



International
Labour
Organization

► Digitalising career guidance services

Policy guidance note



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Digitalising career guidance services – Policy guidance note

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► Contents

1. Rationale and justification	2
Why this note?	2
A powerful role for digital career guidance	2
...but many challenges in doing it correctly	2
ILO's approach	3
Key questions to consider	3
2. Scope and Definitions	3
Career guidance	3
Digital and distance tools in career guidance	4
3. Practical guidance, advice and tips	5
System level concerns	5
Targeting specific groups and needs	6
Digital and distance tools supporting youth transitioning into the labour market	6
Digital and distance tools supporting unemployed	7
Digital and distance tools supporting adults learning or wanting to learn	7
Transversal issues	8
Tailored service	8
Labour market information and intelligence	9
Interoperability and use of personal data	9
Staff training needs	10
Equitable access	10
Context adequacy and indigenisation	10
The emerging present and the near future	11
Artificial intelligence (AI)	11
Blockchain technology	12
Gamification simulations and virtual reality	12
Key ILO resources	13
Other resources	13

▶ 1. Rationale and justification

Why this note?

This note has been developed for decision makers, service managers and skills specialists who make or support decisions to invest in digitalising career guidance services.

There is a need to rationalise decisions on investment in digital tools for career guidance so that they are useful and address the needs of beneficiaries and clients. Their choice and design should be thoughtful, leading to well integrated and coherent solutions rather than ad hoc investment. An approach that ensures that technology is 'fit-for-purpose' for specific and diverse needs, contexts and publics is required with the aim of improving the accessibility, quality and relevance of career guidance services. This note can assist in the identification of the issues to be considered when investing in digital technologies.

This policy guidance note will be accompanied by a collection of exemplary practices, on its publication webpage.

A powerful role for digital career guidance

Recent communication technologies have expanded possibilities in career guidance services. The COVID-19 pandemic, leading to the implementation of health restrictions and social distancing across the world, has further increased the relevance of online and distance services, which have, in many cases, quickly replaced face-to-face delivery.

In particular, such technologies

- ▶ have the potential to systematically embedded or coordinate career guidance support in skills development, lifelong learning and employability measures in a seamless and user friendly way.
- ▶ hold rich potential for development in terms of their ability to gather users' data, track and filter content and establish collaborative online platforms engaging employers, practitioners and beneficiaries.
- ▶ can support face-to-face interaction in work among individuals and groups, and they can enable distance activities online, including real-time interaction.
- ▶ are increasingly important in supporting learning and career choices, job searches and job applications.
- ▶ have the potential to increase access to career development services for vulnerable groups, including forcibly displaced people, who often face mobility restrictions or are in remote locations.
- ▶ allow for self-directed processes access by exploring self-assessment tools and relevant career information.
- ▶ can facilitate collaboration across different services as well as referrals of clients.

...but many challenges in doing it correctly

- ▶ While the offer of digital and distance services, such as e-guidance, career information portals, personal portfolios and matching platforms, is steadily growing, their scope is not always clear, and their level of quality is not always as high as users might like.
- ▶ Careers services to youth and adults are in many cases weakly prepared for digital transition, having difficulties in adapting methodologies, developing digital skills and positive attitudes towards technology, as well as accessing equipment and digital platforms.
- ▶ Best practices frequently are not widely known and do not have the level of exposure that they should.
- ▶ In addition, the current crisis has demonstrated that digital services do not necessarily increase access to career development support in an equal manner. Populations in geographically remote areas, individuals with low literacy and digital skills, people at a socioeconomic disadvantage and other vulnerable groups have been frequently unable to make use of existing services, often due to the absence of a comprehensive strategy for service implementation.

