

Scheme of Work

Cambridge Lower Secondary

Digital Literacy 0082

Stage 9

For use with the curriculum framework published in 2019



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Introduction

This document is a scheme of work created by Cambridge Assessment International Education for Cambridge Lower Secondary Digital Literacy Stage 9.

It contains:

* suggested units showing how the learning objectives in the curriculum framework can be grouped and ordered
* at least one suggested teaching activity for each learning objective
* a suggested project at the end of each unit that will consolidate the learning
* a list of subject-specific language that will be useful for your learners
* sample lesson plans.

You do not need to use the ideas in this scheme of work to teach Cambridge Lower Secondary Digital Literacy Stage 9. It is designed to indicate the types of activities you might use, and the intended depth and breadth of each learning objective. You may choose to use other activities with a similar level of difficulty, in order to suit your local context and the resources that you have available. You may also choose to adapt the suggested activities and the projects so that they can be embedded within the teaching of other subjects.

The accompanying teacher guide for Cambridge Primary Lower Secondary Literacy will support you to plan and deliver lessons using effective teaching and learning approaches. You can use this scheme of work as a starting point for your planning, adapting it to suit the requirements of your school and needs of your learners.

Long-term plan

This long-term plan shows the units in this scheme of work and a suggestion of how long to spend teaching each one. The suggested teaching time is based on 30 hours of teaching for Digital Literacy Stage 9. You can adapt the time, units and order of the units based on the requirements of your school and the needs of your learners.

| Unit | Suggested teaching time |
| --- | --- |
| **Unit 9.1 Personal responsibility in the digital world** | **10 hours** |
| **Unit 9.2 My children’s digital world** | **10 hours** |
| **Unit 9.3 That’s entertainment** | **10 hours** |
| **Total** | **30 hours** |

Sample lesson plans

You will find two sample lesson plans at the end of this scheme of work. They are designed to illustrate how the suggested activities in this document can be turned into lessons. They are written in more detail than you would use for your own lesson plans. The Cambridge Lower Secondary Digital Literacy Teacher Guide has information on creating lesson plans.

Other support for teaching Cambridge Primary Lower Secondary Literacy Stage 9

Cambridge Lower Secondary centres receive access to a range of resources when they register. The Cambridge Lower Secondary support site at [**https://lowersecondary.cambridgeinternational.org**](https://lowersecondary.cambridgeinternational.org) is a password-protected website that is the source of the majority of Cambridge-produced resources for the programme. Ask the Cambridge Coordinator or Exams Officer in your school if you do not already have a login for this support site.

Included on this support site are:

* the Cambridge Lower Secondary Digital Literacy Curriculum Framework, which contains the learning objectives that provide a structure for your teaching and learning
* grids showing the progression of learning objectives across stages
* the Cambridge Lower Secondary Digital Literacy Teacher Guide, which will help you to implement Cambridge Lower Secondary Digital Literacy in your school
* templates for planning
* worksheets for short teacher training activities that link to the teacher guide
* assessment guidance (to support classroom assessment)
* links to online communities of Cambridge Lower Secondary teachers.

Resources for the activities in this scheme of work

We have assumed that you will have access to these resources:

* paper, pens and pencils for learners to use
* digital devices, such as desktop computers, laptops, hand help devices and other hardware such as video and audio recording equipment
* software that will enable learners to:
* create and save digital artefacts
* communicate online
* digitally search for information.

Other suggested resources for individual units and/or activities are described in the rest of this document. You can swap these for other resources that are available in your school.

Websites

There are many excellent online resources suitable for teaching Cambridge Lower Secondary Digital Literacy. Since these are updated frequently, and many are only available in some countries, we recommend that you and your colleagues identify and share resources that you have found to be effective for your learners.

Approaches to teaching Cambridge Lower Secondary Digital Literacy Stage 9

Cambridge Lower Secondary Digital Literacy can be used flexibly as a standalone subject, integrated within other subjects or used as the basis for activities outside of the formal curriculum. During your planning you will need to decide which approach, or mix of approaches, will enable you to address each learning objective most effectively. The activities that are presented within this scheme of work are based upon Digital Literacy being taught as a standalone subject but they can be adapted to suit an integrated approach. As an example, learners can develop content creation, research and other digital skills through activities in other subjects, such as through planning and creating blogs in language lessons.

To develop their digital skills it is recommended that learners are provided with opportunities to use a range of devices, such as desktop computers, laptops and tablets.

It is also recommended that typing skills are practised regularly through short activities, possibly at the beginning of a lesson. During Stage 9, you may wish to include a suitable typing scheme of work as part of your regular lesson planning.

Unit 9.1 Personal responsibility in the digital world

| Unit 9.1 Personal responsibility in the digital world |
| --- |
| Outline of unit: |
| This unit aims to help learners take responsibility for their own safety and behaviour when online so that their experiences can always be positive.  By the end of the unit, learners will understand that they are responsible for their online activity and be aware of the permanence of the digital footprint that they create each time they go online. They will develop knowledge that will enable them to make judgements about the information they find online and understand how the results of their information searches could be personal to them. They will also deepen their knowledge of document creation through creating artefacts that contain a number of different media types. |
| Knowledge, understanding and skills progression: |
| Before starting this unit, learners should know:   * what metadata is, how it is created and how it is used * how to protect files from unauthorised access * that some people have specific purposes for posting things online * that they can control their own online profile * what online communities are and their associated benefits and risks. |
| Language: | |
| * cyberbullying * permissions / privacy settings * social network * tag * posting * search engine / search engine optimisation (SEO) * search history * filter bubble * metadata * algorithm | |

