



Experiences of Teaching- Learning During Lockdown

Shefali Pandya

Department of Education, University of Mumbai
spandya@education.mu.ac.in

The swift switch from traditional classrooms to online classes in the wake of COVID-19 has given teachers very little or no time for planning and preparation. However, challenging pedagogical issues have to be addressed, predominantly concerning the most effective way to educate students. Online teaching-learning sessions need to provide active learning experiences including numerous occasions for students to answer questions and justify answers, participate in debates with their peers and solve real-life problems. This requires a discussion on the components of effective online and blended learning in the context of higher education.

Philosophy of Online Teaching: Change is the only permanent requirement of human life and this is equally true for academic professionals who need to evolve and grow with their teaching philosophies. The first half of twentieth century saw the emergence of a constructivist approach to teaching-learning process. The 21st century saw the advent of digital literacy involving the use of the Internet and e-mails that went on to revolutionise the field of education in general and higher education in particular with power-point presentations, mobile learning, Google classrooms, Facebooks pages, blended learning and flipped classrooms, use of tablets and so on. This made the teaching-learning process very much technology driven.

In future, teachers will need to be willing to unlearn past practices and take risks with new technology. A critical self-analysis constantly challenges me to revamp my philosophy as the environment in which students learn is changing fast in an unparalleled manner. Teaching and learning have become more diverse and translucent as never before.

My Teaching Philosophy: With the sudden decision to implement lockdown, initially I suffered from acute anxiety and did not know what to do with my students and the teaching-learning process. I was not equipped to deal with such a situation. I thought that the lockdown may end within 10-15 days and we will be back to work. After 15 days when I realised that there was no sign of the lockdown coming to an end, I spoke to some of professional friends as well as techno-savvy young students. They suggested that we could start with our lectures through the online mode using zoom App. I agreed and could download the App but did not know how to schedule a lecture. I realised that I need to unlearn my past teacher education/training and learn newer philosophy of learning, teaching and evaluation in the online mode.

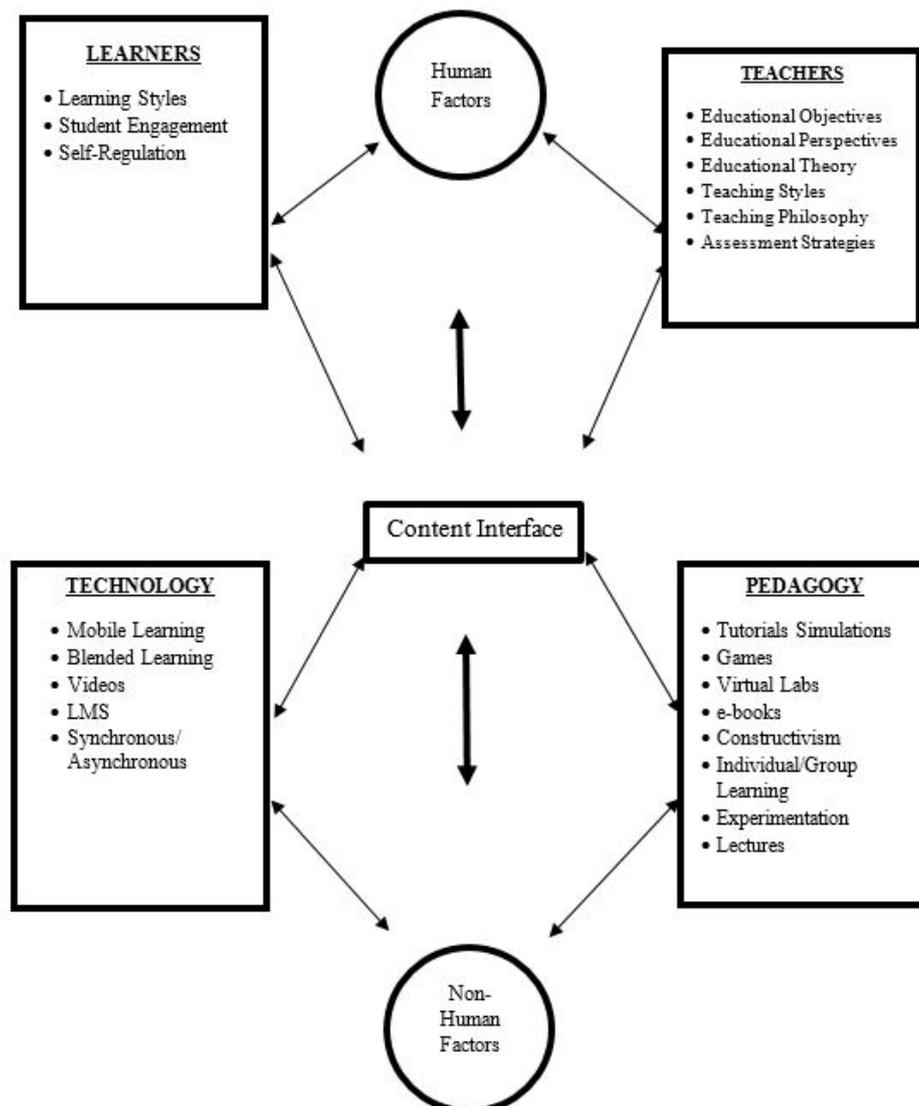
I asked one of my students to create a link and send it to other students and me and thus, I conducted my first online lecture. I reflected on my lecture and realised that my mode of online teaching was the same as my regular offline teaching. But at the same time, I could identify some challenges of online teaching which are mentioned as follows:

