

# Training In-service teachers in designing Online Lesson Plans using Instructional techniques based on learning theories

Sneh Bansal<sup>1</sup> & Savita Sharma<sup>2</sup>

<sup>1</sup>Principal, Chandigarh College of Education, Punjab

Email-sneh.bansal40@gmail.com

<sup>2</sup>Assistant Professor, School of Education and Humanities,  
Manav Rachna University, Faridabad

## Abstract

*This study draws on the authors' first-hand experience of the pilot study focused on delivering a 6 weeks online training programme on 'Designing lesson plans' in an online mode education for in-service teachers to improve their teaching competencies. The study aimed to evaluate the lesson plans designed by the participants using the innovative instructional elements based on the combined ideas and principles of three learning theories- behaviourism, cognitivism and constructivism in an online teaching-learning process. Twenty-six Indian school teachers participated in the study. The data was collected using the mixed method- both quantitative and qualitative. The Demographic profile of the participants was collected through the Google Form. A focused group interview form was used to determine the teachers' perception of writing lesson plans in online teaching and possible concerns and needs while teaching. A self-developed 16-item, 3-point rating scale was used to evaluate the online lesson plans drafted by the participants both at the pre- and post-training programme to determine the overall impact of the online training programme. Against this backdrop, the study presents the findings of the in-service training programme conducted to improve the competencies of the teachers in designing lesson plans using the combined ideas of the three learning theories in an online learning environment in school education and its relevance in implementing NEP 2020.*

**Keywords:** In-service training, online education, learning theories, instructional elements, lesson planning, NEP 2020

## Introduction

The COVID-19 pandemic has disrupted education and affected learners and teachers worldwide leading to adversely affecting the teaching-learning process (UNESCO, 2022). Resources, money, and time are always restricted in the real world (Mittal et al., 2021), and it is evident in the education system, too, where we have a shortage of trained and skilled teachers to meet the ever-changing demands of the school system. Due to the abrupt shift from F2F teaching to online teaching, several difficulties

faced by school teachers in creating an effective online learning environment and fulfilling the learning outcomes. In-service training programmes to enhance the competencies of the teachers in an online learning environment are essential due to the pandemic situation; therefore, many national and local educational bodies conducted numerous workshops and capacity-building programmes under the professional development of the teachers. Resources, money, and time are always restricted in the real world, and this is applicable in the education

sector, too, where there is a shortage of teachers capable of providing effective digital education to students.

In India, with the release of the New Education policy (2020), much attention is given to the learning outcomes of the students, and this aroused interest in the instructional elements and the approaches used by school teachers in designing lesson plans in online teaching. Lesson Planning serves as an instrument for effective instruction, and enhancing the engagement level is an aspect of practice that serves as a lever for instructional improvement and engagement of the teachers in lesson planning may influence the quality of their instruction (Bieda et al., 2020). Specifically, knowledge of designing lesson plans with innovative instructional activities and elements using the blend of learning theories in online teaching is much required for optimum learning and achieving the desirable outcomes for the students. Though the lesson plan is essential for successful teaching and learning, its practice and implementation have hardly been found after the outbreak of the COVID-19 pandemic. Learning theories, with their instructional techniques and strategies, are essentially important to address the needs of the learners. Planning lessons in a variety of ways using interactive activities enhances the students' satisfaction, learning needs and educational achievement (Jamalia & Heidari 2014; Pang, 2016; Chen 2019). Educational psychologists have developed theories of learning based on three main paradigms – behaviourism, cognitivism and constructivism. To ensure a successful teaching and learning environment, it is vital to design a theory-based lesson plan and follow the instructional elements with a

blend of three learning theories.

### **Theories-driven Instructional strategies**

In Behaviorism Theory, Villalba and Romiszowski, 2001 stated, "Instruction is designed to promote individual pacing and progress using a task analysis which breaks down the behaviour into a sequence of observable actions". Emphasis is to be given to selecting the reinforcements which are most effective to facilitate the learning and performances of the students. In online learning, lessons with explicit objectives in behavioural terms shall be shared with the students breaking the learning tasks into small chunks. Proper feedback shall be provided to the learners so that they can monitor how they are performing and take corrective actions if required. For example, the teacher introduces the lessons with the structured objectives defined in behavioural terms, teaches the lesson, and monitors the students' learning through formative assessment with proper feedback to examine the gaps where remediation is required. Activities reminders, dashboards depicting deadlines for assignments, word cloud features, digital stickers and emoticons, and small breakout forums are some of the activities teachers can use in their teaching to reinforce the learning behaviour of the learners in an online setting.