| Learning objectives | Suggested teaching activities and resources | Teaching notes |
| --- | --- | --- |
| **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing. | Introduce this unit by asking this provocative question:  *Are teenagers wise enough to be allowed access to the internet that is not regulated by their parents or teachers?*  Discuss the responses and then ask the following:  *How many of you own a smartphone?*  *Who is permitted to go online whenever they want without asking for permission from an adult?*  *Who has a social network profile or maintains a personal website?*  Explain that posting content online requires great responsibility.  Display a mocked-up website and instruct learners to identify as many examples of bad practice as they can. They should also explain the risks that these examples may pose to either the owner of the site or to other people. This activity can be supported by questions such as:  *How easy is it to identify the owner of the site?*  *What impression have you formed about them?*  *Have they expressed any opinions that may upset or antagonise others?*  *Are people easily identified within the site content?*  *If so, could these people be exposed to physical or emotional harm as a result of what appears on the site?*  *Does the site display any content that could be considered illegal?*  Working in pairs, learners review each other’s findings to see if they agree on which aspects of the website content will put people at risk and decide what those risks might be.  Summarise the instances of bad practice and ask learners to suggest how the site might be improved.    **Resources:**   * A mocked-up website that appears to have been created by a 14-year-old. * A set of questions to guide learners’ work to identify examples of bad practice. | Some countries have laws which give an age at which children are considered old enough to take responsibility for their online activity (e.g. 13 in the COPPA rules for the US). Some parents will judge this as being too young, while others will not. Regardless of these views, all teenagers that use digital devices should be made aware of the risks that are associated with internet use and should know how to protect themselves.  Teenagers will frequently post content that puts themselves and others at risk. Many will seek to portray a version of themselves that may be different to the person they really are.  The mock website for a fictitious 14-year-old child could include a range of personal information, images, links to video clips, etc. The aim of the site is to demonstrate bad practice, so include personal information that should not be disclosed (such as personal email, address, etc.). Add images that would enable a stranger to identify and track down the website owner. Some of the images and comments should show other individuals using bad behaviour that would be viewed as cyberbullying. Tag some images with full names and include text and pictures that put others at risk. Risk, in this context, is an activity that may lead to physical or emotional harm to the person posting the content or the person who is the subject of the content. |
| **9SW.02** Explain how search engines provide personalised search results based on metadata, including targeted advertising. | Tell learners to prepare to be amazed and then ask the following question:  *Do you remember where you have been during the past month?*  Explain that if they do not, they could try checking their smartphone.  If learners have a smartphone with them, ask them to view their location history in the Map application. If nobody has a phone, demonstrate it either using your own device or by showing an online video.  Explain that location history is just one example of the vast quantities of data that search engines and social networks collect about all of us. Discuss what this means in terms of the use of personal data, personal privacy and potential misuse.  Also introduce the ‘filter bubble’ concept. Explain that a filter bubble can occur when websites use algorithms which make assumptions, based upon the information that they hold about a user, to refine the search results that they return. As a result, users can become separated from certain information that disagrees with their usual viewpoints and these users can therefore effectively become isolated in their own cultural or ideological bubbles.  Ask learners to make several searches using the same search engine and the same search term, for example ‘*tennis shoes’*, and compare their search results in small groups. It is possible that in some cases the results presented to each learner are not identical. Discuss what might be causing the variations.  Display some examples of targeted advertising, such as for sport products, textbooks and luxury goods, and ask learners to speculate about the ‘profile’ of the person that the adverts were delivered to. This can be repeated a number of times with different combinations of adverts.  Discuss what learners can do to protect their personal privacy, such as disabling location tracking, clearing their browsing data, deleting cookies and using a private browsing mode within a search engine, such as ‘Incognito’ in Google Chrome.  *Why would you want to protect your personal history in this way?*  **Resources:**   * Examples of targeted advertising. | Personalised search results are the product of the information that the search engine has gathered about the user, such as their location, search history, demographics, past click-behaviour, interests and the hardware they are using. The stated purpose of personalisation is to increase the relevance of search results for a particular user. This is known as search engine optimisation (SEO). SEO operates based on the use of metadata.  For metadata-based searching, the engine that powers the search indexes documents based on a specified metadata schema. The documents have been tagged with metadata fields such as title, description, keywords and other data about the document.  The metadata that organisations gather on users of their online systems can provide a detailed profile of an online user, and each online action increases the detail of that profile. This data can be sold to third parties as a product. In reality SEO leads to a great deal of targeted advertising, generating enormous revenue for search engines and social networks.  The downside of SEO is that search engines and social networks collect enormous quantities of personal data about users that could be stored and then used in the future for unknown purposes. |
| **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online. | Display an example of a totally inaccurate piece of information, or news story, which appears to have been posted on a web page. Make sure that there are some clues to its lack of authenticity contained within the content, for example:   * a strange looking URL * spelling and grammar mistakes * a fact that is obviously wrong * an incorrectly captioned photograph, etc.   Discuss the information without drawing learners’ attention to the clues. Then take a vote on whether the information is accurate or fake.  Remind learners that, while much of the information on the internet is factually correct, some of it is not. It is therefore important for learners to adopt strategies to help them to evaluate the credibility of a source. Explain that if they cannot evaluate the source, they should ignore it or always treat the information with scepticism.  Provide learners with a checklist that might help them evaluate the accuracy of an online information source. Also provide a list of links that learners should review using the checklist. The list should include sites that are generally accurate and some that are not.  Learners work in pairs to conduct a review of the websites, using the checklist, and then join another pair to compare their results and discuss any differences.    **Resources:**   * An example of a web page containing inaccurate information or news. * A checklist of strategies for judging the validity of the source and accuracy of information found online. * A list of websites for learners to review using the checklist. | As young people in particular increasingly turn to the internet for news, information and entertainment which has been subject to little or no editorial control, they are susceptible to being influenced by inaccurate and, often intentionally, misleading information. It is important that learners are made aware of this trend and develop a healthy scepticism towards information from any source that cannot be validated.  There are many guides on how to evaluate the validity of an online information source available on the internet. |
| **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing. | Display an image of a fossilised human footprint. Explain that the humans who made them were probably unaware they were doing so and certainly did not know how long they would endure. Emphasise the permanence of the fossils.  Draw an analogy between real footprints and the data we leave behind whenever we use the internet and how it could be viewed many years later.  Discuss learners’ personal responsibility to protect their future selves through remaining conscious of their footprint while they are operating and communicating online.  *Does your digital footprint reflect you in a positive or a negative way?*  Explain that a digital footprint is not always a negative thing and that some people actively seek to increase their own footprint.  *What might be the positive aspects of a digital footprint?*  *Who might want to increase their digital footprint and why?*  Working in small groups, learners find each other’s digital footprint by searching for their names and their location using a range of different search engines.  Working individually learners conduct similar searches for older relatives.  Discuss learners’ findings. It is possible that they do not find anything, and this should be seen as a positive result. In this case congratulate them for their invisible footprints but remind them that they will still have a digital footprint.  Explain that it is unlikely that children of this age will have a visible digital footprint but that their invisible footprint in the data recorded in their search or online shopping histories will be substantial.  Outline some activities that contribute to a digital footprint and ask learners to list all the things that they have done online in the past week that will have added to their digital footprints.  Provide learners with a list of names of some adults that are known to them, such as other teachers in the school, to illustrate how much information it is possible to find online. Make sure that it is a list of people you have approved and tested in advance to ensure the returns are not inappropriate.  As a whole class discuss the following question:  *What should you do to stay in control of your digital footprint?*  *What could be a potential impact of your digital footprint when you become an adult?*  Discuss the suggestions made by learners and help then to draw up a plan to create a positive digital footprint. Learners write a blog listing the things that they will do to take responsibility for their own footprint in the future.  Complete this activity by suggesting some further strategies that learners can adopt to avoid building a negative digital footprint. Some simple steps you should advise them to take are:   * To remove any negative comments that you have posted about yourself or others. * If friends or relatives have posted anything you are unhappy with, politely ask them to remove the post. * Set permissions on your social networks so that only the people you personally know have access to your information, and block others.   **Resources:**   * Guidelines for creating a positive digital footprint. | To help learners, define the term ‘digital footprint’ as *all of the data that is currently stored on the internet that can be linked to each of them individually*.  Learners should do a search of their full name and the town or city in which they live. Due to their age it is unlikely that there will be any data, however it is possible that information is disclosed that raises a cause for concern. This should be reported immediately to a member of staff in your school who is responsible for pastoral care.  Some of the activities that contribute to a digital footprint that learners are likely to list are:   * websites they have visited * purchases they have made * emails they have sent * comments they have posted * their search history * the social networks they use * their personal website * their chosen video sharing platform * everything that other people have posted about them. |
| **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing.  **9TC.02** Use devices to create increasingly sophisticated digital artefacts, including the use of sound, video, text and other multimedia. | *What should you do if someone’s activity or something you have encountered online is making you concerned or unhappy?*  Discuss various scenarios, including:   * negative responses to social media posts * comments about either themselves or people that they know * evidence that their posts are being seen by, or shared with, people that were not their intended audience * any online communication from outside their group of ‘real’ friends.   If individuals are supported to share personal experiences, these can have a powerfully engaging effect on other learners. Find out how they dealt with any of the situations they discuss.  Explain that an essential first step is confiding in someone they trust. The issue can then be reported to authorities that can stop the perpetrators. By taking positive action, learners will protect themselves, and others, and will demonstrate resilient behaviour.  Explain what it means to be resilient and why it is important that learners adopt resilient behaviour when online, by outlining and discussing a series of resilient behaviours.  To reflect upon this activity, learners create a digital artefact to help teenagers to develop resilient online behaviour. Allow them to work as individuals, in pairs or in a small group. The artefact should combine a range of media including text, music, speech, images, video, etc. They could produce a role-play, news item, presentation, short lecture, etc. that demonstrates a range of the content creation skills that they have acquired up to this stage in their learning.  **Resources:**   * Access to applications that can be used to combine a range of media to create a multimedia artefact. Ideally, video camera, audio recorder, video and audio editing software and/or a presentation tool. | Risk is applied broadly in this activity to cover risk to learners themselves (from things such as cyberbullying, grooming, addiction, etc.) or risks to other users as a result of learner’s activity (from things such as posting images tagged with the full name of the person shown, posting hurtful or unkind comments, etc.).  Risk is unavoidable in the virtually connected world so young people need to know how to react and how to be resilient when risk presents itself.  Resilient behaviours include:   * Being prepared in advance, through education, about risks when online. * Sharing concerns with others. * Reporting more serious concerns to authorities, if necessary. * Knowing that content can be removed from social networks if it contravenes a network’s terms and conditions of use. * Seeing perpetrators of cyberbullying as victims themselves who may well have emotional and behavioural problems that lead them to victimise others. |