- a) I spent a lot of time asking students whether I was audible.
- b) Some of my students had gone home i.e. outside Mumbai and did not have proper internet facilities.
- c) I could not maintain eye contact with my students and thus felt very awkward about it and felt that I was inadequate.
- d) I could not verify whether students were physically present and attentive.
- e) Students are as passive as in offline lectures. Thus, online teaching is teacher-centred. Learners could not be actively engaged.
- f) Usual interaction with students was missing.
- g) I generally give group activities in my offline class. I did not know how to organise such activities in the online mode.

- h) Students found some subjects like statistical data analysis difficult in the online mode.
- i) I felt that both I and the students were 'invisible'.
- j) Some of my students were unprepared for online learning.
- k) Some of the students did not have a peaceful place at home to learn or attend lectures. Some of my colleagues said that a few of their students did not have an android phone.

I have attempted to develop a model for online education for higher education in the Indian context as described in the following figure.

FIGURE 1: ONLINE MODEL OF EDUCATION



Each of these are explained in the following paragraphs:

A. TEACHER-RELATED FACTORS

I. Educational Objectives: We need to clearly state the goals of education so as to help students to acquire relevant knowledge of the subject and apply it. This is followed by outlining the learning objectives, namely, (i) What the learners will be able to do at the end of the course, (ii) Conditions required for the learners to achieve the objectives and (iii) Establishing norm for evaluation of student performance. The next step is to determine learning outcomes, namely, (i) Remembering, (ii) Understanding, (iii) Applying, (iv) Analysing, (v) Evaluating and (v) Creating. In higher education, the emphasis needs to be on the higher order learning outcomes ranging from Applying, Analysing, Evaluating and Creating.

There is a need to emphasise outcome-based learning by identifying and determining learning objectives and learning outcomes. Outcome-based education is a learning paradigm that focuses on the outcomes or goals rather than results.

Currently, most online lectures in colleges, traditional as well as dual-mode universities focus on providing information on Zoom or other similar platforms such as Google Meet, JioMeet, CiscoWebex and so on. We need to go beyond learning-outcomes of Remembering and Understanding. Ideally, several teachers teaching the same subject could prepare learning outcomes synergistically.

II. Educational Perspectives: These are two major perspectives:

a) Objectivist Perspective: Knowledge is determinate and structured. A teacher can see herself/himself as an expert in the subject matter who knows more than the students, and thus his/her job is to ensure that knowledge is transferred effectively and efficiently to the learners.

b) Teaching for Individual Development: The teacher focusses on developing

critical thinking skills and the ability to analyse, synthesise and apply information or knowledge. Thus, the role of a teacher is that of a facilitator of student learning.

c) A Combination of Both: Most cases of the sudden onset of online learning during Covid-19 pandemic have been from the objectivist perspective. However, if we want our teaching-learning process to be effective and of excellent quality, we must ensure that we revisit our role as an educator – both, online and offline educator. Besides, one of the important challenges of e-learning is that it is very difficult to cater to students with different learning styles.

