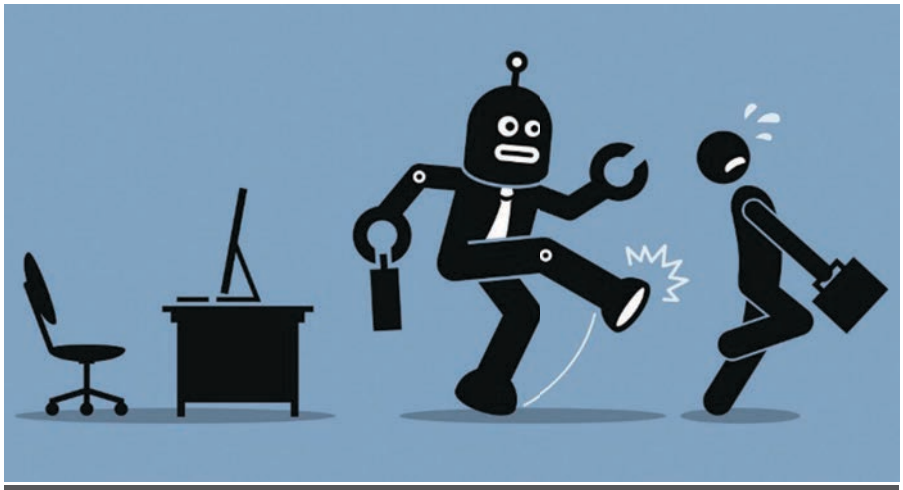
Do you want to help develop some of the most exciting emerging technologies? Increasingly, mechanical engineers and mechanical engineering technicians are involved in the design and testing of things like advanced robots, automation equipment, 3D-printing machines, and clean energy devices.

12. Electronics Engineering Specialist

Like mechanical engineering pros, a lot of people in this field get to help design, test, and evaluate leading-edge technologies. As electronic circuitry and other components get smaller, more complex, and more powerful, it is up to these professionals to figure out how to take advantage of the latest technological advances. They may help develop things like better computers, automated machinery, handheld medical devices and navigation, and communications equipment. Going forward, some of them may even get to work on things like self-driving cars.

13. Digital Rehab Counselor

Do you ever feel overwhelmed by the incredible amount of digital information you consume in a day? Many people do. As more and more of our lives revolve around social media and other online activities, there is a growing awareness that a lot of us are actually addicted to the technology we use. So one of the top jobs of the future may involve helping people "detox" from their over-consumption of digital inputs. People with counseling training will likely be the best-equipped to pursue this type of job.



Future jobs will lead to disappearance of some jobs, realignment of others and creation of news ones. Picture courtesy of https://wtfeconomy.com

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PHOTO FOCUS

R - L: Higher Education Authority CEO, Prof Stephen Simukanga and TEVETA Acting Director General, Cleophas Takaiza sharing notes during the 92nd Agricultural and Commercial Show. The Show was held under the theme: "Sustainable Economic empowerment."

Quality skills in construction are central to improved infrastructure in Zambia. TEVET Strives to develop quality and relevant skills to meet national goals such as those envisaged in construction.

Welding skills offers many business opportunities to create income and jobs.

Government provides financing for female learners in TEVET programmes in line with gender parity.

Skills to work on water reticulation are important to the provision of clean drinking water and fighting diseases like cholera

TEVETA
Technical Education, Vocational and Entrepreneurship Training Authority

TEVETA Mission and Mandate

VISION

A World-class Technical Education, Vocational and Entrepreneurship Training (TEVET) system that drives skills empowerment for sustainable development.

MISSION

To ensure supply of internationally competitive skilled persons through:

I) Regulation
ii) Coordination
iii) Monitoring and
iv) Evaluation of Technical Education, Vocational and Entrepreneurship Training (TEVET) service delivery.

Mandate of TEVETA

The Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) is an institution created under the Technical Education, Vocational and Entrepreneurship Training Act (No. 13 of 1998), read together with the Technical Education, Vocational and Entrepreneurship Training (Amendment) Act No. 11 of 2005. Its general function is to regulate, coordinate and monitor technical education, vocational and entrepreneurship training in consultation with industry, employers, employees and other stakeholders.

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