Cognitivists emphasize the students and their abilities to make them engage actively to organize their knowledge. It focuses on the different learning styles and allows the students to incorporate new learning with the prior learning and reproduce the new learning through connections and associations. Students are taught to think independently and analyse problems; the teacher acts as

a facilitator and enables the learners to discover new knowledge by assimilation and accommodation. Graphic organizers and concept mapping can be used as introductory material to activate the previous knowledge of the learners, which enables them to recall and enable a linkage between prior and new knowledge. Various instructional strategies such as framing, outlining, mnemonics, concept mapping and advance organizers can be used to activate the prior knowledge which enables the learners to make connections between existing and new knowledge. To activate the prerequisite knowledge of the learners, pre-instructional questions and test questions can be included while teaching online. Annotation and note taking skills, peer-assessment of learning and search engines promote the processing activities to teach the learners so as to acquire information or solve problems.

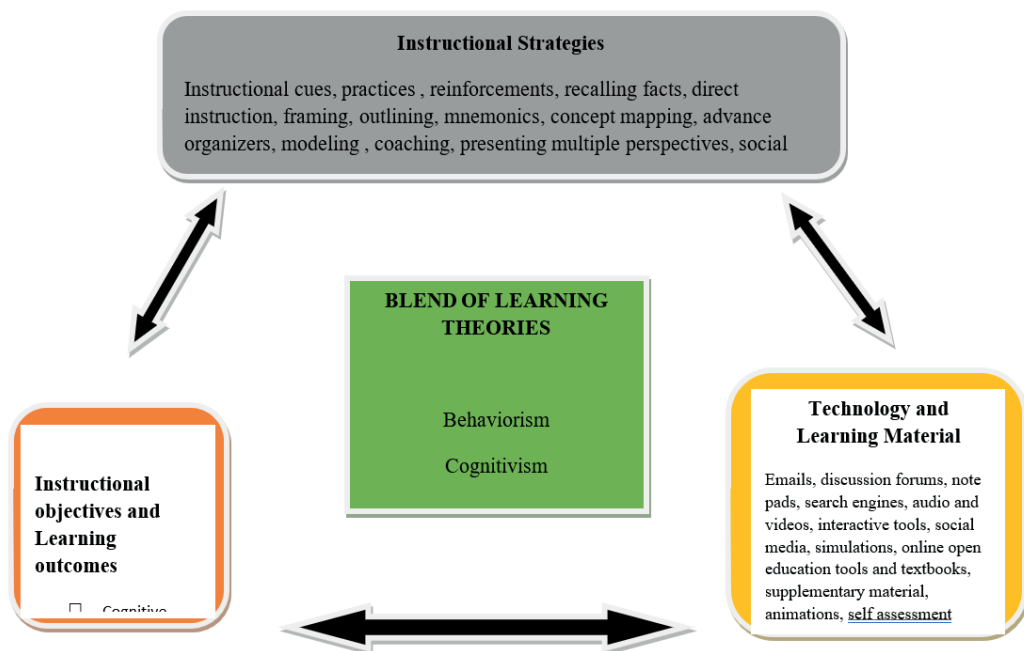
Jonassen et al., 1995 viewed, "Constructivist principles provide ideas to help instructors create learner-centered and collaborative environments that support critical reflection and experiential processes". Constructivists believe that the purpose of education is to provide learning in a meaningful way to integrate knowledge with real-life settings and situations, which allows the learners to construct their own knowledge. Provision for social activities on the net through participation in discussion forums and chats provides personal and meaningful learning experiences to the learners. Cooperative and collaborative learning encourages reflective awareness and provides real-world experiences to the

learners.

Marfuah, M., et al., 2022 analyzed the three learning theories closely. Overlapping in the ideas and principles of the three theories - behaviourism, cognitivism and constructivism become apparent. Hence the instructional strategies can include the principles from all three learning theories. To teach 'What to learn' (facts) - behaviourists' strategies can be used, 'How to learn' (processes and Principles) - Cognitivists' strategies can be used and 'Why to Learn (deriving personal meaning) - Constructivists' strategies can be used.

