

Moving to Online Teaching and Learning

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1. Technology in Support of Online Teaching and Learning

1.1. Introduction

This document introduces some of the key concepts and considerations associated with online teaching and learning scenarios. Institutions considering a move to online delivery of educational content may benefit by reflecting on the content and guidelines in this document.

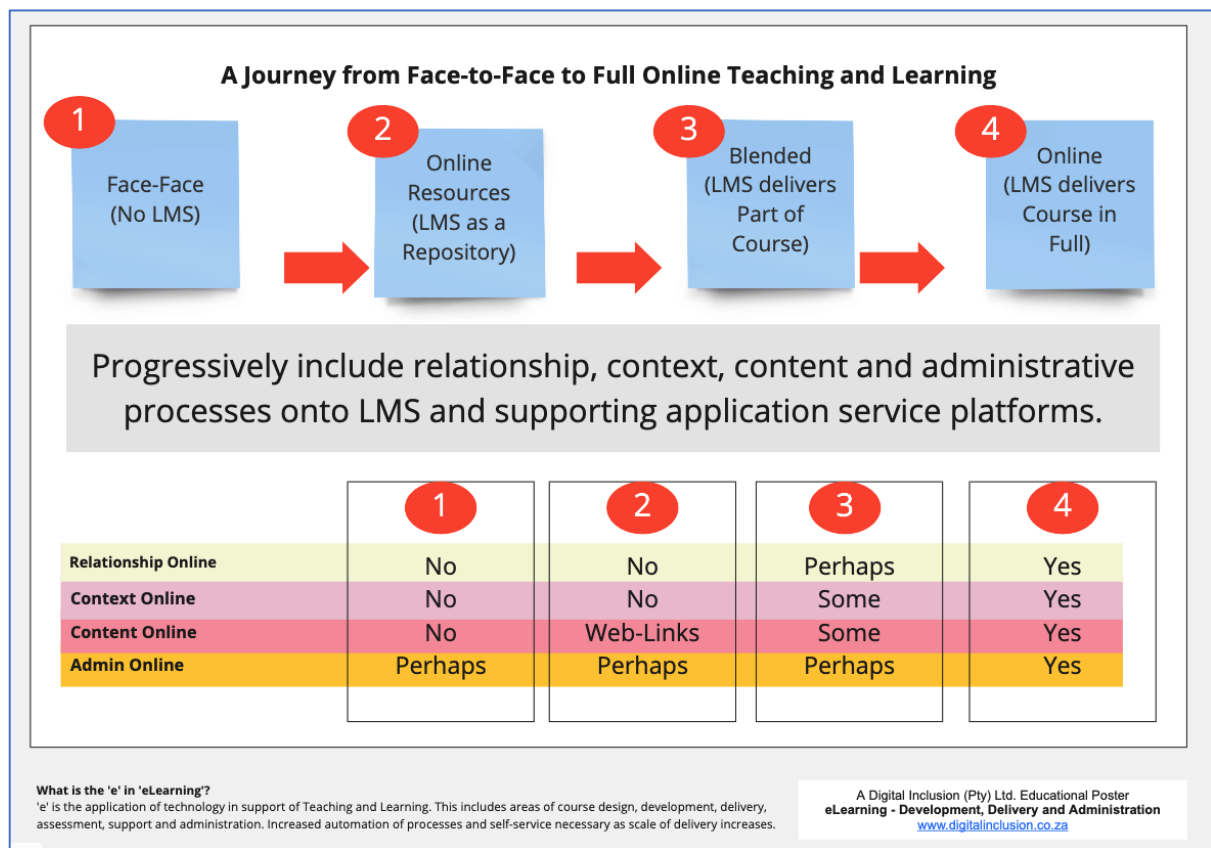
1.2. Effective Teaching and Learning

Learning is something done by learners (course participants). Teachers and facilitators can create a learning environment and use supporting processes to present, engage, coach, assess, interact, and intervene as necessary to maximise the learning experience.