III. Educational Theories: We review pedagogies of e-learning as follows (Weller 2002):

a) Constructivism: Teachers in higher education most often adopt the lecture method for instructional purpose (McKeachie 1990). It is quite probable that teachers in universities in India follow a more objective style of education because of cost efficiency and large number of vacancies of teachers due to financial constraints causing a high student-teacher ratio. Thus, the preference for objectivist teaching-learning may not be due ideological reasons. The term constructivism implies that students construct their knowledge on the basis of their individual experiences and from thinking through these experiences (Windschitl and Andre 1998; Loyens, Rikers, and Schmidt 2009). As opposed to the objectivist perspective, the constructivist model of learning argues that the learners should have more control over the process of learning and that they learn better when they discover things on their own (Leidner and Jarvenpaa 1995). The obvious difference between online learning and face-to-face learning is the ability of students, in online mode, to access course material from outside the classroom through the internet at their convenience. “This type of any-time/any-place access allows students in an online course more control over the pace of learning, a necessity for constructivist education” (Palocsay and Stevens 2008). Some of the constructivist approaches to teaching-learning are co-operative learning, collaborative learning, brain-based learning, meta-cognitive strategies, situated learning and project-based learning. It will be challenging to teach using such approaches and strategies in the online mode. The teacher needs to encourage learners to share experiences, discuss theories and challenges and

learn from each other. The teacher is no longer responsible for transmission of knowledge, providing notes or references. His/her role is that of a guide, facilitator and assessor of the learning.

b) Resource based Learning (RBL): Traditionally, resource-based learning has been used to supplement more lecture-based teaching methods. Nevertheless, the advent of a vast amount of information available due to internet and the ability to transmit that information in diverse formats has given prominence to the potential of resource-based learning (Hill & Hannafin,2001) for supporting emerging inquiry-based models. This in turn led to the emergence of pedagogical opportunities like blended learning and flexible delivery. Orey defines blended learning as “...the ability to choose among ALL available facilities, technology, media and materials matching those that apply to my prior knowledge and style of learning as I deem appropriate to achieve an instructional goal.” Caladine defined flexible delivery as involving “various types of mediated instruction including print, audio-visual, computer assisted or on line delivery as well as traditional instructional formats such as lectures and tutorials.” (Campbell n.d.) In both cases, the teacher or the instructional designer identifies and makes available resources for achieving the specific, pre-determined educational goals. Hence, blended learning and flexible delivery are the offshoots of the RBL perspective. Thus, resource-based learning can be termed as an educational model designed for active engagement of learners with multiple resources in print as well as non-print form. In order to plan and use it effectively, it is essential that there is collaboration between the subject teacher and media specialists. In this approach, learners enjoy the freedom of their own preferences, choices, interests and abilities for selecting resources, human or otherwise.

IV. Teaching Style

Tomlinson (2017) provided a taxonomy of five teaching styles as follows:

A. Teacher-Centred:

- i. Authority or Lecture Style
- ii. Demonstrator or Coach Style

B. Student-Centred:

- i. Facilitator or Activity Style
- ii. Developer or Group Style

C. Blended or Hybrid Style

No.	Philosophy	Ideas	Educational Implications
1	Idealism	It is a philosophical approach that believes that ideas are the only true reality, the only thing worth knowing and focusses on conscious reasoning while searching for truth, beauty and eternal justice. Plato believed in this philosophy and opined that in order to understand truth, one must pursue knowledge and identify with the absolute mind.	In the idealist philosophy, the aim of education is to discover and develop each learners' capabilities and complete moral excellence with the ultimate goal of serving the society better. Teaching methods advocated in idealist philosophy include lectures, discussions and Socratic dialogue method through posing questions so as to enable learners to discover and clarify knowledge.
2	Pragmatism	For pragmatists, acquisition of knowledge and problem solving through experiences and observations is real. They also believe that reality changes continuously and that there is no absolute truth. Rather, what works is truth.	John Dewey (1859-1952), a pragmatist believed that learners must adapt to their peers as well as to their ever changing environment. The curriculum and the subject matter need to incorporate social experiences of learners since learning is context-dependent. The eventual goal of education is the creation of a new social order. Pragmatists advocate teaching methods such as hands-on-experiences, problem solving, experimentation and projects-based learning. They also emphasise group learning and application of knowledge to real situations.

No.	Philosophy	Ideas	Educational Implications
3	Naturalism	Proponents of naturalism believe that the material world is the only real world. They emphasise actual facts, actual situations and realities. Naturalists believe that everything originates and returns to nature.	They focus on students' biological, psychological or social instincts which are responsible for their learning. They assert that education should include pleasurable activities based on learners' interest and readiness to learn.
4	Realism	Proponents of realism believe that reality exists independent of the human mind and is objective in nature. Reality can be learnt through observations and experimentation. The ultimate reality is the world of physical objects. Aristotle was a major proponent of this philosophy as well as the scientific method.	Aristotle emphasised teaching of logic as a formal discipline. Realism asserts that content-matter should be organised and presented systematically within a discipline and should demonstrate the criteria used in decision-making. It further advocates teaching methods emphasising mastery of facts and basic skills through demonstration enabling learners to demonstrate their critical thinking ability and scientific thinking.
5	Perennialism	Proponents of Perennialism value knowledge that goes beyond time. This is a subject-centred philosophy.	The goal of a perennialist teacher is to teach rational and critical thinking to learners. It emphasises a well-organized, structured and well-disciplined environment aimed at developing a lifelong pursuit for the truth in students. They advocate mastery of content-matter and development of reasoning skills in a sequential manner in learners.