ILO's approach

The International Labour Organisation ILO has a strong mandate and has displayed a consistent concern for the promotion of national career guidance systems for learners, workers and vulnerable groups. Access to career development support is to be enhanced in accordance what is stipulated by the Human Resources Development Convention (C 142) that explicitly encourages coordinating the development of training and career guidance systems and progressive convergence towards universal access, as well reflecting the services stipulated by the Employment Service Convention, 1948 (C 88). This access is further encouraged as a lifelong process by the Human Resources Development Recommendation (R 195). Career guidance is also key to enable a human-centered approach to the future of work as defined in ILO's Centenary Declaration, by promoting individual self-fulfilment, responsiveness of training to labour market needs, enhancing workers' capacity to make choices and seize opportunities, support transitions, helping achieve gender equality and enabling entrepreneurship. ILO supports countries' efforts in digitalising career guidance services, ensuring that they serve the instrumental purpose of access to decent work, livelihoods and accomplished careers.

Key questions to consider

In order to ensure appropriate decisions in investment in digital career guidance tools, there are a number of questions that should be considered:

1. What are the effective needs of target groups?
2. What are the most adequate functionalities to address target groups' needs and implementation contexts characteristics?
3. Does the tool ensure that the most vulnerable have access to it and that accessible offline alternatives are available?
4. Is the purpose of the tool well defined and clearly explained to the user?
5. Is the tool appropriate for autonomous usage by clients?
6. Is the tool appropriate for small group use?
7. Is the tool relevant and useful for guidance practitioner practice?
8. Do target users have the necessary skills to use the tool?
9. Is there on-site professional assistance available for effective tool use?
10. Is there a commitment and adequate infrastructures and resources to implement, maintain and upgrade the tool?
11. What is the digital ecosystem in which the tools will be implemented and is the tool interoperable with other relevant tools and/or services?
12. Is there adequate monitoring and evaluation of the tool?
13. Were all relevant stakeholders engaged in the design and implementation of the tool?
14. Has the tool been adequately promoted in and integrated into all relevant services and policy initiatives?
15. Have data protection, ethical and security concerns been considered?

► 2. Scope and Definitions

Career guidance

Career guidance describes the services intended to support individuals of any age to manage their careers and to make the educational, training and occupational choices that are meaningful for them. Career guidance helps people to reflect on their ambitions, interests, qualifications, skills and talents – and to relate this knowledge about who they are to who they might become in life and work. Individuals, families and communities differ in the extent to which they are able to visualise and plan their future. It is an important role of career guidance to address such differences and inequalities.

► [Inter-Agency Group Definition](#) (Cedefop et al., 2021)

Career guidance encompasses a number of activities which provide support to individuals in achieving successful and fulfilling careers. It is key for success in learning for both young pupils and adults who wish to upskill or retrain. It enables effective career transitions for individuals in their early, mid and late careers. It empowers vulnerable individuals to plan their livelihoods, exercise entrepreneurial interests and develop sustainable businesses. It is an important component in recognition of prior learning, playing a fundamental role in bridging informal and non-formal learning with successful acquisition of qualifications.

People can have support at three broad levels:

- ▶ Self-help: Some people can do it on their own. They can get by on self-help resources.
- ▶ Brief assistance, non-specialist support, or group support: Some people need some assistance to get started and a source of advice in case they get stuck, but in most cases, they can work it out themselves without lots of specialist advice or guidance. They can often get support from each other in a group, for example, or with brief assistance from staff.
- ▶ Specialist support, one-to-one: Some people need a lot of support. They have significant difficulties, are indecisive (not just undecided), or have extra social, cultural or economic disadvantages to overcome. They may need specialist support to use the resources that meet their needs. They may need one-to-one attention.

Correspondingly resources, too, exist at three broad levels:

- ▶ Self-help resources. Resources which include self-assessment and career information requiring little or no assistance from staff are intended for individual self-help.
- ▶ Resources that are most effective when used with some support or practitioner-guided advice. Some more complex or interactive resources can be used on a self-help basis, but some advice on how to use them, or some sharing of experience of using them with others, can make the experience much richer and more valuable. Work experience and taster courses also fall into this category.
- ▶ Resources that require specialist training or support to use effectively. Psychometric tests of ability are a good example here – it is part of the ethics of test use that they are only made available when someone trained in their use is on hand to provide feedback on results. Someone trained in their use is readily available to assist with interpretation.