1.2.1. Delivery Methods

Today we are confronted with choices regarding delivery methods. Moving from Face-to-Face teaching to full Online Learning is a journey. There are four key stages of progression:

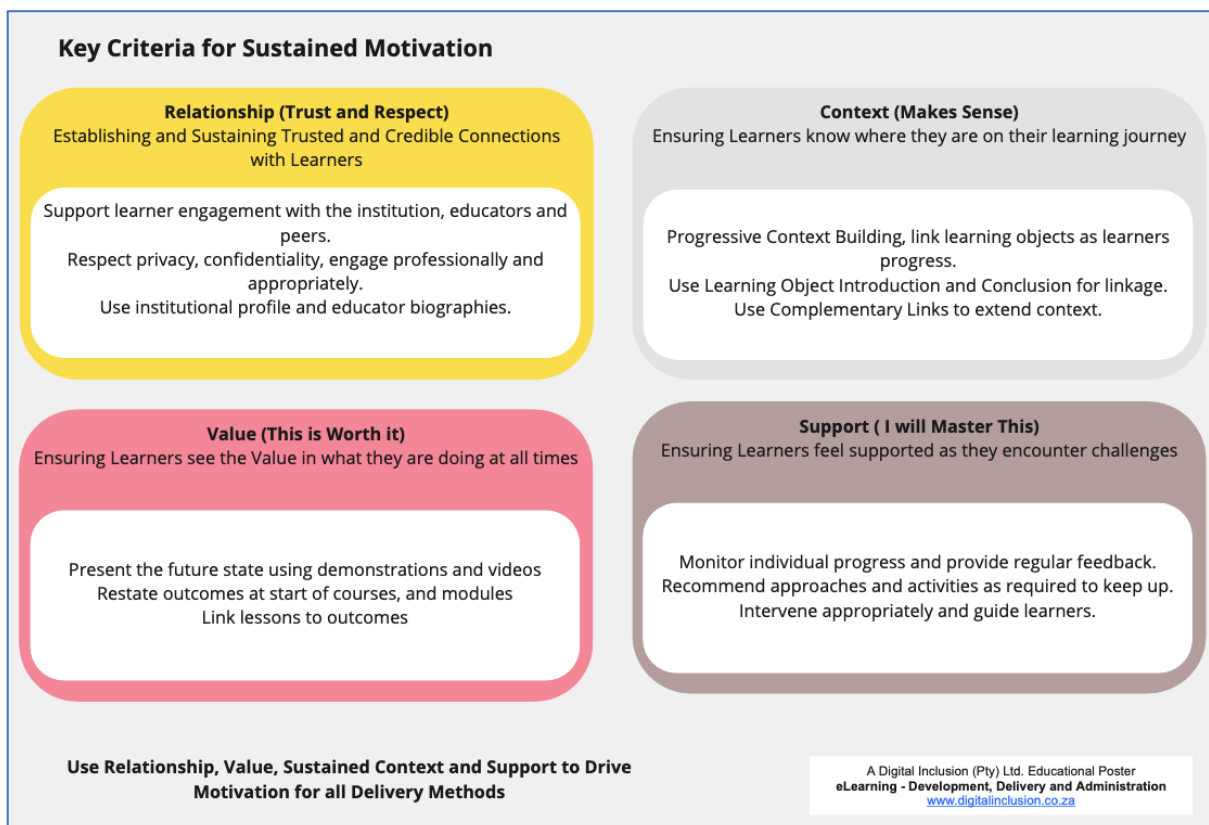
- Face-to-Face with no online elements
- Face-to-Face with online resources (files, assignments, slide decks, videos etc.) that can be accessed and downloaded. Essentially the online system is used as a “Resource Server”
- Blended Learning – Part of the course is delivered online, the rest delivered face-to-face
- Full Online – all of the course, as well as all supporting processes are delivered online



