COMMONWEALTH of LEARNING | Teacher Education

TeacherFutures

Guidelines and Standards for Design and Integration of Microlearning Content

Version 1

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LEARNING FOR SUSTAINABLE DEVELOPMENT

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Overview

This Guidelines and Standards documentation has been put together as a recommendation for integration of Microlearning resources into the TeacherFutures cross-national teacher communities of Practice. The Guidelines and Standards document is further intended as a guide to assist content creators (teachers, teacher trainers, and the support team) in developing microlearning content in a consistent time saving manner. It serves to support the technical implementation of COL's Teacher Futures programme in various teacher education institutions.

The document seeks to address the following:

a) methods and technologies associated with microlearning ;
b) benefits of microlearning as a methodology for teacher learning;
c) risks to implementing microlearning;
d) guidelines on creation of microlearning lessons ;
e) microlearning content types and guidelines on curation, sharing, using or repurposing of existing and teacher generated microlearning content
f) best practices for microlearning that encourage knowledge retention in both online and face-to-face instruction, including licensing for OER.

Should you have any questions or need assistance in implementing the guidelines and standards for design, please contact the TeacherFutures design consultant at melisallela@gmail.com.

Introduction to Microlearning

Microlearning involves the process of learning via bite-sized, well planned modules and short-term learning activities. According to Hug (2006) microlearning matches our brain's limitation of working memory by combating learner boredom, disengagement, and poor retention that is attributed to cognitive overload as a result of more traditional long-format instruction (Mayer & Moreno, 2003).

> Microlearning as a term reflects the emerging reality of the ever-increasing fragmentation of both information sources and information units used for learning, especially in fast-moving areas which see rapid development and a constantly high degree of change," – (Langreiter & Bolka, 2006 cited in Hug, 2006)

Microlearning is well suited to the demands of teacher training which include:

a) **Life-long learning:** Primary and Secondary school teachers bear the heavy responsibility of teaching young people and adults. As a result they are constantly required to reflect on current ideas about education and teaching whilst applying special knowledge, attitudes and skills to identify current and future needs for professional development.
b) **Fragmented Learning:** Teachers already have busy schedules, heavy workloads that include teaching, administrative and curriculum related activities as well as social responsibilities which take up most of their spare time. Thus, traditional long-format eLearning, or in-service training is no longer effective in achieving expected results and may result in inefficient training.
c) **Self-Learning:** One of the characteristics of adult learning is that of self-learning where learning motivation is prompted by the individual. As adults, teachers place great emphasis on the practicability or usefulness of knowledge and its application to problem solving. As a result, this prompts the need for personalization of training where teachers can choose what to learn at a flexible pacing and in accordance to their own requirements.

1.1. Benefits of microlearning as a methodology for teacher learning

Microlearning objects/lessons are typically short in duration, not longer than 10 minutes if in the form or time-based media such as video, or as single images that contain condensed information such as infographics. The capacity of microlearning lessons is generally small and carries the overarching advantage of focused emphasis and a clear theme. Microlearning in teacher training has the following benefits:

i. Abundant Digital Resources

Microlearning piggy-backs on the affordances of existing web-technologies and new trends in eLearning and educational technology where content can be deployed, curated, accessed and shared by users on multiple devices and can be implemented in any learning environment. In this respect, learners use tools that they are already accustomed hence the tools leverage on pre-existing learner behaviour.

ii. Reducing Cognitive Overload

According to Sweller's cognitive load theory, the human brain has a limited capacity to process information. Studies indicate that the average human brain retains more information when the content is structured in short format chunks of not more than ten minutes – an ideal time to absorb microlearning lessons which are part of a larger learning track.

iii. Self-Paced Learning

Microlearning enables learners to consume content at their own learning pace to optimally synthesize the information. It supports flexible and self-paced learning since learners are typically in control of what, when and why they are learning. They can reference the content as often as they wish and competence can be evidenced through microlearning assessments at the end of each lesson. This can go a long way in maintaining trainee's learning enthusiasm, avoiding burnout and ingraining a sense of professional fulfillment.

iv. Learner Led

While traditional teaching methods are often instructor led and thus limit the level of interaction between learners, microlearning is more hands-on and fosters interaction via collaboration tools that enable learners to learn from subject matter experts within the group or leverage on the strength of the crowd for collaborative learning.

In such a scenario, learners also become content creators through the possibilities of responding to questions on social forums, blogs and providing feedback to other learners within a community of practice. In addition, well designed microlearning strategies can vary the modes of delivery to address learners multiple intelligences resulting in highly personalized experiences.

v. Savings on Cost and Time

Since microlearning lessons are short, they are quick to produce, enable piloting of short lessons, gathering feedback, iteration and further planning for additional lessons. This is especially quite useful where such content needs to be frequently updated. Furthermore, while developing content might require the use of paid technology, many technologies that support microlearning such as social media are freely available over an internet connection. In addition, learners can use tools that they already have such as mobile phone devices to record, edit and publish microlearning lessons.

vi. Accurate and Reusable Knowledge

Developing microlearning content requires a few rounds of iteration during which teacher trainers can review the teaching content and edit out redundant information to ensure accuracy and simplicity of knowledge. When coupled with a Learning Management System, the inbuilt reporting system further enables sharing of high-quality resources amongst teachers, mentors and technical support teams within the varied Communities of Practices (CoPs), tracking of user participation, engagement and feedback. This is useful because it allows for data-driven learning.

vii. Feedback and Discussion

Microlearning supports active interaction via synchronous and asynchronous channels of communication such as discussion forums, messages, blogs, social media pages etc. Here, teachers can raise questions, respond to questions, share learning outcomes and teaching methods and learn from the experience of others. Teacher Trainers (Mentors) on the other hand can monitor the effect of training by analyzing the feedback received from teachers in the CoPs. The platform support interaction amongst teachers, between teachers and Teacher Trainers (Mentors) and between mentors from different institutions.

1.2. Risks of microlearning as a methodology for teacher learning

When implementing microlearning into teacher training, there are a number of risks/challenges that should be considered. The following listed factors can be mitigated by creative instructional design and planning:

i. Casual Learners:

The success of microlearning is largely dependent on motivation for self-learning. As result, lack of self-motivation by the learner may lead to poor reception of the microlearning objects.

ii. Technology Barriers

The biggest challenge in microlearning is on access to varied technologies that learners (teachers) may not have access to or may not be familiar with. Other technology related challenges include slow internet connection that makes it difficult to upload or download files.

iii. Incoherence and lack of cognitive synthesis due to over-focus

Due to bite-sized nature and narrow focus of microlearning content, some complex concepts may be challenging to teach and learn in isolation. There is the possible risk that learners may fail to draw connections between the different fragments of learning objects to see the overall picture.

1.3. Methods and technologies associated with microlearning

Since each microlearning object serves a specific objective, the forms they take are diverse and dependent on the intended learning outcome. Common examples of microlearning objects that can be used across multiple devices such as desktop/laptop computers, tablets and mobile/smartphones include:

1. Short Chunks of Text
2. Short Videos
3. QR Codes
4. Interactive Videos
5. Short Podcast
6. PowerPoint type presentations
7. Quizzes
8. Learner-generated blog posts

9. Simple and Serious games
10. Step-by-Step Checklist
11. Quick Learning Modules

Furthermore, a number of tools and technologies exist which can be used to develop microlearning objects. Below we discuss common microlearning objects and suggest technologies that can be used for authoring purposes.

1.3.1. Videos

Microlearning videos are ideal for quickly teaching a specific skill or concept or to use as reference material that can be accessed repeatedly. Microlearning videos are suited for training for a number of reasons, including:

1. **Easy to Produce:** Microlearning videos can be created quite easily using readily available tools and edited quite frequently with ease when information changes. Video production no longer requires an expert in video production and editing to produce high-quality video that people want to consume.

2. **Retention and Transfer of Knowledge:** Since most people are visual learners, combining visual examples with audio creates a higher likelihood of knowledge transfer and information retention. According to the dual coding theory, we process information via two channels: the visual channel and the auditory channel. Learning is most optimum when. Mayer's multimedia principle further positions that "people learn more deeply from words and pictures than from words alone" (Mayer, 1994)

   Studies in cognitive psychology indicate that after 3 days, we retain only 10% of the information we hear and have a recall rate of 65% when visuals are added. Small bits of focused information is retained and internalized better than when the same information is presented in longer learning content.