Digital and distance tools in career guidance

In career guidance, digital and distance tools are most commonly used to deliver information, to automate interactions and to provide channels for communication. Using information and communication technologies (ICT) to deliver information eliminates time and space constraints and increases visibility and access to information. Using multimedia and interactive resources (e.g. picture, audio, video), ICT enables practitioners to deliver a media-rich experience and more personalized support to those who need it by automating routine interactions—for instance, games and simulations to support interactive exploration of the worlds of learning and work. Finally, ICT-based communication channels help to increase individual access to professional support.

Digital and distance tools for career development can include:

- ▶ Tools for evaluating attitudes and skills relating to specific career pathways.
- ▶ Online career assessments.
- ▶ Websites to explore occupational, educational, training, and employment information, including interviews with professionals.
- ▶ Databases for occupational educational, training, and employment opportunities.
- ▶ Tools to maintain a CV and a career portfolio (educational, training, employment, and volunteer work).
- ▶ Instructions in career decision making.
- ▶ Communication with service providers;
- ▶ and communication with other persons making career decisions.

▶ 3. Practical guidance, advice and tips

System level concerns

Digital career guidance services exist within a wider policy, e-governance and service context, as well as in a wider digital ecosystem. Before deciding on what kind of tool to invest in, it is important to consider a number of aspects that may affect the overall relevance and usability of the tool:

- ▶ Ensure the commitment of key ministries departments, social partners, practitioner groups and relevant social society groups facilitate the development and implementation of the tool(s).
- ▶ Not all tools work for everyone. Diagnose existing needs and prioritise target groups to be supported by your tool in consultation with key stakeholders, including relevant ministries, social partners, practitioners and representatives of client groups themselves. Do not neglect the opinion of practitioners and clients/beneficiaries – they frequently transmit the most important insights!
- ▶ Assess service preparedness to integrate ICT tools. Staff and management skills and attitudes should be considered, as well as existing infrastructure.
- ▶ Ensure that the tool is well integrated within the framework of the ministries and services that are responsible to provide support to the designated target groups (e.g. support to students, unemployed, persons with disabilities, migrants) producing relevant outputs and contributing to key target outcomes.
- ▶ Check if the tools can facilitate points of contact between different services, by allowing for integration between systems, frameworks and the possibility of interfacing with other digital services. The development of formal or informal individual referrals is frequently used for this purpose, for example using individual portfolios or logbooks.
- ▶ Make use of/agree common standards for service provision, skills, qualifications, ethics and data usage, to facilitate contacts across services.
- ▶ To the extent possible and as relevant link the tool to official websites and systems linked to qualification systems, certification, social protection and employment to enable seamless integration of services provided to citizens. If there is an e-government framework, try to integrate the tool in its context.
- ▶ Ensure that the necessary infrastructure and access to equipment exists in the targeted geographical areas and intervention contexts. Internet accessibility, access to computers, tablets and mobile phones are fundamental. Public-private partnerships can be established to facilitate infrastructure development and access to equipment.
- ▶ Make sure you correctly estimate and allocate the necessary financial, technical, physical and human resources to implement the tool. Digital tools are often presented as human resource saving, but their maintenance and correct application frequently implies careful staffing.
- ▶ Ensure that sufficient resources and support are committed to the continuous improvement of the tools. Technology, policies and priorities changes and innovations may need to be introduced.
- ▶ Connect your tool to existing reliable labour market information and intelligence hubs in your country to feed the career information provided to the users.

Setting a correct pace of change for the digitalisation of previously established services is key. Increased connectivity between different services may also require an effort to generate shared tools. Allocate sufficient time to staff training, methodological and administrative adaptation, coordination of strategies, and stakeholder mobilisation.

Targeting specific groups and needs

It is important to make sure that each digital tool selection is made with a clear purpose in mind. Although some tools may end up being used for multiple tasks, a specific goal is key to maximizing the tool's value. In this section we provide some important examples of how to address key goals for distinct groups.

Digital and distance tools supporting youth transitioning into the labour market

Career development for youth transitioning into the labour market refers to a range of activities and tools that assist young people in knowing and understanding about educational pathways and in linking these to further vocational learning and work opportunities, and to make successful transitions to those opportunities.