1.2.2. Key Criteria for Sustained Motivation

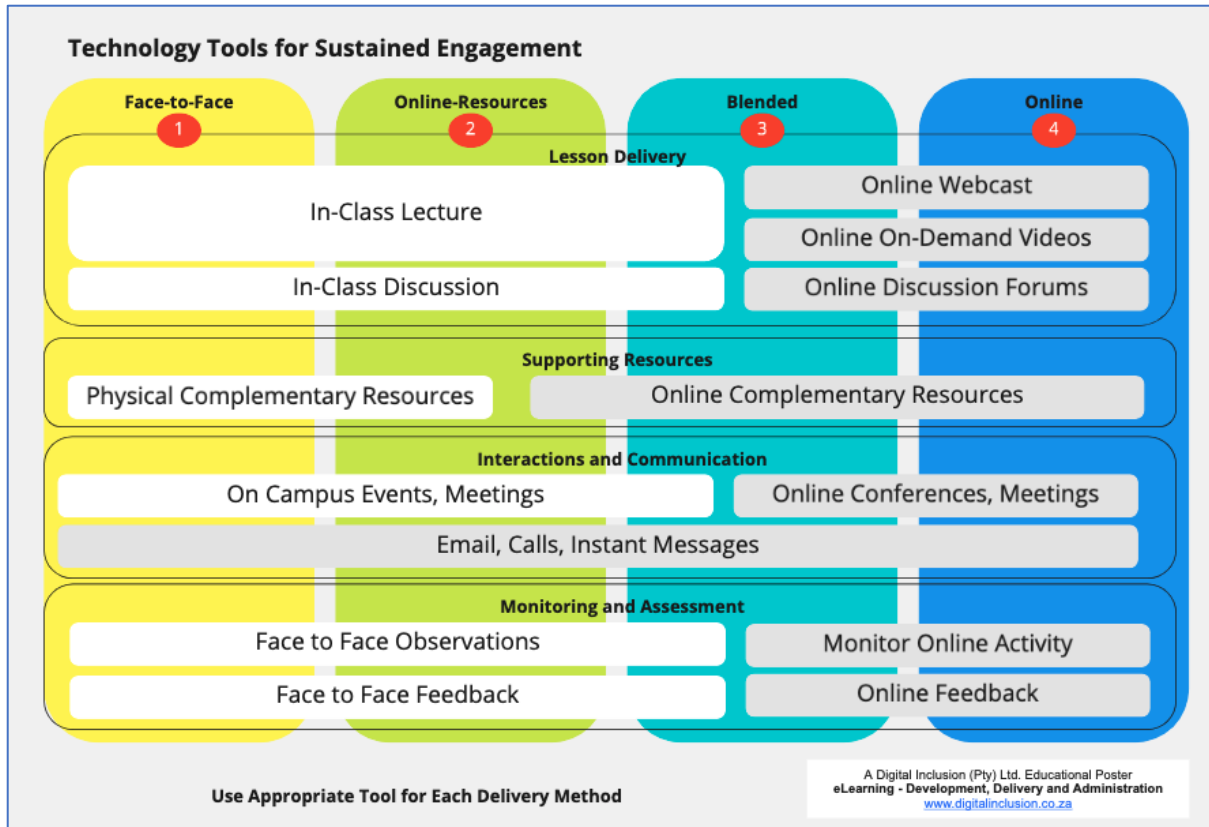
Regardless of the delivery methods being used to present courses and their respective modules and lessons, there are four key considerations that underpin sustained motivation for participants to complete their learning experiences:

- Relationship – Built on mutual trust, respect and credibility. Institutional representatives and participants. Cultivate a sense of association with the institution.
- Value – Course outcomes to be valued by participants, and the participants must believe their efforts will be worthwhile.
- Context – Always ensuring content makes sense, when delivered and in relationship to other content already delivered. Make sure all participants know where they are on their journey and why.
- Support – Any learning outcomes require a change in perceptions, understanding or behaviour. Learning requires effort and when participants find this challenging they may require access to supporting resources.



1.2.3. Technology Tools for Sustained Engagement

Lecturing, discussing, meeting, having events, observing, giving feedback and doing assessments are part of the teaching and learning experience. These processes have been done in a face-to-face environment for centuries. Now, as we embrace the development of the internet and explore the opportunities and challenges of online learning environments, we need to ensure we can continue to perform all the key processes to teach effectively online. For each delivery method we can align the required process with a tool or feature of online learning and communication systems.



1.2.4. Definitions of Technology Terms:

- Online Webcast – Video Podcast conducted by a presenter to a wider audience online. There may be the ability to submit text feedback or questions to the presenter, but this is not a multi-party video conference. May be recorded and made available for on-demand viewing after the webcast
- Online On-Demand Videos – Dedicated Library of recorded videos, hosted and streamed from a Video Content Management system. May be lectures, demonstrations, or context supporting content. Able to be accessed using a link (URL) and viewed when convenient for participants. Ideally integrated with content on Learning Management Systems and viewable on any device chosen by participants
- Online Discussion Forums – a substitute for peer meetings related to specific topics, where threaded conversations can take place. Participants can engage asynchronously and benefit by interacting with each other and institutional representatives.
- Online Conferences and Meetings – Multiparty synchronous online interactions. May include audio only as well as video participants. Meetings may be moderated and participation controlled, as it would be in a chaired meeting. Ideally integrated with Learning Management Systems to schedule and manage group participation.
- MOOC – *Massive Open Online Course*. Typically aimed at unlimited free participation with open access over the internet. MOOCs are hosted on online learning sites, with course administration, interaction, communication, assessments and certification being driven by a Learning Management System. See [Wikipedia definition](#). See [Reviews.com Basics of MOOCs discussion](#). Some proponents of MOOCs sub-classify them xMOOCs or cMOOCs.