From the above discussion and literature it is clear that incorporating the ideas and principles of learning theories in instructions with the connected instructional strategies and activities can support the learning of the students effectively. For this, first and foremost, the teacher shall be professionally capable of designing the lesson plan to enhance the student's learning with the prime focus on virtual classrooms. However, none of the research to date addresses the instructional perspectives of facilitating teachers to design theory-based lessons incorporating innovative instructional approaches in online educational environments. There is a paucity of research on lesson planning by school teachers in digital learning. Due to the lack of literature and research on this area, the author has taken the initiative to assess the effectiveness of the training programmes in developing competencies of the existing school teachers in designing lesson plans based on the learning theories-driven instructional strategies and techniques in an online classroom environment.

**Figure-1: Theories-driven instruction components for online teaching-learning process**



## Objectives of the Study

The study was aimed at assessing the effectiveness of training programme executed in developing competencies of the existing school teachers in designing lesson plans based on the learning theories driven instructional strategies and techniques in online classroom environment.

The main objectives of the study are as follows:

1. To explore the perception of school teachers about their knowledge of lesson planning in online teaching and possible concerns and needs while online teaching.
2. To evaluate the impact of the online training programme on the lesson plans designed by the participants using the innovative instructional elements based on

the combined ideas and principles of three learning theories- behaviourism, cognitivism and constructivism in an online teaching-learning process.

## Research Design

To improve the teaching competencies of the school teachers in digital teaching, an online in-service training was conducted. The combination of quantitative and qualitative measures was designed to examine and evaluate the competencies of the participants in planning online lessons using instructional approaches based on a combination of three learning theories. The design employed for this research work was a Pre-Post-test experimental design. Descriptive statistics – percentages and frequency were used to examine the impact of a training programme on the online lesson plans designed by the participants.

## Participants

A Google Form was created and shared among the school principals of Chandigarh and Punjab, India, through WhatsApp and school mail IDs in which the clear purpose of the project was declared along with the consent of the participants who were asked to participate in the project. From 48 respondents, 26 teachers were the final part of the project. Participants had agreed to attend the workshop session in a group twice a week as per the mutual time agreed by everyone. The participants were 26 school teachers (general and special educators) and principals of CBSE-affiliated private schools situated in Chandigarh and

Punjab, India. 65.3 per cent (17) were general teachers, 11.5 per cent (3) were special educators and 23 per cent (6) were coordinators of the schools. The participants were mixed groups teaching from elementary to higher classes, teaching different subjects (see table 1). All the participants had experience of teaching in the schools and taking classes in blended mode during the post pandemic. 46.15 per cent (12) of the participants had more than 15 years of experience, 15.38 per cent (4) had experience between 13-15, 11.5 per cent (3) between 10-12, 7.6 per cent (2) between 7-9, 15.38 per cent (4) between 4-6 years 3.8 per cent (1) between 0-3years.

**Table-1: Presents the demographic details of the participants**

No.	Designation	Subjects taken	Classes	Experience
	General Teacher	English	6-12	10-12 years
	General Teacher	Mathematics	6-8	More than 15 years
	General Teacher	Science	8 to 10	More than 15 years
	Special Educator	School Counselor	6-12	0-3 years
	Coordinator	EVS and Science	4-7	7-9 years
	Coordinator	English Science SSt EVS	1-5	More than 15 years
	General Teacher	Punjabi	8-10	More than 15 years
	General Teacher	Math, Hindi	2 <sup>nd</sup>	4-6 years
	General Teacher	Biology, Science, Primary Mathematics	4 <sup>th</sup> -8 <sup>th</sup>	10-12 years
	General Teacher	English, Evs, Maths	1 <sup>st</sup> -2 <sup>nd</sup>	More than 15 years
	General Teacher	Life skill & Hindi	4 <sup>th</sup>	More than 15 years
	Special Educator	Economics	10 <sup>th</sup> -12 <sup>th</sup>	13-15 years
	Special Educator	Psychology, Social Science	3-7 <sup>th</sup>	7-9 years
	General Teacher	Physical education	11-12	13-15 years
	Coordinator	English	5	More than 15 years