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| Example project: Unit 9.1 | | |
| Learning objectives | Project outline and resources | Teaching notes |
| **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing.  **9TC.03** Create a portfolio of documents for a common purpose.  **9TC.02** Use devices to create increasingly sophisticated digital artefacts, including the use of sound, video, text and other multimedia. | Working in small groups, learners plan an ‘online safety questionnaire’ that provides sufficient data to enable their school to identify behaviours that might place learners at risk.  As a whole class, ask learners to discuss their ideas and agree on 10 to 15 questions.  Using the title ‘Online Safety Questionnaire’ each group designs a questionnaire that will be quick and simple to complete.  Ensuring that anonymity is respected, learners sample as many individuals within their year group as possible.  Each group enters the results of their survey into a shared document. Each learner then analyses the collected results in order to identify:   * patterns within the results * extreme responses that create cause for concern that need to be discussed further.   Each learner also chooses a suitable platform and document type for presenting their conclusions. Their presentations should include a summary of the findings and suggest how learners in their year group might improve their online safety. | The aim of this project is to make learners think about how to collect potentially sensitive data from their peers, identifying areas of concern within the information that is collected and how to present their findings in an engaging, informative and sensitive way.  Before learners produce their individual presentations, discuss if there are any particular survey results which should be left out in order to protect a particular respondent.  Learners who are familiar with spreadsheets, databases and graphical presentation may choose to use these within their final document.  Assessment of the work should consider the quality of layout of the final document.  This activity can provide your school with valuable information about learners’ online behaviour which can be used to inform the school’s online safety strategy. |

Unit 9.2 My children’s digital world

| Unit 9.2 My children’s digital world |
| --- |
| Outline of unit: |
| This unit will provide learners with an insight into metadata and digital technology developments that will shape lives in the future, such as Artificial Intelligence (AI). The unit looks into how metadata could be collected by seemingly offline activities, such as making a drink or sitting in a car, and how learners can equip themselves to embrace the future while remaining aware of the risks that the increasing sophistication of technology could pose to every individual.  Creativity is introduced at the end of the unit, where learners are invited to imagine a community that their children could belong to. They then consolidate their learning by writing a science fiction story in which they create a world for their children to live in based upon the risks and opportunities that have been discussed during the unit. |
| Knowledge, understanding and skills progression: |
| Before starting this unit, learners should know:   * that online activity creates metadata * that metadata can be used to create a detailed profile of an individual * the meaning of online communities * how computers are continuing to change the workplace * some of the benefits and risks of the Internet of Things. |
| Language: | |
| * optical character recognition (OCR) * biometrics * artificial intelligence (AI) * machine intelligence / machine learning * algorithm * big data * virtual community * graphical processing unit * data aggregation * encryption/decryption * cipher/cipher text/plaintext | |