- xMOOCs are based on traditional course structures where learning paths are predefined, aligned to course maps and curricula.
- cMOOCs are based on *connectivist* pedagogies where content is remixable, can be repurposed, and peer interactions and collaborations are used to underpin learning. cMOOCs require LMS systems with the integration of key collaborative communication capabilities. Participants plot their own learning paths as they engage with content and peers.
- LMS – *Learning Management System*. Application that manages processes associated with the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs online. LMS platforms can host and deliver MOOCs and courses that are not open or aimed at massive audiences. See [Wikipedia definition](#). MOOC delivery requires efficiency of processes at scale and fully exploit automation and flow management capabilities of LMS platforms.
- VCMS – Video Content Management System. A video content management system, or video CMS, is software that enables an organization to centralize, manage, and deliver video online. See [Panopto definition](#). LMS platforms are not designed as streaming platforms and as such, typically have links to video objects hosted on a VCMS.

1.3. Online Teaching and Learning Roles and Responsibilities

In any online teaching and learning scenario there are many role players. Referring to the figure below, the role players include:

1.3.1. Learning Environment Role Players

- Course Sponsor – Overall Sponsor of the Teaching and Learning Project. Signs off all courses as ready for delivery once satisfied all objectives and outcomes can be realised in line with institutional vision and budget.
- Systems Administrator/s – Those responsible for making sure that all required platforms are appropriately setup, configured and managed to meet the needs of the project

1.3.2. Course Design and Development Role Players

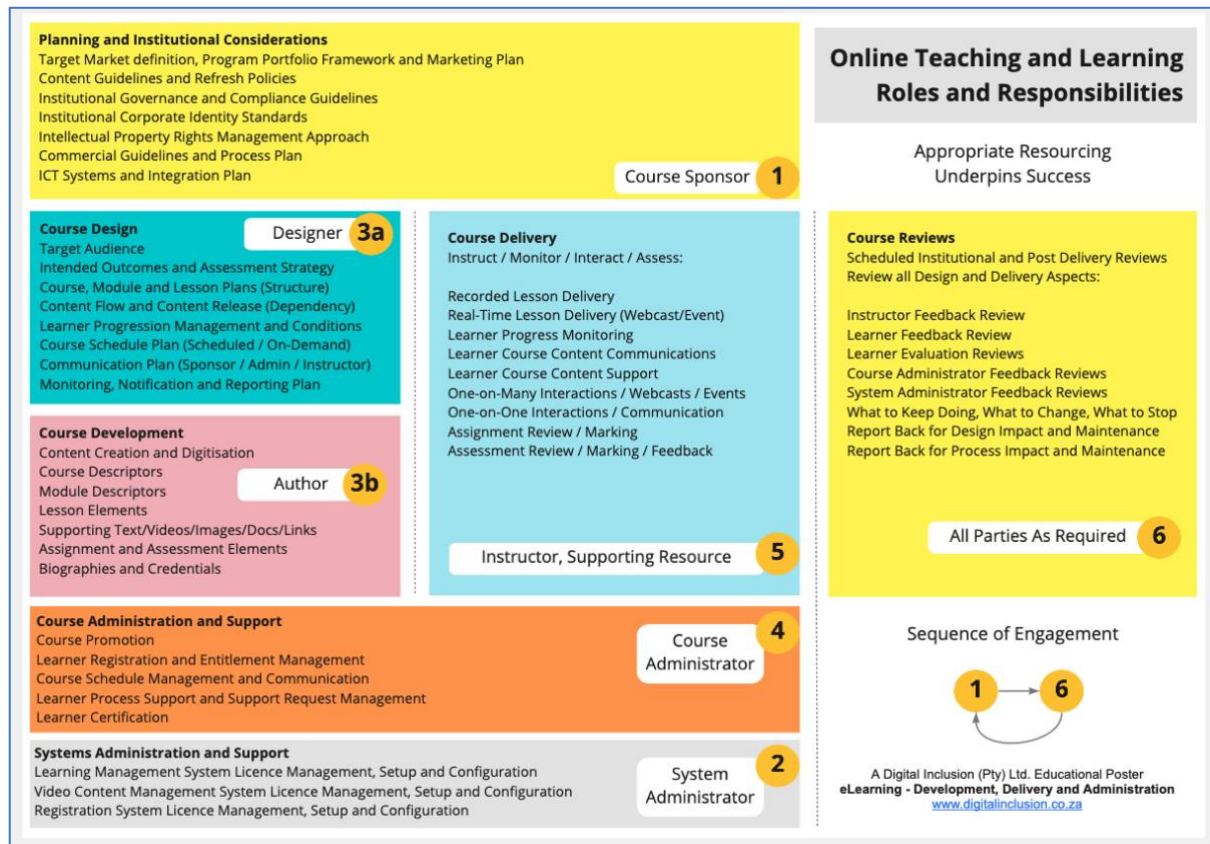
- Course Designer/s – Specialists that align pedagogical goals and outcomes with supporting course design, lesson types and assessment methods.
- Course Developer/s – Subject Matter Experts that create or source content as required to support course design objectives.

