

Guide to deliver capacity- building using

DIGITAL TOOLS





Guide to deliver capacity-building using digital tools

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United Nations Human Settlements Programme (UN-Habitat)
P.O. Box 30030 00100 Nairobi GPO KENYA
www.unhabitat.org

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Acknowledgements

Project supervisor: Raphaëlle Vignol
Principal author: Vidar Vasko
Contributors: Dyfed Aubrey, Bernhard Barth, Beatriz González Mendoza, Matthew Nelms, Trang Nguyen, Katja Schaefer, Raphaëlle Vignol, Mariana Lessa Voita, Liyana Yusof
Editing: Matthew Nelms, Vidar Vasko
Design and layout: Austin Ogola

CONTENTS

01

- 1. Introduction to digital capacity-building7**
 - Context and opportunities8**
 - Defining digital capacity-building.....9**
 - Opportunities and challenges of digital capacity-building10**
 - Opportunities10
 - Challenges.....13
 - Digital capacity-building at the United Nations14**
 - UNSSC15
 - UNITAR15
 - ITCILO15
 - Other UN agencies15
 - Main approaches to digital capacity-building: an overview16**
 - Three levels of learning16
 - Synchronous versus asynchronous learning.....16
 - Flipped classroom17
 - Blended and hybrid learning17
 - On-the-job training18
 - Interactivity18
 - Massive Open Online Courses (MOOC)19
 - Adaptive learning19
 - Social and peer learning.....19
 - Social media for learning.....19
 - Microlearning20
 - Gamification20
 - Virtual Reality.....21
 - When is digital capacity-building useful?21**

2. Designing digital capacity-building	22
Digital capacity-building pitfalls to avoid	22
Assessing needs	24
Defining learning objectives	26
Designing high-quality digital capacity-building	26
Follow the Principles for Digital Development	26
Apply instructional design.....	27
Use design thinking methods	27
Ensure accessibility	27
Select appropriate tools	28
Organizing a virtual workshop.....	29
Developing a self-paced online course	33
Example modules of two self-paced online courses.....	35
Example 1: New Urban Agenda crash course.....	36
Example 2: e-Learning Ecologies course.....	36
Navigating through different technical tools.....	37
Tools for asynchronous learning activities	37
<i>Learning Management System (LMS)</i>	37
<i>Course authoring software</i>	37
<i>Videos and animations</i>	37
<i>Simplified video making</i>	39
<i>Graphics, images and data visualization</i>	39
<i>Text-message courses</i>	39
<i>Screen recording</i>	39
Tools for synchronous learning activities	40
<i>Video conferencing</i>	40
<i>Surveys and live polls</i>	40
<i>Whiteboarding</i>	40
Useful skills and human resources.....	41
Evaluating digital capacity-building	43
Kirkpatrick's training evaluation model.....	43
Data-driven learning design.....	43
3. References.....	44
4. Annex: Theoretical frameworks	46
An e-Learning Theoretical Framework	47
Seven affordances of e-learning.....	47

01

INTRODUCTION TO

DIGITAL

CAPACITY-

BUILDING

Although technology has been progressively transforming education worldwide for a number of years, the onset of the COVID-19 pandemic has accelerated this transformation.

Innovative tools enable the delivery of completely new learning experiences. Online learning in particular allows anyone with internet access to gain knowledge and skills outside of the typical classroom or meeting room setting.

During the COVID-19 pandemic, physical distancing dramatically increased the need to take educational efforts online. Many local government officials, students, NGO workers and others that are served by UN-Habitat's capacity-building efforts have since begun working from home. With the prospect of a "new normal" rather than a "back to normal", embracing a sustained adoption of digital tools and remote work, there is a demand-driven urgency to deliver high-quality digital capacity-building.

Technology can help to deliver training in a user-friendly, interactive and visually stimulating manner. Remote learning enabled by digital technologies can reduce costs associated with on-site training, transportation and accommodation, while enabling capacity-building activities to impact a wider audience. This helps to improve inclusivity by reaching individuals who may otherwise not be able to participate.

With this in mind, UN-Habitat's Capacity Development and Training Unit initiated the production of this guide. It aims to support an increased integration of digital tools into the delivery of capacity-building activities and programmes.



Digital capacity-building has the potential to reach participants **globally in a cost-effective manner.**



Since the beginning of the COVID-19 pandemic, many people served by UN-Habitat's educational and training efforts have been **working from home.**



Innovative tools enable the delivery of completely new learning experiences.



The objectives of this guide are to:



Provide UN-Habitat staff with clear definitions and an overview of digital capacity-building trends and tools applicable to its work and mandate.



Give ideas to enhance the use of digital capacity-building tools in UN-Habitat and its partners.

Accordingly, this guide:



Introduces what digital capacity-building is, why it is useful, and when it is useful.



Discusses opportunities and challenges of digital capacity-building.



Outlines useful approaches to digital capacity-building.



Provides guidance on the process of developing digital capacity-building products.



Suggests a selection of state-of-the-art and well-renowned digital capacity-building tools, categorized according to their intended purpose.



Identifies digital capacity-building best practices.

The content in this guide is not exhaustive, but rather tailored to the experiences and needs of UN-Habitat's capacity-building work. For this reason, certain concepts, approaches and tools relevant in a broader context have been excluded.

The guide includes links to external resources, as well as to sections within the document itself. External links are highlighted in [blue](#), while links to sections within the document are highlighted in [green](#).

Parallel to the development of this guide, a strategy for digital capacity-building has been created, aimed at supporting the development of a roadmap to better integrate the use of digital capacity-building in the work of UN-Habitat. Contact the Capacity Development and Training Unit to learn more about this strategy.

Context and opportunities

With regard to accelerating the implementation of the 2030 Sustainable Development Agenda, digital and frontier technologies have been foregrounded within the UN system. The ["Secretary General's Roadmap for Digital Collaboration"](#) (2020) represents the overarching framework for this implementation, while emphasizing the strengthening of capacity-building support at local level. The ["United Nations Development Programme Digital Strategy"](#) (2019) represents the approach of a particular UN agency. These strategies, although beyond the scope of digital capacity-building, provide important guiding

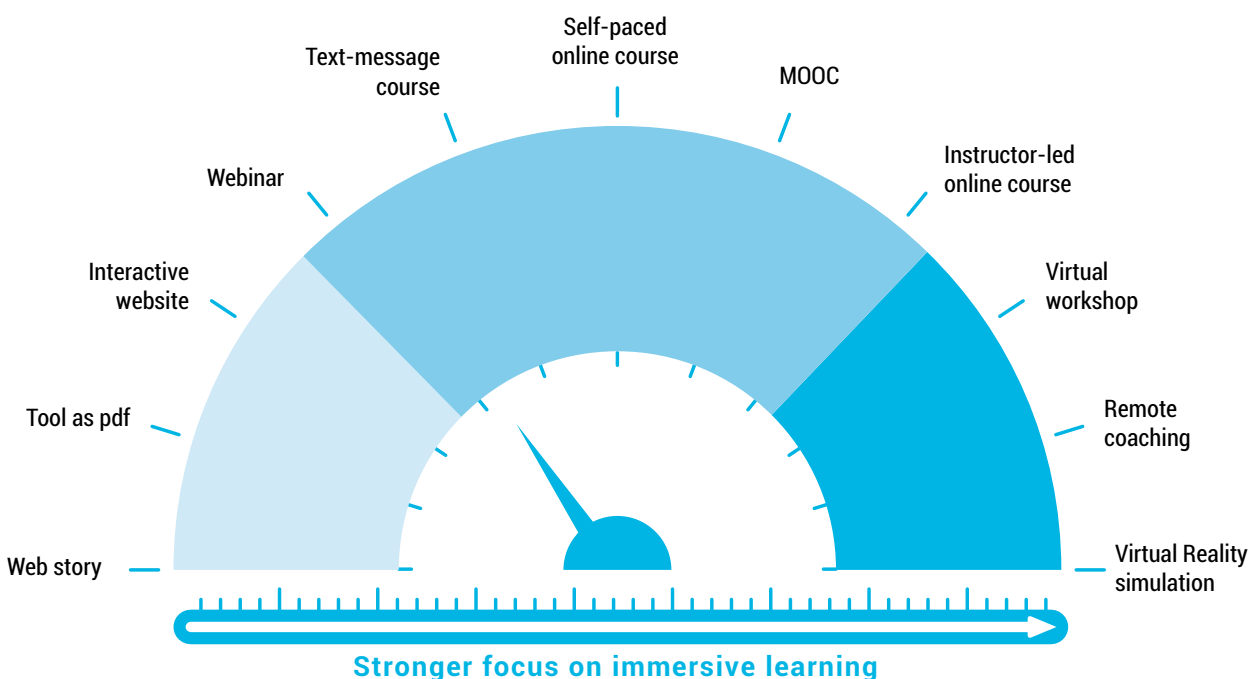
principles on digital philosophies and approaches within the UN system. Central to both reports is the concept of increasing digital capabilities and capacities, both for UN colleagues and beneficiaries. The aim of this is to effectively harness the potential of digital technologies while mitigating risks.

The development of this guide coincides with the United Nations Department of Economic and Social Affairs (UNDESA) report titled ["Blended Learning Methodologies for Capacity Development"](#). The findings from the report are highly relevant for this guide, and it is referred to throughout the sections.

Remote learning enabled by digital technologies can reduce costs associated with on-site training, transportation and accommodation



Figure 1: Common digital capacity-building methods placed on a scale of focus on immersive learning.





Blended learning approaches can be used in many ways to integrate both digital and non-digital capacity-building methodologies.

Defining digital capacity-building

Capacity-building is built from three interdependent levels – individual, institutional and systemic. Capacity-building as such goes beyond technical cooperation and training approaches. It can be defined as “a change process through which individuals and institutions engage in a set of learning methods, whereby they develop and acquire knowledge, skills, know-how, and tools that strengthen their ability to effectively intervene, transform and improve themselves and the environment in which they operate.” ([UN-Habitat Capacity Building Strategy](#)).

In the context of UN-Habitat’s work, capacity-building is a far more complex process than “training”, which is but one element of capacity-building. Effective capacity-building takes place in a dynamic and interactive learning environment that should combine a variety of tools and methods, including specialized courses, policy seminars, expert group meetings, tailor-made trainings, peer-to-peer learning and knowledge exchange workshops that support the learning cycle.

Digital learning is understood as any type of learning that uses digital technology – both internet-based and offline. Often, the concept is interchangeably used with e-learning, which represents any learning that is enabled electronically (Abbad et al., 2009).

E-learning, however, is sometimes defined more narrowly, as any learning that is internet- or web-based (LaRose et al, 1998; Keller & Cernerud, 2002). [See Annex: Theoretical frameworks](#) for two useful academic frameworks for thinking about digital learning.

Digital capacity-building incorporates a broad range of approaches, tools and strategies. Figure 1 illustrates the diversity of digital capacity-building methods and places them on a scale of focus on immersive learning. There is no absolute position for any of the methods mentioned, all of which can be progressively focused on learning objectives. It is useful to note that there are many different approaches to capacity-building, all of which can include more or less of a focus on learning.