3. **Alignment with Learner characteristics:** Video is the most popular media format that is widely shared and consumed globally. It has become a ubiquitous medium from viral videos on Youtube and Facebook to educational content such as TedEd Videos and can be easily authored using smartphones and tablets.

Creating a microlearning video is quite different from a regular learning video.

1. **Include only one learning objective per video**
   Since microlearning is intended to be short, concise and topic-centered, ensure that your microlearning video only addresses a key idea or task. Learners are seeking specific information within a much broader topic and as such, the scope must be narrow and focused.

2. **Storyboards and Script**
   Avoid going into video production without a plan even if you are a subject expert in the specific area. Planning in this case involves having a script and/or storyboard to

ensure that you are concise and stay on topic. Scripts will detail the narration in a video and make it easier to add subtitles or closed captions for accessibility purposes. Storyboards serve as a visual blueprint for the content (visuals and texts) and sequential flow of information in your video.
TIP: Use the provided Microlearning storyboard template for planning purposes.

3. **Use visually descriptive content**
   Visuals help in simplifying ideas or presenting abstract concepts that may be impossible to realise otherwise. Furthermore, they assist in grabbing the learners' attention. Visuals in this regard refers to illustrations, photos, infographics, diagrams, or charts, as well as time based media such as animations. Text refers to both written text and audio. It is important to design combinations of text and visuals properly in a way that furthers the objectives of the learning resource. Choose visuals that are relevant, emotive, relatable and compelling.

4. **Use audio effectively**
   Audio can make or break your microlearning video. Use audio intelligently in a way that furthers the understanding of the content in your video. If possible, record your audio in a natural sounding tone and avoid the use of text to speech computer synthesized sounds. Furthermore, avoid the use of extraneous backgrounds sounds and music unless they serve to support the actions in the video and do not interfere with the narration.

5. **Employ the right production tools**
   There exists a plethora of authoring tools for varied video formats such as live recordings and animation that allows you to rapidly create microlearning videos. It is therefore pragmatic to identify an authoring tool that meets your intended needs and is in tandem with your skill sets.

   We have provided video templates resources to get you started that can be accessed here.

   Below is a recommended list of video tools that can be used to create microlearning videos:
   a) Camtasia Studio
   b) Adobe Premiere Elements
   c) PowerPoint (for screencasting)
   d) Articulate
   e) Adobe Captivate

Links to Video production tutorials:
a) Creating Screencasts with Microsoft PowerPoint
b) Video Editing in Adobe Premiere Elements
c) Camtasia studio

Links to Video production templates:

a) Video template in Camtasia studio
b) Screencasting template in Microsoft PowerPoint
c) Video intro template

1.3.2. Interactive Presentations

Presentation tools such as Microsoft PowerPoint can be used for creating microlearning objects such interactive presentations that infuse games, video and quizzes. However, to achieve success in using tools that are conventionally used for presentations, you need to approach their use from a point of view separate from creating presentations for face-to-face interaction.

PowerPoint for instance contains a number of inbuilt features that are adequate for building simple microlearning objects. The following are general recommendation for creating interactive presentations:

1. Choose the ideal authoring tool.
2. Change the default layouts e.g. alter backgrounds, include clickable links to outside resources, or add additional relevant and attention-grabbing graphics to make it more exciting. Refer to the templates that have been provided for commonly used tools such as PowerPoint and Articulate.
3. Make navigation non-linear and add menus at the beginning or the presentation for ease of navigation.
4. Add hyperlinks and integrate videos (see previous section on videos).
5. Add characters and audio to make your content immersive.
6. Add stories (that could link to real world scenarios)

There are a number of tools that allow you convert content that you have created in PowerPoint into more dynamic, engaging, and interactive formats. A few examples are discussed below are ideal for embedding animation, video, sound and quizzes to create rich microlearning objects:

1. **Articulate Storyline**

Articulate allows you to convert presentations, such as those created in PowerPoint, into interactive eLearning courses that feature rich and immersive multimedia content. It features a wide range of templates, screen capture tools, and a character library that you can use to design your eLearning course.

2. **Adobe Captivate 8**

Captivate allows users to create multi-screen responsive eLearning without programming. You can use the intuitive UI to convert a PowerPoint presentations into engaging eLearning or mlearning microlearning object using actors, voices, interactions, and quizzes. It further supports HTML5 publishing to deliver any content to mobile devices, the web, desktops, and leading LMSs such as moodle.

3. **iSpring Suite 7**

iSpring is based in PowerPoint hence provides comfortable content authoring right in the familiar PowerPoint interface. It is easy to use, and contains a wide range of capabilities such as adding rich media and characters, creating quizzes and interactions. Furthermore, its cross-platform content format allows you to publish your microlearning object into formats that are accessible on most browsers, mobile devices and LMSs.

4. **Lectora 12**

Letora is a commercial application (with a free trial version) that is built for professionals who want to easily turn their presentations into eLearning courses and is great for collaboration and teamwork in the cloud.

5. **Elucidat**

Elucidat is a commercial application (with a free trial version) that is ideal for novice and technical authors to create engaging, interactive and gamified eLearning. It provides the building blocks you need to create well designed, and engaging eLearning without having to start from scratch and is a perfect tool for turning presentation content into interactive eLearning courses.

6. **Gomo**

Gomo is a cloud based commercial application (with a free trial version) that allows you to create multi-device HTML5 courses in minutes. Using their intuitive drag and drop interface to convert PowerPoint presentations into highly interactive courses without programming. It allows you to drop in sound, video, animation, quizzes and rich interactivity to engage your learners. You can further embed third party content from across the Internet, including Twitter feeds, YouTube and Vimeo videos, Google Maps and more.

1.3.3. Interactive PDFs

Interaction PDFs (Portable Document Format) commonly referred to as iPDFs, are gaining use as quick and handy resources that are ideal as a microlearning object. While early versions only allow for navigation to particular sections of a document by clicking on a provide table of contents page, more recent tools support additional interaction that trainers and instructional designers can leverage upon.

iPDFs are responsive and mobile friendly and can therefore be supported across multiple digital devices for easy circulation. Furthermore, they are relatively affordable, easy to use and provide versatile ways to present content. (The guidelines and standards for design and integration of microlearning content is organized in sections within an interactive PDF document.)

iPDFs are well suited for both online and offline access and are compatible with all browsers. iPDFs support the use of simple click and learn activities help organize and index information through features such as:

- Contextual Pop-ups.
- Tabs.
- Tooltips.
- Animations.
- Dropdowns.
- Search.
- Click and reveal.

In order to conform to the requirements of microlearning, it is important to analyse when it is appropriate to use iPDFs. Potential use case scenarios include:

- Creating awareness about a topic and not building skills and competency;
- Relaying quick communication within a short time-frame;
- Learning does not require assessment or scoring such as in a LMS;
- Are useful as reference material that supports larger training.

Commonly used tools for creating interactive PDFs include Adobe InDesign, Adobe Presenter, Adobe Captivate which may require a moderate learning curve. Other easy-to-use tools such as Microsoft Publisher and Microsoft Word can also be used to achieve almost similar results.

Links to Interactive PDF resources

1.3.4. Animation

Animation provides a medium that can combine both description and exposition in a narrative context in order to "visualize dynamic phenomenon that is not easily perceptible, impossible to realize in practice or is inherently visual and can enhance a learner's understanding of both concrete and abstract concepts" (Betrancourt & Chassot, 2008). Animations are a powerful medium to create engaging learning experiences that bring content to life and visually communicate an idea in an easy to comprehend manner that digests complex ideas.

Animation, when used pragmatically and intentionally is a powerful tool for creating microlearning objects that deliver complex concepts in engaging ways. Animation is especially useful in the following scenarios:

- In explaining abstract concepts
- Improving information retention
- Engaging learners
- Making content relatable
- To surprise and delight learners
- To improve attitudes towards training
- To emphasize visual metaphors, rhetoric and didactics.