No.	Philosophy	Ideas	Educational Implications
6	Existentialism	According to existentialists, reality is subjective and lies within the individual.	Individual choice and individual standards lie at the centre of an educational system. It de-emphasises external standards and rather focuses is on individual freedom and the development of authentic individuals. The existential philosophy advocates that young learners need to realise that choice is theirs, that they are responsible for themselves. Thus, they advocate that the subject matter of existentialist classrooms should be a matter of personal choice. In this philosophy, the individual as an entity within a social context is the most important in which the learner must confront others' views to clarify his/her own. Such teachers focus on providing such learning experiences to students which create opportunities for self-direction and self-actualization for students. They start with the student, instead of the curriculum.
7	Essentialism	Essentialism is a subject-centred philosophy of teaching basic skills which advocates training the mind.	Advocates of essentialism emphasise transmission of a series of gradually challenging subject-matter for promoting learners to the subsequent academic level. The major teaching method is the lecture method and learners take notes. Besides, learners are given practice worksheets or hands-on projects, followed by formative assessment.

No.	Philosophy	Ideas	Educational Implications
8	Progressivism	Proponents of progressivism opine that individuality, advancement and transformation are fundamental to education. They believe that people learn best from experiences most relevant to their lives.	The curricula should focus on the needs, experiences, interests and abilities of learners. Progressivists believe in all-round-development of students' teachers and content-matter are secondary to them. They recommend co-operative and collaborative learning approaches as well as active experimentation in which learners learn through group activity and group problem solving.
9	Social Reconstructionism	It is a philosophy that focuses on social questions and a pursuit to creation of a democratic society and a new social order by overcoming subjugation of human beings and humanising mankind.	Paulo Freire (1921-1997), a proponent of social reconstructivism or critical theory, advocated that humans must learn to resist oppression and not become its victims, nor oppress others. This necessitates dialogue and critical consciousness, an awareness to overcome supremacy and repression or subjugation. He rejected the "banking concept" in which the teachers deposit information into learners' heads. Rather, he advocated teaching-learning as a process of inquiry, community-based learning, multiple perspectives and dialogue through students' experiences and social action on controversial issues and problems such as dominance, control, violence, poverty, terrorism, price rises, and inequality.

Some teachers may have an eclectic philosophy of teaching.

VI. Assessment Strategies: There are three major goals of assessment as follows:

a) Assessment of Learning: This is summative assessment and occurs at the end of the year or semester which is used by teachers as evidence of students' learning to for making judgment on their performance vis-à-vis pre-determined

goals and standards. This evidence is meant for parents, other educators and students themselves. In the Indian context, it is done through external examination.

b) Assessment for Learning: This is formative assessment and enables the teacher to make decisions about the next stage of student learning. It is, however, not internal assessment. It is to be done at the end of each unit, marks or grades are shown to students and feedback is given. Thus, it is interactive. This could be done in online or blended learning through mode using Google Forms, Microsoft Forms that could be sent to students via Google email groups or Google Classroom. It can contain multiple choice questions or short answer questions.

c) Assessment as Learning: This involves students reflecting on their own learning and themselves as learners. “Assessment as learning and empowerment combines elements from both learning-oriented assessment” (Carless et al. 2006) and “sustainable assessment” (Boud 2000). Assessment as learning enables learners to learn about themselves as learners and become aware of how they learn. In other words, it enables students to be meta-cognitive. Meta-cognition refers to knowledge of one’s own thought processes. This requires students to reflect on their work on a regular basis. Self and peer assessment using rubrics or structured forms may be used for this purpose. This in turn is used for decision-making about what students will learn next. At the initial stage, this is done with the help of teachers. In other words, assessment as learning enables students to be more responsible for their own learning and monitor future directions. Effective feedback makes the process of metacognition routine.

Assessment as learning is very effective in online and blended learning and needs to be introduced in the Indian higher education context. In addition, it is suggested to introduce use of rubrics, portfolios, group and individual projects especially if we are using constructivist approaches to teaching and learning. Constructivism needs authentic assessment based on the ideas of social constructivism. (Williams and Burden 1997). Authentic assessment is performance assessment since it requires learners to develop extended responses so as to perform on something or to produce a product.