1.3.3. Course Delivery Role Players

- Course Administrators – Manage all course related processes that are not concerned with content and delivery
- Instructors and Supporting Resources - Facilitators, Instructors, Tutors, Assessors and others that act as coaching and supporting resources to course participants. From a support perspective, resources must be available on-demand to participants if they are experiencing any system difficulties or confusion regarding processes or interpretation of content.

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It must be noted that all the roles are key and if there is a problem in any area it will negatively impact the success of the online learning experience for participants and sponsors.



1.3.4. Role Player Involvement During Online Course Delivery

Each active role player is involved in many processes during an online course. We need to consider how processes are presented and when processes can be completed.

The chart below shows what they are each involved in, as well as how and when they should ideally engage. As an example, let us consider “Completing and Submitting a Quiz” (This is the What):

- Participants are the “Who”
- The *Optimal* “How” would be to have quiz hosted on the LMS
- The *Next Best* “How” would be to use online forms for quiz completion and submission
- Not *Ideal* as the “How” would be for Email to be used for quiz submission
- The *Ideal* “When” would be for participants to submit when it suits them
- The *Next Best* “When” would be for all submissions to be done against a fixed schedule

Each institution must determine the resource impact of supporting “on-demand” processes, as well as the impact of not driving all processes through an LMS with integrated functionality. Achieving efficiency and scalability depend on effective automation of integrated processes and allowing participants to engage based on their own time constraints and circumstances.

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eLearning Roles and Activities Who is involved in what processes, how and when?		Who				How			When	
		System Admin	Course Admin	Online Facilitator	Participant	Hosted on LMS	Online Forms	Email	Scheduled	Adhoc On-Demand
Registration			Involved		Involved		Not Ideal		Involved	
Participation	Complete Lessons and Topics			Involved	Optimal				Involved	
	Engage in Forums			Involved	Optimal				Involved	
	Course Events, Meetings and Web-Casts			Involved	Optimal			Involved		
	Complete and Submit Quizzes			Involved	Optimal		Not Ideal		Involved	
	Complete and Submit Assignments			Involved	Optimal		Not Ideal		Involved	
	Content Related Communications & Support			Involved	Optimal				Involved	
	Administration Related Communications & Support		Involved		Involved				Involved	
	System Related Communications & Support	Involved			Involved				Involved	
Assessment	Mark Quizzes			Involved	Optimal				Involved	
	Mark Assignments			Involved	Optimal				Involved	
Certification		Involved			Optimal				Involved	

Legend: Involved (blue square), Optimal (green square), Next Best (yellow square), Not Ideal (red square)

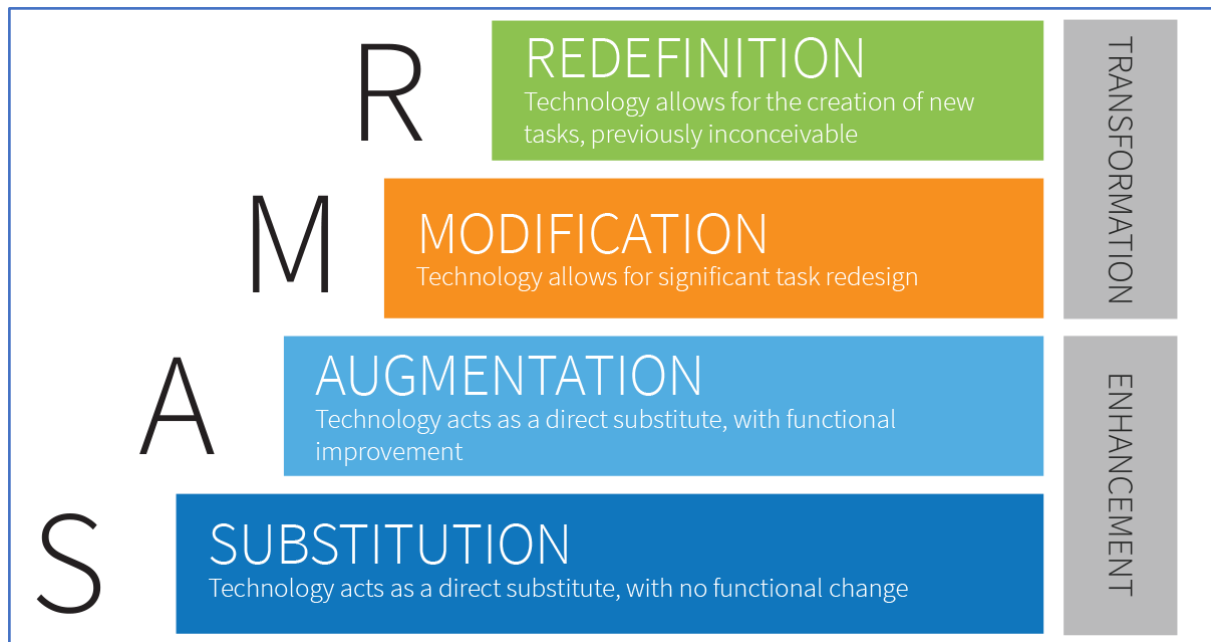
1.4. Systems in Support of Teaching and Learning Processes