| Learning objectives | Suggested teaching activities and resources | Teaching notes |
| --- | --- | --- |
| **9DW.06** Describe the benefits and risks of AI.  **9TC.04** Use advanced search techniques to refine search results.  **9TC.01** Develop fluency and accuracy when typing in increasing quantity.  **9TC.03** Create a portfolio of documents for a common purpose. | Introduce this activity by asking the following questions:  *Is the ‘AI spring’ finally upon us?*  *What will it bring?*  Explain these questions by pointing out that there is nothing new about the term Artificial Intelligence (AI) and that people have been making predictions about its possibilities and risks since the 1960s. However, AI requires a set of technologies to make it affordable and possible to process, and it is only in recent years that these technologies have become available. Explain that the period from the 1960s until this ‘spring’ is known by some as the ‘AI winter’.  Ask learners to work in pairs, and assign each partner to either Task A or Task B:  **Task A** – Identify a specific human function that AI or robotics might have the power to change dramatically in years to come. Examples could include:   * a specific area of employment * the military * industry * science * medicine * something at home * something at school.   Choose a human function to research and type a report about how AI might be able to change this function.  **Task B** – Identify a specific employment or human function that AI or robotics will not have the power to change dramatically in years to come, for example:   * hands-on care for the elderly * psychology * active education for early years learners * creative thinking in the Arts * professional sports * law * politics.   Choose an employment or human function to research and type a report about how AI will not be able to change this function.  Before starting the task, the class should agree a report template that will be used for both Task A and Task B. The templates should include the following headings:   * Name * AI will have the power to dramatically change, **or**   AI will not have the power to dramatically change   * Reasons why * Peer assessment * Peer assessment guidelines.   They should also agree guidance on how to peer review each other’s report.  Once learners have completed their report they should exchange it with their partner and review each report using the guidelines that were agreed.  The whole class should then discuss some of the interesting findings about AI. They also discuss the benefit of having a template and an agreed set of guidelines to work with during the task. Benefits of using the template could include:   * it provided a structure for the report * it made reports easier to compare * it made it easier to find key information. | ‘AI winter’ is a term used to describe the passage of time between early predictions for artificial intelligence in the 1960s and the recent implementation of AI systems.  AI requires a set of underpinning technologies to make it possible and it is only in recent years that these have become available. Three developments that have brought about the end of AI winter are:   * Abundant and affordable graphical processing units (GPUs) and, increasingly, cloud computation. * The availability of ‘big data’ to provide the source material for machine learning. * Machine learning algorithms. These are more complex and faster algorithms that are able to take advantage of big data sets and the greater processing power made available by the GPUs and cloud computing. They identify patterns in data, which would otherwise be very difficult to find, and make predictions based upon on them.   Peer assessment must follow strict guidelines. For this task, advise peers to:   * be objective * state whether they agree or disagree with the example chosen * state what they liked about the reasoning given in the report * make helpful suggestions for improving the report. |
| **9DW.06** Describe the benefits and risks of AI.  **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online. | Explain that governments and organisations are increasingly making use of data that has been collected from private citizens. Also explain that AI is being used to repurpose data to provide information that may have little to do with the stated intention that the data was originally collected for.  *How does this make you feel?*  Provide learners with a template and ask them to make a list of as many technologies that collect and store digitised data on individual citizens as they can. A possible template (with an example row completed is below).   |  |  |  |  | | --- | --- | --- | --- | | The method of data collection (including the hardware used) | The nature of the data collected | The intended purpose for collecting the data | How they feel about this data being collected and why they feel that way | | *Cameras on the side of the road linked to OCR technology* | *Car registration numbers and the speed being travelled* | *To control traffic speed* | *I am in favour of this as it will make the roads safer* |   Learners research the above points. They should demonstrate that they make good judgements about the information they found. Areas that could be researched include:   * What data is collected? * How? * Who collects it? * Why?   Once learners have completed their templates discuss, as a class, some of the examples given. Ask them to consider the possible advantages and disadvantages of this practice and to identify any uses they were previously unaware of.  Finally take a vote on whether learners are generally in favour of more or less data collection.  **Resources:**   * Templates for learners to record their data collection examples. * Cards with examples of data collection to guide learners’ research. | Technology-based security is treated as a trade-off between public security and privacy. The importance of security is a priority but this is often with disregard for personal privacy.  Other examples of digitised data might include fingerprints, DNA, shop loyalty cards, biometrics, etc. |
| **9TC.04** Use advanced search techniques to refine search results.  **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online.  **9TC.03** Create a portfolio of documents for a common purpose.  **9TC.01** Develop fluency and accuracy when typing in increasing quantity. | Ask the following two questions:  *What is big data?*  *What can it be used for?*  Define big data using the five Vs:  **Volume** – which is growing exponentially.  **Variety** – the data is gathered from multiple sources and is unstructured (many different file types and formats).  **Velocity** – data is now being generated by a vast number of internet users and is being stored in real time.  **Value** – the data must be analysed in order to produce valuable information.  **Veracity** – uncertainty and inconsistencies in the data need to be eliminated in the processing.  Learners complete a case study using one example of how big data is used to solve a problem. The problem solved might be an unintended consequence of the collection of the data.  They create a typed report to explain their findings using a template, which is first discussed and agreed upon by the whole class. Each report should clearly explain:   * the nature of the problem that has been solved * where the data came from and how and why it was collected * how the reliability of the data can be checked * how the data was analysed in order to provide the solution to the problem.   The report should include a portfolio of evidence, for example:   * news items * documents * data sets * diagrams * charts. | This activity will illustrate the way in which big data is enabling us to solve problems that, without big data, have no solution.  There are many definitions for the term ‘big data’. It is a data set so large that it is impossible to process using traditional data management systems.  An example of the use of big data could be an unsolved murder case. The data source would be the vast quantities of familial DNA data stored on ancestry and medical databases. The big DNA data can be interrogated to find a close match to DNA collected at a murder scene. This enables police to narrow down their search for a suspect to a particular family name and geographical location, and therefore makes it easier to, correctly, identify and convict the murderer and, in so doing, solve a seemingly impossible case.  An important general point to make is that big data may be used to solve a problem that had nothing to do with the original reason for gathering it in the first place. In the example given above, people uploaded their DNA to find lost relatives or to learn about possible medical conditions linked to their DNA, not to solve a murder case. |
| **9DW.06** Describe the benefits and risks of AI.  **9TC.02** Use devices to create increasingly sophisticated digital artefacts, including the use of sound, video, text and other multimedia. | Ask learners to imagine this scenario:  You are chatting in person to a friend in a local café about wanting to visit a city in a different part of the world. The next time you sign in to your favourite social network you are amazed to find offers for cheap flights to the city you had been talking about earlier in the day. Your friend strongly denies having anything to do with this.  *How is this possible?*  Suggest that the roots of such a seemingly impossible occurrence lie in the aggregation of big data.  Explain that, in simple terms, the aggregation of big data is the use of algorithms to make connections between otherwise unconnected big data sets to provide information that is an unintended consequence of the initial data collection. For example:  The data stored in an image of the blood vessels in the retina of your right eye is aggregated with personal data such as your name, date and place of birth, racial origins, address, employer, medical records, biometrics, bank account details, recent purchases, social networks, place of employment, etc.  Provide copies of a scenario of this type for learners to read:  You find out that you have some unexpected holiday to use and see that a message has immediately appeared on your smartphone informing you of cheap flights to a country you have always wanted to visit. You leave for the airport and check in. You are able to clear customs and walk on to your flight without any documentation. At your destination you get into a self-drive car that automatically takes you to a restaurant serving your favourite food. The car waits for you to finish your meal before taking you to a hotel in which the room temperature has been adjusted to be exactly right for you. A selection of your favourite music is playing over the speakers and the ‘cleanerbot’ has stocked the fridge with your favourite drinks and snacks.  In the morning your smartphone alerts you that you have a flu infection and instructs you to collect some prescription medicine that is waiting for you at the nearest pharmacy. While you are in the pharmacy a shoe brand that you particularly like messages you to inform you that there is a pair of shoes, in your size, in a sale in a shop near the pharmacy. You go to the shop and buy them  You are tired so use your app to call a self-drive car. The ride is very comfortable because the seat automatically adjusts itself to match your biometrics. On your way back to the hotel you stop at a supermarket to pick up some local food items to take home. You walk into the shop, collect a large paper bag, select several items from the shelves, place them in the bag and walk out as there is no sales assistant.  All of the events in this story took place without you having to show any documentation, use any cash or a credit card or even needing to talk to anyone.  *How is this possible?*  *What technologies are enabling the links between the data sets that are implied in the scenario?*  *How much of this is already possible today?*  Use the scenario to stimulate a discussion about a world in which our daily lives might be improved by the aggregation of big data.  Provide a set of comprehension questions to find out if learners see this as a wholly positive experience or if they see any disadvantages implied by the scenario. Ask if they are aware of other examples of the aggregation of big data and what that might lead to. Once learners have answered the questions they should create their own mind map that lists examples of big data sets and identifies the connections between them.  Learners reflect on the content of the two mind maps to produce a digital artefact which outlines possible positive and negative impacts of big data and AI.  **Resources:**   * Printed copies of the two scenarios. * A set of comprehension questions based on the second scenario. * A mind mapping application. | The scenarios presented here are designed to promote learner discussion. Learners should be given freedom to speculate what may have happened in each case.  Governments and organisations are becoming increasingly aware of the benefits that aggregated big data can facilitate. Targeted marketing is one example but other areas where it is rapidly gaining traction are:   * public health (CDC, WHO) * marketing * advertising * politics * organisational management * space exploration.   The scenario was developed to illustrate how big data from many separate sources might be aggregated to make life not only simpler for individuals but also tailored to their specific needs.  Also draw out in discussions the loss of our personal privacy and the negative consequences of identity theft.  Demonstrate the use of the mind mapping software while capturing learner responses. |
| **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing.  **9DW.06** Describe the benefits and risks of AI. | Introduce the theme of security by asking learners what measures either they or their parents have taken to secure their digital systems.  Their answers might include:   * using internet security software * not sharing sensitive information with anyone * ensuring passwords are strong and unique * scanning their system with antivirus software * not clicking on unexpected links and attachments * not installing unidentifiable devices on their system.   Remind learners about the permanence of digital footprints and explain why, with the increasing application of machine learning, their own digital footprints will grow at an ever-increasing rate.  *What type of data do you think might be added to your children’s digital footprint that is not currently collected about you?*  Example answers that learners might provide:   * the number of hot drinks they have during the day – collected by their kettle which is linked to the Internet of Things * the music they like to listen to on a long journey – collected by their self-drive hire car * everyone they spent more than five minutes with during the past week – collected by location tracking applications.   Explain that wireless communications can be intercepted and hacked so that personal data can be gathered for criminal purposes. Learners should be aware that with increasing quantities of their personal information being uploaded to the cloud, the application of tight security should be a major consideration. This can be achieved through encryption.  For learners who require more challenge, introduce the process of encryption (plaintext into cipher text) and decryption (cipher text back into plaintext), using a very simple substitution code such as A=1, B=2, C=3, etc.  Allow learners time to play a range of games involving encryption and decryption to enable them to experience a variety of ciphers of increasing complexity.  **Resources:**   * A variety of team games and group activities to allow learners to investigate increasingly complex ciphers. | The size, complexity and sensitivity of an individual’s digital footprint will grow at an increasing rate as machine learning makes deeper links between data held in the cloud and shares this with numerous unrelated systems. This process will be autonomous and outside of human control.  The security of personal (as well as corporate and governmental) data is already a major concern and it will be up to individuals to do what they can to safeguard their own privacy.  If the data is not encrypted it is relatively easy for people with sufficient technical knowledge to bypass your security and gain access to information on your digital systems.  Encryption scrambles the network connection so that no one can intrude on your data and spy at the web pages you are viewing and what data you are sending.  Encryption is the process of translating plaintext data into something that appears to be random and meaningless (cipher text). Decryption is the process of converting cipher text back to plaintext.  There are lots of team games and group activities available on the internet that you can use with learners to investigate encryption ciphers (the code used to encrypt plaintext). |
| **9DW.03** Describe the potential for online communication to bring together and maintain communities in the real world.  **9TC.02** Use devices to create increasingly sophisticated digital artefacts, including the use of sound, video, text and other multimedia. | Continue to discuss the future but by now looking at the potential for technology to have a really positive impact upon the lives of individuals. One of the ways that this is likely to happen will be through the continuing development and sophistication of online communities.  Introduce the activity by asking the following questions:  *What is a community?*  *What is a virtual community?*  *What topic would be the focus of your ideal virtual community?*  Ask learners to imagine that they have been given the opportunity to create a new virtual community and that their task is to design one for the benefit of their own children’s generation.  The aspects of the design that they must address are:   1. The topic or focus of the community. 2. A name for the community. 3. An aim or ‘mission statement’ for the community that outlines the benefits for those who decide to join. 4. Would it be free or require a subscription? 5. If a subscription is charged, how much would people have to pay and how would this be collected? 6. If it is a free community, how will it generate the revenue needed to sustain it? 7. What registration and personal profile data you would want to record about the individuals who join the community? 8. Will comments made by members of the community need to be moderated and, if so, how will this be done? What kind of content would need to be suppressed through the moderation process?   Learners use their digital skills to create a brand for their virtual community. Artefacts they create could include:   * a logo * a ‘homepage’ layout for the community’s website * an online advert, with a strategy about the type of individuals that will be targeted, such as their demographic, interests and online activity. | A virtual community is a social network of individuals who interact through specific social media, crossing geographical and political boundaries in order to pursue mutual interests or goals.  An illustration you could suggest is: if you are interested in modern art you might want to bring together people from all over the world to discuss and share their knowledge and understanding of modern art from their locality, and possibly to enable them to trade in works of art.  Show learners a list of some of the vast number of existing virtual communities and social networks that are currently available online.  It is recommended that learners produce more than one digital artefact in order to present a detailed picture of their community. |

