**Enhancing Learning through Technology (ELT) and Universal Design for Learning (UDL)**

This resource is designed to offer suggestions as to how certain core technologies at DMU might be useful in implementing inclusive teaching, learning and assessment practices. The resource is intended as a point of departure for those academic staff who may not be aware of the range of technologies available and where these technologies might interface with the three principles of Universal Design for Learning (UDL). Where available – links to case studies and guides on how to use the technologies are included.

It is important to understand that simply implementing any of the technologies or technology-facilitated approaches listed below does not immediately create an inclusive learning environment and so achieve UDL compliance. It may be that a range of approaches (technological and non-technological) will need to be introduced. Given this, the use of a particular technology-facilitated approach must be considered in terms of the broader pedagogical requirements that are specific to your curriculum – the local the learning objectives and needs of your students – and all through the inclusive lens of UDL. [Click here for more information about UDL at DMU](https://lt2020.our.dmu.ac.uk/udl/).

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| **UDL PRINCIPLE 1: ENGAGEMENT**  *Provide multiple means of engagement*  Some learners are highly engaged by spontaneity and novelty while others are disengaged, even frightened, by those aspects, preferring strict routine. Some learners might like to work alone, while others prefer to work with their peers. In reality, there is not one means of engagement that will be optimal for all learners in all contexts; providing multiple options for engagement is essential. (National Centre on Universal Design for Learning, <http://www.udlcenter.org/aboutudl/whatisudl/3principles>)  The following technologies and technology-facilitated approaches can offer ways in which to provide multiple means of engagement. |

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| **Technology/approach** | **Inclusive practice facilitated** | **Case Studies** | **‘How to’ Guide** |
| **Online group work** *Includes:* | Supports students who effectively learn in group settings, who work best in a shared/collaborative/dialogic space |  |  |
| * Wiki | A shared space that affords interactive collaboration and shared group work | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-wikis/) | [How?](http://celt.our.dmu.ac.uk/wikis-in-blackboard/) |
| * Discussion board | A space that affords shared dialogue, doesn’t require all participants to be present at the same time in the same physical space |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-ways-of-collaborating/create-a-discussion-board-forum/) |
| * Virtual classroom | A space that affords collaborative interaction in real-time without the need to be in a shared physical space – one in which the teacher actively participates | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/hanging-out-with-google/) | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard-collaborate/#menu) |
| * Virtual group space | A space that affords collaborative interaction in real-time without the need to be in a shared physical space – one in which only the students actively participate |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard-collaborate/#menu) |
| **Social media** | Supports students who learn most effectively in social/communal/collaborative spaces. Utilises informal yet familiar spaces for students to engage in learning activities. | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-blackboard-social-networking-to-support-student-learning/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Information repository** *Includes:* | Supports students who prefer to learn independently. Provides resources to support them in accessing information and knowledge. |  |  |
| * Make text-based files available to students | Provides content for students who learn effectively through engaging with text |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-item/#editor) |
| * Provide links to online resources | Provides alternative modalities of content which may include audio and visual content, as well as different ways of navigating thorough content |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-a-web-link/) |
| * Lecture/presentation recordings | Offers the opportunity to revisit and review a lecture/presentation | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/enhancing-learning-through-technology-the-power-electronics-is-in-your-hands/) [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/live-lecture-capture/) | [How?](http://celt.our.dmu.ac.uk/support-using-technology/develop-content/multimedia-enhancement-recording-in-a-classroom-for-students-to-replay-later/) |
| **Provide pre-session materials** *Includes:* | Supports students who don’t easily assimilate and comprehend knowledge when presented in a lecture format. Offers a general overview of what the content/context/key themes of the session will be. |  |  |
| * Attach text-based files to Blackboard pages | Provides text-based content in an online space which can be individually modifiable |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-item/#editor) |
| * Provide an audio/visual synopsis of an upcoming lecture | Provides an alternative modality to text-based materials | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/powerpoint-video-using-lync/) | [How?](https://celt.our.dmu.ac.uk/panopto-desktop-recording-quickguide/) |
| * Provide links to online resources | Provides an alternative modality to text-based materials |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-a-web-link/) |
| **Classroom response technology** | Allows students to ask questions anonymously; which benefits shy students, allowing them to participate.  Deliver anonymised pop quizzes during a session for formative knowledge checking – students use this to self-evaluate their depth of understanding. Supports students who learn independently. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/using-non-dmu-core-elt/turning-point/) |
| **Practical/classroom activity audio/video recording** | Supports students who benefit from group activity and peer feedback. Effective as a means of formative feedback/self-reflection on practice-based activities. | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/student-role-play-videos-for-formative-learning-in-nursing/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Online scenarios** | Provides an alternative modality to text-based learning | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/creating-online-scenarios-for-teaching-and-learning/) [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/developing-high-street/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |

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| **UDL PRINCIPLE 2: REPRESENTATION**  *Provide multiple means of representation*  To reduce barriers to learning, it is important to ensure that key information is equally perceptible to all learners by: 1) providing the same information through different modalities (e.g., through vision, hearing, or touch); 2) providing information in a format that will allow for adjustability by the user (e.g., text that can be enlarged, sounds that can be amplified). Such multiple representations not only ensure that information is accessible to learners with particular sensory and perceptual disabilities, but also easier to access and comprehend for many others. (National Centre on Universal Design for Learning, <http://www.udlcenter.org/aboutudl/whatisudl/3principles>)  The following technologies and technology-facilitated approaches can offer ways in which to provide multiple means of representation: |

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| **Technology/approach** | **Inclusive practice facilitated** | **Case studies** | **‘How to’ guide** |
| **Make PowerPoint and MS word Files available to students in Blackboard** | Provides text-based content in a format that can be modified by students. |  | [How?](http://celt.our.dmu.ac.uk/powerpoint-file/) |
| **Use digital media (multimedia)** Includes: | Provides content that supports varied modalities. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/enhancing-learning-through-technology-the-power-electronics-is-in-your-hands/) [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/creating-online-scenarios-for-teaching-and-learning/) [Case study 3](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/powerpoint-video-using-lync/) [Case study 4](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/developing-high-street/) [Case study 5](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-videos/) [Case Study 6](http://celt.our.dmu.ac.uk/video-workbooks-assessment-and-exam-feedback/) |  |
| * Embedding images in Blackboard pages | Supports students who effectively learn via a visual modality. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-image/) |
| * Embedding audio in Blackboard pages | Supports students who effectively learn via an aural modality (NOTE: has implications for students who are hearing impaired). |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-audio/) |
| * Adding links to web videos (e.g. YouTube) in Blackboard pages | Supports students who effectively learn via a visual modality. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-mashups/#youtube) |
| * Adding links to web content in Blackboard pages | Supports students who effectively learn through active interaction with information sources. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-working-with-content/create-a-web-link/) |
| * Recording an audio and PowerPoint presentation in a classroom and make it available to students in Blackboard | Provides a different representation of a temporally finite learning experience – the live lecture. The recording means that it can be revisited multiple times. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/live-lecture-capture/) [Case Study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/enhancing-learning-through-technology-the-power-electronics-is-in-your-hands/) | [Record – How?](https://celt.our.dmu.ac.uk/panopto-classroom-recording-quickguide/)  [Add to Blackboard – How?](https://celt.our.dmu.ac.uk/panopto-adding-a-recording-to-blackboard-quickguide/) |
| * Recording an audio and PowerPoint presentation away from the classroom and make it available to students in Blackboard | Can be used to represent key points/concepts/themes, in a shorter and more easily digestible format. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/powerpoint-video-using-lync/) [Case Study 2](http://celt.our.dmu.ac.uk/video-workbooks-assessment-and-exam-feedback/) | [Record – How?](https://celt.our.dmu.ac.uk/panopto-desktop-recording-quickguide/)  [Add to Blackboard – How?](https://celt.our.dmu.ac.uk/panopto-adding-a-recording-to-blackboard-quickguide/) |
| **Video of practical techniques** | Offers an alternative to the representation of practical techniques via text description, or a series of fixed images. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-videos/) [Case Study 2](http://celt.our.dmu.ac.uk/video-workbooks-assessment-and-exam-feedback/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |

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| **UDL PRINCIPLE 3: ACTION AND EXPRESSION**  *Provide multiple means of action and expression*  It is important to provide alternative modalities for expression, both to level the playing field among learners and to allow the learner to appropriately (or easily) express knowledge, ideas and concepts in the learning environment. (National Centre on Universal Design for Learning, <http://www.udlcenter.org/aboutudl/whatisudl/3principles>)  The following technologies and technology-facilitated approaches can offer ways in which to provide multiple means of action and expression. |