- ▶ You can support youth transitioning by increasing young people opportunities to access to reliable and up-to-date or real-time labour market information and data on education, training and labour market online.
- ▶ Make sure that the information is clear, concise, and informative to the intended audience and can be used through different technologies in different settings (e.g. mobile apps). Furthermore make sure that it is attractive and interesting, so that it motivates youth to continue using it and exploring career options.
- ▶ Provide minimum training about available sources and its interpretation to teachers and staff of career services.
- ▶ You can use automated interactions to provide youth with opportunities to learn about work and to stimulate exploration on job markets stimulate exploration on jobs, job markets supporting option knowledge and awareness building.
- ▶ Ensure that you reach out to youth non-enrolled in formal education and training and working in informal sectors by including information related to access to recognition and validation of skills and entrepreneurial support.
- ▶ In automated services for youth make sure that that the program is appropriate for individual use and the purpose of the program is well defined and clearly explained to the user and designed with the end-users and other relevant stakeholders.
- ▶ You can provide online assistance (e.g. on-screen help, chatbots, human support) , synchronous or a-synchronous, and support youth with their career development. When implementing this type on services, make sure that the persons providing support have been trained to provide online guidance.
- ▶ Implement platforms and tools that can be embedded in relevant youth contexts, such as career education at school/IVET, career guidance for youth and NGO youth work. It is better if these platforms include support to teachers and practitioners in the form of pedagogical tools and support to curricular and non-curricular activities (e.g. job fairs, visits, work experience periods).

Be careful with the content and experiences you promote for youth. A lot of initiatives create false expectations and training offered online may not be adequate for the acquisition of relevant skills and qualifications. Access to professional practitioner support may be more necessary than you think!

▶ Practices of interest:

[MyFuture](#), One-stop-shop to support Australian youth in career planning and development.

Digital and distance tools supporting unemployed

Career development for unemployed adults refers to a wide range of activities that can help unemployed job-seekers to improve their employability skills and reintegrate into the labour market. These activities include assessment, profiling or screening, assistance in managing job changes, coaching in career management and social skills, job-brokering and advocacy, job-search assistance activities,

counselling, professional networking, provision of labour market information, and, if relevant, use of psychometric tests.

- ▶ You can support unemployed by providing access to reliable and up-to-date or real-time labour market information.
- ▶ Make sure that such information covers standard occupational categories, duties, abilities, skills, working conditions, equipment, earnings, employment, outlook, training, and methods of entry.
- ▶ Make sure that the tool supports informed decision making by helping individuals generate ideas, obtain necessary information, and evaluate alternative in responsible and personally relevant ways.
- ▶ Offer information on occupations and learning opportunities, combined with personal skills and attitudes assessment where users may employ the tools to
 - update their skills, knowledge, and understanding in their current occupational area;
 - reflect on their current competences in order to determine the type of jobs they could do immediately or in the future;
 - identify skills that need further development and formulate a personal development plan.
- ▶ Make sure that the purpose of the tool is well defined and clearly explained to the user. Make also sure that such program is demonstrable effective with the intended audience, including people of carrying abilities and experiences.
- ▶ Provide job search assistance with tools that allow job seekers to find jobs and interact directly with employers, connects job seekers with recruiters and gain access to job listings made by roster of employers (e.g. matching platforms).
- ▶ Make sure that such systems include possibility to create personal portfolios detailing skills, qualification, experiences and aspirations; record the achievements, experiences of learning and communicating them to others and support recognition and validation of prior formal and informal learning
- ▶ You can also use automated competence-based matching to provide job seekers with a seamless online service platform that combines real-time job vacancies and individuals' skills information via big data extraction or self-assessment tools.
- ▶ When integrating online assistance, make sure individuals have opportunity to access the services via various virtual communication channels e.g. chat, telephone, text message or e-mail.
- ▶ Make sure that those who are providing the assistance have received appropriate training on providing online assistance.

Adults in mid-career situations, whether unemployed or not, frequently face complex situations and require one-on-one work to clarify their options and develop self-confidence and motivation. Remember to provide the opportunity to escalate the support with access with alternative channels for provision, such as the opportunity to book an online or face-to-face counselling session.

