

Supplemental information

**University students' and educators' perceptions
on the use of digital and social media platforms:
A sentiment analysis and a multi-country review**

Maryam Al-Hail, Mariem Fekih Zguir, and Muammer Koç

1 Table S1: Learning contexts and methodologies used for digital learning, related to Figure 1

Learning themes/ Methodology	Purpose
Online learning ¹³⁸	Virtual learning environment that is delivered using a web-based platform to meet the technological objectives and aspects of the course. A didactic approach that implies multidimensional efforts by educators through clear instructions and that ensures high involvement of students through collaborative work. It aims to improve communication and to provide timely and constant feedback.
Online Collaborative learning (OLC) ¹³⁹	A pedagogical approach that advocates social and interpersonal skills, communication skills, and problem-solving skills by working in groups to accomplish educational activities and tasks and to improving students' learning experience.
Cooperative learning ¹⁴⁰	A pedagogical approach that enhances self-efficacy, critical thinking, and problem-solving skills by allowing small groups to work together in a structured manner where each student is responsible for his/her academic performance and that of others. Through this interdependence, and unlike individualistic learning, students learn better from one another.
Blended Learning ¹⁴¹	A pedagogical approach that combines the online learning and traditional classroom learning to foster online discussions, increase interactions, and enhances learning experiences.
Flipped Learning ²³	An active learning strategy where students read and learn the assigned learning materials (or watch videos) outside the classroom and use the class time for engaging, analyzing, discussing and problem-solving.
Technology-Integrated ¹⁴²	A didactic approach that uses an ICT tool to enhance the learning experience and skills in technology among learners.
Digital Storytelling ¹⁴³	A narrative teaching approach that aims to bring personal experiences and stories to life by delivering a concept and making arguments to get some feedback.
Gamification/ Educational Games ¹⁴⁴	An educational approach that motivates students to play and learn by incorporating games design elements in learning contents to increase students' motivations and engagement.
Digital problem-based learning ¹⁴⁵	A challenging learning approach that encourages students to learn through working collaboratively in a team to find solutions for real-world problems. This methodology triggers students' curiosity and initiates intrinsic motivation for learning.
Authentic learning ¹⁴⁶	An educational approach that aims to connect what students are taught in schools to real-world situations. This connection is mostly effectuated through ICT tools nowadays.
Personalized learning ¹⁴⁷	An instructional approach that allows students to learn at their own pace by customizing the learning experience for each student based on their level of interest, skills, capacities, and capabilities, challenging them to improve their academic performance with high expectations.

Understanding by Design (UBD) ¹⁴⁸	An educational framework that aims to ensure that students understand the basics of the delivered lessons, and then apply it or transfer the knowledge by stimulating the learned concepts and skills in other new contexts based on students' interest
Universal Design for Learning (UDL) ¹⁴⁹	An educational framework that provides equal accessibility, flexibility, and opportunity for students to achieve their goals through providing a variety of options of interacting with learning contents to minimize barriers in digital learning environment
Synchronous and asynchronous online learning ¹⁰⁴	While synchronous learning delineates the interaction between students and educators in real time through a digital medium, asynchronous learning happens when students access stored and recorded materials at their own pace, communicating among themselves and their instructors over a longer period.

2

3

4 Table S2: Countries included in the scoping literature review, related to Figure 4

Country	Counts as appeared in the literature review
Afghanistan	1
Australia	1
Brazil	1
Chile	1
China	5
Croatia	1
Egypt	1
France	1
Ghana	2
India	2
Indonesia	1
Italy	1
Iraq	2
Jordan	3
KSA	6
Lebanon	1

Malaysia	1
Mexico	1
Morocco	2
Nepal	2
Pakistan	2
Poland	1
Qatar	1
Romania	2
Russia	1
South Africa	1
South Korea	1
Turkey	4
UK	3
US	4
Global	4

5
6
7