It is important to note that digital methods carry inherent limitations (elaborated upon in [this section](#)) and do not attempt to replace in-person learning. Digital capacity-building should be seen as a key tool for achieving goals as part of a holistic capacity-building strategy. [Blended learning approaches](#) can be used in many ways to integrate both digital and non-digital methods.

It should be noted that there is no one-size-fits-all solution to either digital, or non-digital capacity-building. The appropriate use and mixture of both techniques is highly contextual. It depends on learner needs, subject area, availability of devices, stable internet connection and instructor capacity.

Opportunities and challenges of digital capacity-building

Prior to outlining the specifics of different digital capacity-building approaches, an overview of the opportunities and challenges of digital capacity-building is presented.

OPPORTUNITIES

1. Reduced cost

The cost of developing a digital capacity-building initiative varies widely. It depends on the type of training, type of approach, and specific tools used. The costs of developing digital capacity-building materials can often be higher than those for in-person trainings. The high costs of developing digital media are linked to the use of platforms, videos and graphics that may require additional skills and purchase of specific software. This can, however, often be offset against lower total costs of implementing digital capacity-building, thanks to savings made on facility rent, time of facilitators and trainers, and travel expenses.

2. Inclusivity

While the digital divide can create inequality of access, the digital format may also help to reach participants from marginalized groups. People from marginalized groups, for example persons with disabilities, women or LGBT persons, may face discrimination and can have trouble attending in person.

It should, however, be noted that, depending on the context, marginalized groups may also become more isolated in a virtual learning activity, as their specific needs may become less visible. [This article](#) discusses inclusion in virtual meetings.

Digital capacity-building can also strengthen spatial inclusivity. Rural areas may not have the same access to education as urban areas. Digital capacity-building can help to bridge this divide.

3. Overcoming limitations of physical presence

In-person training involves the use of a physical location. Digital capacity-building, on the other hand, does not necessarily have such requirements. This can help to avoid limitations such as:



Travel restrictions.



Limited time or resources to participate in an in-person learning activity.



Limited schedule because of family or work commitments.



Movement restrictions due to security reasons (e.g. for people living in conflict or post-conflict areas).



Cultural or religious impediments to participating in in-person sessions.



Digital capacity-building may help to overcome learner shyness or limited communication ability, such as language capacity.

4. Innovative technological tools

Innovative tools enable the creation of immersive, interactive, personalized and collaborative learning experiences. These are different to and potentially more effective than in-person experiences.

Whiteboarding software, for example, enables real-time collaboration and brainstorming, while allowing additional functions, such as voting.

The use of artificial intelligence on a learning platform allows learning experiences to be personalized. This can be achieved through content suggestions based on a learner's previous activity. [This article](#) discusses the use of personalized learning and artificial intelligence in education.

Figure 2: Example of a collaborative virtual whiteboard (UN-Habitat, 2020).

The image shows a web browser window with a whiteboard interface. The browser's address bar is empty, and there are navigation icons (back, forward, refresh) and a star icon for bookmarks. The whiteboard content is organized into two numbered sections, each with instructions in Spanish and Portuguese, followed by a collection of sticky notes.

Section 1:

- ES:** ¿Qué salió bien con las actividades implementadas en su ciudad?
- PT:** O que correu bem com as atividades implementadas em sua cidade?

Instructions:

- ESPAÑOL:** Empezamos con lo positivo. Use notas adhesivas para escribir lo que cree que salió bien (una idea por cada nota adhesiva). Haga doble clic en el espacio blanco a la derecha para agregar una nota adhesiva.
- PORTUGUÉS:** Começamos com o positivo. Use post-its para escrever o que você achou que funcionou bem (uma idéia para cada nota adesiva). Clique duas vezes no espaço em branco à direita para adicionar uma nota adesiva.

Sticky Notes (Section 1):

- Agrega tu nota adhesiva!
- Coloque aqui seu post-it!
- tuvimos una gran acogida del publico involucrado
- Considero que en general el proyecto se desarrollo sin inconvenientes mayores. Sin embargo creo que los intercambios de experiencias en otros municipios fue algo muy importante para nosotros. De igual manera el Congreso Internacional de Buenas Prácticas en Transparencia Municipal.
- Las actividades implementadas fueron bien recibidas por los servidores de la alcaldía
- Fue posible compartir los ODS con lo público que no los conocía de manera productiva
- Se genero mucha expectativa de la ciudadanía
- la gente estaba muy feliz de ser escuchada y participo activamente con grandes contribuciones. La dinamica aportada por la ONU contribuyo mucho a eso

Section 2:

- ES:** ¿Qué no salió tan bien o se puede mejorar con las actividades implementadas en su ciudad?
- PT:** O que não correu tão bem ou pode ser melhorado com as atividades implementadas em sua cidade?

Instructions:

- ESPAÑOL:** Use notas adhesivas para escribir lo que cree que no salió tan bien o se puede mejorar (una idea por cada nota adhesiva). Haga doble clic en el espacio blanco a la derecha para agregar una nota adhesiva.
- PORTUGUÉS:** Use notas adesivas para escrever o que você acha que não funcionou tão bem ou pode ser melhorado (uma idéia para cada nota adesiva). Clique duas vezes no espaço em branco à direita para adicionar uma nota adesiva.

Sticky Notes (Section 2):

- Agrega tu nota adhesiva!
- Coloque aqui seu post-it!
- Creo que la falta de continuidad de las personas fue algo que complicó el seguimiento del proyecto. Por ejemplo en algunas actividades participaron unos que no continuaron en ella siguiente.
- Todavía es necesario alcanzar un público mayor para divulgación de los proyectos
- Se pudo generar mas intercambios para conocer buenas prácticas de otras ciudades
- seria muy bueno si pudieramos continuar las reuniones cara a cara en las escuelas para llegar a un numero aun mayor de personas

5. Scalability

Technology enables learning materials to reach a much wider audience than in-person learning, by offering:



Independence. By relying less on individual instructors, digital capacity-building can help to provide the same quality of instruction to all learners.



Flexibility. High potential to reuse learning materials for different learners at a low cost.



Scalability and adaptability. Individual components from one activity can easily be reused or adapted (e.g. translated or localized) to fit another context.

6. Reduced greenhouse gas emissions

In-person learning activities often require participants to travel. This inevitably results in greenhouse gas emissions. By avoiding travel, moving training to a virtual setting can contribute to greater environmental sustainability.

That said, it must also be considered that the world's data centres are [estimated](#) to account for around 2% of global greenhouse gas emissions, with a year-on-year growth rate of 7% through 2020.



CHALLENGES

1. Digital divide

As highlighted in the previous section, digital capacity-building has the potential to reach users on a much broader scale than in-person learning. This should not, however, disguise the fact that many still lack the financial means, skills, or internet connection necessary to partake in digital activities.

For a detailed discussion on how to help bridge the digital divide, refer to the UN-Habitat playbooks on [assessing](#) and [addressing](#) the digital divide.

Research on the use of MOOCs (Massive Open Online Courses) has also proven interesting. MOOCs allow for a wide distribution of knowledge, especially for groups who may be disadvantaged due to economic, geographic, or political reasons. However, a study from 2013 found that “the individuals the MOOC revolution is supposed to help the most – those without access to higher education in developing countries – are conspicuously underrepresented among the early adopters” (Christensen et al., 2013, p. 8). The study demonstrated that MOOCs mainly attract young, well-educated and employed people from developed countries.

Below are some recommendations for addressing the digital divide when delivering capacity-building digitally:



Make sure that all learning experiences are optimized for mobile devices, since smartphones are often more accessible than desktop computers.



Enable downloading of materials for offline use.



Vary the format and include several versions of learning content. For example, video content is bandwidth heavy, audio is less heavy, and text is light.



Provide appropriate technical support throughout the learning experience to those who experience difficulties accessing resources.



Consider **text-based learning**. Beneficiaries may not have access to smartphones. If this is the case, learning can be delivered with a text message service (SMS).



Use radio and television for educational programmes.








While digital capacity-building can reach more users than in-person learning, many people lack the financial means, skills, or internet connection necessary to partake in activities.




2. Drawbacks of not using in-person learning methods

Perhaps the most obvious limitation of digital capacity-building in comparison to in-person learning is the lack of physical interaction.

Limitations of this include:

-  Lower attention span from learners.
-  Reluctance to use or learn technology.
-  Less personal, social, and human learning experience.
-  Digital collaboration may not suit all personalities and learning styles.
-  Lack of informal social interaction and networking prior to and after the learning experience.

Below are suggestions to address the lack of interaction:

-  Provide clear guidelines for receiving technical support.
-  Integrate solutions to make synchronous learning, such as online workshops, more engaging. More about this in the section on [taking workshops online](#).
-  Use the unique collaborative possibilities of digital capacity-building to make the learning experience social. Examples of this include [peer-review assignments and forums for online courses](#), as well as breakout rooms and silent brainstorming for [online workshops](#).

Digital capacity-building at the United Nations

The “[UN Secretary General’s Strategy on New Technologies](#)” includes a commitment on “Enhancing UN System support to government capacity development”. This relates to building the capacities of governments on new technologies. The strategy does not explicitly mention an approach to capacity-building carried out by digital means. It is important to understand the difference between building the capacity of governments and stakeholders to embrace digital transformation, vis-à-vis using digital technologies to deliver capacity-building activities. This guide relates to the latter concept. The concepts are, however, interlinked – as stakeholders become more advanced in the use of digital tools and processes, it becomes easier to use digital tools for capacity-building activities.

In 2020, the United Nations Office of Human Resources published an online learning framework with guidance for the development of [online learning solutions](#) at the United Nations.



The UN Secretary General's Strategy on New Technologies includes a commitment on “Enhancing UN System support to government capacity development”.

UNSSC

The United Nations System Staff College provides customized web-based learning solutions and knowledge tools for UN partners.

Find all UNSSC resources [here](#).

UNITAR

The United Nations Institute for Training and Research hosts a section on online learning solutions, with booklets on making online training events more inclusive, online facilitation cards, examples of online learning projects, as well as other resources.

Find all UNITAR resources [here](#).

ITCILO

The International Training Centre of the International Labour Organization has an online section dedicated to e-learning. It includes an e-learning design lab course and provides guidance on topics such as MOOCs and virtual reality.

Find all ITCILO resources [here](#).

OTHER UN AGENCIES

Many UN agencies are advanced in their design and implementation of digital capacity-building initiatives. [Here](#) is a continuously updated list of digital capacity-building platforms offered by different UN agencies.

Additional platforms not listed on the above page as of October 2021:

- UNDESA financing courses: <https://www.un.org/development/desa/financing/capacity-development/onlinecourses>
- UN-Habitat Learn: <https://learn.urbanagendaplatform.org/>
- Kaya – Humanitarian Leadership Academy: <https://kayaconnect.org/>
- IFRC: <https://ifrc.csod.com/client/ifrc/default.aspx>



The United Nations System Staff College provides customised web-based learning solutions and knowledge tools for UN partners.