▶ **Practices of interest:**

Chatbot to support in search for job vacancies or finding other suitable information, advice and guidance sources in UK: <https://careerchat.uk/>.

Digital and distance tools supporting adults learning or wanting to learn

Career development in adult learning refers to a range of activities and products that enable adults to participate and engage with learning and, where appropriate, to progress to qualifications and further learning and work transitions. It includes processes for the identification and validation of non-formal and informal learning.

- ▶ You can support adults learning or wanting to learn by providing centralised information on training opportunities in one's region or country.
- ▶ Offer personalised recommendations based on user inputs such as expressed preferences or interest or results of self-assessment of skills needs.

- ▶ Make sure that besides providing information on education and training and programmes, you provide indicators of skills demand/supply so that users can identify the occupations or sectors they are interested in, identifying programmes available to acquire the skills needed to work in those sectors or occupations.
- ▶ Make sure that you provide information about how much a certain education or training programme costs and available financial incentives (scholarships, subsidies) to reduce the cost.
- ▶ You can offer skills assessment tools that allow users to identify their abilities, skills needs, and job preferences, provide exploratory activities to strengthen user's self-management career development skills, such as questionnaires, self-assessment and reflection exercises.
- ▶ Make sure that such tool is appropriate to individual use and in using assessment instruments, those instrument conform to accepted standards of validity and reliability.
- ▶ You can also provide online assistance, synchronous or a-synchronous, to allow adults to ask questions and receive assistance interpreting training or labour market information.
- ▶ When integrating online assistance, make sure individuals have opportunity to access the services via various virtual communication channels e.g. chat, telephone, text message or e-mail.
- ▶ Make sure that those who are providing the assistance have received appropriate training on providing online assistance.
- ▶ If developing a tool to support enterprise based learning and internal mobility/redeployment you can develop a suite of tools that provide i) the possibility of self-assessment of skills, aspirations and experience ii) a mapping of the results against in-house job descriptions, identifying the gap between self-declared skills and required skills and iii) suggest a learning pathway to develop them.
- ▶ **Practices of interest:**
 - National directory of vocational education and training to support adults in finding the training that best suits their needs in Australia: <https://www.myskills.gov.au/>
 - National one-stop portal assists Singaporeans to make informed learning choice, become more aware of their skills and upskill themselves to find jobs: <https://www.myskillsfuture.gov.sg/>
 - Atlas of emerging jobs anticipates future skills needs in Russia to assists users in making their choice of occupation and discovering the route to it: <https://atlas100.ru/en/>
 - eGuidance to provide individual and personal guidance to all citizens, via various virtual communication channels including focus on adult training and education in Denmark: <https://www.voksenuddannelse.dk/>

Transversal issues

There are a number of questions that you may ask when defining any type of digital service and that will affect its overall quality and impact. Below we focus on some of the key issues.

Tailored service

Services should be tailored to the users, to the extent possible, to meet their specific needs. Individuals have different levels of career readiness and distinct literacy levels (language, numeric and digital). To increase the level of individualisation of service, you can:

- ▶ Offer dedicated and different sets of tools and information for different user groups that have been typified in accordance with a diagnosis of needs.
- ▶ Integrate exercises that allow users to reflect on their level of readiness to make career decisions and access the most adequate level of support and delivery mode.
- ▶ Integrate an automated screening tools that may integrate skills and preference assessments and other profiling characteristics.
- ▶ Provide access to several delivery channels including online chat, telephone, email or forums to accommodate different needs and literacy levels.
- ▶ Allow users to escalate the type of support they need by providing access to practitioners either remotely or physically.

Remember that screening should be used to improve the service, not exclude users!