No.	Designation	Subjects taken	Classes	Experience
	General Teacher	Mathematics	7 <sup>th</sup> -8 <sup>th</sup>	More than 15 years
	General Teacher	Teacher	1 to 8th	10-12 years
	General Teacher	English	3 <sup>rd</sup> ,4 <sup>th</sup> ,5 <sup>th</sup>	More than 15 years
	General Teacher	Computer	1-5	4-6 years
	General Teacher	Sanskrit and hindi	Tenth ( 10)	More than 15 years
	Coordinator	English,math. evs,hindi	1 <sup>st</sup> -2 <sup>nd</sup>	13-15 years
	General Teacher	social science	9 -10	13-15 years
	Coordinator	Mathematics, Computer	8 <sup>th</sup> -10 <sup>th</sup>	More than 15 years
	General Teacher	Science and Maths	6 <sup>th</sup>	4-6 years
	General Teacher	Science n Maths	6 <sup>th</sup>	4-6 years
	Coordinator	mathematics, computer	8 <sup>th</sup> -10 <sup>th</sup>	More than 15 years

## Tools and data collection

The qualitative data was collected through a Semi-structured focused group interview which was conducted to explore the perception of school teachers about their knowledge of writing lesson plans in an online teaching and possible concerns and needs while online teaching. The interviews were conducted on google meet and were recorded with their prior consent. The narratives were coded and then categories with themes were devised.

The 16-item rubric was designed to compare the components included in the online lesson plans drafted by the participants prior to and after the training programme. One lesson of each participant was scored on a three-point scale – 3 points for Adequate/ Meets Expectations, 2 points for need improvement and 1 for absent of that item in the lesson plan. Relevant literature was reviewed to prepare the interview schedule and rubric. The data was analyzed with the content and descriptive analysis.

## Ethical consideration

Ethical principles were considered by informing the respondents about the purpose of the study with their consent on the Google Form.

## Procedure

Initial Meeting: Before data collection, an initial introductory meeting was conducted with the participants in one group on Google Meet for an analysis of the training programme to design online lesson plans. Focused group interviews were conducted with the participants on the Google Meet platform due to post-pandemic fear and limited mobility. In a focused group interview, participants were asked questions like “Do you prepare an online lesson plan? If yes, what approach do you use?”, “Are you aware of the online teaching-learning tools? “Which tools do you use often during online classes?” What specific learning outcomes do you address in your lesson?”, “How do you engage students during online teaching?”, “How



do you provide support and facilitate students in online classes to address their needs/ learning problems?”, “What major challenges do you face during online classes?” and “Are you aware of the learning theories? How do you use it in your teaching?”

Google classroom was created to share the material, resources and discussions with the participants. The participants were asked to share the online Lesson plan drafted by them before the training. The pre-drafted lesson plans were rated by using the 3 point scale rating scale covering components of instructional activities and strategies using the combination of three learning theories.

Development of training programme: A 6-week online training workshop (see table 2) was planned and designed by the researcher to make the in-service teachers competent in drafting and designing online lesson plans on instructional activities and strategies using the combined ideas and principles of three learning theories- behaviourism, cognitivism and constructivism in an online teaching-learning process. With the vast experience of conducting training programmes with school teachers for more than a decade under the capacity building programmes organized by the CBSE board, India both in person and online along with experience as a head of teacher training programme, the researcher planned and designed

a series of online in-service training programme for the school teachers. The researcher herself instructed the participants and conducted 16 sessions that lasted one to one and half hours at noon time between 3:00 to 4:30 IST ( Wednesday and Friday) for one and half months, excluding ice-breaking and follow-up sessions. The training was conducted in both synchronous and asynchronous modes. Google Meet, Google Classroom, OER Common Group, Google features (drive, jam board), and online tools (paddles, Meeting Pulse, slide, thing link, Book Creator, wallet, TED-Ed, Edpuzzle, Kahoot) were created to offer the sessions to the participants. The training was facilitated with case studies, hands-on activities through self-reflection exercises, visual presentations, questioning, assignments, supplementary material (available open educational resources), and discussion opportunities for the teacher participants to promote critical and collaborative skills in their subject domain. Participants had enough time to practice learned skills during the workshop. The training was offered to the in-service teachers on writing lesson plans using the instructional strategies/ activities based on the combination of three learnings in their online teaching. Reiser (1994) viewed that with the appropriate training, teachers can employ effective approaches and techniques in their instructional planning.