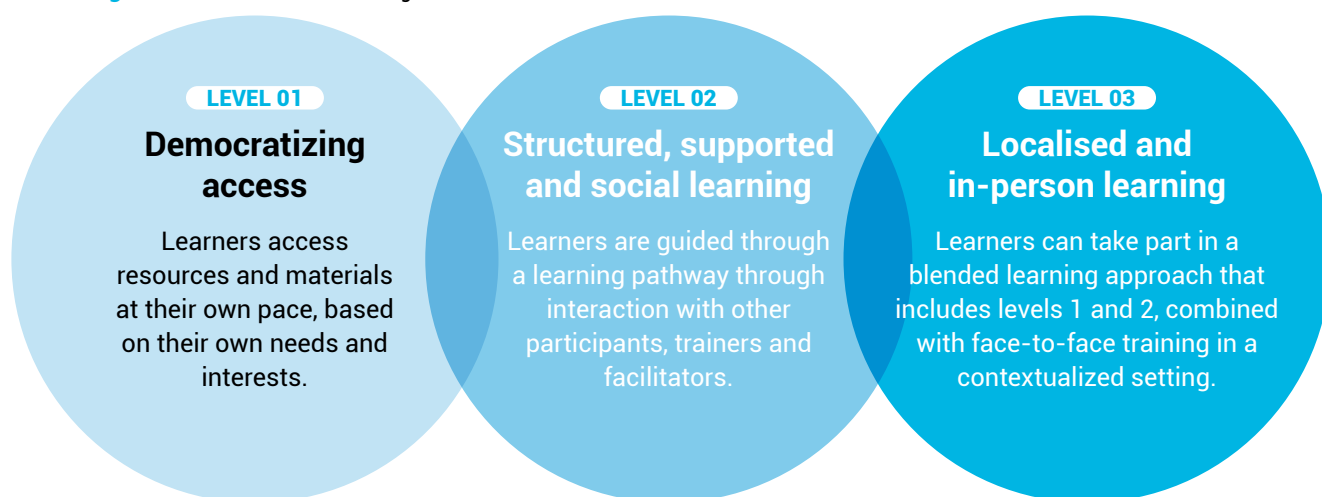
Main approaches to digital capacity-building: an overview

There is a plethora of different approaches to digital capacity-building, some of which have conceptual overlap. Without intending to be exhaustive, this section introduces some of the most useful concepts.

THREE LEVELS OF LEARNING

In [Blended Learning Methodologies for Capacity Development](#), three levels of learning are identified. These levels are indicative and can overlap:

Figure 3: Three levels of learning

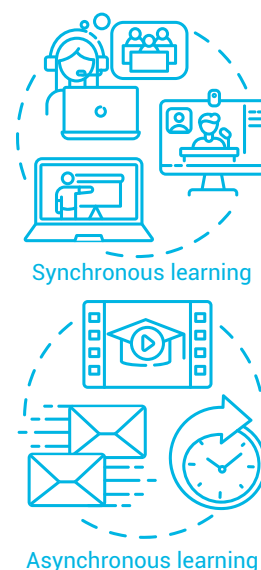


SYNCHRONOUS VERSUS ASYNCHRONOUS LEARNING

Synchronous learning takes place in real time, whereas asynchronous learning does not require participants to be present at the same moment in time. For example, an online training module can contain both virtual workshops with lectures and collaborative exercises (synchronous learning), and self-paced activities such as pre-recorded lectures, explanatory videos and quizzes (asynchronous learning).

Recordings can enable broader dissemination of a synchronous learning experience, effectively making it into asynchronous.

Instructor-led training can incorporate both synchronous elements such as webinars, and asynchronous elements such as discussion forums and chat groups.



	Synchronous learning	Asynchronous learning
What is it?	Instructors and learners are engaged in learning at the same time: there is real-time interaction.	Instructors and learners are not engaged in learning at the same time: there is no real-time interaction.
Examples	In-person physical workshops, webinars, online workshops and live chats.	Self-paced online courses, discussion forums and text-message courses.
Pros	Personal, social, immediate feedback, collaborative.	Time- and space-independent, flexible, cost-effective, highly scalable, measurable.
Cons	Time-dependent, may not suit all types of learners (e.g. introverts), quality depends on instructor, pace must be matched to suit all learners.	Often less personal and social, learners may feel isolated, learners need more self-discipline and motivation.

FLIPPED CLASSROOM

The “flipped classroom” flips the traditional relationship between classroom and homework. Traditional teaching consists of a lecture first, after which homework is done outside the classroom. In a flipped classroom approach, the instructor first provides the content (for example a pre-recorded lecture or reading materials) that the students study. The subsequent synchronous meeting is dedicated to doing “homework”, opening the opportunity for students to ask questions or engage in peer collaboration.

BLENDED AND HYBRID LEARNING

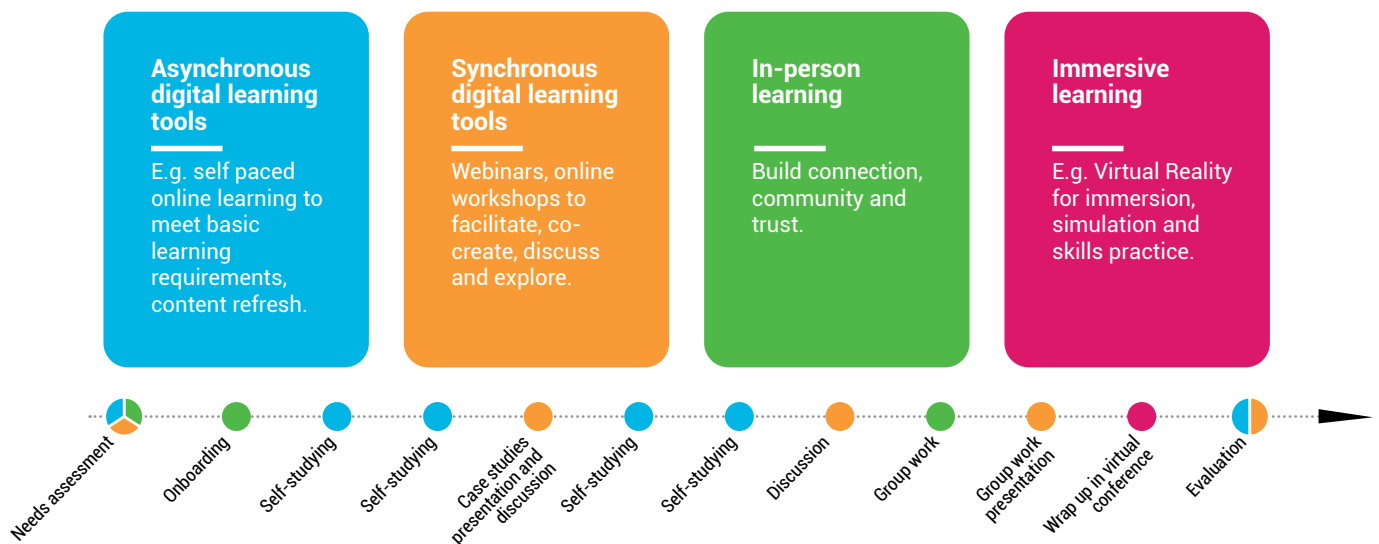
“Blended learning” or “hybrid learning” is usually defined as combining online educational methods with face-to-face instruction. The two terms are often used interchangeably in research (Vereshchahina, 2018). Some private sector companies, however, suggest a difference between the concepts, with blended learning defined as the combination of online and offline activities. Hybrid learning, meanwhile, is defined differently, for example (1) only relating to synchronous learning

(see [article](#)), or (2) incorporating any possible learning technique, whether offline or online (see [article](#)). To avoid confusion, this guide utilizes the term “blended learning”. Figure 4 illustrates an example of a blended learning journey.

An example of blended learning would be a self-paced online course that could be used to prepare participants before an in-person workshop. This can help to ensure that workshop participants all have the same level of background knowledge before entering a synchronous session. Some advantages of this approach are that it (1) asks students to come to the classroom prepared; (2) enables the design of more personalized and efficient classroom activities that respond better to the needs of students; and (3) potentially reduces costs by decreasing the time required in the classroom.

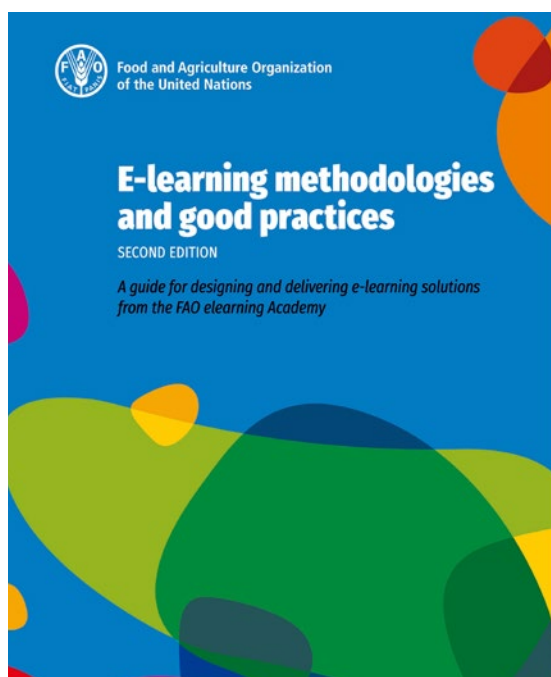
Blended learning approaches can also be used to assess learners' knowledge prior to or after a course. This enables a higher degree of personalized learning as well as opportunities for monitoring and evaluation.

Figure 4: Example of a blended learning journey.



Synchronous learning takes place in real time, whereas **asynchronous learning** does not require participants to be present at the same moment in time.

FAO's guide "[E-Learning Methodologies and Good Practices](#)" (2021) includes several case studies on the practical employment of blended learning approaches.



ON-THE-JOB TRAINING

On-the-job training is training that is given to an employee at their workplace, while they are performing the job that they are trained for. On-the-job training helps to focus on skills that are used in an actual work environment, while being a low-cost training alternative.

Digital tools can complement and enhance on-the-job training, for example through online courses, virtual sessions and bite-sized learning activities, such as instructional videos.

Research suggests that workers perceive on-the-job training delivered as e-learning as a more flexible and up-to-date training methodology. Nevertheless, face-to-face training provides more motivation and clearer explanations from trainers (Batalla-Busquets & Pacheco-Bernal, 2013).

INTERACTIVITY

In a web context, interactivity means that a tool can respond to the user. Graphics, data visualizations, videos and other types of content are not inherently interactive. Examples of interactive content include:



A graphic that changes colour and size when clicked on.



A list of different projects that can be filtered according to thematic area.



A data visualization that allows the user to select and visualize data subsets.



A video that pauses at a given moment and prompts the user to answer a quiz before continuing the video.

In the context of virtual meetings, interactivity means the possibility for participants to actively engage in the session, for example through discussions, Q&A, polling and collaborative exercises.

Interactivity can help make a learning experience more immersive, engaging and fun, by reducing the passive intake of knowledge and increasing active participation.

MASSIVE OPEN ONLINE COURSES (MOOCs)

Massive Open Online Courses (MOOCs) are aimed at large-scale participation and open access online. Examples of platforms delivering MOOCs include [Coursera](#), [EdX](#), [Khan Academy](#) and others. MOOCs sometimes deviate from the original definition, for example by requiring payment to access course content or full functionality.

Massive Open Online Courses (MOOCs) are aimed at large-scale participation and open access online.