Below is a list of recommendations when developing animation for use as a microlearning object:

1. **Write a Script**

Writing a script in a few words helps you to determine the most important parts and key takeaways. A short script allows you to omit unimportant details that may distract learners.

2. **Tell a Story**
   Determine your narrative and the main learning intent of the animation. Key questions to ask include: what should your learners get from the lesson? do you need an animated character/persona to help relay the story?

3. **Use the Right Tone (Conversational Tone)**
   Although you are creating an animation, it does not necessarily have to be "cartoony". Animation in this case refers to images that move in order to relay a story and not cartoon characters with simplistic tones. If dealing with serious subject matter, avoid the use light-heartened tones but rather opt for a more authoritative tone.

4. **Avoid extraneous information**
   While animation for film requires aspects such as providing background information about characters or referring to secondary characters who are not present in a scene, this only contributes to information overload. Avoid extra details that do not support the learning objectives such as special effects, a lot of action since busy scenes will serve as a distraction from the main content.

5. **Use Different Media**
   A combination of different media forms such as music, sound effects, character animation and pictures provide a rich variety to keep your learners attentions whilst emphasizing the most important parts of the lesson.

6. **Seek Different Perspectives**
   Test your storyboard (rough mockup of your animation) within the CoPs before you start working on it in order to outside perspective from colleagues and eventually fine tune your work.

Although animation production is essentially a big budget endeavor that requires specialized training, a number of tools exist that allow ease of production to individuals with no prior skill in animation. These include:

1. **Powtoon**
   Powtoon is a free cloud-based animation tools that enables users to quickly create animated presentations and animated explainer videos using pre-created objects, imported images, provided music and user created voice-overs.

2. **Moovly**
   Moovly is a commercial cloud based application that allows users to easily create multimedia content such as animated videos, video presentations, animated info

graphics and any other video content that includes a mix of animation and motion graphics.

3. **GoAnimate**
   GoAnimate is commercial easy to use online tool for creating explainer videos, training videos and eLearning videos through drag and drop options. It is very easy to use and can therefore be used by individuals with no animation background to create content in three main styles: Whiteboard style animation, 2D character animation and video infographics.

Link to Animation resources.

1.3.5. Infographics

Infographics are a combination of visuals and text that simplify complex ideas. They are great for learning/training that involves facts, statistics, and trends. Infographics also act as quick reference tools since they give a general overview of the topic.

While most infographics display well on computer screens (desktops and laptops), they tend to display poorly when viewed on mobile devices. To remedy this, and to ensure that the structure breaks away from infographics that contain multiple concepts, we recommend the following:

1. **Chunking content**
   This is applicable when your infographic contains multiple points and section. As a result, you should rework the infographic into separate smaller infographics, each containing one of the main points.

   This enables you to relay the depth of each point even though the user may need to view separate graphics to consume all the content. It is therefore prudent to name your graphics appropriately in a sequential manner. By doing so, you will have created separate pieces of micro-content that can be easily disseminated on social media platforms.

2. **Format**
   Refer to the style guide that details on formats and dimensions for social media platforms.

3. **Design**
   Reduce the amount of text to ensure that headlines and callouts have greater impact and to keep the graphic portions more prominence.

4. **Call to action**
   Call to action such as using the share button is useful in prompting the user to disseminate the content to a larger audience.

Tools such Adobe Illustrator while well suited for creating beautiful infographics, require specialist graphic design skills and therefore cannot be used individuals who are not familiar with vector based design tools. However, other tools exists that remedy the need to specialist skill. A few examples are listed below:

1. **BeFunky**
   BeFunky is essentially a photo editor and collage maker that also includes an infographic maker. Select a template, customize your theme with images and icons, and personalize the infographic by adjusting the text, colours and layout, then simply save and export.

2. **Visme**
   Visme allows you build presentations and is also geared towards creating engaging infographics. It contains over 100 free fonts, millions of free images and thousands of quality icons, and there's options to include video and audio (including the ability of record a voiceover directly in the editor – handy!). You can further animate your content to make things clearer.

3. **Snappa**
   Snappa is a graphic design tool that includes a free infographic maker. It is aimed at non-designers and offers preset templates that are optimised for social sharing on the web. It contains a simple, drag-and-drop interface, and access to thousands of hi-res, royalty free stock photos.

4. **Canva Infographic Maker**
   Canva is a powerful and easy-to-use online tool that's suitable for all manner of design tasks, from brochures to presentations and much more besides. It also offers users a vast library of images, icons, fonts and features to choose from.

5. **Venngage**
   Venngage is a great tool for creating and publishing infographics because it's so simple and easy to use. You can choose from templates, themes, and hundreds of charts and icons as well as uploading your own images and backgrounds, or adapt a theme to suit your brand. You can animate them too!

6. **Vizualize**
   Vizualize can visualise your CV in one click and also take a look at previous examples. The idea is to enable people to express their professional accomplishments in a simple yet compelling personal visualisation.

7. **Google Charts**
   Google's chart tools are powerful, simple to use, and free. You can choose from a variety of charts and configure an extensive set of options to perfectly match the look and feel of your website. It further allows users to connect your data in real time.

1.3.6. Social Media

According to the Oxford dictionary, the term "social media" can be defined as websites and applications that enable users to create and share content or to participate in social networking. Essentially, this means that the internet and its tools can be used to communicate in new, constructive and collaborative ways, enabling us to work together and communicate remotely - at the same time, or at different times.

Social media platforms such as Facebook, LinkedIn Twitter and WhatsApp enable social learning i.e. learning with and from others. It facilitates a personal experience since learning is not taking place in conventional formal learning environment. Furthermore, the bite-sized communication that takes place on social media platforms characterized by a preference for smaller pieces of information is very much aligned with microlearning. Content can be easily accessed and shared across multiple devices using features such as chat, comment share, like etc.

A simple typology of social media could include (but is not limited to) the following:

Category	**Examples of social media tools**
Blogging	Blogger, WordPress, Typepad
Bookmarking	Diigo, Delicious
Microblogging	Twitter, Tumblr, Foursquare
Photo sharing	Flickr, Instagram, Pinterest, Picasa
Video sharing	Vimeo, Vine, YouTube
Presentation sharing	Prezi, Slideshare, Scribd, Issuu
Social News sharing	Digg, Reddit
Social Networking	Facebook, Google+, LinkedIn
Wikis	PBWorks, Wetpaint, Wikispaces

There are several pedagogic advantages to using social media in teaching and learning, as well as in encouraging students to use it autonomously in their own learning. They include:

For Teaching

- Blogs to share introductions and other induction activities
- Wikis and Google Drive for project collaboration
- Google hangouts for group online meetings
- YouTube videos for how to guides
- Screencast tools such as Jing and Screencast-o-matic to create short summaries
- Pinterest for visual reading lists, Diigo for social bookmarking

For Academic Professional Development

- Sharing information via Twitter and LinkedIn
- Discussion forums such LinkedIn groups and Google+ communities
- Curation tools to gather resources on specific topics such as Scoop.it

For Research

- Be known as an expert in your field on LinkedIn
- Research your project definition, funding and collaboration reaching out to a rich personal learning network of educators using social media
- Share and promote publications: papers, books, articles, websites, presentations via Twitter, Mendeley, ResearchGate, Academia.edu and LinkedIn

For Student Guidance

- Facebook and Wikis for FAQs and space to raise questions
- Twitter to signpost support areas such as wellbeing, study support, disability support
- Social Bookmarking tools such as Diigo to tag and highlight key documents and web resources
- Pinterest board of Who's Who in Student Support
- Newsletters using Blogs

For peer Support

- Maintain/make new connections/friendships via Facebook happens!
- Course blogs to share interests, hobbies etc.
- Collaborative Pinterest boards to share inspirational quotes or picture quizzes of places and people in University
- Online group chat using Google+ hangouts, Skype or Blackboard Collaborate

For student Professional Development

- Share information via Facebook groups
- Professional networking
- Learning about companies via LinkedIn company pages
- Job opportunities/career development on LinkedIn and Twitter

For recruitment

- Communicate events/open days via Facebook, Eventbrite and Lanyrd
- Showcase event photos and videos on Pinterest and Flickr
- Company presence on LinkedIn Recruitment - Post info and links to undergraduate and postgraduate courses, distinguished lecture series, careers opportunities and the university Media Centre

University Communication

- Having an active presence on Twitter, LinkedIn Company page and Facebook
- Clearly place links to university social media spaces on websites and written communication
- Utilise social sharing buttons so that information can be easily shared by readers to their connections via LinkedIn, Twitter, Facebook and Google +

The following recommendations are to ensure that the microlearning objects do not disappear in the plethora of information on social media platforms:

1. Encourage learners to comment (react, like, share) or rate the microlearning objects. Additionally some platforms such as Facebook allow you create polls where you can poll the efficacy of a resource.
2. Compel learners to talk about what they are learning, exchange ideas and engage in discussions related to the microlearning object.
3. Encourage learners to ask questions related to the training to reinforce learning.
4. Encourage curation of learner-created microlearning object.
5. Provide forums for support and responding to queries by learners.