B. STUDENT-RELATED FACTORS

I. **Catering to Individual Students' Learning Styles:** Keefe (1979) defines learning styles as “characteristic cognitive, affective in psychological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment”. Students have different learning styles such as visual, auditory, verbal, physical, logical, social and solitary Styles (Time 4 learning n.d.) ; Somji 2018). and care must be taken to ensure that one's teaching caters to the learning styles of all students.

No.	Learning Styles	Description	Teaching Strategies
1	Visual Learner	Visual learners prefer learning through observations. Such students need to be taught using pictures, images, diagrams, whiteboards etc. so as to enable them to understand information better. These learners find it easy to absorb information through visualisation, have a good sense of direction and prefer drawing and sketching.	<ul style="list-style-type: none"> • Use of visual aids. • Providing visual analogies and metaphors. • Use of graphics if possible • Writing key points in the power-point presentation. • Use of flow charts, colours and pictures. • Providing reading materials to students. • Asking students to write down key points and descriptions • Asking students to take notes. • Use of colour for key points in text. • Avoiding large blocks of text. • Including exercises involving mind maps to be created by students.

No.	Learning Styles	Description	Teaching Strategies
2	Auditory Learner	These learners have a good sense of rhythm and prefer to learn through sound and music. They are good listeners and learn better through verbal presentations like lectures and speeches	<ul style="list-style-type: none"> • Organise discussions and motivate students to participate in them. • Suggest audio books if necessary. • Soft music could be played when students are reading material. • Make available your own videos of topics taught by you. • Make pairs of students and ask them to explain concepts to each other. • Make students read out a problem loudly in order to solve it.
3	Verbal Learner	These learners prefer using words in communication i.e. discourse and writing. They find it easy to express themselves verbally and usually enjoy reading and writing. They usually have an enormous vocabulary and outshine in activities that involve giving a speech, debate and journalism.	<ul style="list-style-type: none"> • Use lecture method. • Ask students to discuss or make presentations. • Use acronyms. • Use role-playing as a method of teaching. • Use peer-teaching amongst students. • Make them reread and rewrite their notes and summaries. • Make use of quizzes. • Provide them with lists of key words.
4	Physical Learner	Such learners prefer to learn through their sense of touch. They enjoy physical activities and sports. They need hands-on experience and learning by doing.	<ul style="list-style-type: none"> • Find out from students what they think about a concept/topic/idea. • Use brain-storming and make students compare their ideas with others. • Provide group work such as projects. • Make use of role-play.

No.	Learning Styles	Description	Teaching Strategies
5	Logical Learner	If there is logic, reasoning and numbers involved, these learners are sure to excel. These students function and solve complex problems by employing strategies and their scientific way of thinking. Computer programming, math and science are usually favoured by these types of learners.	<ul style="list-style-type: none"> • Make use of problem-solving tasks. • Motivate students to carry out allotted work on their own. • Inspire students to interpret abstract visual information. • Provide for critical thinking tasks. • Provide data, facts and figures. • Provide for activities where students can make conclusions with evidence.
6	Social Learner	These learners prefer learning in groups and working with others in teams. They have the ability to communicate effectively and collaborating with others, brainstorming and discussing ideas and concepts. They are usually good listeners, thoughtful and understanding.	<ul style="list-style-type: none"> • Use physical exercises and provide hands-on experiences. • Include work which require them to alternatively walk and stand. • Encourage learners to draw diagrams, graphs and maps. • Organise activities where learners have to interact with physical objects or solve puzzles. • Include role-playing and case studies as a teaching method. • Provide real life examples. • Use peer teaching amongst students.
7	Solitary Learner	These learners prefer self-study and work alone. They are independent learners, very self-aware in terms of their thoughts and feelings. They prefer staying away from the crowds and learn effectively in a peaceful place and focus on the task at hand.	<ul style="list-style-type: none"> • Try to understand what learners are thinking and how they are feeling through questions. • Provide individual activities and problem-solving exercises. • Explain the relationship between the objectives and content matter. • Let the class track their progress. • Link new learning with past learning of students.