Labour market information and intelligence

Labour market information includes information on general employment trends, data on the structure of the labour market, information about the way labour market functions, the interaction between the labour demand and supply, data on regional and local labour market variations, data focusing on equality and diversity as well as information on progressing routes. Generally the term “labour market information” in career guidance is labour market intelligence: an interpretation of this information, a repackaging of graphs and statistics to better serve the end-user to make educational, training and occupational choices that are meaningful for them. Important aspects to remember include:

- ▶ When making use of data make sure that it’s reliable, accurate and easy to update.
- ▶ Labour market information should also be relevant for the targeted users and presented in an easy to use, accessible and appealing way. Make use of simple language and use easy to interpret visual supports and easy to use data visualisation tools.
- ▶ Be impartial in the way you present the information. All relevant information should be presented in line with users’ interests, avoiding discrimination and bias by providers’ interests.
- ▶ Try to integrate forward looking information, based on skills forecasts or consultations with experts.
- ▶ Provide access to trained practitioner support when presenting data and information. Many users have difficulties in interpreting and using the information provided.
- ▶ Remember that the most important information on skills, occupations, vacancies/workplaces and training offer is local in nature. Engage with local stakeholders to feed the information provided (especially social partners and training providers) and make them part of the information production process immediately at planning stages.
- ▶ Use big data and online vacancy data but be careful with its quality. In many countries, this information covers a small share of the labour market and may provide inaccurate information regarding job requirements and career pathways. Analyse these aspects with the support of experts before deciding on how to use it.
- ▶ **Practices of interest:**
 - Labour Market Information Council (LMiC) in Canada: <https://lmic-cimt.ca>
 - LMIforAll in UK: <http://lmiforall.org.uk>

Interoperability and use of personal data

Tools are more useful and powerful if they allow for better coordination and communication across services and enhance seamless integrated support to individuals.

- ▶ Review the ability of different career development systems and applications to access, exchange, integrate and cooperatively use data in a coordinated manner through the use of shared application interfaces and standards, within and across organisational boundaries in order to advance the effective career development services for individuals and communities
- ▶ If your tool produces, stores and can share information about users (e.g. personal portfolios) remember that it needs to be in accordance with local data protection rules and regulations
- ▶ There are ways to tailor how personal information is handled to ensure that information sharing across services does not violate existing regulations, including the creation of shared information storage and anonymisation of selected data (e.g. replacing names with codes)
- ▶ As a general principle try to ensure that users own their personal information, can decide on how it’s used and provide tools for them to tailor it for specific uses (e.g. application processes) and introduce data protection disclaimers
- ▶ Explore the possibilities of blockchain technology to support individual ownership of personal data and system and platform interoperability.

Remember that sometimes less is more: providing a Word file to a user can be more useful than an automatically generated online form (e.g. in html).

Staff training needs

Development of digital services is more successful if backed by a professionalised careers service and digitalisation of existing services requires preparation of staff.

- ▶ Deliver training on digital skills and provision of digital services to career guidance professionals, through initial, in-service training, refresher training, and training in connection with digital and distance services.
- ▶ Training should accommodate contents on existing technologies, effects of digital media over methodologies, response times, interaction strategies/communication and the ethics of service.
- ▶ Successful digitalisation of services will also require adjustments in management and practitioner attitudes. Make sure you create opportunities to reflect on how digitalisation affects service provision.
- ▶ Ensure that training and support is available through different channels, including face-to-face, blended and online. Support is especially important if training is self-managed.
- ▶ Training modules for management and practitioners: <https://www.cedefop.europa.eu/en/tools/resources-guidance/training-modules/objectives-target-groups>

Equitable access

Not only people have different levels of digital competence, as the ones in the lower levels also tend to have more complex needs and can be the most vulnerable. It follows that digital platforms need to offer easy to access contents and, more importantly, alternatives in accessing information and support.

- ▶ Make sure that the information and key tool functionalities are accessible via simple devices such as mobile phones, simple personal computers and that relevant information can also be used offline. Preferably offer also information in printed support.
- ▶ Particular attention needs to be paid to the needs, preferences and circumstances of disadvantaged or hard-to-reach groups.
- ▶ In general use simple language on internet websites and phone apps and to interpret visual representations and provide access to alternative delivery channels to include individuals with low literacy or digital literacy skills.
- ▶ To the extent possible provide support in ethnic minority group and representative migrant group languages.
- ▶ Provide accessible tools for persons with disabilities such as sight or hearing impairments.
- ▶ Develop a gender sensitive approach to support. In many contexts women face increased difficulties in accessing learning and labour markets and dedicated information and advice should be provided through the tools.
- ▶ Tailor information and support to populations affected by emergency situations.
- ▶ Disseminate the tool targeting the right groups and individuals by integrating it in relevant contexts, initiatives, events and by developing awareness raising campaigns. Integrating tools in the training of practitioners and teachers is one of the most effective ways of ensuring their dissemination. Make sure that relevant public websites provide a link to the tool you are promoting.