While there are an abundant number of social media platforms, the most commonly used platforms include:

1. **Twitter**

   Twitter is ideal for develop a community among your students and experts in the field. Social media channels like twitter allow students to connect with experts in the field and establish industry linkages that can lead to internship opportunities.

   Link to TeacherFutures Twitter handle: @TeacherFutures on Facebook

2. **Facebook**

   Facebook allows you to create pages and (study) groups (private or public) where you can post daily activities for learners who subscribe to the pages by clicking on the like button or by requesting to join the group.

   Link to TeacherFutures Facebook Page: @TeacherFutures on Twitter

The aforementioned microlearning objects are not a comprehensive list and can be further extended to include interactive videos, audio recording, blogs and microblogging exercises. The examples are intended as a starting point in exploring the use of varied media forms to create microlearning objects.

1.4. Microlearning and print-based resources

Typically, print based materials can only provide links that lead to online repositories which learners have to copy and paste or retype into a browser in order to access the material. This can be particularly cumbersome for lengthy URLS. There are two ways to mitigate this. The first is to use Quick Response codes and the second is to use a URL shortener.

1.4.1. Quick Response Codes

One of COL's innovative ways to mitigate the problem of cumbersome and long URL's is through the use of Quick Response (QR) codes which allow for the integration of microlearning content including video, animation and related multimedia forms into print based materials.

QR are two dimensional matric barcodes that are used to store information in a digital medium. They were first used in 1994 by a Japanese company for inventory tracking and

their use has since expanded to the academic community as well (Ozcelik & Acarturk, 2011 cited in Abeywardena, 2017).

Typically, QR codes will have an encoded URL that leads to a specific webpage or multimedia resource on the internet. COL's Print2Screen app further allows users to access compatible Print2Screen QR codes that are encoded with additional information such as titles, descriptions, notes that are useful for enhancing the learning experience (Abeywardena, 2017). Using the app, learners can point to the relevant section on the print material that contain the QR code in order to view the material on their form. The app further keeps track on the use of learning resources, stores links to the resources on the device for further perusal, allows users to add study notes and share resources on social media.

To use the app, download the beta version from the app store by clicking on the link below or scanning the associated QR code. The app is available free of charge and is currently available for Android OS hence can run on android smartphones and tablets.
Click here to download the Beta version.

You will also need to use a QR code generation software that will enable you to generate the QR code. A number of QR code generators exists including but not limited to:

- http://www.qr-code-generator.com/
- http://goqr.me/
- https://www.the-qrcode-generator.com/

In order to encode the additional information into your QR code, it must adhere to a specific format as show below:

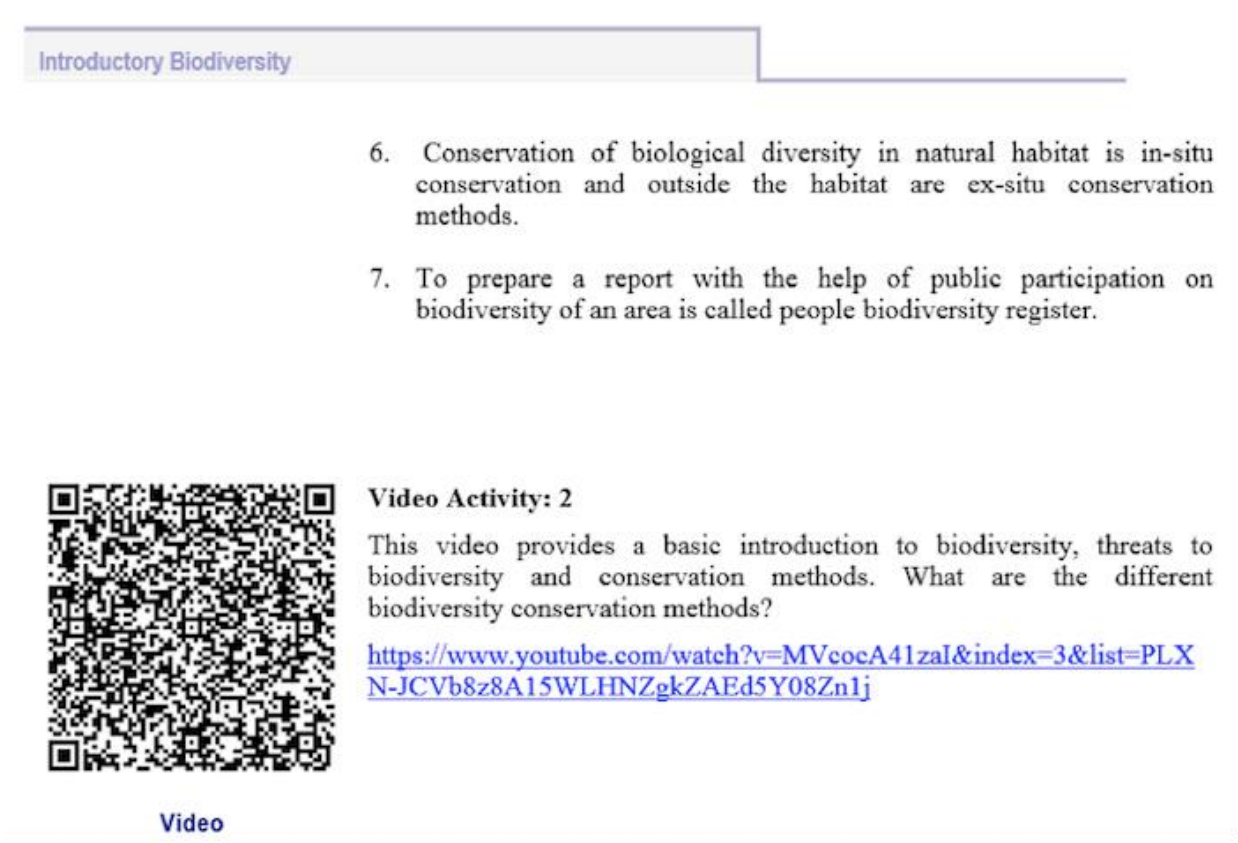
Resource URL; Title of resource; Notes (e.g. brief descriptions. Questions etc.)

Abeywardena (2017) provides an example on how the above format is implemented:

https://www.youtube.com/watch?v=xyub1qIbha8&index=2&list=PLXN-JCVb8z8DS1umCwF2cvJoIgxSDRP4j; Techniques of Critical Thinking; This is a short video that explains how to acquire and develop techniques of Critical Thinking and what are the obstacles or hurdles in critical thinking.

An example from the above URL is shown below:

Once the QR code has been generated, it can be placed in the print based material (see example below) alongside additional information that serves to describe the microlearning object (video, animation etc). Furthermore, a URL should be provided for users who do not have access to smartphones. Using a url shortener is recommended to enable ease of access for learners who cannot access the QR codes.



The other advantage of using the Screen2Print app is that you are guaranteed of security since the app only supports resources from a select list of websites and related subdomains. These include:

1. https://www.col.org/
2. http://cemca.org.in/
3. http://oasis.col.org/
4. https://www.youtube.com

5. https://vimeo.com/
6. http://nptel.ac.in/
7. https://commons.wikimedia.org
8. https://www.flickr.com

1.4.2. URL Shortners

A number of free online URL shortener applications exits to reduce the length of a URL. This will facilitate ease of sharing links to online resources. URL Shortener are web-based service that convert a long URL (website address) and it into a very short easier to manage URL. When a user clicks on a shortened URL they are immediately redirect to the webpage with the longer URL.
The main advantages of URL shorteners is that they not make sharing of URL's easier, but they take up less space in a document and are much easier to manage.