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| Example project: Unit 9.2 | | |
| Learning objectives | Project outline and resources | Teaching notes |
| **9DW.06** Describe the benefits and risks of AI.  **9TC.04** Use advanced search techniques to refine search results.  **9DW.03** Describe the potential for online communication to bring together and maintain communities in the real world.  **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online.  **9TC.01** Develop fluency and accuracy when typing in increasing quantity. | In this project, learners write a science fiction story set 20 years in the future. The aim of their story is to predict how digital technologies will change the world for the next generation.  Learner’s predictions must be based on research into a range of different digital technologies and how they may evolve over 20 years. Although their story will be imaginative and fictional, the uses of digital technology that they describe must be based on accurate technological information.  A suggested process for this project:   1. Ask learners to engage in some imaginative thinking about the future, to envisage how technology might develop to shape the world for the next generation. 2. Learners briefly outline their individual visions for the future. Use this phase of the project to make clear the distinction between unlikely ideas and predictable ideas based on clear reasoning. 3. Learners should research the future development of digital technologies using advanced search techniques. 4. Their story must be word-processed, giving learners an opportunity to develop fluency and accuracy when typing in increasing quantity. | Some learners may find it helpful to refer to a list of guidance questions and links to helpful websites to guide their research. |

Unit 9.3 That’s entertainment

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| Unit 9.3 That’s entertainment |
| Outline of unit: |
| This unit introduces the idea of the ‘digital divide’. Lack of access to hardware, software and the internet has created a digital divide between those who can and those who cannot, or choose not to, access it. For those that have access, it is easy to overlook the fact that such a phenomenal resource for education and entertainment is not available to everybody.  The unit also covers the role, and the impact of digital technology upon, the creators of sources of entertainment. This includes their revenue streams and their opportunities for increased creativity. It also considers the problems they encounter through piracy, plagiarism and how they generate income from their creativity.  The unit looks at the internet as the most popular source of entertainment. It makes learners aware of, and resilient to, negative aspects of socialising online such as cyberbullying or harassment. |
| Knowledge, understanding and skills progression: |
| Before starting this unit, learners should know:   * that files can be protected against unauthorised access * that all online activity creates metadata which can be sold as a product * that they can control their online profile * that they are solely responsible for their online activity and safety * the potential benefits and risks of online communities * the benefits and limitations of different methods of online communication. |
| Language: |
| * video sharing platform and video sharing platform ‘influencers’ * vlogger * digital divide * piracy * intellectual property theft * ripping * app * GUI |

| Learning objectives | Suggested teaching activities and resources | Teaching notes |
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| **9DW.03** Describe the potential for online communication to bring together and maintain communities in the real world.  **9DW.05** Describe the impact of digital technology on the creative disciplines.  **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online. | Introduce this unit by asking the following question:  *Are streaming and video sharing platforms affecting television usage?*  You will need to define television as being traditional network television, as opposed to online viewing.  *Do you watch television anymore?*  *If not, which platforms do you use for your viewing?*  Explain that a growing number of vloggers (video bloggers) and online celebrities, with millions of regular viewers, can acquire enormous endorsements and other advertising fees.  Give learners a set of cards, each with a different statement about video sharing platforms and ask them to select one to research. The statements could include:   * video sharing platforms are a good influence * video sharing platforms are a bad influence * video sharing platforms enable public participation * video sharing platforms promote creativity * video sharing platforms are democratic * video sharing platforms exclude those who cannot afford a smartphone or a reliable internet connection, therefore creating a digital divide * video sharing platforms lack editorial control * video sharing platform influencers do not deserve the vast sums of money that they make * video sharing platforms are one of the most important educational resources.   Ask learners to gather into small groups with those that have selected the same statement. Each group conducts research into their selected statement, for example by looking at local news reports and editorials. As many of the findings will be the result of their opinion they will need to make careful selections about which items they use.  Each group presents a reasoned argument to rest of the class, either for or against the statement on the card they have selected, based upon the outcome of their research.  Allow time for discussion of the class findings and then ask learners to vote ‘yes’ or ‘no’ to the following question:  *Would it matter if video sharing platforms made television extinct?*  **Resources:**   * A set of cards, each with a different statement about video sharing platforms for learners to select from and research. | In many countries traditional network television is in decline, which has led to a decline in television advertising revenues. Young people have many alternatives for viewing television programmes and movies.  Companies marketing to a younger demographic are being forced to consider alternatives to television advertising in order to reach their intended audience. For some companies this is through the sponsorship of video sharing platform performers who, as a result of enormous viewing figures, are the new media celebrities for young people and are able to exert considerable influence.  When you see some of the content generated by young people and posted on video sharing platforms (short videos, animations, music, artwork, etc.) it can be asserted that video sharing platforms have helped people to share more creativity.  Learners may want to make reference to some of the extreme opinions that they found and rejected when presenting their ‘arguments’. |
| **9DW.05** Describe the impact of digital technology on the creative disciplines.  **9SW.04** Identify the benefits and risks of online gaming and e-sports.  **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing. | Ask learners how many of them regularly play video games.  *How many hours a week, on average, do you spend playing video games?*  *Is this time well spent?*  Ask learners to work in small groups and use a digital tool to create a mind map divided into two halves with‘video gaming’ in the centre:   * on the left side they should write positive aspects of video gaming * on the right side they should write negative aspects of video gaming.   Also introduce positive and negative ideas of your own, such as:   |  |  | | --- | --- | | Research has shown that game playing has **positive** aspects: | Research has also shown that video game playing has **negative** aspects: | | * Playing games is enjoyable. * They may slow down aging. * They can make the player a better decision maker. * Online multiplayer games make the player more sociable. * Games can enhance the player’s ability to learn. * Games develop the player’s skills for strategic problem solving. * They can help to improve the player’s hand-eye coordination. * They help the player to improve focus and attention. * Playing video games can reduce stress. * Professional gamers can make an income from gaming. * The video game industry provides jobs and creates revenue. | * Many contain scenes of repetitive violence. * Online multiplayer games are used by predators and stalkers. * Games can lead to acts of cyberbullying. * Privacy issues can arise from children giving away personal and private information to other online players. * Children can be exposed to content that is inappropriate for their age. * Game playing is carried out at the expense of more beneficial or productive activities. * Excessive game playing can make players less sociable. * Some players can become addicted to game playing. |     Once the mind maps are complete learners should work individually to select one positive statement and one negative statement that most surprised them and then research it further, so that they can explain the reason for each of their selections.  Learners discuss their findings with the rest of their group and any interesting outcomes are shared with the whole class. | Electronic or video gaming (sophisticated online games where learners are playing the role of the lead character in the first person, or cheap smartphone apps like Tetris, etc.) is a growing industry. The gaming industry provides creative, rewarding and well-paid jobs for those involved.  Note: issues concerning the financial costs of games, and enhancements to games, are covered in the next activity. |
| **9SW.03** Understand the payment models that exist in the gaming and app industries, and identify the advantages and disadvantages of these models. | *Do you pay for the games that you play?*  *How are the people who make the games rewarded for their creativity*?  Discuss the different payment models for games, for example:   * in-app advertising * freemium and in-app purchases * pay for game enhancements and advantages * pay to download * traditional, in shop, purchase * subscription, which will include the provision of personal data.   Discuss the cost of games and apps and the amount of money that can be made by the companies making and selling them.  *Do you think that these methods are fair?*  *How do they affect your experience as a user?*  Ask learners to think about their favourite game and create separate lists of the payment methods that would and would not work for that game. They should consider the following:   * Will the user be the person that pays for the game? For example, it could be something that is given to them as a gift from a family member. * Will advertising interrupt the enjoyment of the game? * Would the game become less enjoyable if all enhancements needed to be paid for? * Would they prefer it if the enhancements were offered as a reward for achievement within the game itself? * Is it fair that people can receive game play advantages if they pay for them?   Learners write a letter to the makers of their favourite game to explain the payment method that they would prefer for a sequel of the game. ‘No payment at all’ is not an option, learners have to show appreciation for the creativity and investment that has been put into creating the game – they should acknowledge that the game would not be developed if no payment were received. |  |
