eLearnit

Developing Enhanced Pedagogies for
21st Century Virtual Learning

Dr. Harris Saseendran
COMMERCIAL STUDIES DIVISION
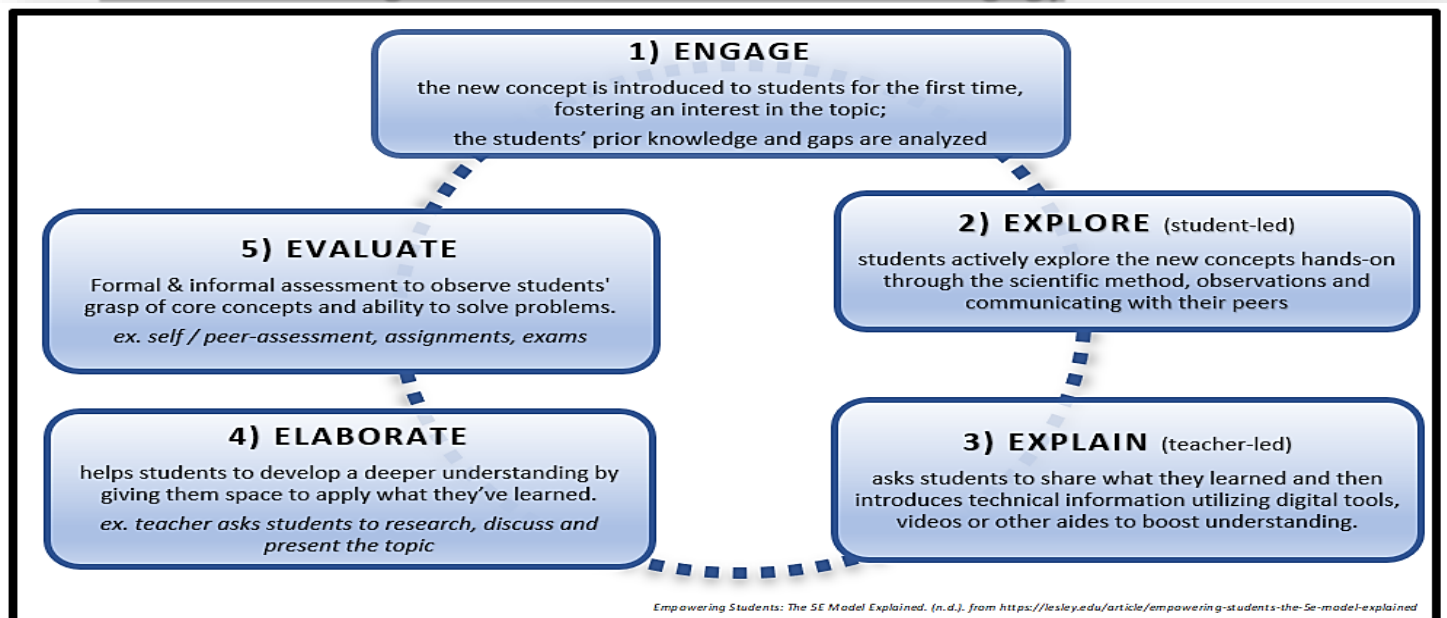### BAHRAIN TRAINING INSTITUTE

Four C's of 21st Century Learning

Communication
Sharing thoughts, questions, ideas & solutions online

Collaboration
Students apply their talents to work together and reach a shared goal

Critical Thinking
Try to solve problems linking learned concepts & researching online resources

Creativity
Expression through online platforms & digital tools encouraging innovative thinking

Trainer task focus to develop the 4C Skills:

Creativity	Critical Thinking	Communication	Collaboration
create	inquire	present	listen
design	predict	justify	share
enhance	analyze	articulate	clarify
imagine	find relationships	discuss	participate
change	evaluate	convince	motivate
invent	investigate	summarize	organize
improve	experiment	propose	empathize

The 5E Knowledge Lens of Virtual Classroom Pedagogy

1) ENGAGE
the new concept is introduced to students for the first time, fostering an interest in the topic; the students' prior knowledge and gaps are analyzed

2) EXPLORE (student-led)
students actively explore the new concepts hands-on through the scientific method, observations and communicating with their peers

3) EXPLAIN (teacher-led)
asks students to share what they learned and then introduces technical information utilizing digital tools, videos or other aides to boost understanding.