**Table-2: Online teacher training sessions**

S.No.	Topic	Hours
1.	Conceptual framework of learning theories: Behaviorism, cognitivism and Constructivism	1.5
2.	Bloom’s Taxonomy: Writing Learning outcomes using cognitive, affective and psychomotor domains	1.5
3.	Instructional strategies and techniques in Behaviorism, cognitivism and Constructivism	1.5

S.No.	Topic	Hours
4.	OERs in teaching learning and How to form OER common group	1.5
5.	Using free mind software	1
6.	Using white boards/ jam board for online teaching	1
7.	Sharing documents with the students through google drive, interactive tools (padlet, book creator, waklet, meeting pulse, slido, tedEd )	2
8.	Creating videos with freecam and slideator	1
9.	Graphic organizers/ concept mapping/ Mnemonics in online teaching	1
10.	Diversity in classrooms and ways to accommodate in online classrooms	1
11.	Competency based assessment (focus on designing rubrics)	1.5
12.	Online lesson elements/ components	1.5

Post Training: After the completion of the training programme, teachers were given the time from week 1 to week 2 to write one lesson plan from the subject taken and submit it on the google classroom. The post training lesson plans submitted by the participants were evaluated on the 3 points rating scale which was compared with the lesson plan submitted by the participants before the training.

## Results and Discussions

Objective 1: To explore the perception of school teachers about their knowledge of lesson planning in online teaching and possible concerns and needs while online teaching, the following results were drawn from the focused group interviews conducted with the participants:

- Majority of the teachers did not design any lesson plan for online classes. Only an outline comprising the learning objectives covering the remembering and understanding component was included in the
- lesson plan. During online teaching, less significance was given to evaluation and creating skills. The affective domain was been ignored in the online classes.
- Participants showed concern in planning online lessons from moderate to very difficulty/ challenging with much need for the training in online lesson planning. They perceived themselves as less competent in planning online lessons than in face-to-face teaching.
- Teachers have heard about the blended and flipped approach to teaching but could not differentiate or imply it in their online classrooms. The majority of the teachers relied on the YouTube videos, textbook exercises and Google forms prepared by them.
- Majority of the lessons were teachers, and little evidence was noticed for the activities conducted online for students' engagement, especially in secondary classes.



- Majority of the teachers had formed WhatsApp groups of the students to interact and facilitate in clearing doubts related to learning needs.
- Majority of the teachers sent soft copy of the question papers for assessing the learning performances of the students. However few have created google form in an open ended question (paragraph/ short questions) for evaluation.
- Little evidence/ responses have been gathered from the participants on their awareness of learning theories. Though they know about the theories in general their application in online lessons was not much evident during the interview and from the lesson plans.
- Lack of students engagement, limited peer interaction, Insufficient digital literacy on the part of the teacher and infrastructural barriers were the major challenges that they encountered during the online instructions

For example one of the teachers viewed:

Students are not interested in online classes; they simply complete the formality to get attendance done. Students have list of excuses...

Students lack necessary digital devices like laptops as well as high-speed internet facilities, due to which many of them cannot attend the class.

The above results indicated that overall, all 26 participants agreed that student engagement is an important part of online teaching, and they faced challenges in engaging them virtually. While participants seemed to be unfamiliar with the instructional activities and techniques online using the learning theories principles and ideas, they still generally understood the main ideas of constructivism theory and few instructional activities. But how it can be implemented in online teaching was they needed to learn through planning the instruction.

Objective 2: To evaluate the impact of the online training programme on the lesson plans designed by the participants using the innovative instructional elements based on the combined ideas and principles of three learning theories- behaviourism, cognitivism and constructivism in an online teaching-learning process, the descriptive statistics i.e. percentage and frequency were employed. Results of the pre- and post-training programmes are depicted in Table 3.

**Table-3: Percentage and frequency of the pre and post-training lesson plan designed by the participants evaluated on 3 point rating scale (adequate/ Meets expectations=3 to Absent=1)**

S.No.	Statement	Pre-training			Post-training		
		Adequate/ Meets Expectations	Needs Improvement	Absent	Adequate/ Meets Expectations	Needs Improvement	Absent
1	The lesson plan clearly describes the explicit goals and objectives with expected learning outcomes	15.3% (4)	65.38% (17)	19.32% (5)	76.9% (20)	23.0% (6)	0% (0)