ADAPTIVE LEARNING

Adaptive, or personalized/customized learning, is a teaching method that delivers personalized learning experiences, often with the help of computer algorithms. Artificial intelligence can be useful in delivering adaptive learning.

As an example, imagine a learning platform with many different courses and users. All user activity can be tracked – which courses they complete, how much time they spend on certain activities, which topics they prefer, etc. This data can be used to generate user profiles, which can be used to suggest content for users sharing a similar profile.

Chatbots can be used to facilitate adaptive learning. Chatbot software simulates online conversation with human users and is often used to help answer questions or guide users on a website. The Humanitarian Leadership Academy provides an informative [toolkit on chatbots](#).

Another example of using chatbots is [World Health Organization Health Alert](#), which uses chatbot technology to provide information on COVID-19 via WhatsApp.

SOCIAL AND PEER LEARNING

Social learning theory was initially outlined more than half a decade ago by Bandura and Walters (1963). Its main proposition is simple – people learn by watching people.

The 70/20/10 ratio of learning and development states that people obtain 70% of their knowledge from job-related experiences, 20% from human interactions, and only 10% from formal learning methods (Lombardo & Eichinger, 1996).

It is possible to gain a wider knowledge spectrum by sharing experiences, solutions and ideas. This also helps us to experience greater control over our learning.

The Humanitarian Leadership Academy hosts [useful resources](#) on social learning. [This article](#) elaborates on “scaffolded” social learning.

Peer learning is the “acquisition of knowledge and skill through active helping and supporting among status equals or matched companions” (Topping, 2005). Observations have shown it to have a very positive impact on learning (e.g. Ali et al., 1998; Topping, 2005). It has also been described as one of the most cost-effective learning strategies (Levine, Glass, & Meister, 1987).

Digital approaches and tools can facilitate peer learning in several ways. [This section](#) outlines seven possibilities for using digital approaches to enhance teaching (Cope and Kalantzis, 2017). Four of them are related to peer learning: active knowledge making, recursive feedback, collaborative intelligence, and metacognition.

For example, social and peer learning can be carried out in a digital context through the use of peer-to-peer communication and assignments, collaborative exercises, discussion forums, and individual coaching.

SOCIAL MEDIA FOR LEARNING

Social media can be a beneficial tool for learning. It provides specific tools that can be used to foster engagement, critical thinking, collaboration, information dissemination, interaction, community building and informal learning (Otchie & Pedaste, 2020). Social media can reach a high percentage of people in some communities, and in particular, young people. For this reason, social media can be key for learning initiatives to reach scale.

Social media can also play an important complementary role to other learning activities. Take [MOOCs](#), for example, where much of the learning has been attributed to activities external to the courses themselves, such as after-class discussions between students on Twitter and Facebook (Knox, 2014). In the context of international development, social media can be utilized to build informal connections and communities of practice between learners. This could be both during or after a workshop or training course.



The 70/20/10 ratio of learning and development states that people obtain:

70% of their knowledge from job-related experiences, 20% from human interactions, and only 10% from formal learning methods.

MICROLEARNING

Microlearning is an approach that delivers learning in short, bite-sized activities. Microlearning is well suited to mobile, on-the-go learning experiences. It can help to increase knowledge retention (Shail, 2019). Microlearning can help to prevent mental fatigue and make content easier to digest and more attractive to learners who may not have the time to go through a full course.

Microlearning is a good way to reuse and adapt other learning resources. Short clips from webinar presentations and discussions can be extracted, enhanced with editing tools, and then used as stand-alone learning products. They can be used as part of a blended learning programme, or be promoted on social media for wider impact.

GAMIFICATION

Gamification refers to the introduction of game-like elements into learning experiences. These elements can increase learner motivation, engagement and enjoyment.

Examples of gamification are progress mechanics such as point systems, level-up systems, badges and leader boards, together with narration, instant feedback, collaboration and competitive elements.

An immersive example of gamified learning is UN-Habitat's ["Block by Block" project](#).

The Humanitarian Leadership Academy provides a useful toolkit on [gamification](#).

EXAMPLE OF GAMIFICATION: BLOCK BY BLOCK



Block by Block began in 2012 with the radical idea of integrating the computer game "Minecraft" into public space planning to get community members more involved.

Minecraft is easy to use, and people of all ages, backgrounds, and education levels can pick it up quickly.

It is an impactful and cost-effective way to visualize a three-dimensional environment, in a format designed for rapid iteration and idea sharing.

Minecraft helps neighbourhood residents model their surroundings, visualize possibilities, express ideas, drive consensus and accelerate progress.

VIRTUAL REALITY

Virtual reality (VR) is a game changer for learning. A VR headset provides audio and visuals that enable a learner to enter a virtual world, which can either be fictional or based on reality.

VR immersion increases motivation to fully understand learning materials and requires less cognitive load from the participant. It takes the concept of "learning by doing" to a completely new level.

High-quality VR equipment remains expensive. As technology progresses, VR for learning will likely become more accessible and more viable as a learning experience option.

In the United Nations System, the International Training Centre of the International Labour Organization works with VR as part of the "[Learning Innovation Programme](#)".









[This webinar](#) by the UN Innovation Network has great examples of applied use of VR.

The Humanitarian Leadership Academy also provides an interesting [toolkit on VR](#).



When is digital capacity-building useful?

Digital capacity-building is particularly useful when:

-  Limited options exist for in-person training, such as during pandemic restrictions.
-  Budget restrictions exist that limit the possibilities for in-person training.
-  Participants have access to the (internet-connected) devices needed for partaking in the training.
-  Participants are sufficiently motivated to attend remotely as opposed to in person.
-  Participants are geographically dispersed.
-  Participants have limited time to dedicate to learning.
-  Participants have limited mobility.
-  Many people need to be trained. Digital capacity-building is highly scalable.
-  The amount of learning content is large. Digital capacity-building approaches can be helpful in organizing and providing flexibility for learners.
-  Data collection and analysis are important.
-  Training needs are long-term rather than short-term. Digital capacity-building materials often require more development time but are easier to reproduce and adapt.
-  There is a higher likelihood that learning materials will be reused in the future.
-  The learning experience aims at developing cognitive rather than psychomotor skills.



VR immersion increases motivation to fully understand learning materials, while requiring less cognitive load to process the learning experience.

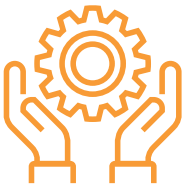
02

DESIGNING

DIGITAL CAPACITY- BUILDING



It is vital to consider **pedagogics**, learner needs and learning objectives while designing capacity-building activities.



Technological tools should enable learning but are not educational substance in their own right.

This section attempts to cover fundamental aspects and key considerations for how to design effective digital capacity-building interventions.

As with in-person learning, it is vital to consider pedagogics, learner needs and learning objectives while designing capacity-building activities. While technological tools enable the creation of digital capacity-building experiences, they are enablers rather than educational substance in their own right.

Digital capacity-building pitfalls to avoid

Digital capacity-building initiatives come with great potential, but also risks. Below are presented six common pitfalls that are important to consider for creating a successful learning product.



A digital capacity-building experience is only as good as the underlying substantive content.



1 Anchor in strategy

Digital capacity-building is not an end in itself, but rather a means to deliver training that seeks to achieve certain learning objectives. Digital capacity-building should be anchored in an overarching learning strategy, which may include a blend of both in-person and digital capacity-building approaches.



2 Focus on substance

A digital capacity-building experience is only as good as the underlying substantive content. A self-paced online course can feature modern design. A video may have beautiful animations. A webinar workshop may use the latest collaborative software. Presentation is, however, secondary to educational substance.



3 Consider learner ability, skills and access

Designing a digital capacity-building experience is only useful if the target audience has the necessary abilities, skills and access to the necessary hardware and software, for example a computer or a mobile phone, as well as internet access.



4 Engage the learner

The lack of human contact is an inherent limitation of digital capacity-building activities, and keeping the energy high can be challenging. Incoming emails and multitasking are frequent distractions. It is therefore vital to allocate additional time to interactive activities throughout an activity to keep participants attentive and engaged.



5 Keep it simple

The growing digital capacity-building industry is filled with buzzwords and attractive sales pitches. Although it is easy to get distracted by flashy technology, there is always the need to question whether an approach truly serves its purpose.



6 Find the right balance

Translating a technical manual into an online workshop or course requires a lot of work with the original text to make sure that learners stay attentive and motivated throughout the experience. There is often a trade-off between substance and delivery, and it is important to try to get the right balance.



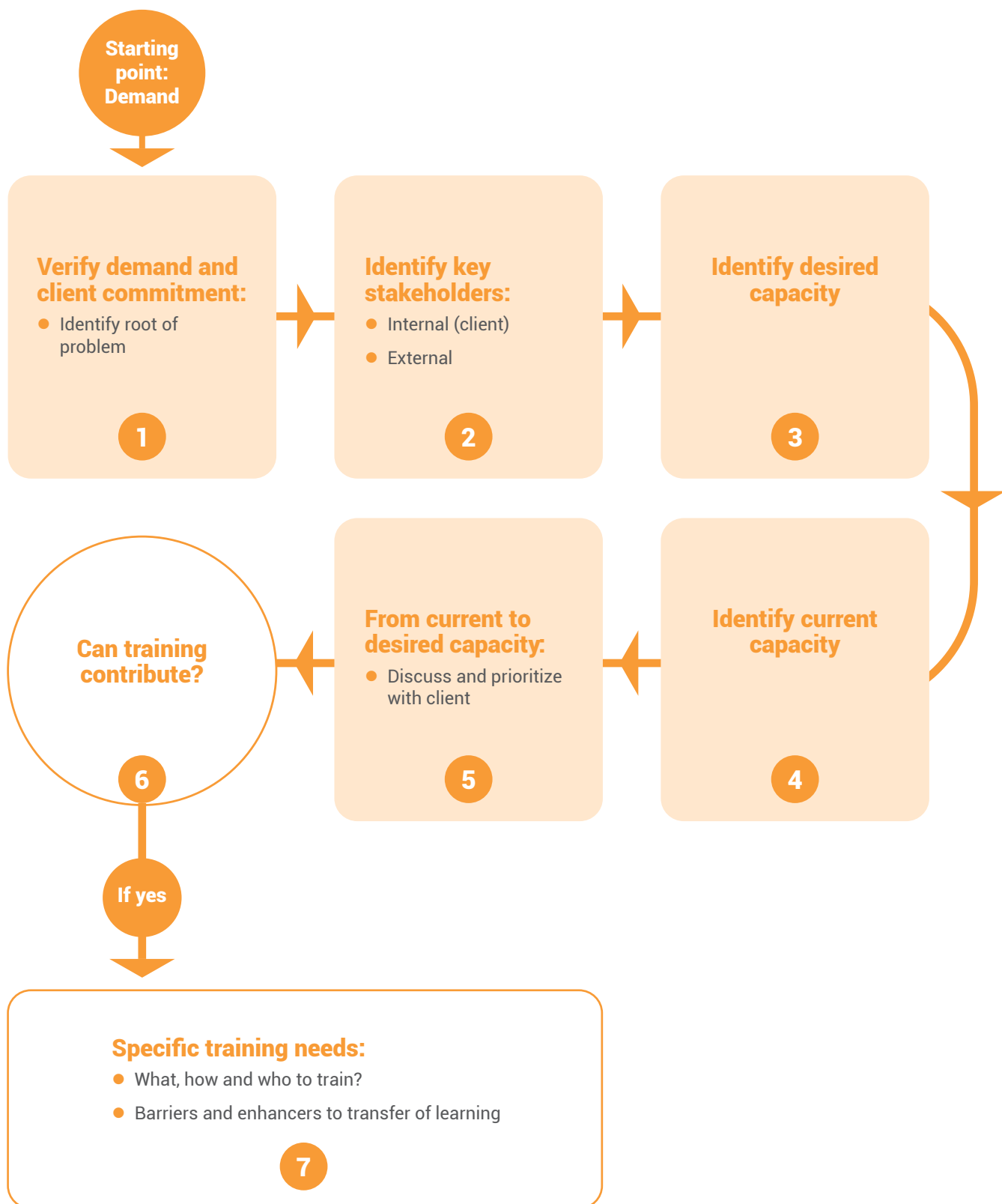
Assessing needs

A training needs assessment is an essential first step in planning an effective capacity-building intervention. The assessment usually focuses on both current and desired skills, as well as knowledge and attitudes of the learners. This information is then used to determine if and how the issue at hand can be improved by training.