4) ELABORATE
helps students to develop a deeper understanding by giving them space to apply what they've learned.
ex. teacher asks students to research, discuss and present the topic

5) EVALUATE
Formal & informal assessment to observe students' grasp of core concepts and ability to solve problems.
ex. self / peer-assessment, assignments, exams

Empowering Students: The 5E Model Explained. (n.d.). from https://lesley.edu/article/empowering-students-the-5e-model-explained

3 Core Constructivist Pedagogies for Online Training

a) Case-based learning (CBL)	b) Problem-based learning (PBL)	c) Inquiry-based learning (IBL)
• Students engage in online discussions of specific real-world scenarios. • The teacher acts as a facilitator while the students collaboratively analyse problems that have no single right answer. • *Ex. Real engineers/ managers are invited for special online sessions where they discuss real business problems;* • *A YouTube video of a business news/ new product design is studied and discussed by students.*	• Virtual class lesson plans, online activities & assessments are designed to EVALUATE trainee ability to face challenges. • Teachers' focus is NOT on communication of theoretical concepts. Society and business challenges are emphasised. • *Ex. To support social distancing during Covid19, teams of students present online the design of a device that would trigger an alarm sound when people come too close to you.* • Trainees make strategic DECISIONS that are assessed for their effectiveness and efficiency.	*4 Types of student inquiry:* i. **Confirmation inquiry** Learners are given a question, as well as a method, to which the end result is already known. The goal is to confirm the results. This enables learners to reinforce already established ideas, and to practice their investigative skills. *Ex. MCQs and T/F using Google Forms.* ii. **Structured inquiry** Learners are given the question and the method of achieving the result, but the goal is to provide an explanation that is already supported by the evidence gathered during and through the investigative process. *Ex. Trainer gives an activity to for two trainees to have a debate/ presentation on the top business practices for customer satisfaction using news articles online.* iii. **Guided inquiry** Learners are only given a question. The main goal is to design the method of investigation and then test the question itself. This type of inquiry is not typically as structured as the other forms. *Ex. Trainer enquires about solutions for selected problems in the business. Students can decide their own method to solve the problems using online resources with guidance and approval of the trainer.* iv. **Open inquiry** Learners must form their own questions, design investigative methods, and then carry out the inquiry itself. They must present their results at the end of the process. *Ex. The topic is covered during an online session and trainees are expected to investigate business challenges and possible solutions when trying to apply the concept.*

EXAMPLES OF TRAINING APPLICATION
Developing Enhanced Pedagogies for 21st Century Virtual Learning by Applying the 4C "Super Skills" through Bruner's 5E Lens of Knowledge Construction

Table 1. Teaching the 4C's super skills through Bruner's *E1: Engagement Lens*

4C super skill	Examples of *Engagement* student activities
Critical thinking & problem-solving	• Tell how and why previous learning is relevant to the present topic. • Connect your thoughts to new learning • Agree or disagree over an issue and give reasons for own position. • Debate to defend your position about an issue in society • Use Internet resources to illustrate and communicate original ideas and stories
Communicating	• Online discussion why previous knowledge is essential for current learning • Trainees & trainers actively/attentively listen to each other's points of view • Ask questions on the topic • Illustrate and communicate your original ideas using digital technologies. • Trainees communicate information which helps fellow students to troubleshoot a business challenge to increase their efficiency

Collaborating	• Trainees are given a problem to plan and work as a team using 'K-W-H-L chart'
	  o K: what each one *Knows*
	  o W: *What* each team member wants to know
	  o H: *How* each member will find relevant data
	  o L: what each team member will have *Learnt*
	• Working in teams of 3-5, search the Web for data on the day's topic and discuss how they relate
	• Engage in learning activities with employees or students from other institutes/ countries