| **9DW.02** Understand that obtaining unauthorised access to digital media is a form of theft.  **9SW.01** Understand the risks of downloading software and streaming from unauthorised sources.  **9DW.05** Describe the impact of digital technology on the creative disciplines.  **9TC.04** Use advanced search techniques to refine search results. | Explain that Intellectual Property (IP) theft is a criminal activity. It stops people who create work (e.g. games developers) being paid. If it continues then they may stop creating new things. This means that victims of IP theft include:   * the people who create new products and their families * future audiences who will not receive new products.   Ask learners to imagine that they had been offered a fee to write an article for a magazine but that a criminal has copied their text and submitted the article under their own name. The criminal has therefore cheated them out of both the payment and the recognition.  *How would you feel?*  Divide the class into small groups and tell learners that they are going to participate in a class debate. Some of the groups will be speaking for and some against the following statement: *‘IP theft is acceptable in moderation.’*  Provide each group with a topic which identifies the specific aspect of the argument they should focus on. For example:   * the financial impact upon the creator * disincentive to create future work * less investment in the creative industries * it offers access to online entertainment, closing the digital divide * it provides a platform for further creativity * it promotes the creator’s wider work.   Ask learners to research and present their findings and then conduct a class debate.  Explain that some people use illegal downloads or streaming in order to avoid paying fees. These unauthorised sources are often developed by criminals who use them to gain unauthorised access to users’ systems. Therefore illegal downloads represent a serious security threat to the user’s own devices.  **Resources:**   * List of topics related to IP theft so that the different groups are not duplicating their research and the final argument considers a wide range of aspects. | Illegal downloading and other forms of piracy have become a massive threat to the music, film and gaming industries.  Young people often view piracy and IP theft as a victimless activity. It is vital to help them to understand that, ultimately, they will be the victims as piracy poses a risk to future audiences. By not paying those that create digital artefacts for their work, the creative industries will have restricted funding for new content.  The gaming industry has introduced online subscription streaming services, using in-game micropayments to generate revenue. Payment for games works best when it is on the player’s terms, through regular small payments where players can see the direct value and do not feel they have fully committed to a single, expensive game.  In spite of these models, IP theft is still an enormous problem. Examples include making unlicensed copies of music CDs, DVDs and games, watching a live sports event without paying to view it, etc.  Young people often do not understand the risks to themselves in using illegal downloads. |
| **9DW.04** Understand what is meant by the digital divide and how this affects different areas of society both locally and globally. | Explain the term ‘digital divide’ at the local level.  *What do you think causes the digital divide?*  *How do you think a lack of digital access or awareness could affect a person of about your age?*  Emphasise basic examples that your learners may not consider:   * the ability to communicate with friends, both locally and globally * access to outstanding resources for learning * the practical advantages of being able to access goods and services online.   As a whole class discuss both the causes and the effects of the digital divide for both young and older people.  Tell learners to imagine they are a politician who has been elected because they promised: ‘*I will break down the digital divide*’.  Instruct them to design strategies that would eliminate the digital divide in your country. They can choose a specific aspect of the divide, for example financial causes or providing information and support to those who have not yet engaged with the technologies that are available to them.  Learners present their strategies using digital resources. Inform them that they can be creative when doing this, for example that they could role-play being a politician and present their strategy via a video.  **Resources:**   * Examples of news stories that exemplify the damaging effect of the digital divide on the education of young people and people who are not digitally engaged. * Statistical data on the extent of smartphone and computer ownership, cost of internet access, etc. for learners to include within their strategies. * Examples of the support that is available to those who lack knowledge about the benefits of digital engagement. | The term digital divide refers to a distinction between people who have a reliable device that they can use to access the internet and an affordable means of connecting to a reliable internet connection via their home or school, and people who do not. A digital divide exists, at a local level, between:   * those who devote time to the use of digital devices and those who do not * those who feel comfortable engaging in digital environments and those who do not * those who feel comfortable using technology and those who do not.   Many teenagers, with sufficient means of access, take their internet access for granted. However, a digital divide also occurs between these teenagers and those who live in areas where reliable internet access is not as widely available.  The digital divide also exists within fully developed countries. There will always be families who are unable to afford access to the internet for their children. This lack of access may be detrimental in poor and underdeveloped countries and to children in disadvantaged families. |
| **9DW.05** Describe the impact of digital technology on the creative disciplines. | To encourage learners to place the creative disciplines into an historical context ask them:  *How was the written word published before 1440?*  *How were images recorded before 1816?*  *How did people listen to music before 1877?*  *How did people watch theatrical performances before 1925?*  Explain that the creative disciplines have benefited from technological innovations.  In small groups, learners pick one of the following – text, image, music, theatre or film, and create a slideshow timeline which:   * identifies milestones in technological innovation and the dates * explains the benefits these innovations brought * credits those responsible for introducing the innovations * includes diagrams and photographs to illustrate the timeline.   Provide a peer assessment form for each learner and, while each group presents their slideshow, ask the class to assess each presentation using clearly prescribed criteria.  Describe how the creative disciplines have merged in recent years as the principle technology has become the computer and more recently the smartphone.  **Resources:**   * Peer assessment forms. | The creative disciplines include literature, music, theatre and dance, film, game creation and the visual arts in general.  One of the best ways to understand the impact of technology on any developmental process is to put it into an historical context.  Often it is only by looking back in time that we can understand the full impact of technological innovations and the benefits that digitisation has brought.  The dates given in the activity are key points in history but encourage learners to think back further in time. The invention of the printing press in 1440 improved the publishing of the written word to a wider audience but was it more important than the invention of an alphabet or a quill pen?  The main aim of this activity is to enable learners to understand how recently many of these changes have taken place, and the speed at which digitisation changes the production of content and has the power to disrupt whole industries. |
| **9DW.05** Describe the impact of digital technology on the creative disciplines. | Having looked at the historic impact that technology has had in the creative disciplines, discuss the current and future impacts that digital technology could have on these disciplines.  Focus on the benefits, which could include:   * that the ease of digital creation and distribution has made the creative disciplines more accessible * young people have been empowered to create and distribute their own thoughts, music, videos, etc. * artists have embraced technologies, for example by creating digital art or by exploring new possibilities in the recording of music or the making of video * new marketing opportunities have arisen though social media, sharing platforms and through linking products to others through targeted advertising.   Explain that alternative methods of distribution have led to different methods of payment for the consumers of creative products.  *How do you pay for books, music and film in digital format?*  Refer back to the activities on piracy, emphasising that, although digital content is now extremely easy to reproduce and distribute, it is not honest or legal to do so.  In pairs or small groups, learners choose a creative discipline, such as film, books, visual art or music.  They create a brief description of a new creative product within their chosen discipline and make a list of the strategies that they will use to make sure that their product reaches as wide an audience as possible. The strategy must ensure their work is sustainable and will generate an income.  Each pair/group explains to the class their product, the digital technologies that were used in its development and the selected marketing strategy. They should answer questions from their peers about the choices they made. |  |