S.No.	Statement	Pre-training			Post-training		
		Adequate/ Meets Expectations	Needs Improvement	Absent	Adequate/ Meets Expectations	Needs Improvement	Absent
2	Use of interactive activities for self learning	11.5% (3)	46.15% (12)	42.30% (11)	34.6% (9)	57.6% (15)	7.6% (2)
3	Presenting the information in steps	84.6% (22)	11.5% (3)	3.8% (1)	96.1% (25)	3.8% (1)	0% (0)
4	Provide a scope for the students to seek information through search engines	34.6% (9)	57.6% (15)	7.6% (2)	88.4% (23)	11.5% (3)	3.8% (1)
5	Use of discussion forums and chats	19.2% (5)	69.2% (18)	11.5% (3)	76.9% (20)	19.2% (5)	3.8% (1)
6	Provision of emails/ social media to transfer their ideas amongst learners	7.6% (2)	34.6% (9)	57.6% (15)	30.7% (8)	50% (13)	19.2% (5)
7	Use of appropriate technology to address the learning goals	11.5% (3)	42.3% (11)	46.15% (12)	26.9% (7)	57.6% (15)	15.3% (4)
8	Use of Open educational resources including e-books, web page links, reference materials and other open sources	11.5% (3)	46.15% (12)	42.30% (11)	76.9% (20)	23.0% (6)	0% (0)
9	Use of instructional strategies and techniques	7.6% (2)	42.3% (11)	50% (13)	88.4% (23)	11.5% (3)	0% (0)
10	Varied opportunities for the students to engage in the online learning	11.5% (3)	50% (13)	42.30% (11)	42.3% (11)	38.4% (10)	19.2% (5)

S.No.	Statement	Pre-training			Post-training		
		Adequate/ Meets Expectations	Needs Improvement	Absent	Adequate/ Meets Expectations	Needs Improvement	Absent
11	Teacher provides full support during online classes	30.7% (8)	42.3% (11)	26.9% (7)	46.1% (12)	34.6% (9)	19.2% (5)
12	Connecting the concept/ topic of one subject area to other area	7.6% (2)	34.6% (9)	57.6% (15)	11.5% (3)	57.6% (15)	30.7% (8)
13	Make connections of the concept/ topic to real world situation	11.5% (3)	38.4% (10)	50% (13)	53.8% (14)	23.0% (6)	23.0% (6)
14	Integration of arts in the concept/ topic	7.6% (2)	34.6% (9)	57.6% (15)	15.3% (4)	34.0% (9)	50% (13)
15	Use of alternative assessments so as the students able to demonstrate their knowledge of concept/ skills	3.8% (1)	26.9% (7)	69.2% (18)	38.4% (10)	46.1% (12)	15.3% (4)
16	Students able to self- evaluate their progress and knowledge	0% (0)	7.6% (2)	92.3% (24)	19.2% (5)	38.4% (10)	42.3% (11)

The results demonstrate in Table 3 reveal an increase in the participants' usage of various theories driven instructional strategies in designing lesson plans for virtual classes. Post-test sample lesson plan is given in Appendix-A.

1. Goals and objectives with expected learning outcomes

The learning outcomes related to the content are the expectations, competencies, and skills which learners need to acquire in achieving holistic which cannot be achieved by focusing on the cognitive, affective and psychomotor domains. While writing the online lesson plans, the teachers shall answer the following questions connected with

the learning Goal and objectives with expected learning outcomes answers the questions:

- What will students experience and be able to do as a result of this lesson or project? What instructional goals would students need to achieve to demonstrate their understanding?
- What specific curriculum learning outcomes will be addressed in the lesson or project?

Hence, by understanding the characteristics of the learners and their learning needs, the teachers

can define instructional goals and objectives in the cognitive, psychomotor and affective domains, keeping in view the topic to be taught.

In the pre-training evaluation, among 26 participants, only 4 (15.3 per cent) of the participants described the goals and objectives with expected learning outcomes from the students, 17 (65.38 per cent) defined the goals however need improvement, and 5 (19.32 per cent) of the participants did not describe the goals and objectives with expected outcomes. However, after conducting sessions on Bloom's Taxonomy: Writing Learning

outcomes using cognitive, affective and psychomotor domains during the training programme, the post-training evaluation of lesson plans results indicated the majority of the participants wrote the goals and objectives representing the three domains i.e 20 (76.9 per cent) of 26 participants lesson plan scored under adequate/ meets expectation category, 6 (23 per cent) participants with needs improvement and interestingly, all the lesson plans had this component, and no one (0 per cent) scored under absent category.