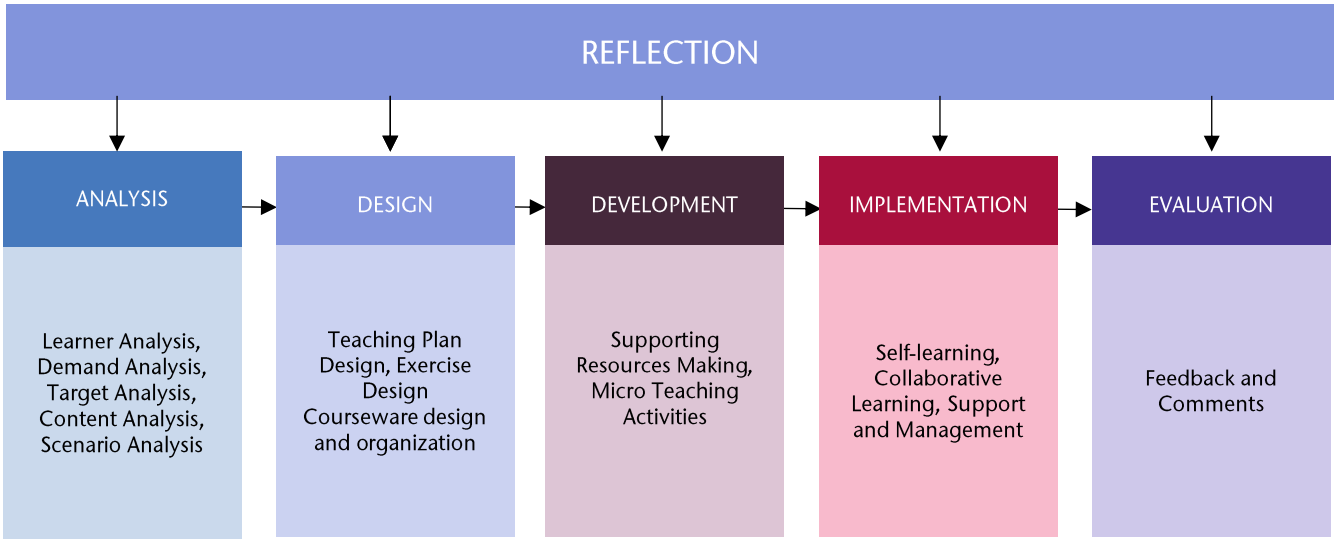
While there are a number of free URL shorteners, they each have different sets of pros and cons to use. Google URL shortner and Bit.Ly for instance, is linked to the users Gmail account and further enables you to derive analytics on use. Below is a list of recommended tools:

1. Google URL Shortener
2. Bit.ly
3. TinyURL
4. Fur.ly
5. Cli.gs
6. Snip URL
7. Is.gd
8. V.gd
9. Tweetburner

2. Guidelines on creation of microlearning lessons

Creating a microlearning lesson is a complex systematic task that includes planning, design, creation, application and research. Microlearning for teacher training must therefore meet teachers' training needs, leverage on the affordances of the microlearning objects, meet the teachers' individual development and further the development of their professional skills through life-long learning.

We recommend the following model (based on ADDIE) for creating microlearning lessons for teacher training



2.1. Analysis

Before starting to create the microlearning lesson, it is integral to first conduct a detailed analysis of the entire process. This will include:

1. **Learner Analysis**
   As learners, teachers possess unique learning preferences, it is thus imperative to understand who they are by being cognizant of aspects such as age, gender, socioeconomic status, and experience and education level.

2. **Demand Analysis**
   Learning amongst adult learners is is demand-centered. As a result, it is crucial to understand the teachers learning requirements in order to ensure the micro-lesson will stimulate learning motivation and meet the learning needs.

3. **Goal Analysis**
   This is to determine the goal(s) that teachers should achieve at the conclusion of the learning activity. Furthermore, this goal should be communicated to everyone who is involved in the creation of the particular microlearning lesson. These goals must be measurable.

4. **Course Content Analysis**
   The teacher trainers (mentors) should align the course content to the learning goals and device ways of chunking the content into reasonable small units and knowledge points. Are there existing material on the topic? How will the lesson be assessed?

5. **Scenario Analysis**
   This involves assessing the learning environment and in order to consider the tools to use, platforms to avoid, and potential challenges that the teachers may encounter in application/demonstration of knowledge, as well as other physical and organization constraints that may impact learning. In what setting will the learning take place and would it influence the efficacy of microlearning? What are the technical requirements of the course?

2.2. Design

This stage is focused on the microlearning objectives, assessment instruments, exercise design, lesson plan design, content and media selection. The teacher trainers should fully understand curriculum goals for informed documentation of the lessons instructional, visual and technical design strategy. Documentation in this case refers to microlearning teaching plans, storyboards and scripts for microlearning objects and selection of appropriate media for microlearning objects.

Recommendations for documentation:

1. Provide relevant background introduction of the microlearning object at the beginning in order to contextualize it.
2. Design the introduction in an attractive manner in order to stimulate study interest
3. State important concepts clearly in an easy to comprehend and memorable manner
4. Provide relevant links to sections that contain a lot of theory
5. Ensure that skills teaching is clear
6. Include appropriate questions and varying questioning strategies to promote critical thinking about the content
7. Provide a brief summary at the end of the lesson, clarify ideas and emphasize difficult concept.

2.3. Development

Developing microlearning lessons consists of production of the microlearning objects such as video production (shooting, recording and editing), creating animations and infographics depending on the type if microlearning object being developed. At this point, content outlined in the design phases is assembled and/or created.

2.4. Implementation

At this stage, Microlearning lessons are packaged to be uploaded into the relevant platforms e.g. on DVD, LMS, social media platform etc. The decisions made in the design phase will largely influence how this is implemented. It is important to ensure that the content works and displays as is required before teachers commence learning hence conducting a pilot of the course is a useful exercise. Once the microlearning lesson is

uploaded, teachers can consume the content independently during training, take part in the course activities and provide feedback to the trainer.

2.5. Evaluation

Evaluation of the microlearning lesson consists of both formative and summative evaluation.

Formative evaluation is present as reflection in each stage of the process while summative evaluation consists of design of specific feedback opportunities to solicit for feedback from the users. Teachers who are part of the microlearning lesson should be able to evaluate the content, its design, process against their own experiences in order to review whether the lesson has achieved set goals

2.6. Reflection

This is an ongoing process that trainers should engage in order to comprehensively review every aspect of the microlearning. The last round of reflection enables trainers to adequately revise or update the lesson as required.

Below is a framework on how to structure each microlearning lesson and example microlearning objects for each structural element:

WHAT STRUCTURAL ELEMENT	**HOW** INSTRUCTIONAL METHOD	**MEDIUM** MICROLEARNING OBJECT
WELCOME TO THE LESSON	Structured overview	Video
AWAKEN PRIOR KNOWLEDGE	Inquiry Drill and practice	Survey on Moodle Quiz
REVIEW KEY POINTS	Mental modelling Discovery learning	Infographic
CONTENT	Direct instruction Lecture Drill and Practice	Video Animation Infographic Interactive PDFs
DISCUSSION	Reflective discussions Group discussion Debate	Discussion forum Social media posts
REVIEW KEY POINTS	Question and answer Inquiry	Video Infographic
ASSESSMENT	Quiz Inquiry	Moodle Quiz Google Forms

3. Best practices for microlearning

This section entails visual design standards, as best practice recommendations for delivery of microlearning that encourage knowledge retention in both online and face-to-face instruction. It also provides in depth practical information on Open Educational Resources.

3.1. Visual design standards

Most microlearning objects will contain any of the following visual design elements:

1. Graphical user interface (GUI)
2. Font
3. Color
4. Graphics

3.1.1. Graphical User Interface (GUI):

The Graphical User Interface is the point of interaction between learners and the content that you have created. It facilities interaction and enables navigation through the learning resource using items such as icons, menus and controls. It is therefore crucial to pay attention to the design of the User Interfaces as it will have a major impact in determining the success of failure of the microlearning content.