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| Example project: Unit 9.3 | | |
| Learning objectives | Project outline and resources | Teaching notes |
| **9TC.02** Use devices to create increasingly sophisticated digital artefacts, including the use of sound, video, text and other multimedia.  **9SW.03** Understand the payment models that exist in the gaming and app industries, and identify the advantages and disadvantages of these models. | Explain that it is now up to learners to decide what the internet is missing and how they would like to improve it, for example by adding a specific service.  Challenge them to design a smartphone app that would link some of the ideas that they have been learning about. The purpose of the app is to improve the life of the user in some way, for example it could provide information about:   * health * transport * entertainment * education.   Explain that they will be designing the app but not creating it.  The app can be based on current technology or technology that learners envisage might be available in years to come. They can use their imaginations but the technologies that are envisaged must have a sound scientific basis to them. The technologies that they include could encompass the Internet of Things (IoT), as well as traditional computer devices.  Learners will produce a portfolio of work that will include the following:   * the name of the app and a justification for that name * the purpose of the app * the origin of the data that the app needs to draw on. This could be very specific or an example of aggregated big data so that the app is not limited to one set of data * if the app is IoT dependent, learners must explain how IoT devices are incorporated * if the app makes people healthier or safer, this should be highlighted * if the app helps to close the digital divide, this should be highlighted * if the app supports the creative industries, this should be highlighted * how the app rewards the creator for their IP, how it generates revenue and how the user will pay for it.   The user interface must be carefully thought out and designs for smartphone GUI screens should also be presented in the final portfolio.  If time is available, learners create a video advertisement or marketing presentation that ‘sells’ their app to the end user. This should clearly explain the payment model that is being used. | For this project, define ‘app’ as a piece of platform independent, standalone, software that has been designed to perform a specific task, which can be downloaded to a smartphone.  Learners should be persuaded that an app designed to improve people's lives in some way would be a more worthwhile product. For example, an app which makes people healthier or safer, or one that helps to close the digital divide.  An example you could use to illustrate the project is a ‘*Bus Stop App*’, as follows:  In a city, the bus stops are spaced at irregular distances apart, the fare to the city centre decreases the closer you are to the centre when you catch a bus. Each stop has a display that tells the user when the next bus will arrive. The ‘Bus Stop App’ is able to aggregate data from the bus company (on fares and bus times) and from the smartphone’s map application. The user enters their average walking speed and the app will then tell them if they will be able to walk to the next bus stop and arrive in good time to catch the bus. The app will encourage users to ‘walk not wait’ by telling them how much money they will save on their bus fare and how many calories/joules they will burn off if they walk to the next stop rather than waiting for the bus. |