Sample of the goals and objectives with learning outcomes defined by the participant after training

Class	Lesson No. & Name Of Lesson	<b>A. Learning Objectives</b> <b>B. Learning Outcomes</b> <b>C. Skills Enhanced</b>
9A,B,C,D	Lesson 4  Working of Institutions  (Political science)	<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>● <b>Identify the need to accommodate social and cultural diversity in a democracy.</b></li> <li>● <b>Understand how a democracy promotes acceptance of diversity.</b></li> <li>● <b>Appreciate that democracy forms a legal basis for equality and dignity of all citizens.</b></li> </ul> <p><b>Learning outcomes</b></p> <p><b>Students will be able to:</b></p> <p><b>Appreciate that democracy by its very nature works towards being socially and culturally inclusive thereby accommodating and accepting diversity.</b></p> <p><b>Skills Enhanced:</b></p> <p><b><u>Thinking, Empathy, Understanding.</u></b></p>

## 2. Use of interactive activities for self-learning

Self-assessment is a process in which students criticize their own work according to clearly stated expectations, usually provided in the form of goals or criteria, and then revise their work (Andrade & Valtcheva, 2009). It helps students participate directly in learning objective activities (Ozan, C., & Kincal, R. Y. (2018) and check their own understanding of the lesson/ topic. It can be evaluated by the

teachers by answering the question given question while lesson planning: What and how will I add interactive activities in my lesson components which support the learners in reflecting on what they have learned?

Students who can self-assess are poised to be life-long learners and use self-regulatory skills effectively. They are able to ask focused questions when they don't understand or when they're stuck (Brookhart, S. M. (2016) in an online class as

well. Cognitivism theory focuses on making knowledge meaningful and helping learners to be able to relate new information to existing knowledge. Instructional activities that encourage the students to self-reflect on their learning assist the students in evaluating their learning. In online teaching, with the use of interactive activities

Almaiah (2020) study emphasized in online classes, "the content is either less or no opportunities are provided in terms of interactivity" and hence it leaves no scope for self-assessment of the learning. From the pre-training evaluation data, only 3 (11.5 per cent) of the participants mentioned self-assessment questions as interactive activities in their lesson plans, with 12 (46.15 per cent) of the participants needing improvement in this item, and 11 (42.30 per cent) of the participants did not include any self-assessment questions. The post training data showed improvement in the lesson planning on using interactive activities (brainstorming) for the self-assessment. A session on various interactive activities in the learning material eg: using google drive, padlet, kahoot, waklet etc were conducted which supports in self-assessment. 9 (34.6 per cent) lesson plans were rated adequate, 15 (57.6 per cent) needed improvement, and only 2 (7.6 per cent) of the lesson plans did not mention this component.

### 3. Presenting the information in steps

The goal of instruction for the behaviorist is to elicit the desired response from the learner who is presented with a target stimulus. Therefore, instruction is structured around the presentation of the target stimulus and the provision of opportunities for the learner to

practice making the proper response (Ertmer, 2013). From the pre-training data, it is evident Out of 26, the majority of the participants (n=22 with 84.6 per cent) had mentioned the step-by-step description of learning materials in small chunks, 3 (11.5 per cent) lessons need improvement, with 1 (3.8 per cent) absent of this component. The post-training lesson plan showed an increase in this component, i.e. 25 (96.1 per cent) out of 26 participants' lesson plans indicated detailed descriptions of learning materials in small chunks, 1 (3.8 per cent) need improvement, which showed they break down the tasks into small elements and teach one by one each element in online teaching.

### 4. Scope for students to seek information through search engines

Seeking and collecting information independently allows the learners to develop their own knowledge and meaning. If the teachers provide scope to the students to seek information from the search engines, it will facilitate the learning that is based on task-based and hands-on activities. Through this, the ideas and principles of constructivism theories are applied in online teaching.

Pre-training lesson plans indicated out of 26, only 9 (34.6 per cent) of the teachers scored with adequate, 15 (57.6 per cent) needed improvement and 2 (7.6 per cent) were absent. There was an improvement in the lesson plans of the participants submitted after the training programme, which is indicated by the post-training data. Out of 26 participants, 23 (88.4 per cent) of the participants scored with adequate 23 indicated the use of search engines in their lesson plans and, 3 (11.5 per cent) with need improvement and 1 (3.8 per cent) absent in this component.