Two UN-Habitat publications, ([UN-Habitat, 2007](#); [UN-Habitat & IHS, 2012](#)) serve as useful guides for performing training needs assessments.

A training needs assessment is an inherently flexible process, although the typical approach is to start with a broad assessment that gradually becomes more specific. Figure 5 outlines the different steps of the assessment process.

Figure 5: The training needs assessment process (UN-Habitat, 2012)



Defining learning objectives

The training needs identified in the previous section serve as a guide in the creation of learning objectives for a learning activity.

Bloom's taxonomy of learning objectives (Bloom et al., 1956) can be helpful in creating appropriate learning objectives. It categorizes cognitive skills into six levels, with more cognitive processing required as you move along the scale. The six levels, ordered from lowest to highest in complexity, are as follows:

- 1 Knowledge
- 2 Comprehension
- 3 Application
- 4 Analysis
- 5 Synthesis
- 6 Evaluation

[This article](#) elaborates on Bloom's taxonomy.

Designing high-quality digital capacity-building


This section outlines helpful recommendations for designing digital capacity-building.


1. FOLLOW THE PRINCIPLES FOR DIGITAL DEVELOPMENT


The "[Principles for Digital Development](#)", highlighted both in [Blended Learning Methodologies for Capacity Development](#) and in the Humanitarian Leadership Academy's [core strategy on collaborative learning](#) for all humanitarians, are "a set of living guidance intended to help practitioners succeed in applying digital technologies to development programs".


They read as follows:


A training needs assessment is the essential first step in planning an effective capacity-building intervention.


 **Design with the user:** User-centred design starts with getting to know the people you are designing for through conversation, observation and co-creation.


 **Understand the existing ecosystem:** Well-designed initiatives and digital tools consider the particular structures and needs that exist in each country, region and community.


 **Design for scale:** Achieving scale requires adoption beyond an initiative's pilot population and often necessitates securing funding or partners that take the initiative to new communities or regions.


 **Build for sustainability:** Building sustainable programs, platforms and digital tools is essential to maintain user and stakeholder support, as well as to maximize long-term impact.

 **Be data driven:** When an initiative is data driven, quality information is available to the right people when they need it, and they are using those data to take action.

 **Use open standards, open data, open source, and open innovation:** An open approach to digital development can help to increase collaboration in the digital development community and avoid duplicating work that has already been done.

 **Reuse and improve:** Reusing and improving is about taking the work of the global development community further than any single organization or programme can do alone.

 **Address privacy & security:** Addressing privacy and security in digital development involves careful consideration of which data are collected and how data are acquired, used, stored and shared.

 **Be collaborative:** Being collaborative means sharing information, insights, strategies and resources across projects, organizations and sectors, leading to increased efficiency and impact.

2. APPLY INSTRUCTIONAL DESIGN

Instructional design is an accepted concept in both in-person and digital education. At its core, instructional design is the creation of instructional materials. There are several ways to approach this process. Common models are "ADDIE", "ASSURE", and "The Dick and Carey Model", of which [ADDIE](#) is most widely used (Gonzalez & Quiroz, 2019). ADDIE is an acronym for five stages of instructional design – Analysis, Design, Development, Implementation and Evaluation.

The Humanitarian Leadership Academy offers a [free online course](#) presenting the ADDIE steps in an engaging and interactive format. The course uses examples from a development context.

An instructional design model such as ADDIE is a useful starting framework for building a learning initiative. Importantly, it is best used not as a fixed process, but rather as something adaptive and flexible to the changing needs of specific projects.

More modern, alternative approaches to ADDIE emphasize the need for flexibility and openness to change, such as the agile design models, "Successive Approximation Model" (Jung et al., 2019) and "Agile Project Management" (Torrance, 2019).

3. USE DESIGN THINKING METHODS

[Design thinking](#) is a human-centred approach to solving problems and finding innovative solutions to digital capacity-building challenges. It is an iterative, non-linear process involving five phases: Empathize, Define, Ideate, Prototype, and Test. [This Coursera course](#) gives a good introduction to design thinking.

[This article](#) from UNSSC discusses the power of design thinking as a tool for implementing the 2030 Agenda for Sustainable Development.


4. ENSURE ACCESSIBILITY


The ["United Nations Disability Inclusion Strategy"](#) provides the foundation for sustainable and transformative progress on disability inclusion through all pillars of the work of the United Nations.


The [New Urban Agenda](#) recognizes the multiple forms of discrimination faced by persons with disabilities and emphasizes their rights, including to accessibility and universal design, as an essential precondition for their inclusion in society (New Urban Agenda, paragraph 51).


It is important to consider accessibility when designing digital capacity-building. The guidelines for this vary depending on the type of learning activity.


For synchronous activities such as online events, the below guidelines can help make the experience more inclusive. This resource (link on «This resource»: <https://unitar.org/learning-solutions/online-learning-solutions>) from UNITAR elaborates on how to make online events more inclusive.

 Performing a thorough needs assessment of your audience before planning your learning


 Event, reflecting on your methodological design


 Ensuring that your learning event meets accessibility standards

 Considering varying technological literacy levels and environmental limitations


 Being conscious of our own unconscious biases


 Encouraging participation by all during the event


 Clearly outlining communication options during the event

 Making sure your language style fits your audience

 Considering inclusion when developing content

 Having a plan for difficult situations

 Making sure visual imagery is inclusive


 Assessing inclusivity in feedback and evaluation


[This webinar](#) introduces the creation and evaluation of digital documents with accessibility in mind.


For asynchronous online courses, many [Learning Management Systems](#) have features for ensuring accessibility, such as screen reader compatibility. [This article](#) introduces accessibility in a general web context, with guidelines that often apply to


digital capacity-building materials. UNICEF also offers an [online course](#) on web accessibility training.


The accessibility of course content itself must also be considered:

-  Is all content available in both text and audio form? Is it accessible to screen readers?


-  Are subtitles provided in videos?


-  Are there appropriate alternative texts for all images and graphics?


-  In case the maximum alternative text length is insufficient to describe an element, is this information also provided as screen reader-friendly text?


-  Are headings, tables and text formatting used to structure content?

To help create accessible virtual meetings it is recommended to:

-  Provide participants with materials prior to the session.

-  Make sure that materials meet [Web Content Accessibility Guidelines](#), including standards regarding [colour contrast](#).

-  When presenting, try to ensure that content included on slides is also spoken, so that visually impaired persons can follow along.

-  Consider including closed captions for people with hearing loss. Closed captions are available in some software, for example [Google Slides](#) and others.

[This article](#) outlines additional measures that can be taken towards accessibility and inclusion in virtual meetings.

5. SELECT APPROPRIATE TOOLS

Technological tools are central to digital capacity-building activities. Although it is important to see tools as means to deliver an activity rather than ends in their own right, the tool will always influence the way in which an activity can be carried out. Being open regarding specific tool selection throughout the planning process will provide additional flexibility. At some stage, it may

become evident that the proposed tool does not provide the desired results, and that another one may be a better choice.

[This section](#) outlines different types and examples of tools.

The list of digital capacity-building tools available is long and constantly expanding. Each digital capacity-building project or activity may require a different tool. The following six considerations, partially adapted from [Lee-Anne Ragan's](#) "Umbrella" tool, provide useful guidance when selecting a tool:

✔ What needs to be accomplished?

For what purpose is a tool needed? Write down what the desired achievements are and base the tool selection on this. Sometimes a tool can be more distracting than useful. Always be critical of attractive marketing.

✔ How many people need to be reached?

For example, for a webinar with many users, it is useful to select a tool with the capability to set all participants' microphones to mute as they join the meeting.

✔ What features are needed?

Try to keep the tool as simple as possible while making sure it ticks all the functionality requirement boxes. For example, when selecting a whiteboarding tool, are only basic drawing capabilities needed, or also advanced features such as voting? This choice will be further influenced by time restrictions.

✔ Do learners have experience with the technology?

If a tool is too advanced for users to learn within the given timeframe, it may be necessary to simplify the approach.

✔ Are there restrictions regarding what software can be used?

United Nations Secretariat staff may face certain restrictions in using specific software. ICT guidelines from UN-Habitat (November 2020) can be found [here](#). Given the rapid development of new tools and approaches, these guidelines are subject to frequent change.

✔ What resource restrictions are there?

Human, financial and time constraints will often influence the viability of an option. For example, in a collaborative online exercise, is there time available to make sure that all participants understand a tool? If not, it may be necessary to consider a simpler approach.

The following two sections outline good practices for two common scenarios:



Organizing a virtual workshop



Developing a self-paced online course



Organizing a virtual workshop

The virtual format brings challenges to delivering workshops that were previously carried out in person. Some aspects, such as the personal feeling of being in the same room as the instructor and other participants, cannot be replicated online. In-person teaching makes it much easier to create immediate feedback through body language and the subtleties of human connection. Video conferencing software, made to be used by only one speaker at a time, lacks the organic flow of face-to-face conversation. The virtual format may also exacerbate participants' differences in communication ability.

With these challenges in mind, the virtual format also brings its own set of unique opportunities, making it an entirely different pedagogical experience. For example, chat functionality makes it less intimidating to react and ask questions during a session, potentially increasing engagement, especially for shy participants. Participants can be moved around from larger to smaller rooms without physically moving places, making activity transitions quicker. Virtual sessions are also exceptionally easy to record. This makes it easy to share, replicate and scale the workshop content after the session is over. Virtual workshops also often operate independently of space and time limitations, which can potentially lead to significant cost savings.

This section outlines general guidance and examples of good practice for taking workshops online.