II. Enhancing Student Engagement:

- a) **Read the mood of the students.** Those students who are unmuted could start talking at the same time unintentionally. The teacher will not be able to read their body language easily. Similarly, the more quiet students may disappear silently. In order to deal with such problems, the teacher needs to be more attentive, takes pauses and give opportunities to students for giving their ideas, opinions or share experiences before going on to the next topic.
- b) **Invite guest speakers.** This can motivate learners and promote student engagement, variety, inclusion and zest.
- c) **Inspire community.** When all the students show their face on web camera, it enhances students' enthusiasm, attentiveness, their sense of participation and engagement.
- d) **Provide time for stretching.** Encourage learners to “stretch” every 20–30 minutes for a few seconds. It is sometimes difficult to maintain attention while staring at screen. Thus, such a physical diversion can be helpful.
- e) **Use of breakout groups.** Use chat in the zoom or other apps and provide chances of group work. You may also use Google Docs, Microsoft Forms, slides or sheets. This will help students to participate in discussions or group work through videos. In other words, communicate in multiple formats, provide active learning opportunities and make learning social.
- f) Writing while teaching. Use a word file as part of a class session.
- g) Gamify with Badges and Certificates for motivating students.
- h) Provide timely and useful feedback.
- i) Add self-assessment opportunities using Google forms, Microsoft forms or rubrics.
- j) Improve course accessibility for all.

III. Enhancing Students' Self-regulation:

- a) Encourage students to take notes.
- b) Provide multiple choice quizzes and practice questions that are engaging.
- c) Promote time management skills.
- d) Set a consistent schedule, e.g. Weekly assignments.
- e) Provide group activities.
- f) Establish short-term and long-term goals of learning.
- g) Make use of rubrics for self-assessment by students.

C. PEDAGOGY

I. Tutorials/Simulations/Games/Virtual Labs/e-books: There are several technological platforms available for videos, simulated experiments, etc. These are Panopto, Zoom, LabXchange, MIT Open Lab Resources, Chem Collective, Phet Simulations, Merlot Materials, Virtual Microscope, myVRscope, eScience Labs, Hands-on Labs, Sketchfab, MorphoSource, BioDigital, CloudLabs, Labster and so on. Some of these are interactive while others are non-interactive, synchronous or asynchronous and can be useful in physical as well as biological sciences, Geology, earth sciences and mathematics. Game-based learning (GBL) is implemented in non-entertainment contexts in an open, simulated environment with its specific rules and boundaries and is an alternative for traditional teaching and is the fundamental mode in which learners acquire knowledge and skills. There are several open education resources (OERs) as well as e-books which can help students. Online tutorials can be offered in synchronous, asynchronous or a combination of the two modes. Such tutorials could be (i) Discussion-based tutorials, (ii) Problem-solving tutorials and (iii) Review and Question & Answer based tutorials.

II. Constructivist Teaching Methods: Contemporary teaching styles are group-centred and inquiry-based. These are intended to stimulate student participation and necessitate a hybrid approach to teaching. One criticism of the constructivist approach is it caters to extroverted, group-oriented students, who tend to dominate and benefit from these teaching methods more than introverts. Nevertheless, introverts are expected to learn through observation. Hence, such teaching styles are expected to help them too. Student-centred learning does not have to come at the expense of an instructor's preferred teaching method. Blended teaching styles cater to accommodate the diverse needs of 21st-century classrooms.

III. Collaborative Learning/Individual Learning: Collaborative learning relies on using groups to improve learning through groups or pairs in which learners work together to solve problems, complete tasks or learn new concepts. This approach encourages active student engagement, enables them to process, analyse and synthesise information instead of rote memorisation of facts and figures. Collaboration stimulates activities like elaboration, justification and argumentation that activate mechanisms of learning. "Online collaborative learning shows that for successful collaborative learning to occur, students have to exhibit a high degree of motivation and involvement as well as both interdependence and autonomy" (Hansford and Wylie 2002). On the other hand, in individual learning, students are given classroom activities/projects/problem-solving that they have to work independently with help from the teacher. This leads to competition which can be used effectively for developing students' skills and can help to develop entrepreneurship and leadership skills. Individual learning is both a prerequisite and a complementary facet of collaborative learning.

IV. Experimentation: The process and platforms for conducting simulated experiments are described in the first point in this section.