Creating & innovating	• Students engage in inquisitive activities (ex. how can a restaurant manage negative publicity?) • Respond to "what if" type of questions *(ex. what if the Covid19 pandemic lasts for up to 4 years?)* • Come up with an answer different to the one given • Students are asked to redesign a business product or service • Using digital video tools, students will compose a digital story about how a business grew and took over a market due to a creative practice/ technology

Table 2. Teaching the 4C's super skills through Bruner's *E2: Exploration Lens*

4C super skill	Examples of Exploration student activities
Critical thinking and problem solving	• Students critique a topic discussed to come up with other interpretations and findings • Attempt new research to discover new reactions results • Conduct Internet searches and use the data to explore a product life cycle • Go on a virtual excursion on YouTube (ex. watch the functions within a business-setup or a field-study of a factory/ mall/ service-centre)
Communicating	• Talk about relationships among ideas, concepts and themes • Discuss misperceptions and correct misconceptions • Probe for deeper understanding of a new trend • Conduct a whole-class discussion or debate on a controversial topic (men/women have different roles in the development of society?) • Students watch a video clip of a leader and discuss the message it conveys • Discuss the effective use of online resources in training
Collaborating	• Work in teams to study a new topic • Use given opportunity as a team to monitor and scaffold each other • Use the Internet to form peer learning networks and virtual learning communities with classmates (using WhatsApp/ SnapChat/ Instagram). • Work as a team to complete a given project/ assignment.
Creating and innovating	• Take time to reflect and come up with a new idea. • Come up with a different opinion about what has been covered previously. • Download useful resources from YouTube and use them to design something new • Create a curriculum-specific simulation that will encourage peers to practise critical thinking

Table 3. Teaching the 4C's super skills through Bruner's *E3: Explanation Lens*

4C super skill	Examples of *Explanation* student activities
Critical thinking and problem solving	• Demonstrate how something works (role-play how to improve employee satisfaction) • Present a concept/ theory and explain to the class how it works • Discuss how past learning links to new knowledge • Look for trends, differences in data from online articles • Apply previous knowledge to resolve a current software problem
Communicating	• Explain to the teacher personal understanding of an idea, concept, or issue • Reinforce, support or challenge a view, fact or news collected from news-sites • Conduct an online interview and report the outcome to the class or topic • Describe the results of an online survey (do people buy products displayed on the top shelf of supermarkets less?) • Explain the meaning of a plot in a recent movie. Relate it to the topic being discussed (leadership/ profit/ ethics) • Describe and illustrate a concept using a model
Collaborating	• Conduct a Round-Robin of Four-Ways-Interviews and then discuss among your team the ideas generated by the interviews • In pairs, students chat with each other and probe each other's contribution to develop a deeper and fuller explanation and understanding of the given topic/ case-study • Students challenge each other's contribution to the team (in an activity or assignment) by asking the other members to explain further • Use the Think-Pair-Share Collaborative Strategy (or Think-Pair-Square cooperative learning structure) to solve a given problem or explain a topic to your team-members
Creating and innovating	• Link past events to new learning occurrences • Develop a hypothesis to be tested • Come up with a new theory about current business practices/ human psychology (ex. Moore's Law) • Create a glossary of terms from the topic learnt and explain them to the class • Compose a narrative and explain it • Share a new app/ website/ logo design that can have applications in Bahrain context.

Table 4. Teaching the 4C's super skills through Bruner's *E4: Elaboration Lens*

4C super skill	Examples of *Elaboration* student activities
Critical thinking and problem solving	• Look for deeper meaning of concepts that students are introduced to • Search online for further points connected to or are relevant to what is being learnt • Challenge current understanding by reading the complex concepts from text book • Question students and correct misperceptions • Apply what is taught to solve new problems • Apply theory to real-life experiences in life (how has VAT affected daily life?)
Communicating	• Talk more about a topic that has been discussed previously • Practise using formal language correctly • Discuss extension of a concept • Describe and demonstrate a process • Share own understanding of how a Xbox/ PlayStation game helps in learning • Create a presentation and share it with other students • Trainees record themselves presenting/ planning in a team and the video is played in class for a group analysis.
Collaborating	• Challenge peers in a team to share their views • Work in a team to broaden what is being learnt • Share understandings of what has been learnt • Work together to solve a problem. • Publish to all members of your virtual community a problem you have encountered when learning and seek their assistance