1.4.1. e-Learning or eLearning

While we talk loosely and debate about “or e-Learning or eLearning” we often lose focus on the fact that is simply learning using technology. Over time, as learning using technology as a tool becomes standard practice, the “-” or hyphen will disappear and then the “e” will disappear too. We talk today of sending a mail, while we mean an email.

What is important is that if used appropriately, technology can aid teaching and learning processes. How the technology is used depends on the extent to which it been embraced and exploited. In many cases, technology is simply a substitute for methods or processes that have been applied without technology, with little or no exploitation of the technologies potential.

The SAMR model, credited to Dr. Ruben Puentedura, shows the different levels of potential technology integration. SAMR is the combination of the first letters from Substitution, Augmentation, Modification and Redefinition which all refer to the progression of technology integration into processes and the impact on outcomes.



Institutions that offer online learning may simply be using an online platform as a substitution for distributing learning resources, by allowing downloading of resources on demand. Others may be redefining how learning can take place by offering on-demand, unscheduled access, asynchronous completion, with full automation of key supporting processes that allow delivery at scale, in a manner previously unimagined.

Progressive integration of technology into teaching and learning processes may take place over time. Starting first with substitution, and then progressing through augmentation to the two transformative stages is common. Benefiting initially from the enhancement that technology may bring, prepares us for exploring the transformational benefits we can realise. Often we think within our current constraints and lack the vision to see and explore the potential beyond our limiting conditions.

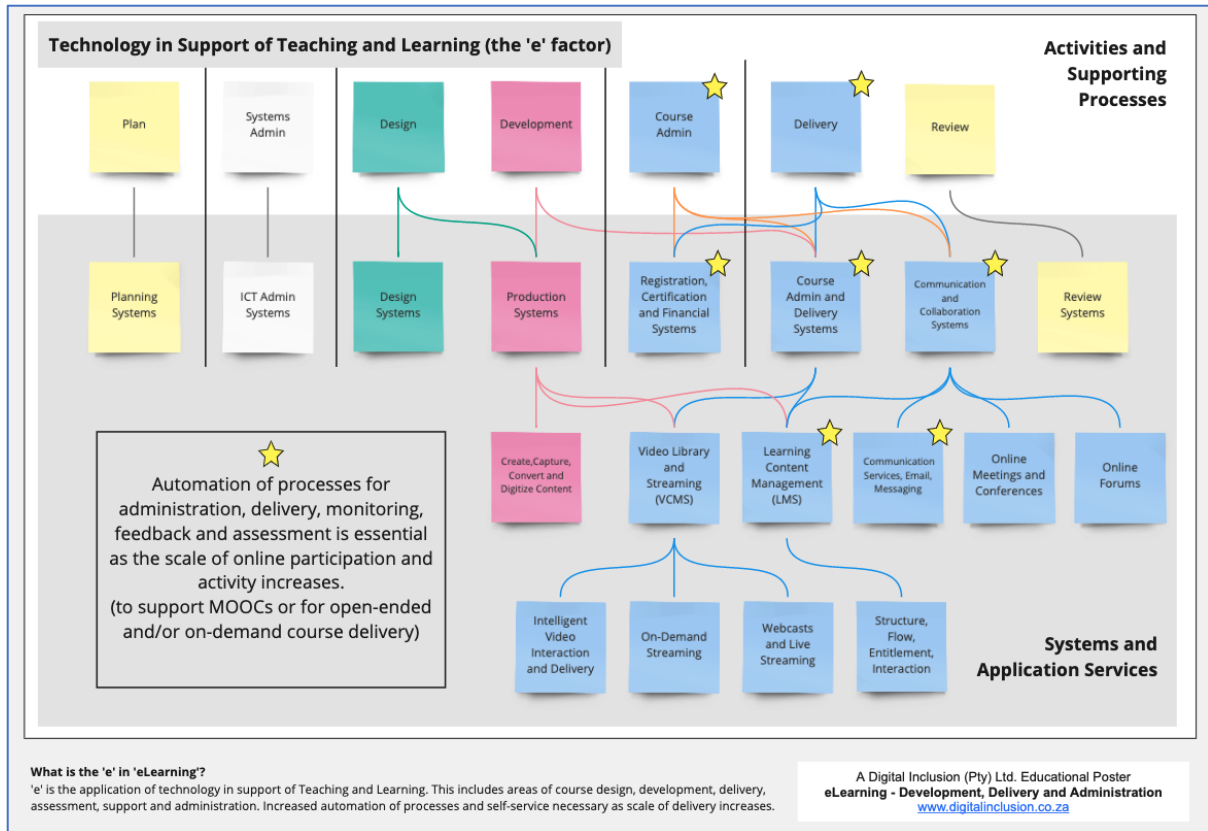
1.4.2. Technology Support for Key Teaching and Learning Process Areas