V. Lectures: These would be conducted in the same way for face-to-face class and online class.

D. TECHNOLOGY

I. Mobile Learning/Blended Learning/LMS: Mobile learning (m-learning) is education via the Internet or network using personal mobile devices, such as tablets and smartphones to obtain learning materials through mobile apps, social interactions and online educational hubs. Mobile learning is flexible, permits learners access to education anywhere, anytime. Your students can be at any place or learn at a time convenient to them. Their learning content is available for them in their pockets. Mobile learning enables delivery of knowledge and educational content to students on any platform, anyplace and at the time of need. Students use mobile apps and tools to write their assignments and upload them to teachers, download course material and work in small online groups. Blended learning (also known as hybrid learning) is a learning model in which traditional classroom and online courses methodologies are combined and integrates technology to facilitate learning. It combines online educational materials and scope for online interaction with traditional place-based classroom pedagogies. Flipped classroom is a specific example of blended learning. It necessitates physical presence of teacher and learners and allows some amount of control over time, place or pace of student learning. A Learning Management System (LMS) affords support and strength to the workflow of education. LMS enables teachers to assign work, share content and post marks/grades to students. It also enables students to submit their assignments or internal assessment work, view content and make collaborations on forums. Some of the popular LMS include (i) Blackboard, (ii) Schoology, (iii) Brightspace, (iv) Canvas, (v) Sakai, (vi) Learndash, (vii) WP Courseware, (viii) Learnpress and (ix) MOODLE.

II. Synchronous Learning: Synchronous learning is online or distance education taking place in real time through methods such as video-conferencing, tele-conferencing, live chatting and live lectures. Learners preferring active classroom discussions, on-the-spot feedback and a personal familiarity and interaction with peers and teachers would be more comfortable with synchronous learning experience. This will also make the transition from the traditional classroom to an online setting easier, as in the current Covid-19 pandemic situation. Synchronous methods enable teachers and students to ask questions and receive answers mid-lesson, have dialogues and debates

with peers at a fast and stimulating pace as well as afford individual guidance. However, it has a few disadvantages too. Working students find it difficult to adjust to lecture timings and set schedules. Besides, if your work or life requires you to travel extensively and if the internet availability is not easy to ensure, it will be very stressful to attend a videoconference, lecture or an online test.

III. Asynchronous Learning: Asynchronous learning takes place without real-time interaction through online mode as per the learner's schedule. The teacher provides reading materials, videos of lectures, assignments for completing and tests for formative evaluation. The students can access these at their convenience with flexible time frame. Methods of asynchronous online learning include self-paced and guided units and modules, video content, virtual libraries, pre-recorded lectures and podcasts and posting of lecture notes. This is a very flexible mode. But it does not provide personal touch and live, social interactions with peers and teachers or instant feedback.

IV. Many hybrid learning models will include a blend of both asynchronous and synchronous online learning.

Epilogue: Both, face-to-face and online teaching-learning have their advantages and disadvantages. The four factors mentioned in the model in this paper can be adopted for face-to-face and online teaching-learning models. If a blended model is developed, it will be the most advantageous to the students. Though currently UGC does not provide permission for a combination of face-to-face and online courses, it is hoped that in future such blended courses are offered by higher education institutions. Blended learning "is an instructional model that combines different forms of media such as text, audio and video at different time scales (synchronous, asynchronous) with the face-to-face method of instruction within the same course" (Roseth, Akcaoglu and Zellner 2013). It "combines face-to-face learning with an online learning style, where 30–79% of the content is delivered online. This model is also referred to as a blended pedagogical method or a blend of didactic methods and delivery styles" (Al-Busaidi 2013). We also need to gear our online and blended learning towards development of multiple intelligences in the students which requires sustained efforts and research into the areas. Along with changes in the mode of teaching-learning, we need to make

simultaneous changes in the mode of assessment and introduce assessment for learning, assessment as learning and authentic assessment.

REFERENCES

Al-Busaidi, Kamla A. 2013. "An Empirical Investigation is Linking Learners' Applying of Blended Learning to their Intention of Full E-Learning." *Behaviour & Information Technology*, 32, no.11(April): 1168–76. Accessed July 23, 2020. <https://doi.org/10.1080/0144929X.2013.774047>.

Atlantic Provinces Education Foundation. (n.d.). "Foundation for the Atlantic Canada English Language Arts Curriculum". Accessed August 2, 2020. <http://lia.ednet.ns.ca/pdfs/foundations-ela.pdf>.

Bleakley, Ann and Jackie Carrigan. 1994. *Resource-based Learning Activities: Information Literacy for High School Students*. Chicago: ALA.

Boud, David. 2000. "Sustainable Assessment: Rethinking Assessment for the Learning Society." *Studies in Continuing Education* 22, no.2:151–67. Accessed Aug 11,2020. https://www.researchgate.net/publication/241580761_Sustainable_Assessment_Rethinking_Assessment_for_the_Learning_Society.

California Media and Library Educators Association. 1994. *From Library Skills to Information Literacy: A Handbook for the 21st Century*. Colorado: Hi Willow Research and Publishing.