Common features of a GUI will often include: Next and back navigation buttons, menu based navigation, audio controls, closed captioning controls for accessibility, contextualized help button, and Exit/close buttons. Take note of the following while creating custom layouts for microlearning objects:

- **Intuitive**: Make interfaces friendly and easy to understand. If you need to incorporate icons, use the provided resource packs that include most frequently used icons in User Interfaces.
- **Unobtrusive:** The design of the UI should not overpower the content. Otherwise users will fail to notice the content.
- **Flexibility**: Since microlearning content changes rapidly and is updated over time, you should make provisions for changes to the overall functionality over time.
- **Simplicity:** Use simple and clean layouts that lay emphasis on the content and purpose of the learning material.

Below is a summary of guidelines that relate specifically to user interface design from the larger set of findings by Richard E. Mayer.

1. The multimedia principle: People learn better from a combination of text and visuals rather than text alone. Words and graphics are more conducive to learning rather than text or graphics alone.

The inclusion of visuals improves learning. Visuals in this regards refers to illustrations, photos, infographics, diagrams, or charts, as well as time based media such as videos or animations. Text refers to both written text and audio. It is important to design combinations of text and visuals properly in a way that furthers the objectives of the learning resource.

- Decorative graphics: Serve to decorate a document without necessarily enhancing the message of the learning object. Avoid decorative or representational graphics but rather focus on providing explanatory graphics that help the learner process and interpret information.
- Representational graphics: show a sing aspect of a photo with a caption explaining the photo.
- Relational graphics—like comparative graphs or interactive systems models
- Organizational graphics: These show the relations among elements and are useful for showing changes in time and space.
- Interpretative graphics: These show phenomenon that would otherwise be invisible—for example, an atomic structure, greenhouse gas flow, or the global movement of money.

2. Coherence Principle: Graphics should be relevant, not merely decorative.

- Avoid extraneous visuals as they add more to the cognitive load and lower retention. Any onscreen graphic should serve to complement the learners' thinking process and not to distract them.
- Avoid learning objects with extraneous audio and only use music at the beginning and end to ensure learners only focus on the lesson contents.
- Avoid learning objects with extraneous words such as long phrases and sentences.

3. Redundancy Principle: Use animations to teach physical procedures and still images to teach processes.

People learn physical procedures better by watching videos or animations and learn conceptual processes better when they are illustrated by a series of static images.
Avoid redundant material such as narration that is accompanied with identical text since people begin to lose focus when they hear and see the same verbal message in a presentation.

4. Contiguity Principle: Don't separate related text and visuals. Put them in close proximity.

In line with the basic design principle of proximity, learning research has shown that people learn better when text relating to an image appears near that image. As obvious as it sounds, designers often violate this guideline. For example, rather than adding a list of labels to a diagram's caption, create callouts, drawing lines to various parts of the diagram and labeling those parts directly; and rather than providing feedback for an incorrect answer at the bottom of a screen, include it beside the learner's answer.

Also, include an explanation in the form of a narration whenever possible. If you can't use narration, provide text for learners to read before playing a video. While you can present these on the same screen, avoid having text appear on a screen at the same time a video or animation is running. That would be too much visual information for learners to take in at once.

5. Personalization Principle: User a conversation style and virtual characters
Research shows that people learn better when they perceive social presence. For this reason, using a conversational tone in first or second person increases learning. We are hardwired to pay more active attention when we're dealing with human beings rather than machines. This is probably why virtual coaches, tutors, characters, or avatars help people learn. Keep in mind that you should use agents for instruction, *not* entertainment. Agents are good for providing hints, explanations, and demonstrations, but you need to use them sparingly to prevent their becoming irritating.

Interestingly, realistic characters are not more effective instructors than cartoon characters. In fact, an agent does not even need to be visible, as long as learners hear a voice. Also, a voice should be a human voice rather than a machine voice. So don't blow your budget on a 3D animated avatar with a robotic voice. A simple illustration with a human-voice narration—regardless of whether that human is visible—is enough for learning gains. As a final note, while having a realistic human appearance is not necessary, learners do benefit from agents who exhibit realistic human behavior such as human-like eye gaze and gesturing.

6. Segmenting Principle: Break complex information into chunks and provide pre-training.
Two basic ways of managing complex information are either to break it into segments, or chunks, or to extract difficult terms or key concepts and deal with those first, which is called *pre*-training. Segmenting means breaking content into parts that deal with just one, two, or three steps or concepts at a time.

A common way that lessons are broken down and pieced together is by playing a "Continue" button in the frame of each slide. This does two things, the first of which allows the learner to move at their own speed and ingest the information at the speed that works best. It also has a easy to understand method to piece all the different segments together.

7. Choose your tools based on learning activities.
Different types of tools are most effective for different types of learning activities. For example, asynchronous communication tools that allow interaction over time—such as discussion forums—are well suited to learning experiences that require reflection or independent research. Synchronous tools like chat or live online classroom sessions are well suited to experiences that benefit from group synergy and social presence.

8. Know when to give learners control.
Allow learners to control their pace through a learning experience. Give them video and animation controls, let them review previous content, and allow them to exit at any time. However, you should be more careful about giving learners control of the sequence of instruction.

9. Design learning games and simulations in strict alignment with learning goals.
The recent trend in gamification has led to the assumption that adding badges, rewards, and scoreboards to just about anything makes it a game. The main point to take away from games and learning is the notion of extrinsic versus intrinsic motivation. While it's tempting to think that adding game rewards and goals would increase learners' motivation and thus help them to learn better, you have to ask what is motivation about? Are people more motivated by learning a topic or by collecting points?

3.1.2. Graphics

Graphics in microlearning content enhances the look and feel of the resource and are critical to learning success. Graphics include visuals from the real world such as photos, or computer generated imagery such as vector images and raster images including illustrations, icons, graphs, diagrams and infographics.

Visuals should be placed strategically in your microlearning content to support and engage learners with the learning material. It is recommended that you label visuals appropriately.

Recommendations for use:

- Label images appropriately
- Use relevant images
- Avoid visual elements that do not add instructional value
- If possible, use SVGs (scaled vector graphics) as these are resolution independent and will scale up or down depending on screen size
- Photography, especially of people, has greater power to communicate a message to our audience. The images we use should reflect and respect the diversity and cultures of the Commonwealth nations. Where possible, photographs should convey the emotions and setting of the content they represent.
- Good photography can dramatically improve connection with material and engagement with a document, while poor photography can be distracting.
- It is very important to use images of an appropriate resolution. Low resolution pictures that look pixelated make COL look unprofessional and distract from our message. It is better to have no photography than poor or low resolution photographs.

The following are recommendations on where to find visuals for your microlearning content:

- Icons – a comprehensive list of commonly used icons is provided in the TeacherFutures icon pack. Link: TeacherFutures Icon Pack
- Images (Photos): COL's publishing policy is to publish using Creative Commons CC BY-SA. Images require attribution, meaning you must give appropriate credit, provide a link to the CC BY-SA license text (https:// creativecommons.org/licenses/by-sa/2.0/ca) in online materials and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The usage rights for images found on the internet should always be verified.

Link to TeacherFutures icon pack:

3.1.3. Fonts

Typefaces are an important part of the COL identity. The consistent use of the COL typefaces within the TeacherFutures programme is essential organization. It is vital that they are used correctly across all services, messages and materials.

For print best resources, it recommended that you use the primary corporate font of COL, Galliard. Galliard Roman is the preferred weight for body copy in publications. Galliard Bold and Black can be used for headings, titles, subtitles, lead text and pull quotes. Do not set entire documents or paragraphs in Galliard Bold or Black. Since Galliard is not a standard font found on all computers. Palatino is an acceptable alternative to Galliard.

The recommended font for non-print based resources is the COL Serif Font alternative StoneSans . Verdana is a widely available sans-serif typeface and computer font packaged with Microsoft Windows, other Microsoft software applications, and Apple Mac OS X. It is the preferred typeface where Stone Sans is unavailable for its recommended applications. A comprehensive description of the corporate font family that should be adhered to, is detailed the Commonwealth of Learning Brand guidelines.