Creating and innovating	• Raise new issues for discussion • Apply skills learned within new contexts • Extend current learning to new areas • Apply knowledge learnt in one Key Learning Area (KLA) to several other KLAs • Design and complete a rich learning task • Trainees share a topic learnt in another unit with the trainer and discuss creative applications/solutions to cater to both topics. • Plan contingency scenarios for businesses assuming various disasters and challenges. • Create a video documenting a community event in which the team participated and supported a group (improving knowledge of school kids, supporting elderly etc.)

Table 5. Teaching the 4C's super skills through Bruner's *E5: Evaluation Lens*

4C super skill	Examples of *Evaluation* student activities
Critical thinking (and problem solving)	• Reflect on what they have learnt and discuss its value in real life • Complete a Plus, Minus, Interesting (PMI) model of a topic they have learnt • Debate a current controversial issue in the news online and try to solve it while considering the arguments of both sides. • Link or show connections between current class work and solving problems in the industry. • Complete a Cost-Benefit Analysis of a business issue. • Complete a self-assessment exercise following the completion of a major task or project • Recognize bias in resources available on the internet. • Debate between trainees to highlight alternative views of thinking. • Conduct a team-presentation to criticize the business decisions made by top companies and suggest how those problems could have been avoided.
Communicating	• Demonstrate mastery of certain learning in an oral discussion. • Discuss the evaluation of a particular task • Evaluate digital resources for use in a named topic and discuss your findings with the class • Select a set of digital tools and justify their value in completing a task
Collaborating	• Complete peer assessment for members in your team • Mentor each other in a team and provide feedback • Use the Kagan's (1994) Jig-Saw structure to evaluate a story • Use collaborative electronic tools to evaluate the topic or unit completed
Creating and innovating	• Prepare an online report about trainees' goals, challenges and plans to become an entrepreneur. • Complete a SWOT Analysis to reflect on how trainees' see themselves • Prepare a new proposal for changes to a unit they are studying / completed. • Create a personal portfolio and assess each other's' portfolio • Complete open-ended assessment tasks with possible multiple answers. • Use digital tools to analyse data and to evaluate a theory learnt • Design a model of legal and ethical behaviours when producing/marketing/ transacting online.

Sources:

Bruner, J. (1960). The Process of Education. Cambridge, MA: Harvard University Press.

Bruner, J. S. (1961). The Act of Discovery. Harvard Educational Review, 31, 21-32.

Bruner, J. S. (1966). Toward a Theory of Instruction. Cambridge: Harvard University Press.

Bruner, J. S. (1978). The Role of Dialogue in Language Acquisition. In A. Sinclair, R. J. Jarvelle, & W. J. M. Levelt (Eds.), The Child's Concept of Language. New York: Springer-Verlag.

Pappas, C. (2014, June 18). Instructional Design Models and Theories: Inquiry-based Learning Model. Retrieved May 25, 2020, from https://elearningindustry.com/inquiry-based-learning-model

NETS (2007). Profiles for Technology (ICT) Literate Students, National Educational Technology Standards for Students. Excerpted from NETS for Students Booklet. http://www.schenectady.k12.ny.us/techresources/EETTLitCon/NETS-s_2007_student_Profiles.pdf

Kivunja, C. (2015). Teaching, Learning and Assessment: Steps towards Creative Practice. Melbourne: Oxford University Press. (In Press)

Kivunja, C. (2015). Exploring the Pedagogical Meaning and Implications of the 4Cs "Super Skills" for the 21st Century through Bruner's 5E Lenses of Knowledge Construction to Improve Pedagogies of the New Learning Paradigm. Creative Education, 6, 224-239. http://dx.doi.org/10.4236/ce.2015.62021

Empowering Students: The 5E Model Explained. (n.d.). from https://lesley.edu/article/empowering-students-the-5e-model-explained