Context adequacy and indigenisation

Digital tools need to be adequate to socioeconomic and cultural contexts. For example, some opportunities may emerge in non-formal sectors and constitute viable paths to careers. Many digital tools for career development support that provide assessments information and advice were developed in Western countries, based in those country contexts and on theories that reflect Western values and visions. Many researchers recommend that tools are “indigenised”, reflecting local opportunity structures, understandings of work and career and are equally developed by local practitioners and researchers.

- Develop the tools in cooperation with local experts and practitioners to make sure that they reflect local opportunity structures, regulatory realities and are culturally sensitive.
- Take particular care with the definition of assessment tools that may reflect career constructs that are displaced from local values and orientations.

Generally be careful with importing and directly applying tools developed in other countries for different contexts socioeconomic and cultural contexts. Consult with local stakeholders extensively beforehand to guarantee successful adaptation.

The emerging present and the near future

Several new technological innovations are influencing the way digital career development support is evolving and should be taken into account for current decisions. Here you will find some tips on some of the most important trends.

Artificial intelligence (AI)

The intelligence demonstrated by machines is known as Artificial Intelligence. It is the simulation of natural intelligence in machines that are programmed to learn and mimic the actions, such as problem-solving and decision-making capabilities of humans. AI is used in different domains to give insights into user behaviour and give recommendations based on the data. Another example are the artificial intelligence Chabots that reproduce natural interview dynamics with practitioners to provide tailored information and advice. While AI holds enormous potential, some aspects should be taken into account:

- Some tools display good results in some contexts but not in other due to the quality of the underlying data. Automated solutions that provide career advice and information based on data mining require that the base data is reliable, has enough coverage and is well categorised and labelled (e.g. vacancy information).
- Make sure that underlying data has also cleared anti-robot measures, copyright and privacy issues.
- To create adaptive tools that reflect users behaviours, machine learning solutions are used that rely on generalisations and patterns. There can be bias in generalisations that leads to inadequate responses and discrimination (e.g. gender, ethnic and racial). Also pattern recognition may not be easily generalizable and transferable across environments, so AI's may need to be “trained” in the context of application. Make sure you are well advised on these issues.
- Algorithms used to devise AI's are frequently based on rational decision theory, that attempts to maximise the utility of career decisions in relation to precise outcomes. Nevertheless, what reality demonstrates is that individual behaviour is based on more variables and that the most significant outcome for an individual does not necessarily correspond to the optimal (also known as “satisficing”).

Current experiences indicate that AI supported tools are complementary to practitioner based support, rather than its replacement and should be used on that basis.

Blockchain technology

Blockchain is the technology that creates a digital database containing information that can be simultaneously used and shared within a large decentralised, publicly accessible network. The technology verifies each transaction and records it in an encrypted ledger shared by all the computers in the network. This technology holds enormous potential in promoting information storage, organisation and sharing, while at the same time allowing for user ownership and control over her/his personal information (e.g. using a personal portfolio). Integration of blockchain can seamlessly link a career guidance service to a skills validation process followed by training offering microcredentials/digital certificates, guaranteeing the identity of the user and the reliability of the providers and outputs. While this is a very extensive discussion, there are some important aspects that may be considered:

- ▶ Blockchain can be used to promote self-sovereign systems, where individuals have full control and ownership of certification processes and personal information relating to their career pathways, through personal portfolios.
- ▶ Consider the introduction of blockchain technology from a strategic standpoint as an enabler of decentralised governance solutions and engage a multiplicity of stakeholders link to identification of emerging skills need, certification, training and provision and career development support.
- ▶ Consider the possibilities of discussing the potential of blockchain with neighbouring countries to promote mobility of learners and workers as well as its application in the mobility of humanitarian migrants.