Plan and prepare

Below are recommendations for ensuring a well-planned workshop, leading to a more successful learning experience:

- Perform a [needs assessment](#) of participants before planning the workshop to make sure that the content is purposeful to the target audience.
- Determine the collaboration needs between participants, which will guide the type of exercises completed during the session.
- Develop a workshop script to ensure that all activities are covered. Estimate the time each activity will take. Make it clear which facilitator does what.
- Do a dry run session to identify and resolve any potential issues.
- Gather and structure the script and materials, such as presentations for the session, in a shared folder that all facilitators can access.
- Consider participants' varying levels of technological understanding when deciding which activities to include.
- Configure the appropriate software settings, for example whether to mute participants when joining the session.
- Make sure to understand how to operate the software user interface, to be able to quickly mute people, share presentations, chat, start polls, etc.
- Consider presentation logistics. Will presenters share their own screen, or will a facilitator share slides from their screen? When deciding, consider both presenters' and facilitators' technology skills.

The list of digital capacity-building tools available is long and constantly expanding. Each digital capacity-building project or activity may require a different tool.

Take it slowly

Give participants time to understand activities and ask clarifying questions. Include breaks to deal with fatigue. It may not be possible to cover as much content in a virtual as in an in-person setting. [Flipped classroom](#) techniques can help to include additional content.

Realizing the limitations of a virtual format is important when planning for facilitators. Delegate responsibilities to alleviate stress. For example, while one facilitator presents, another keeps track of questions for Q&A, and a third chats with a participant experiencing technical difficulties.

When presenting visuals, there is often a delay between what the presenter and the rest of the group sees. Take this into account – pause between slides.

When switching between activities with the full group and smaller groups, allow time for transitioning.

Inform

Make participants more comfortable by clearly explaining activities and processes to them. For example:



Publish an agenda including a time estimate for each activity.



Clarify how questions are asked, for example by hand raising, writing in the chat, or writing in the Q&A and using voting.



Inform participants if a meeting is being recorded. Some video conferencing software gives the option to display a recording consent prompt. Participants can then either agree to being recorded or leave the meeting.



Let participants know early on when and where a recording of the session will be made available.



Be strict with time limitations for exercises and make sure to grab everyone's attention afterwards to mitigate the risk of participants starting to multitask.



In a virtual workshop, a good rule of thumb is: Do not have more than 10 minutes of monodirectional communication without an interaction.



Consider time zones

If participants are in different time zones, it may be necessary to host a workshop on two or more occasions. If smaller teams are formed for group work outside sessions, consider time zones for easier planning.

Encourage interaction and humanize the virtual environment

The virtual format includes a higher risk of participant fatigue than an in-person session. Fortunately, there are many different strategies that can be used to improve interaction and humanize the virtual environment. It is important to keep in mind that interactive approaches are

just tools and should only be included as part of a workshop activity if they contribute to the goal of the workshop. Interactive activities with vague purposes may confuse or annoy participants.

The appropriate length of a session depends on how engaging the meeting components are. For example, a relatively one-directional webinar should be no longer than an hour, whereas a workshop, in which participants are more active, can be longer. Breaks should be inserted approximately every hour.

A good rule of thumb is to not have more than ten minutes of monodirectional communication without any interaction. The interaction can be as small as probing for feedback in the chat.

Below are guidelines to increase interaction and humanize the virtual environment:

1 Collaborate

Group work and peer learning opportunities are great ways to encourage engagement, especially for shy participants. This can be done by creating breakout rooms. A well-facilitated breakout room session requires additional instructors. Innovative collaboration tools, for example [whiteboarding](#), can be useful. [This UN Innovation Network webinar](#) uses breakout rooms during a webinar to allow participants to engage more intimately with panel participants. [Another UN Innovation Network webinar](#) introduces participants to collaborative exercises with whiteboarding tools.

2 Use the chat

The chat is a great tool for creating engagement. It may even lead to higher engagement than during an in-person session, as the effort required to send a message is often lower than that of speaking up. Plan for how to use the chat and encourage users to try it out as part of icebreaker activities early in the session.

3 Include guidelines

Include guidelines that make the workshop experience more productive and engaging for all. Here are some examples:

- Keep the camera on if possible. Let us know in the chat if you have to turn it off for bandwidth or other reasons.
- It's ok to make mistakes. We're all here to learn.
- Give each other your full attention (try closing the email client during the workshop).

4 Do live polling

[Live polling](#) is a great way to keep participants attentive. The possibility of having anonymous polls further reduces participant reluctance to provide an answer. Some software includes features for displaying live results. This can add to the dynamism to the session.

5 Probe for feedback

Probe for both structured and unstructured feedback during the session. Structured feedback can be submitted through live polling or a post-session survey. Unstructured feedback can be given verbally or in the chat. Unstructured feedback during the session can also help to increase engagement.

6 Consider language style

Use a language style that fits the audience.

7 Break the ice

Do icebreaker activities to ensure a welcoming and open atmosphere. For example, get participants to show their energy level by holding up a number of fingers in front of the camera. This increases the visual dynamism of the session, while also involving the participants physically, making them more comfortable in front of the camera.

8 Start the cameras

Encourage participants to leave cameras and microphones on at the start of a session, to make the experience more personal.

9 Call on individual people

Call on individuals by their name to encourage sharing by someone who is staying quiet. People may need encouragement to speak up in front of a group.

10 Send links to resources

Put links to additional resources mentioned during a session in the chat so that participants can easily click on them.

11 Take a group photo

Take a group photo at the end of the session and share with participants. For many participants, workshops are not just about gaining knowledge, but also an opportunity to socialize and network.

12 Use feedback icons

Encourage participants to use the feedback icons, which are often provided by video conferencing software (raising hand, thumbs up, etc.). This allows for instant feedback, emotion and spontaneity.

13 Consider music

Consider playing music during a silent brainstorming activity. This can alleviate the sensation of isolation that can arise during silent moments in a virtual session.

14 Stay on after the session

Stay on the call after the session to ask questions and allow for networking opportunities, if time allows for it. Shy participants may prefer this option. Inform participants of the opportunity to do so throughout the session.

15 Be inclusive

Be aware of and mitigate [power dynamics and inclusion issues](#).

Summarize

At the end of a substantive activity, summarize the main points and give clear guidance for the purpose of any subsequent discussion. This mitigates the risk of losing participants because of unclear instructions. For workshops spanning multiple days, it is useful to start the day by giving a quick recap of the previous day's activities.

Learn from data

Virtual workshops allow for more natural data collection than during in-person sessions. This data can be used to gain deeper insight about virtual sessions. For example, knowing at which points participants joined and left a session can highlight which content was the most interesting. [This presentation](#) by the International Civil Aviation Organization during a webinar hosted by the UN Innovation Network is a useful starting point to learn more about exploring webinar data.

Think outside the session

There is added value in creating learning experiences that do not take place during the session itself. For example:

Send participants preparatory materials before the session. Make it clear whether this is mandatory. Some participants may not have the time or motivation to go through the additional materials, even if mandatory.

Consider giving participants individual or group assignments between sessions. This enables deeper reflection. The results from assignments can be discussed during subsequent sessions.

Provide an online space for file sharing. This can be done with a cloud-based file-sharing service.

Encourage community building: Consider starting a group chat for participants to engage with each other and the facilitators before and after the session. This can develop into a long-term community of practice where participants continue to network and share ideas.

Share, reuse and scale

Consider turning part of the workshop recording into a [microlearning](#) product. For example, use three minutes from an interesting webinar presentation as part of a self-paced online course. It is important to get permission from all audible and visible participants before publishing the content.

It is also possible to create a community of practice for workshop participants. The success of such initiatives depends largely on the engagement of individuals. Nevertheless, organizers can provide the necessary platform (such as a social media group) and facilitate exchange by sparking debate and providing relevant information.

Consider low-bandwidth participants

Include instructions on how to deal with connectivity issues. Below are some useful points to keep in mind:



Encourage low-bandwidth participants to turn off HD video or switch off video completely.



Give information on the availability of recordings.



Guide participants on how to follow written chat or Q&A discussions in the video conferencing software.



Consider giving virtual workshop participants assignments between sessions. This enables deeper reflection, and assignments can be discussed in the next session.



Developing a self-paced online course

A self-paced online course can be an impactful and cost-efficient learning approach. An online course can be hosted online for a long time, is accessible to many learners anywhere and anytime, and can often easily be edited when new facts, theories and case studies are made available. Content from an online course can also be used as study material for in-person or virtual workshops.

UN-Habitat is moving towards the creation of an online learning ecosystem and corporate approach to online course development. The Capacity Development and Training Unit can provide advice to colleagues on the conceptualization, planning and implementation of online courses. [UN-Habitat Learn](#), an online platform created in 2020, supports the development and hosting of courses.

In UN-Habitat's context, online courses can be developed based upon existing normative products from different substantive areas, such as guidelines, methodologies and tools.

[Instructional design](#) approaches are essential to guide the development of online courses.

The [New Urban Agenda crash course](#) is an example of turning an illustrated handbook into a self-paced online course. The steps outlined in this section illustrate the process used in this pilot project, through which the handbook and online course development were carried out in parallel. The different steps used in this process are an extension of the five [ADDIE](#) stages of instructional design: Analysis, Design, Development, Implementation and Evaluation.



Perform a needs assessment

A needs assessment is the essential first step in planning an effective online course. [This section](#) elaborates on how to perform a needs assessment in this context.



Define learning objectives

The training needs identified during the needs assessment should serve as a guide when creating learning objectives for a course, as well as for each course section. [This section](#) elaborates on how to create appropriate learning objectives.



Select tools

Many different tools can be used in the development of an online course, with a [Learning Management System \(LMS\)](#) often being the most important. In the case of the New Urban Agenda crash course, several different tools were employed to create diverse content, including course authoring software, data visualization tools, as well as tools for video and graphic production. [This section](#) outlines different tools that can be used in the development of an online course.



Prepare a design document

The design document provides an initial outline for the course. Based on the needs assessment, learning objectives and chosen tools, it describes the flow of the course, listing each section and the intended content and methodologies they contain. [Here](#) is a downloadable design document template.



Create course script

The course script elaborates on the design document to provide a complete description of all content and functionality in the course. For reference, [here](#) is an example course script.



Develop content

Content development can be carried out with the help of different tools for [graphic design and data visualization](#), [course authoring](#), [video and simplified video creation](#), as well as custom coding in [HTML](#), [CSS](#) and [JavaScript](#).

To improve scalability, a package of raw materials for the course should be developed. This can be used to translate or adapt the course to a localized context.



Configure the course

Here the course starts to take its final shape in the Learning Management System. A content manager creates and configures the course, defines sections and creates activities, while closely following the course script. This also includes configuring course access, enrolment methods, grading and certification.



Launch

Once the course is configured in the Learning Management System, it is ready for launch. The New Urban Agenda crash course was launched in an iterative manner (first at unit level, then at branch level, then lastly a public launch) to facilitate the gathering of structured feedback. The public course was disseminated through UN-Habitat's web and social media channels, as well as by partner networks.



Evaluate and gather feedback

Feedback is gathered at each stage of the launch process. Once the course is public, feedback is also gathered through a feedback form contained within the course itself. The feedback should continuously feed into adaptations and improvements of the course.

It is important to note that evaluation should not be confined to this stage only. Instead, feedback should be gathered at every stage of the development process to continuously improve the course quality.

” Copywriting is an essential part of creating a course script. Avoid bureaucratic and long-winded language that can lead to a loss of learner interest.