Activities and processes that may be supported through the use of technology include:

- Planning – Planning systems and tools
- Systems Administration – ICT tools for configuration, monitoring and availability Management
- Course Design – Design systems
- Course Development – creation, capture, conversion and digitisation of content for lessons, assessments, and assignments
- Course Administration – Registration, certification and financial systems
- Course Delivery – Learning management systems, video content management systems, online communication and collaboration tools, and assessment tools

Designing, developing and delivering courses is part of a continuous cycle that requires scheduled reviews. Outcomes of the review process results in adaptation of both course content and all the supporting processes.

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To effectively deliver an online learning experience, there are many systems that are required to be integrated. For a “seamless experience” the participants should not be confused by, or struggle with their interaction with any supporting systems.

1.5. Redefining Teaching and Learning

Face-to-Face teaching has typically been targeted at low participant counts and has been restricted by physical space constraints on campuses. Courses were typically run to a predetermined schedule and all participants were synchronously active. Registration, delivery, assessments and certification processes were scheduled and certain human resources were needed only at certain times.

As target markets and usage scales up, the success of systems will depend on how well they are integrated and to what extent automation can be applied to drive all key participant facing processes.

As we move to full online learning the physical constraints are removed and this presents the opportunity for increases in the number of participants, and the ability to not be restricted by specific schedules. Participant can register and participate when convenient for themselves, and work at their own pace with some taking longer than others. To support this, we either need to have all course associated human resources available at all times, or move to embrace the automation of participant facing processes.

1.6. Appropriate Approaches for Target Markets

Each institution must determine its own approach based on its own vision and constraints. Critical to this is the definition of target market, desired outcomes of courses, and the institutional infrastructure services and capabilities.

Depending on how the questions below will be answered, a preferred approach will emerge. Constraints based on the answers will limit the functionality of required online processes, schedule and timing considerations, as well as the reach of offerings.

1.6.1. Strategic Positioning

The systems specifications and infrastructure requirements are outcomes linked to answers to the following questions:

- Is the institutional objective aimed at delivering MOOCs and/or courses based on limited audiences or fee-based models?
- If delivering MOOCs, is the approach based on a connectivism learning model with participant able to pick and choose, building their own learning experience, as well as learn from peers and through collaborative activities. (referred to as a cMOOC if delivered *en-masse*)?
- If delivering MOOCs, is the approach based on traditional course structures. This is seen as an extension model where outcomes are related to a development of a specific skill, concept, or behaviour and lessons are purposefully sequenced and linked to a curriculum. (referred to as an xMOOC if delivered *en-masse*)?
- Are courses to be offered free?
- If access is open and free, will charges be levied if participants wish to receive certificates on completion?
- What level of participant course support, interaction and communication is considered standard and offered at no charge?
- Are courses the property of the institution or is the institution hosting courses owned by other parties?
- Are courses to be certificated, and if so by whom? Where certificated, the institution and course participants will need to comply with the certificating body's registration, identity validation and assessment processes. If the institution is not the entity that issues certificates, this may result in the need for integration of processes and systems between organisations.
- Are courses to be accredited, and if so by whom? Where accredited, the institution and course participants will need to comply with the accrediting body's registration, identity validation and assessment processes. If the institution is not the entity that accredits the course, this may result in the need for integration of processes and systems between organisations.

1.6.2. Target Market Considerations

- What defines the participants' readiness to be part of an online learning environment? This includes an understanding of required "*Digital Literacy*" as well as the degree of "*self-*

regulated learning competency". This may be considered generally or based on specific categories of courses targeting different audiences.