Sample lesson 1

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| CLASS: | |
| DATE: | |
| **Learning objectives** | * **9SW.05** Understand that they have personal responsibility for their digital activity, safety and wellbeing. * **9DW.01** Make effective judgments about the validity of the source and accuracy of information found online. |
| **Lesson focus /**  **success criteria** | Increase learners’ awareness of behaving responsibly when ‘posting’ content online, to protect themselves and those they post about. |
| **Prior knowledge / Previous learning** | * Familiarity with the term ‘posting’ with regard to uploading text, images, audio and video to a website. * Awareness of the steps that can be taken to control who is able to view the content that is posted. * Awareness of what should not be shared online, and why. |

**Plan**

| **Lesson** | **Planned activities** | **Notes** |
| --- | --- | --- |
| **Introduction** | Starter question:  *Do you think teenagers are smart enough to use the internet?*  Learners briefly share their thoughts about the question with a partner.  As a whole class discuss the question.  Ask how many agree and how many disagree with the question. | Allow learners to fully express themselves in response to the question.  Discuss any learner thoughts that emerge which might support the view that more controls should be in place – but remember to be sensitive. |
| **Main activities** | Display a fictitious website but allow learners to assume that it is genuine for now.  Tell them that you are surprised at the content you find posted on some publicly available websites.  Explain that ‘risk’ in this website refers to any content that may lead to physical or emotional harm to the person posting the content or the person who is the subject of the content.  Ask the class to review the fictitious website and create a list of the content that might upset others or may put the creator and others in danger.  If learners are struggling with the task, give them a set of questions that help them to identify examples of bad practice (risk), e.g. *Is it ok to tag images of children with their full name and if not explain why not?* | Support learners to identify the following in the website:   * personal information that should not be disclosed (such as personal email, address, etc.). * images that would enable a stranger to identify and track down the website owner * images and comments that show other individuals in a less than positive light and would therefore be viewed as cyberbullying * images that are tagged with full names * text and pictures that put others at risk. |
| **End/Close/ Reflection/ Summary** | Ask some of the learners to identify examples of how the content posted would be:   1. embarrassing to the 14-year-old who posted the content 2. dangerous to the 14-year-old who posted the content 3. annoying or hurtful to those about whom content was posted 4. dangerous to those about whom content was posted.   Discuss any responses that identify content that could be considered to represent cyberbullying.  Through discussion, develop a list of things they should do and should not do when posting content online. Display this so that it can be referred to in future lessons. | The list of things they should do and should not do when posting online:   * Do present yourself in a positive light. * Do not tag images with full names. * Do ask for permission before you post pictures. * Do not post pictures or videos that make fun of people. * Do not post personal information or contact details. * Do report it if you are concerned about something someone has posted about you. * Do set controls on your content so that only the people you intend to see can view it. |

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| **Reflection Use the space below to reflect on your lesson. Answer the most relevant questions for your lesson.** |
| *Were the learning objectives and lesson focus realistic? What did the learners learn today? What was the learning atmosphere like? What changes did I make from my plan and why?*  *If I taught this lesson again, what would I change?*  *What two things went really well (consider both teaching and learning)?*  *What two things would have improved the lesson (consider both teaching and learning)?*  *What have I learned from this lesson about the class or individuals that will inform my next lesson?* |
| **Next steps**  **What will I teach next, based on learners’ understanding of this lesson?** |

Sample lesson 2

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| **CLASS:** | |
| **DATE:** | |
| **Learning objectives** | * **9DW.05** Describe the impact of digital technology on the creative disciplines. |
| **Lesson focus /**  **success criteria** | Learners will understand:   * that entertainment as they know it today would not exist without a long history of technological developments * key milestones in the development of entertainment-related technology. |
| **Prior knowledge / Previous learning** | * how to pick out key information from search results * presentation development |

**Plan**

| **Lesson** | **Planned activities** | **Notes** |
| --- | --- | --- |
| **Introduction** | Ask:  *How was the written word published before 1440?*  *How were images recorded before 1816?*  *How did people listen to music before 1877?*  *How did people watch theatrical performances before 1925?*  Explain that many of the sources of entertainment that learners use today would not exist without these innovations.  *Can you think of any inventions that came even earlier which helped to shape our entertainment of today?* | 1440 – invention of the printing press  1816 – development of negative photographic images  1877 – phonograph invented (first method of recording and playing back sound)  1925 – television invented |
| **Main activities** | Ask learners to consider which creative industries would not exist without technology.  *How would you feel about this?*  Learners pick one of the following:   * text * image * music * theatre or film   and gather in small groups (2 to 3) with others who have made the same choice.  Each group conducts research and creates a slideshow timeline which:   * identifies milestones in technological innovation and the dates * explains the benefits these innovations brought * credits those responsible for introducing the innovations * includes diagrams and photographs to illustrate the timeline.   Ask learners to consider how many of the developments they are including have taken place recently, and about how this is an indication of the speed at which digitisation changes the production of content and has the power to disrupt whole industries. | As well as using keywords to search for information and images, learners should also use the ‘find’ function within their browser to pick out key information from within their search results. |
| **End/Close/ Reflection/ Summary** | Explain that it is often only by looking back in time that we can understand the full impact of technological innovations and the benefits that digitisation has brought.  Prepare learners to present their timelines in the next session and explain that the class will be reviewing each presentation and offering constructive feedback. |  |

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| **Reflection Use the space below to reflect on your lesson. Answer the most relevant questions for your lesson.** |
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| **Next steps**  **What will I teach next, based on learners’ understanding of this lesson?** |

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