Example modules of two self-paced online courses

To illustrate the types of structure, functionality and content that can be used in an online course, this section outlines examples from two courses: the “[New Urban Agenda crash course](#)” by UN-Habitat, and “[e-Learning Ecologies: Innovative Approaches to Teaching and Learning for the Digital Age](#)” on Coursera, by the University of Illinois Urbana-Champaign.

EXAMPLE 1: NEW URBAN AGENDA CRASH COURSE

The [New Urban Agenda crash course](#) is a freely accessible, self-paced online course in two parts, each taking about four hours each to complete. Each part of the course consists of 15-20 modules that can be accessed independently of each other. A certificate is awarded to learners who complete the course with a satisfactory grade.

Example content from a module in the New Urban Agenda crash course:



Introductory page. Reminds the learner of their progress in the course and how long the module may take to complete. The page includes text, photos and graphics, much like a web article.



Explanatory video with subtitles and voiceover.



Interactive map displaying data relevant to the topic.



Lecture video with visuals. One or several quizzes are embedded in the video.



Grid with boxes explaining related concepts. Boxes include a title, icon and a short text.



Flip cards displaying a title and icon on one side, and, once clicked or tapped, an explanation on the other side.



Quiz to test learner progress. Often multiple choice, but also word dragging and fill-in-the-blanks exercises.



Timeline, displaying the chronology of events in a graphic and interactive way.



Interactive presentation created with [course authoring software](#).



Feedback form asking users to evaluate the course.

EXAMPLE 2: E-LEARNING ECOLOGIES COURSE

The [e-Learning Ecologies online course](#) is a [MOOC \(Massive Open Online Course\)](#) hosted on Coursera's own Learning Management System. The course runs at regular intervals, but the course materials are always accessible. It is broken down into four weeks, with each week containing around two modules. The full course takes about 19 hours to complete. The course includes peer-reviewed assignments that are only available when the course is open. A certificate is awarded to learners who complete the course with a satisfactory grade.

Social learning, as well as learning through creation in peer-review assignments, is particularly useful for creating meaningful and active learning experiences. The efficacy of such assignments is enhanced by the large number of users on platforms such as Coursera and others.

Example content from a module in the e-Learning Ecologies course:



Video lectures with subtitles, visuals, and embedded quizzes.



Reading exercise. Succinct explanations of key concepts from the videos. Links to external materials and additional readings.



Discussion forum exercise. Learners are prompted to create a new post or comment on another user's post in a discussion forum, related to the learning materials in the video lectures and reading exercise.



Peer-review assignment (part I). Learners are asked to write a short essay on a concept from the video lectures.



Peer-review assignment (part II). Learners are asked to review three other students' submissions from the previous assignment, giving feedback according to established criteria.

Navigating through different technical tools

This section outlines different types of tools that can be used in digital capacity-building. These categories, together with the examples of specific tools, are not intended to be exhaustive. Rather, they constitute an attempt to focus on the most interesting approaches and tools for the delivery of capacity-building at UN-Habitat.

TOOLS FOR ASYNCHRONOUS LEARNING ACTIVITIES

1. Learning Management System (LMS)

The most common use for an LMS is to host and track online and face-to-face training initiatives. Other key features are lesson planning, resource storage, forums, personalized learning paths, and more.

An LMS can be proprietary (exclusive legal right, restricted from further distribution, modification and other uses) or open source (built on source code that is free to modify and redistribute). [The Principles for Digital Development](#) recommend using open source, which can help to increase collaboration in the digital development community and prevent the duplication of pre-existing work.

The list of available LMS options is vast and constantly evolving. All platforms have their benefits and limitations. Examples of open source alternatives include [Moodle](#), [Canvas](#), [Opigno](#), [LearnPress](#), [LearnDash](#) and others. Examples of non-open source alternatives include [Blackboard](#), [TalentLMS](#), [Docebo](#) and others.

Although open source may be preferred in many situations, it entails costs that cannot be ignored. Open source platforms require a development team or partner for installation, customization and maintenance.

2. Course authoring software

Course authoring software is used to create interactive learning content.

Examples of popular course authoring tools include [Adobe Captivate](#), [Articulate Storyline](#), [Articulate Rise](#), [iSpring](#) and others.

Some Learning Management Systems allow for the creation of interactive learning content directly in the platform itself, for example through the use of [H5P](#) and others.

3. Videos and animations

Video content is popular for creating engaging learning experiences. Animations can either enhance the content of a video or be used as an independent product.

Examples of video editing tools include [Adobe Premiere Pro](#) (Windows and macOS), [Final Cut Pro X](#) (macOS only), [DaVinci Resolve](#) (Windows and macOS) and others.

There are many options for animation software. Examples include [Toon Boom Harmony](#), [Adobe Animate](#), [Adobe After Effects](#), [Rive](#) and others.

Both video editing and animation software take time to learn before it is possible to produce professional-level material. Depending on what type of video is needed, it may be necessary to hire a videographer, video editor or animator.

Many websites host royalty-free stock videos, some of which are available for commercial use without attribution. Examples are [Pixabay](#), [Pexels](#) and others. It is vital to pay attention to any copyright requirements of individual videos before using them in a learning product.

Videos should be hosted on [UN-Habitat's YouTube channel](#). Alternative platforms can be used to reach users in countries where YouTube is blocked. Some examples of platforms to reach Chinese users are [Youku](#), [Bilibili](#) and others.

4. Simplified video making

Video editing and making animations both require a specific skill set. This can be a source of significant costs. There are, however, alternatives to traditional video editing. This can take the form of certain software, which may be less flexible, but potentially easier to use.

There are many services that provide user-friendly features and interfaces for producing videos with stock footage, auto-generated titles, graphics and animations. Some examples of such services are [Lumen5](#), [Designs.AI](#), [Biteable](#), [Vidnami](#), [InVideo](#) and others.

Similarly, there are services that enable the quick creation of video animations and whiteboard videos. Examples of such services are [Animaker](#), [Powtoon](#), [VideoScribe](#) and others.

5. Graphics, images and data visualization

Well-constructed graphics and images can help to illustrate concepts more effectively and efficiently than text or audio. They are often an essential component for attractive digital capacity-building materials.

There are several tools for graphic production and image manipulation, such as [Adobe Illustrator](#), [Adobe Photoshop](#) and others. These tools take time to learn before it is possible to produce professional-level content.

There are browser-based alternatives that are less flexible, but require less time to master, such as [Piktochart](#), [Canva](#), [Snappa](#), [Infogram](#) and others.

Although not primarily intended for producing graphics, [PowerPoint](#) can be an effective solution for quickly creating graphics and icons. Under PowerPoint's Insert tab it is possible to create shapes in different colours and formats. It is important to keep basic [design principles](#) in mind.

Photos from [UN-Habitat's Flickr account](#), with appropriate credit given, can be used by UN-Habitat employees.

UNOCHA offers a [set of humanitarian icons](#) under a public domain license. This means that they are free to use and edit, with attribution appreciated but not required.

There are also online repositories that offer different graphic resources, either for free or for a fee. Some services provide icons and graphics, such as [iconmonstr](#), [Flaticon](#), [freeicons.io](#), [ICONS8](#)

and others. Others, meanwhile, provide royalty-free stock photos, for example [Pixabay](#), [Pexels](#), [Unsplash](#) and others. It is vital to pay attention to copyright restrictions before using any materials in a learning product.

Data visualization can most flexibly be performed by using programming languages like JavaScript, with dedicated data visualization libraries such as [Highcharts](#), [P5](#) and others. However, this requires coding skills. There are also more accessible alternatives, which are less flexible but require no coding skills, such as [Flourish](#), [Datawrapper](#), [Kepler.gl](#) and others.

6. Text-message courses

Text-message courses are a good alternative to deliver capacity-building when participants are geographically dispersed and do not have access to an internet connection or internet-capable devices. The simplicity of text-message courses makes them accessible to learners and often less costly to develop than more advanced courses.

Examples of applications that can be used to deliver text-message courses are [Signal](#), [Telegram](#) and others.

Examples of dedicated services for delivering text-message courses are [Arist](#), [Eneza](#) and others.

7. Screen recording

Screen recording has many uses. Teachers or facilitators can provide coaching, information or guidance. Learners can use it to submit assignments, provide exercise answers or ask questions.

Many screen-recording tools enable a computer screen to be recorded while focusing on specific applications or windows at the same time as recording the speaker via a camera.

Screen recording tools help overcome asynchronous communication limitations and enhance the human aspect of an interaction. Should an instructor record a video, the exchange "remains asynchronous, but inclusion of the instructor's voice accompanying embedded comments reduces the impersonal nature of traditional, static feedback and helps clarify writing suggestions, objectives, nuance and critique." (Kelly & Banaszewski, 2018).

Examples of screen-recording tools are [Loom](#), [Camtasia](#), [OBS Studio](#) and others.

TOOLS FOR SYNCHRONOUS LEARNING ACTIVITIES

1. Video conferencing

In UN-Habitat, MS Teams is the preferred platform for virtual meetings. UN-Habitat's ICT Unit provides [general guidelines on MS Teams](#), together with guidelines on [how to attend an MS Teams meeting](#) and [how to add guests as MS Teams Site members](#).

There are many other video conferencing services, for example [Zoom](#), [WebEx](#) and others.

As of March 2021, UN Secretariat entities are authorized to use MS Teams and WebEx for video conferencing. However, exceptions may be requested for the use of other tools, which may have additional useful functions. Non-staff or partners may use other tools, and staff may join their meetings.

There are video conferencing tools that allow for more advanced, gamified environments. Examples of this include letting users wander around in a retro, first-person gaming view; providing an online space with multiple tables hosting private video chat rooms that users can move between; or giving users a virtual area where they can move around and be selective with whom they start conversations. Examples of such tools are [Gather](#), [Remo](#), [Wonder](#) and others.

[This list](#) outlines many more video-conferencing and other remote-working tools.

Additional software can be used to extend the functionality of video conferencing products. For example, allowing the presenter to appear at the same time as their presentation, with the possibility to reduce/increase their own size and transparency, as well as the size and position of presentation slides. This can make virtual presentations more engaging and fun. Examples of such software are [mmhmm](#) and others.

2. Surveys and live polls

Surveys and live polls are great tools and can serve a number of purposes.

Surveys can be used to perform a needs assessment or gauge learner knowledge levels in the initial stages of developing a digital capacity-building product. Before a live session, surveys can be used to tailor the session content according to learner needs. Surveys can also be used to evaluate a learning activity and gather lessons learned.

Examples of survey tools are [Google Forms](#), [Typeform](#), [SurveyMonkey](#) and others.

Live polls can be used during synchronous training events to energize participants, get real-time feedback, and understand participants' expectations and experience levels.

Some video conferencing software includes a function for polling.

External tools may provide additional polling functions. Examples of such tools are [Mentimeter](#), [Pigeonhole Live](#), [Slido](#) and others.

3. Whiteboarding

In in-person workshops, it is common to have access to physical tools such as papers, pens, post-its and whiteboards. These can all be used for collaborative exercises. There are digital alternatives that can be useful for structured brainstorming and idea development. Useful features include sticky notes, shapes, images, voting sessions and a timer. Many whiteboarding tools work directly in the browser and do not require the installation of any software on the workstation.

Examples of whiteboarding tools are [Mural](#), [Miro](#), [Google Jamboard](#) and others.