Gamification simulations and virtual reality

Gamification is the process of taking an already existing non-game item (e.g., website, application, online community) and integrating game mechanisms into it, in order to motivate and enhance participation and engagement. Gamification is beneficial to engage learning as it provides attractive ways to learning and to stimulate exploration on jobs, job markets supporting option knowledge and awareness building.

- ▶ Consider integrating games that develop career management skills in curricular and non-curricular activities directed at youth.
- ▶ Games oriented to career development can be very varied, from simple quizzes, challenging puzzles, to complex role-playing games.
- ▶ Work with experts to integrate career learning with game dynamics and define structured gaming experiences with associated career learning outcomes.
- ▶ Gamification provides a safe environment for relaxed learning and experimentation, also potentially providing pedagogical inception to work simulations.

Simulations, enhancement and virtual reality are powerful tools that are progressively used to simulate working environments and can provide an important support to clarify career decisions.

- ▶ You can develop low cost simulations of emerging professional roles in early careers education, usable on most PCs to raise awareness about the wide span of occupations that exist.
- ▶ Virtual reality (VR) and enhanced reality (ER) can be used as a device during job fairs, in classrooms and careers centres to present work realities (and progressively online), develop core skills, to simulate job interviews and complement work experience periods. They have a high potential due to the immersive experiences they can provide in employability promotion and pedagogical settings.

The cost of VR equipment and the necessary digital equipment to adequately support it is still high for individuals, schools and TVET institutes. A possible way to enhance access to work simulations is to develop mobile virtual career centres (e.g. using large trucks/buses).

▶ Practices of interest:

- Game simulating different graduate career paths to help them make better choices about their future in UK: <https://www.thewayup.co.uk/the-way-up-game>
- Minecraft based game to develop players future career skills linked to the curriculum in Wales: <https://education.minecraft.net/lessons/careerscraft>

► Key ILO resources

- ILO (2006). Career Guidance: A resource handbook for low and middle-income countries. http://www.ilo.org/skills/pubs/WCMS_118211/lang--en/index.htm
- ILO (2013). Surfing the labour market: Job search skills for young people. http://www.ilo.org/employment/Whatwedo/Instructionmaterials/WCMS_231722/lang--en/index.htm
- ILO (2015). Job search club: Manual for facilitators. http://www.ilo.org/africa/information-resources/publications/WCMS_711863/lang--en/index.htm
- ILO (2017). Practitioners' guides on employment service centres: Providing effective counselling services (Volume 3). https://ilo.org/asia/publications/WCMS_549679/lang--en/index.htm
- ILO (2021). Developing national career development support systems: Pathways to enhance lifelong career guidance, career education and career development support for workers. https://www.ilo.org/skills/pubs/WCMS_800036/lang--en/index.htm
- ILO (2021). Global framework on core skills for life and work in the 21st century. https://www.ilo.org/skills/pubs/WCMS_813222/lang--en/index.htm
- ILO (2021) How to choose my future profession? A step-by-step guide for job seekers. https://www.ilo.org/emppolicy/pubs/WCMS_800646/lang--en/index.htm
- ILO (2021). COVID-19: Public employment services and labour market policy responses. https://www.ilo.org/employment/Whatwedo/Publications/policy-briefs/WCMS_753404/lang--en/index.htm

► Other resources

- Cedefop, European Commission, ETF, ILO, OECD, UNESCO (2021). Investing in career guidance. IAG Guidance booklet. https://www.ilo.org/skills/pubs/WCMS_762841/lang--en/index.htm
- Cedefop, Handbook for transferability of ICT and LMI based practices. <https://www.cedefop.europa.eu/en/toolkits/resources-guidance/handbook-transferability/welcome>
- ELGPN Tools No. 6: Guidelines for Policies and Systems Development for Lifelong Guidance. <http://www.elgpn.eu/publications/elgpn-tools-no-6-guidelines-for-policies-and-systems-development-for-lifelong-guidance>
- ILO (2021). COVID-19: Public employment services and labour market policy responses. https://www.ilo.org/employment/Whatwedo/Publications/policy-briefs/WCMS_753404/lang--en/index.htm

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