Link to StoneSans Font:

3.1.4. Color Palette

Colours are important as they will significantly influence the presentation of your microlearning content. Colours affect mood and convey varied meaning and their proper use can stimulate an enjoyable learning experience. COLs corporate colour palette is broad and accommodates for varied combinations. A comprehensive description of the colour palette that should be adhered to, is detailed the Commonwealth of Learning Brand guidelines.

3.2. Open Educational Resources (OERs)

Open Educational Resources (OERs) refer to teaching, learning and research resources that reside in the public domain and have been released under a intellectual property license that allows their free use or re-purposing by others.

The purpose of OERs is to:

- Sustain open access to high quality digital educational materials
- Increase transparency, collaboration and networking
- Encourage freedom of use
- Ensure quality of digital learning materials

One of the challenges of using OERs is general lack of awareness among trainers about intellectual property rights as well lack of quality assurance procedures for open content. However, OERs can be beneficial in microlearning contexts as they cover a broad range of subjects and topics and relegate the need to start developing microlearning objects from

scratch saving a lot of time and effort. Furthermore, they support the sustenance of a much wider collaborative learning environment and in so doing, expand learning communities.

OERs are release under various creative commons licenses including:

1. **Attribution CC BY**

This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials.

2. **Attribution-ShareAlike CC BY-SA**

This license lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to "copyleft" free and open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects.

3. **Attribution-NoDerivs CC BY-ND**

This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.

4. **Attribution-NonCommercial CC BY-NC**

This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.

5. **Attribution-NonCommercial-ShareAlike CC BY-NC-SA**

This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.

6. **Attribution-NonCommercial-NoDerivs CC BY-NC-ND**

This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially.

Example of Open Courseware initiatives where trainers can find material to retain (make your own copies), reuse (use in a wide range of ways), revise (adapt, modify and improve), remix (combine two or more), redistribute (share with others) content include:

- Massachusetts Institute of Technology Open Courseware initiative
- Khan Academy
- UK Open University's OpenLearn initiative
- Multimedia Educational Resources for Learning and Online Technology(MERLOT)
- Multilingual Open Resources for Independent Learning (MORIL)
- The OER Commons has almost 50,000 tools that you can browse and access online.
- The Open Professionals Education Network has a guide to finding OER with a collection of useful links.
- Open Education Europa's Resources page has a large collection of resources in the 24 European languages and at all educational levels.

3.2.1. Practical and Legal Factors

When developing your own microlearning resources, be cognizant about copyright and image use restrictions. There are two main legal aspects you must take into consideration when developing your own resources:

- Copyright
- Image right/restrictions

1. Copyright

Oftentimes, images, music, graphics, photos obtained from any other source other than your own are protected by copyright law. In some cases, copyright law makes a few exemptions in the case of using copyrighted material in non-commercial educational contexts. We therefore recommend that you primarily use the following:

- your own material
- open access material
- material in the public domain (e.g. following expiry of the maximum copyright period)
- material protected by a proper Creative Commons license

Below is a list of websites where you can obtain copyright free materials:

Images

- Creative Commons Search
- Pixaby
- Pexels
- FreeFoto.com
- GimpSavvy
- Public Domain Image

Journals and articles

- Directory of Open Access Journals
- Public Library of Science (PLOS)
- Open Humanities Press
- arXiv.org

Music

- Audio Library
- Mutopia Project
- FreeSound.org
- Free Music Archive
- Moby

- Global digital citizen
- Europeana
- Unsplash
- CiteSeer
- PubMed

2. Image Right

This is relevant in the event that you need to feature people in the material you are creating. Image Rights stipulate that an individual (legal person, joint personality, a group or fictional character) maintains the right to decide whether their image may be recorded and used. Recording an image and the use (or further use) of image material is therefore always subject to the permission of the person involved.

Take note that consent to record someone's image does not necessarily mean that you also have permission to publish or distribute this image unless there is proof of explicit consent in this regard.

3.2.2. Sample Microlearning templates

A number of re-usable microlearning have been developed to assist you in getting started. They can be packaged in a variety of multi-device formats, including videos, animation, interactive presentations, PowerPoint presentations, infographics etc.

Below are examples of PowerPoint templates that have been developed and can be used for screencast, PowerPoint presentations and PowerPoint to video.