- What defines the prerequisite technology and infrastructure requirements for participants? This needs to include all devices, internet access, data services, content viewing, printing and creation tools (applications) that participants will need. Online education requires access to online systems and content.
- Is the institution committed to delivering full online education or is it looking at supporting offline participation? If considering allowing offline participation with occasional online access, the delivery model may be restricted to using the online system simply as a resource centre and be more in line with traditional distance learning environments using technology to distribute content elements. In this mode of delivery visibility of participant activity as well as the benefits of peer interaction and institutional monitoring and support will be greatly reduced. A way around this would be to develop application clients for mobile devices that track activity when participants work online and synchronise with the online learning platform when reconnected. Depending on application functionality and frequency of online access, this may mean that dynamic monitoring and participant support will be limited, and forum participation and peer interaction value will be reduced.
- What institutional resources will be needed for supporting course administration processes? Based on participants' readiness, consider the extent of support needed for all admin related process interactions from registration, payment processing, communication through to certification.
- Based on participants' readiness, what institutional resources will be needed for facilitating, interacting, monitoring and supporting participants during the learning process? Consider the course designs, flows, complexity of content, as well as the contextual familiarity of the subject matter to targeted participants.

1.6.3. Outcomes Considerations

- What will constitute course completion and how important are completion rates? Institutions can record participant completion at a lesson, module or course level. Completion could be considered based on the number of lessons, number of lessons as a minimum for each required module etc. Course designers can determine course structure and completion requirements, and this can be as flexible as the institution requires. Some lessons may be mandatory, others optional. Quizzes can be linked to lessons or modules, and aggregate scores can be recorded for summative assessments as an input to completion outcomes and certification processes.
- What are participant expectations on completion? Should participants want certificates, this raises questions on the value of the certificate to the participant and others based on auditability of the assessment and certification processes. Institutions must record participant activity and progress through all lessons, modules and courses, and be able to offer evidence of such activity, if and when required, to underpin the value of any certification.
- Will courses be certificated as "Honour Based Completion" without the complex participant identity verification and the need for assessment proctoring? This allows for full online education without the need for physical "test centres", human moderators and the necessary logistical support and costs proctoring would require. Institutions can verify

certificate issue to an particular individual for a particular course completed on a certain date. What cannot necessarily be verified is that all online interaction was done independently by that person. Not dissimilar to submission of assignments in a standard distance education context, but many distance education courses require proctored examinations to be undertaken at the end of a course.

1.6.4. Infrastructure Considerations

- What is the institution's ability to integrate processes to support full online environment? If the institution is using market leading learning platforms, many offer integration with other system as standard. If the institution is "building" their own learning system based on open source components, the institution must have access to the required competencies to extend the system, customise and develop integrations as needed. If these competencies are not core competencies within the institution, packaged solutions are recommended.
- What is the institution's ability to integrate processes to allow for on-demand delivery at scale? Delivery at scale requires a high degree of automation. Automation of actions based on events and triggers are standard features of most packaged learning platforms. These features should be key considerations when selecting a learning platform. Up front planning of process automation can assist dramatically in reducing human resource requirements. Having less people focusing on processes that really require human interpretation of activity and communicating or intervening when needed, is better than having human resources handle processes that can and should be automated. It is important to note that participants want to be more than just a "number" on a system. Institutional human resources must be seen to be active in forums, communicating with participants as and when needed.

1.7. Going forward

The journey from Face-to-Face to Full Online is not an easy journey. Progressing through the four stages requires the adaptation of processes and pedagogical design.

- Course designers and developers need to learn new skills and be able to repackage courses previously restricted by delivery time constraints associated with Face-to-Face delivery.
- Course administrators need to learn new skills and be able to optimise and automate processes to support efficiencies needed for flexible online learning support
- Assessment approaches may need to be revised as scale demands automation of processes

Successful online teaching and learning projects require good system, administration, and content support for participants.

- Participants expect to be able to engage with instructors and subject matter experts in forums and other forms of online communication during their learning experience.
- Facilitators and participant support resources need to learn new skills with respect to interaction and engagement with participants.

Basic guidelines include:

- Know your audience, and their level of readiness for online learning.
- Be clear on the type of courses to be offered

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- Plan the journey from the institution's current position to full online in multiple steps.
- Take a step at a time.
- Start with restricted audience and restricted portfolio.
- Ensure resource planning matches step requirements.
- Ensure systems and infrastructure meet the course delivery and audience participation needs.
- Pilot, reflect, adapt and deploy.
- Move to next step in the journey.

Should the reader wish to engage in discussion on the contents of this document, please send email to [Mike Hamilton](mailto:mike@digitalinclusion.co.za) to establish contact.