New Approaches to Teaching and Learning in the Digital Age

An overview to reflect on the changes that the new technologies available today can bring to our approach to teaching and learning.
Our idea of education is based on a model that dates back to ancient times, but this model has always been open to new technologies.

See the infographic on the history of virtual education for some examples on the application of new technologies in time and the growth of virtual education.
The new technological developments have made some changes possible in the way we approach teaching and learning.

Technology is a tool. It can make change easier but it can also be used in traditional ways.

The digital era has brought along a revolution similar to the invention of the movable metal type typography by Gutenberg in 1455. In both cases new technologies have brought big changes in society by giving people more:

ACCESS
CHOICE
POWER
Here is a picture of a traditional classroom, what we see in here tells us a lot about our traditional approach to teaching and learning.

The traditional classroom - as in the picture - has a physical space (the way the desks are arranged, the position of the teacher, etc).

The physical architecture of the classroom shapes the way communication (and knowledge) flows in this space.

In the traditional classroom, the communication and knowledge architecture is based on top-down flow of information from the teacher's desk towards the students. The communication goes from the teacher to the single students for all phases (information delivery, assessment, feedback).

This setting does not encourage communication and cooperation between the students.
How Can Technology Change the Traditional Communication and Knowledge Architecture?
Example on how new technologies can make change easier: THE FLIPPED CLASSROOM

The flipped classroom is a pedagogy (a way of teaching) that flips the traditional teaching model. In the traditional classroom, the lecture (information delivery) happens in the classroom, with the teacher and the exercises (information processing) happens at home, through homework and exercises.

In the flipped classroom, the lecture (information delivery) happens at home, where the students approach the new material individually. Their time in the classroom is then dedicated to exercises and group work (information processing).

The new technologies make it easier for the teachers to apply this model. Now lectures can be recorded, didactic material is available on-line for the students to watch/read/listen at home.
I have identified seven different ways in which technology makes change easier and helps shaping a new communication and knowledge architecture:

1) Spatio-Temporal Dimension of Learning: UBIQUITOUS LEARNING

Learning in the Digital age can happen ANYTIME and ANYWHERE. No space or time boundaries. This means extending the process beyond the walls of the classroom and the cells of the timetable.

Learning that breaks out of these spatial and temporal confinements should be as good as, or even better than, the best traditional classroom learning. It should also produce habits of mind appropriate to our times, producing lifelong learners able to learn and to share knowledge throughout their lives, in all contexts, and grounded in those contexts.

Eg: Dual Diploma: the platform can be accessed 24/7 from anywhere in the world.
2) Epistemic Dimensions of Learning: ACTIVE KNOWLEDGE MAKING

Learners become active knowledge producers (for instance, project-based learning, using multiple knowledge sources, and research-based knowledge making), less than they are knowledge consumers (as exemplified in the "transmission" pedagogies of traditional textbook learning or e-learning focused on video or e-textbook delivery).

Active knowledge making practices underpin contemporary emphases on innovation, creativity, and problem solving.

Learners need to be actively engaged and responsible.
Horizontal (peer-to-peer) relationships are encouraged.
Importance shifts from cognition/memory to knowledge presentation/representation.

Eg: Dual Diploma assignments require the students to apply their knowledge to real situations/problems. Group work is encouraged in online discussion forums, and presentations/analyses need to include some classmate's contribution. Every assignment needs to be original in the content and in the way it's presented (powerpoint presentation, interview, video, infographic etc).
3) Discursive Dimensions of Learning: MULTIMODAL MEANING

Using new media resources. Today’s learners need to be able to use digital media to juxtapose and link text, diagrams, tables, datasets, video documentation, audio recordings, and other media. Across all subject areas, meaning making and knowledge representations are supported and enhanced today by digital production skills and technologies.

Messages can be conveyed with different media.

Eg: Dual Diploma encourages the use of different technological tools to present the content. Students have access to text, diagrams, tables, datasets, video documentation, audio recordings, and other media. Not only they "consume" multi modal mateiral, they also need to actively use these different media. Assignments may require them to make a presentation, create a video or an infographic on a specific topic.
4) Evaluative Dimensions of Learning: RECURSIVE FEEDBACK

A new generation of assessment systems, including continuous machine-mediated human assessment from multiple perspectives (peers, self, teacher, parents, invited experts, etc.) and machine feedback (selected and supply response assessments, natural language processing).

Student work can also be assessed through data mining techniques, analyzable either as individual progress or comparisons across cohorts. Student are also offered just in time feedback, or assessment that is for learning (formative assessment) and not just of learning (summative assessment).

In the digital era feedback comes from multiple sources and perspectives. Formative assessment VS summative assessment.

Eg: Dual Diploma encourages recursive feedback, not only teachers but students themselves are required to comment and give feedback on their classmates' work (discussion forums).
5) Social Dimensions of Learning: COLLABORATIVE INTELLIGENCE

Peers offer structured feedback to each other, available knowledge resources are diverse and open, and the contributions of peers and sources to knowledge formation are documented and transparent. This builds soft skills of collaboration and negotiation necessary for a complex, diverse world. It focuses on learning as a social activity rather than learning as individual memory.

Collaborative learning encourages an intrinsic motivation rather than an external one.

Eg: Dual Diploma encourages group work and supports individual contribution to common projects/goals. Every contribution is valuable (feedback can be evaluated, too). Sharing knowledge is more important than individual classroom competition.
6) Cognitive Dimensions of Learning: METACOGNITION

Involving extensive giving and receiving of feedback, and recruiting learners as self- and peer-assessors. This places learners in the position of having to think metacognitively about the nature of the task and the cognitive processes of the discipline. It is vital that learners move from empirical and experiential understanding to pattern recognition and theory making – in this respect, metacognition is key.

Learners need to be aware of their strengths and weaknesses, and adapt their learning practice to maximize their time and efforts and make valuable contributions.
It is essential to think about criteria while getting and giving feedback.

Eg. Dual Diploma students need to be aware of the netiquette, the correct way to interact with their peers, and all assessing criteria. They can also often choose between different types of assignments, which means they need to be aware of what type of assignment is more stimulating/interesting/adapt to their learning patterns.
7) Comparative Dimensions of Learning: DIFFERENCIATED LEARNING

Individuals and groups of learners can work at a pace that suits their needs. Data analyses allow that these processes are readily and conveniently managed by teachers.
This ensures that all learners are able to make progress measured against common goals.

The expression "to be on the same page" comes from the traditional classroom. Learners might take different paths (time, types of content, processing tools) to finally be on the same page. Technology makes these paths possible. It also valorizes local experience, engages learners with varied identity and encourages responsible, personalized learning.

Eg: Dual Diploma students can take their time to digest the didactic material, find different ways to approach the same material so that it suits their learning style. Live sessions are a time for discussion, where all students are “on the same page” and discuss a topic bringing their own perspective/understanding/contribution to the lesson.