Figure 1: Template first page

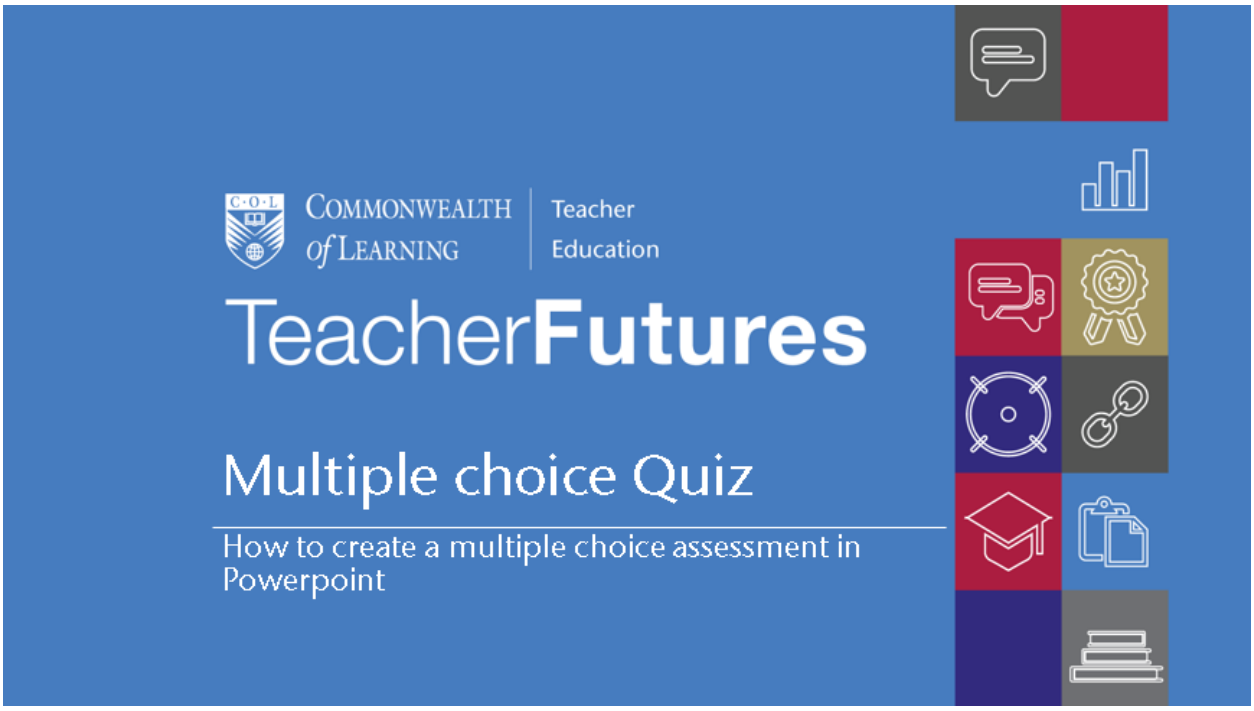


Figure 2: Template page with sample content

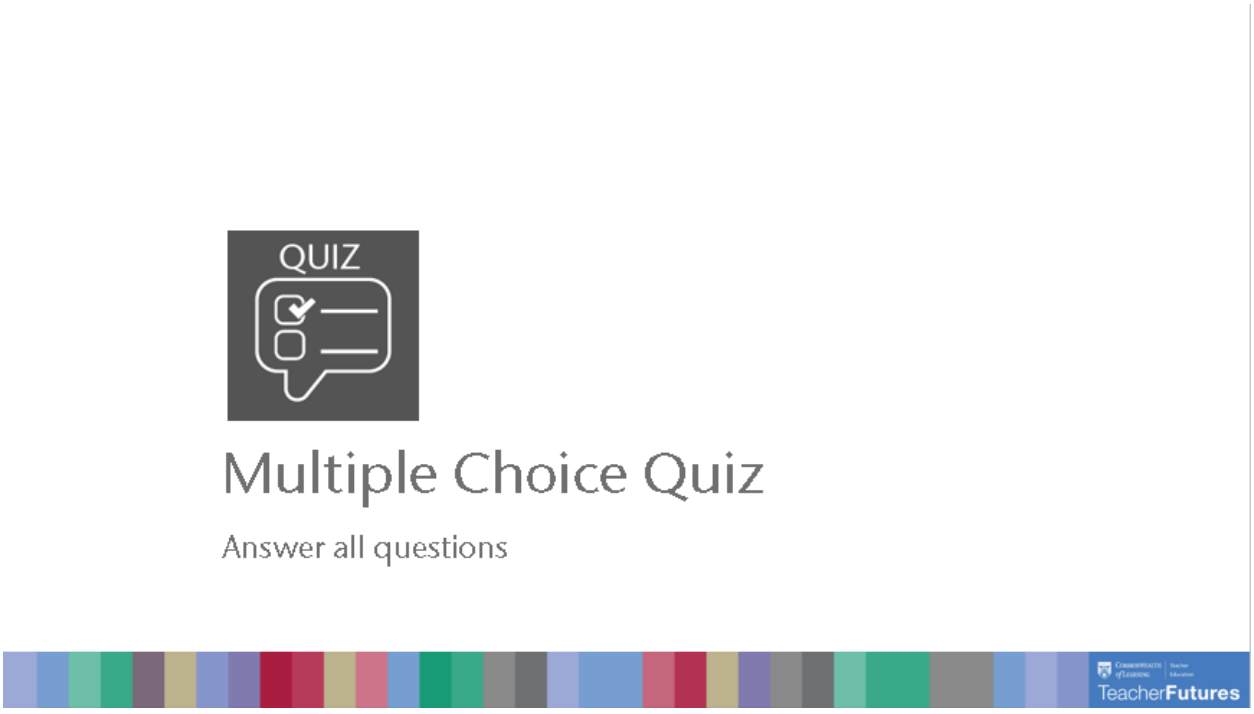


Figure 3: Template page with Logo bar footer

Guidelines for using PowerPoint templates

1. Start and end with the Teacher Futures slides
2. Keep font, colours and sizes consistent and only use the COL corporate fonts in your presentation. StoneSans is preferred.
   Minimum font point size is 20pt (44pt for headings)
   Use bold or colour to highlight text (two or the COL colours max) and avoid using UPPER CASE
3. Keep text simple a headline 4
4. Use high quality images and ensure that they add value to your presentation.
   Do not place text over images unless the background image has a strong contrast to the text and does not compromise its legibility.
5. Use animations carefully and limit transition effects such as blinds etc to one style per presentation and avoid more distracting animations such as 'zoom', or 'swivel'.

How to use the PowerPoint Templates

The provide templates are intended to help you get the most out of your presentations without having to spend too much time designing a new layout from scratch. Feel free to adjust all slides between the start and end slides to suit your needs as required.

Step 1 View the templates from the Template Resource section and search for PowerPoint Presentation templates. There are three templates and you can either use:

1. PowerPoint Presentation
2. Adding Narration to PowerPoint Presentation

Step 2: Follow the instructions in each template before beginning to add your content.

Step 3: Customize your start and end slides with your title

On the home tab, click on the arrow under the 'New Slide' icon and begin choosing new slides to create your presentation. You'll see 10 options ranging from heading and text only, through to full image slides and you can pick and choose to suit your goals.

Step 4: Save, Export and upload you presentation.

Guidelines for using video templates

The following is a list of guidelines for creating video for official TeacherFutures communications and/or related educational purposes.

1. **Style**
   The style of the video should be uncluttered, clear and direct, using high photographic and production values and simple, clear graphics and captioning that don't get in the way of the messages.

2. **Recording sound**

Avoid poor sound quality on video which will inhibit audience's attention to the content. Sound recording be of the highest quality and sounds levels are consistent throughout a video.

IF you need to incorporate music, use soundtracks that match the tone of the film and supports the content without being overwhelming. If you need to source for music, only use music with a creative commons 3.0 attribution.

3. **Brand Assets**
   The main brand assets that must appear in your video include the COL and Teacher Futures Logo which must be use at the start and end of the film, adherence to the corporate colour palette and font family.

   A template file (in the TeacherFutures consultants section) is available to help ensure the correct size and position.

4. **Titles and Credit sequence**
   Please do not include any title or credit sequences in your videos.

5. **Accessibility**
   In order to meet accessibility requirements, closed captions (subtitles) are required on all TeacherFutures videos. You will therefore export your videos in two version, with and without subtitles.
   Captions, Names and subtitles should be placed on an 80% transparent holding panel.

6. **Before filming, please read through the Practical and Legal Factors section.**

3.3. Best Practices for Microlearning

1. **Specific Need analysis**
   The microlearning lessons should be structured around the needs of learners and the institution context. It must respond to the learners and provides them with information in a way that supports their learning.

   Before implementing the technology-enabled Micro Learning approach for school-based professional development programme, consider the current policy and regulatory environment in your country and institution.

   What is the current policy on the use of technology in education in your country or in your institution if any? What are the regulatory requirements for creating and approving delivery of curriculum using technology? Review existing national or institutional documents, curriculum, pedagogy, assessment, education policy, research, and evaluation. Teachers, administrators, policymakers, and other stakeholders should collaborate in adopting technology in the delivery of curriculum.

2. **Technical Consideration**
   In order to design microlearning resources that can be accessed by learners, consideration must be given to technical requirements. The following should be considered:
   - Hardware – what tools are required to develop the microlearning resource? Do you need specialized equipment? How will the learners access the content?
   - Software – what software tools are required? Are they available r can you access Open Source alternatives?

3. **Collaboration**
   Leverage on the strength of the varied technologies for developing microlearning resources in order to provide learners different levels of interactivity with the materials. This can be achieved using the inbuilt channels for synchronous and asynchronous interaction within the Teacher Futures Moodle site. Examples include, feedback forms, building a discussion around a lesson which will further support peer interaction.

4. **Select Content wisely**
   Be pragmatic in the choice of content that will be used in microlearning lesson. Not all content is lendable to microlearning. You should ideally connect microlearning lessons to a much broader learning scenario.

   If intending to convert an existing course content to be used on Print and CD/DVD packaging, analyze the existing content in Commonwealth of Learning instructional design template (http://oasis.col.org/handle/11599/469). Then identify the assignments and assessments across the course units. More so, identify suitable LMS tools that will be used across the assignments and assessment and develop a course analysis matrix as detailed in the Learning Design Strategy document.

5. **Incorporate Different Media**
   Different media forms such as visuals (graphics, animations, and video) are effective at directing learners' attention to the most important parts of the content. The visuals should possess an inherent value in order to reinforce the content and should conform to the Visual design standards guidelines.

   Use the microlearning templates provided in the Microlearning resource page on the Teacher Futures webpage. These have been developed as a starting point that you can customize to author your own resources. Micro Learning elements will be uploaded on the topic sections of the LMS course page. The content developed using macro-learning template will be packaged as SCORM or any other media supported by the LMS and uploaded on the course page.

6. **Comprehension and Chunking**
   The design maxim less is more is applicable in this case. Cluttered interfaces, excessive graphics decrease the efficacy of a microlearning lesson. Parsimoniously include supporting materials such as sounds, graphics, and effects, and only use them when they serve to reinforce learning.

7. **Enable Mobile and Offline Access**
   One of the implications of microlearning is that learners will interact with the microlearning objects anywhere on any device. It is therefore necessary to select authoring tools that enable you to export content that can be accessed across multiple devices and can be easily uploaded to social media sites.
   The TeacherFutures mobile moodle site supports offline access of content and microlearning lessons. These can be accessed offline through mobile applications or offline players and is useful in scenarios where learners have access to limited bandwidth.

   When implementing microlearning as part of an integrated delivery using eLearning (Moodle), print and microlearning objects such as videos or animations, use the recommended COL Print2Screen app. The content must exist on the list of approved URLs.

8. **Continual content updating**
   In order to keep the information relevant and up-to-date, you need to engage all key stakeholders on a continual review, itieration and implementation of the microlearning resources.

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