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| **Technology/approach** | **Inclusive practice facilitated** | **Case studies** | **‘How to’ guide** |
| **Online tests** | An alternative assessment approach that can be particularly effective when used in a formative context, and for student self-evaluation of knowledge. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-assessment-tools/create-a-test/#Create) |
| **Digital storytelling** [[what is this?](http://digitalstorytelling.coe.uh.edu/page.cfm?id=27&cid=27)] [Students express their knowledge through the production of a multimedia object created via their own mobile device.] | Alternative means of expressing knowledge, or reflecting on experience/practice – can be assessed. Connects to students’ familiarity with digital media via their use of personal mobile devices. |  | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Audio diary**  [An audio only reflective diary/journal – can be created via their own mobile device. Can be shared with their peers or private between student and instructor] | Alternative means of expressing knowledge, or reflecting on experience/practice – can be assessed. |  | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Video diary**  [A video-based reflective diary/journal – can be created via their own mobile device. Can be shared with their peers or private between student and instructor] | Alternative means of expressing knowledge, or reflecting on experience/practice – can be assessed. |  | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Virtual presentation/viva (online)** | A means of delivering a presentation (can be for assessment) that does not require the student to be present in the same physical space as those being presented to. Benefits students for whom travel to DMU can be problematic. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard-collaborate/#menu) |
| **eJournal** | A reflective journal approach that due to its electronic nature allows the student to utilise not just text, but multimedia as forms of expression. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/practice-based-ejournals-eportfolios/), [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-wikis/) | [How?](http://celt.our.dmu.ac.uk/ejournals-in-blackboard/) |
| **ePortfolio** | A practice-based portfolio approach that due to its electronic nature allows the student to utilise not just text, but multimedia as forms of evidencing practice. | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/practice-based-ejournals-eportfolios/) | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-ways-of-collaborating/campus-pack-wiki/) |
| **Video role-play/practical activity for reflection** | Affords the opportunity for students to engage in practice-based activities that are not situated in real-world spaces; and have these assessed (most effective as formative assessment). Offers an alternative mechanism for students to express their knowledge as a situated practice/social practice. | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/student-role-play-videos-for-formative-learning-in-nursing/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Group assessment** | Affords the opportunity for students to express knowledge that is formed as a collaborative endeavour as opposed to that which is a purely individual endeavour. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/dmu-core-elt/blackboard/blackboard-how-do-i/blackboard-course-management/blackboard-ways-of-collaborating/creating-groups/) |
| **Classroom response technology** | Allows students to anonymously test their knowledge in a large group environment, which reduces the fear that some may feel in expressing themselves in a large group setting. |  | [How?](http://celt.our.dmu.ac.uk/support-using-technology/using-non-dmu-core-elt/turning-point/) |
| **Peer assessment** | Benefits students who learn best when expressing their ideas in a group setting and getting feedback in this space. | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/peer-marking-introduction-to-research-and-ethics/) | For more info contact your [Faculty ELT Project Officer](http://celt.our.dmu.ac.uk/celt/celt-people/faculty-elt-project-officers/) |
| **Blogging** | Provides an alternative approach to the formal essay. Due to the electronic nature of a blog allows the student to utilise not just text, but multimedia as forms of expression. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/assessed-blogs/), [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-blogs-developing-writing/) | [How?](http://celt.our.dmu.ac.uk/blogs-in-blackboard/) |
| **Audio feedback** | Provides feedback on assessment via an alternative modality to text (NOTE: has implications for students who are hearing impaired). | [Case study](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/using-audio-feedback-to-students/) | [How?](http://celt.our.dmu.ac.uk/support-using-technology/develop-content/multimedia-enhancement-assessment-videos-recording-feedback-for-students/) |
| **Video feedback** | Provides feedback on assessment via an alternative modality to text. | [Case study 1](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/enhancing-learning-through-technology-the-power-electronics-is-in-your-hands/), [Case study 2](http://celt.our.dmu.ac.uk/effective-practice/elt-case-studies/enhancing-feedback-using-screencast-software/), [Case Study 3](http://celt.our.dmu.ac.uk/video-workbooks-assessment-and-exam-feedback/) | [How?](http://celt.our.dmu.ac.uk/support-using-technology/develop-content/multimedia-enhancement-assessment-videos-recording-feedback-for-students/) |