An applied example of whiteboarding can be found in this UN Innovation Network workshop: ["How to Host Effective Virtual Meetings"](#).

The human resources needed for digital capacity-building depend on the ambition of the initiative – its focus, size, existing team capacity, and approach.



Both video editing and animation software take time to learn before it is possible to produce professional-level material. It may be necessary to hire a videographer, video editor or animator.



Useful skills and human resources

Digital capacity-building initiatives require human resources that are often different from those needed in non-digital capacity-building. The resources needed vary depending on the type of initiative, its focus, size, existing team capacity, and approach.

One, several, or all roles in a digital capacity-building initiative can be outsourced. Outsourcing can bring down costs, increase quality, and result in faster delivery. However, outsourcing can also lead to issues with security, software and data

ownership, integration with internal systems and processes, and flexibility.

Specialists with different skills are needed at specific stages depending on the nature of the digital capacity-building initiative in question. To give a general idea, Figure 6 shows at which point in the [instructional design process](#) each different specialist is the most relevant. To do this, the five stages from the [ADDIE](#) model are used: Analysis, Design, Development, Implementation and Evaluation. Several specialist roles may be carried out by a single person. The roles and tasks needed will differ between projects and organizations.

Figure 6: Human resources needed at different stages of the instructional design process.



Project manager ●●●●●

The project manager oversees a digital capacity-building project throughout its different components and phases. The project manager ensures that team members perform their tasks according to schedule.

Digital capacity-building expert ●●

A digital capacity-building expert ensures that the digital capacity-building approach responds to the project goals and meets best practices.

Instructional designer ●●●

The instructional designer develops the instructional strategy. They work closely together with subject matter experts to turn substantive content into educational content and with the digital capacity-building expert to ensure that the educational content fits well into the digital capacity-building approach.

Subject matter expert ●●●●

Subject matter experts provide the substantive knowledge for the digital capacity-building activity. The subject matter expert works closely with the instructional designer and other members of the team to ensure that educational content is factual and relevant. They may also provide presentations or deliver lectures.

Copywriter ●

A copywriter creates clear, succinct and engaging texts. It is beneficial to have a copywriter work together with the instructional designer and subject matter experts to make sure that the language used is concise, precise and accessible.

Web developer ●

Web developers program web products, for example Learning Management Systems or interactive websites. There are different types of web developers, for example back-end (server-side and database) and front-end (look and feel) developers. A full-stack developer knows both back-end and front-end development.

Course authoring software developer ●

Course authoring software developers create specific e-learning courseware products with software such as [Adobe Captivate](#), [Articulate Storyline](#), [Articulate Rise](#), [iSpring](#) and others.

Videographer and animator ●

A videographer records and/or edits video and audio materials. Videographers need to have access to high-quality equipment. Animators create animations with software such as [Adobe After Effects](#), [Toon Boom Harmony](#), [Adobe Animate](#) and others.

Graphic designer ●

Graphic designers produce and curate the graphical materials for a learning initiative, such as infographics, icons and logos.

Voiceover artist ●

A voiceover artist records their voice for an audio component of a capacity-building product. Examples include narrated videos, presentations or text alternatives.

Online instructor, course administrator and tutor ●

These are the virtual teachers in an online learning experience. They perform tasks such as managing learner activities, grading online course assignments, facilitating virtual workshops, administering online forum discussions, responding to learner questions and feedback, and motivating participants.



Evaluation helps us to understand the impact of specific interventions and can be used to adapt and improve the learning experience.

Evaluating digital capacity-building

The evaluation of capacity-building activities increases the understanding of the impact of specific interventions. Learning experiences can then be adapted and improved accordingly.

After identifying which outcomes are linked to the training, it is necessary to devise an effective way to measure these outcomes in the long term.

KIRKPATRICK'S TRAINING EVALUATION MODEL

The most popular (Bates, 2004) tool for evaluating training in organizations today is Kirkpatrick's (1976) training evaluation model. This model measures four levels of training outcomes:

L1 – Reaction. Direct feedback from participants. Responses can be collected via online forms or polls connected to a training event or course.

L2 – Learning. Did the participant learn something? This is commonly measured by comparing survey data on knowledge levels before and after a learning intervention.

L3 – Behaviour. This level helps to understand how well learners apply training in real situations. This is commonly done through observations, interviews and follow-up surveys.

L4 – Results. How well did the learning activity achieve the intended outcome? This level is the most important, but also the most time consuming and costly to measure. The evaluation strategy here varies depending on the type of learning. After identifying which outcomes are linked to the training, it is necessary to devise an effective way to measure these outcomes in the long term.

DATA-DRIVEN LEARNING DESIGN

[Blended Learning Methodologies for Capacity Development](#) proposes a modern alternative to evaluating learning activities known as "data-driven learning design".

This approach aims to evaluate learning activities through data analysis. The analysis of user demographics and activity data can improve the learning experience in different ways. For example, a user finishes three specific courses on a learning platform. Using past data on similar users, the platform can recommend further courses that may suit the learner.

Data can also be helpful in synchronous learning activities. [This presentation](#) by the International Civil Aviation Organization during a webinar hosted by the UN Innovation Network is a useful starting point to learn more about exploring webinar data.

03

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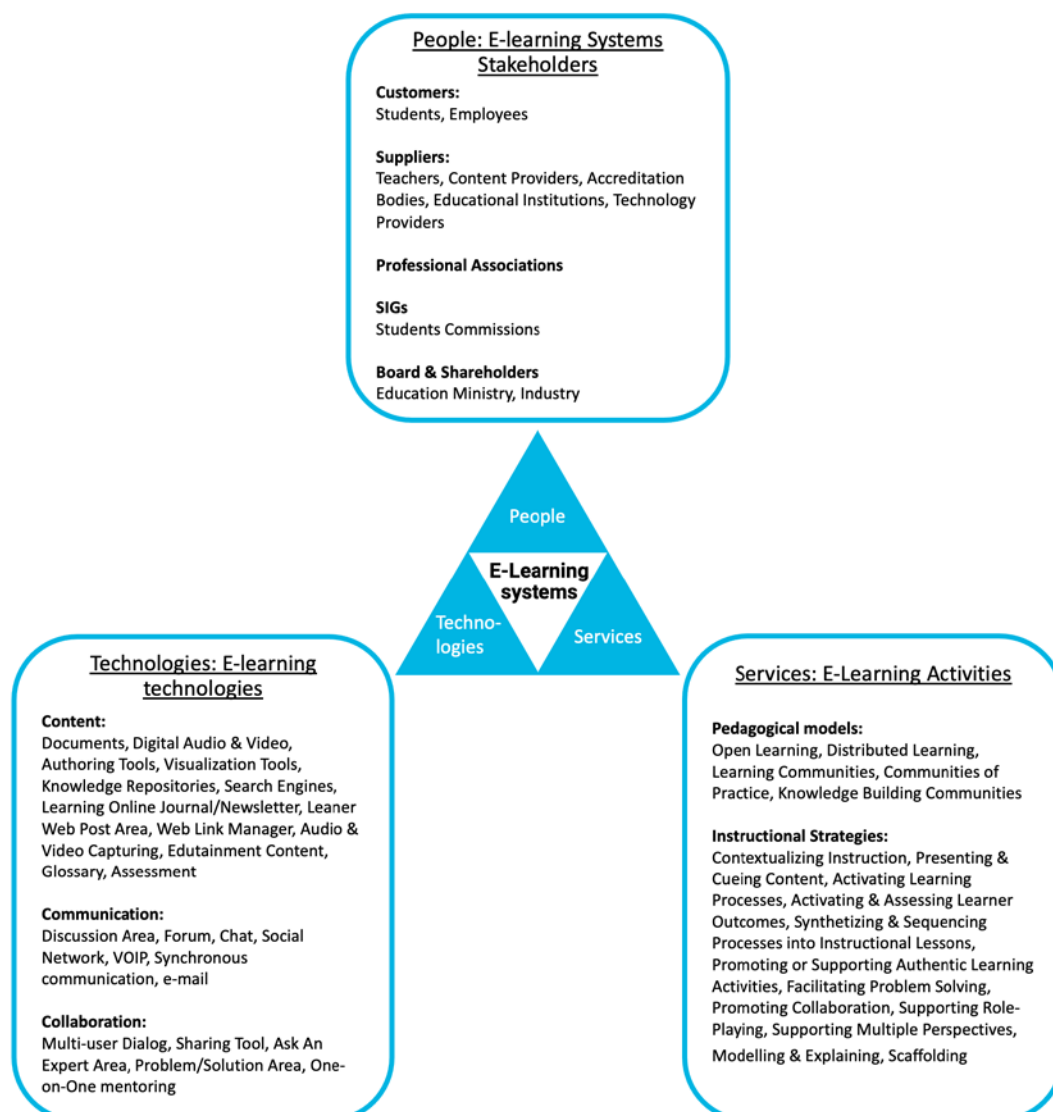
04

Annex

Theoretical frameworks

This section highlights two academic works that provide useful frameworks for thinking about digital capacity-building. The first is the “e-Learning Theoretical Framework”, which reviews extant literature on e-learning (up to 2016) and proposes a theoretical framework for e-learning. The second, titled “Seven Principles of e-Learning”, proposes seven affordances of e-learning. This section gives a brief summary of the frameworks.

Figure 7: E-Learning Systems’ Theoretical Framework (Aparicio, Bação and Oliveira, 2016)



An e-Learning Theoretical Framework

[This publication](#) by Aparicio, Bação and Oliveira (2016) reviews research on digital learning, categorises various digital learning concepts (computer-assisted instruction, e-learning, blended learning, massive open online courses (MOOCs) and small private online courses) and proposes a theoretical framework for digital learning. The study is a useful starting point for understanding the evolving definition, components, approaches and tools for digital learning.

Framework:

"People interact with e-learning systems. E-learning technologies enable the direct or indirect interaction of the different groups of users. Technologies provide support to integrate content, enable communication, and provide collaboration tools. E-learning services integrate all the activities corresponding to pedagogical models and to instructional strategies. The complex interaction combination is the direct or indirect action with e-learning systems." (Aparicio, Bação & Oliveira, 2016).

Seven affordances of e-learning

This framework by Cope and Kalantzis (2017) proposes seven "affordances", which outline areas in which e-learning can enhance education. Below is a brief summary of each of the seven affordances:

1. Ubiquitous learning

This affordance refers to ubiquitous access to learning content from different devices, offline or online, any place and any time.

2. Active knowledge making

Active knowledge making lets learners partake in the knowledge development process, for example by building on existing knowledge and discussing it with peers.

3. Multimodal meaning

This refers to the ample possibilities of e-learning to provide different types of learning materials, such as text, imagery and sound.

4. Recursive feedback

E-learning approaches and tools enable new ways of providing relevant and timely feedback, for example through peer review.

5. Collaborative intelligence

This refers to how e-learning is capable of creating collaborative learning activities.

6. Metacognition

This affordance refers to how e-learning creates new ways for learners to reflect on what they are learning. This can be done, for example, through self-assessment and peer review.

7. Differentiated learning

Not everyone learns in the same way. This affordance refers to the possibility of personalizing the learning experience to individual learners' needs and interests.

This work is also available in an [online portal](#) and as a [MOOC](#).

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