Campbell, Lisa, Paula Flageolle, Shann Griffith, and Catherine Wojcik. n.d. "2b. Resource-based learning". Accessed July28,2020. <https://learn-u.com/lesson/resource-based-learning/>.

Carless, David, Gordon Y. Joughin, and Ngar Liu. 2006. *How Assessment Supports Learning: Learning-oriented Assessment in Action*. Hong Kong: Hong Kong University Press. Accessed August 11, 2020. https://www.researchgate.net/publication/329277076_How_assessment_supports_learning_Learning-oriented_assessment_in_action.

Doiron, Ray, and Judy Davies. 1998. *Partners in learning: Students, Teachers, and the School Library*. Colorado: Libraries Unlimited.

Earl, Lorna M., and Steven Katz. 2006. *Rethinking classroom assessment with purpose in mind: assessment for learning, assessment as learning, assessment of learning*. Canada: [Alberta?]: Western and Northern Canadian Protocol for Collaboration in Basic Education.

Hansford, Diane, and Alan Wylie. 2002. "Evaluating Online Collaborative Learning: A Case Study in Increasing Student Participation." *Challenging Futures – Changing Agendas in Teacher Education, The International Journal of Learning Annual Review* 8, no.1(February). Accessed on 30th July 2020.

Hill, Jennett, and Michael Hannafin. 2001. "The Resurgence of Resource-based Learning. *Educational Technology*." *Research and Development* 49, no.3 (September): 37–52.

4 Major Educational Philosophies. n.d. https://cer.jhu.edu/files_ta/4_Major_Educational_Philosophies.pdf.

Keefe, James. (1979). "Learning Style: An Overview". In *Student Learning Styles: Diagnosing and Proscribing Programs*. Edited by J. Keefe,1-17. Virginia: National Association of Secondary School Principles.

Leidner, Dorothy, and Sirkka Jarvenpaa. 1995. "The Use of Information Technology to Enhance Management School Education: A Theoretical View." *MIS Quarterly* 19, no. 3(September): 265–91. Accessed August 1, 2020. <http://dx.doi.org/10.2307/249596>.

Loyens, Sofie, Remy Rikers, and Henk Schmidt. 2009. "Students' Conceptions of Constructivist Learning in Different Programme Years and Different Learning Environments." *British Journal of Educational Psychology* 79, no.3 (September) 501–14. Accessed August 1, 2020. <http://dx.doi.org/10.1348/000709908X378117>.

McKeachie, Wilbert. 1990. "Research on College Teaching: The Historical Background", *Journal of Educational Psychology* 82, no.2(June):189–200. Accessed August 1, 2020. <http://dx.doi.org/10.1037/0022-0663.82.2.189>.

Palocsay, Susan W. and Scott P. Stevens.2008. "The Study of Effectiveness of Web-Based Homework in Teaching Undergraduate Business Statistics", *Decision Sciences Journal of Innovative Education* 6, no.2(July):213–32. Accessed 28th July 2020. <http://dx.doi.org/10.1111/j.1540-4609.2008.00167.x>.

Roseth, Carey, Mete Akcaoglu, and Andrea Zellner. 2013. "Blending Synchronous Face-to-face and Computer-supported Cooperative Learning in a Hybrid Doctoral Seminar". *Tech Trends* 57, no.3(May): 54–9.

Somji, Rasool. 2018. "Teaching Strategies for the 8 Different Learning" Accessed 29th July 2020. <https://virtualspeech.com/blog/teaching-strategies-different-learning-styles>.

Thompson, Helen, and Susan Henley. 2000. *Fostering Information Literacy: Connecting National Standards, Goals 2000, and the SCANS Report*. Colorado: Libraries Unlimited.

Time 4 Learning. n.d. "Different Learning Styles". Accessed August 9, 2020. <https://www.time4learning.com/learning-styles/#spatial>.

Tomlinson, Carol. 2017. *How to Differentiate Instruction in Academically Diverse Classrooms*. Virginia: ASCD.

Weller, Martin, and Ley Robinson.2002. "Scaling Up an Online Course to Deal with 12,000 Students Education", *Communication and Information* 1, no.3: 307–23.

Williams, Marion, and Robert Burden. 1997. *Psychology for Language Teachers*. Cambridge: Cambridge University Press.

Windschitl, Mark, Thomas Andre.1998. "Using Computer Simulations to Enhance Conceptual Change: The Roles of Constructivist Instruction and Student Epistemological Beliefs." *Journal of Research in Science Teaching* 35, no.2 (February):105–235.