## 5. Use of discussion forums and chats

The pre-training data showed only 5 (19.2 per cent) of the participants mentioned the use of discussion forums and chats in their lesson plan, 18 (69.2 per cent) of the participants thought mentioned but again it was not been reflected in the presentation part of the lesson and 3 (11.5 per cent) of the participants did not mention the discussion forum at all. However, post-training data successfully extended the use of discussion forums in online lesson planning, which is evident from the data with an increase in the rating to 20 (76.9 per cent) under adequate 5 (19.2 per cent) need improvement, and only 1 (3.8 per cent) lesson plan did not use the discussion forum.

## 6. Provision of emails/ social media to transfer the ideas

This component is the extension of the previous component related to the discussion forum which facilitates the ideas of constructivism learning theory. The use of social media and emails for teaching facilitates the learning activities for the students and enhances communication, participation and meaning. The pre-training data showed only 2 (7.6 per cent) of the participants mentioned a provision of emails and social media to transfer ideas among learners, 9 (34.6 per cent) participants needed improvement in this item, and 15 (57.6 per cent) did not mention this in their lesson plans. Post-training showed a positive impact; out of 26, 8 (30.7 per cent) lesson plans were rated adequate, 13 (50 per cent) needed improvement, and 1(3.8 per cent) lesson plan did not mention social media for learning.

## 7. Use of appropriate technology to address the learning goals

The training programme benefitted

the participants in planning and using technology in online lessons. The increase in the number of post-training lesson plans indicating the use of appropriate technology to address the learning goals indicated the participants have additional skills to teach in remote classrooms. Data revealed only 3 (11.5 per cent) of the participants had used the appropriate technology to address the learning goals in their lesson plans, with 11 (42.3 per cent) needing improvement and 12 (46.15 per cent) not mentioning this in the pre-training lesson plans. The post-training showed 7 (26.9 per cent) lesson plans rated at adequate/ meet expectation, 15 (57.6 per cent) had mentioned the technology used but not in very clear terms, and 4 (15.3 per cent) did not refer to the technology.

## 8. Use of open educational resources (OERs)

OERs in the online learning environment can offer learning opportunities that are independent and self-directed and encourage lifelong learning (Sommer et al., 2022). Open educational resources include an extensive array of online formats, including YouTube clips, online textbooks, video recorded lectures, web-based textual materials designed for independent study, animations and simulations, digital diagrams and graphics, some MOOCs etc.

Pre-training data showed only 3 (11.5 per cent) of the participants used open educational resources in their lesson plan, 11 (42.3 per cent) mentioned the other materials used from the internet, but sources were not cleared, and 12 (46.15 per cent) did not mention it. The post-training lesson plan indicated an increase in the use of OERs in online teaching



which is evident from the increase in number to 20 (76.9 per cent) rated at an adequate level, surprisingly all lesson plans used OER with 6 (23 per cent) need improvement as it was mentioned in the lesson plan beginning as the teaching aid but its usage was not evident much in the further presentation part of the lesson plan.

#### 9. Use of Instructional strategies

Incorporating effective visual, written, and animated content in a relevant and realistic context has a positive impact on students' online learning experiences. Pre-test data showed only out of 26 only 2 (7.6 per cent) participants mentioned the use of instructional materials such as mnemonics, concept mapping and advance organizers, 11 (42.3 per cent) mentioned but not very clear with 13 (50 per cent) of the teachers did not use any such instructional strategies in their online lesson plans. Substantial increase in the use of mnemonics, advance organizers, videos, and note taking evident from the post-training workshop; out of 26, 23 (88.4 per cent) lesson plans included these strategies and rated them as adequate and only 3 (11.5 per cent) needed few improvements.

#### 10. Varied opportunities for the students to engage in online learning

Successful pedagogical practices help teachers actively engage online students synchronously and asynchronously. The online training programme included sessions in which the participants were taught engaging strategies. Pre-training workshop lesson plans showed only 3 (11.5 per cent) of the participants mentioned such activities in the form of group projects or cooperative learning, 13 (50 per cent) of the participants needed improvement of such element in their lesson

plans, and 11 (42.30 per cent) did not mention this in their lesson plans. The Post training lesson plan was written by the participants adequately i.e. 11 (42.3 per cent) lessons covered the engaging activities for ex: in one of the lesson plans, a teacher added an activity to engage the students in which the students are required to post the their understanding about the topic in between the short breaks along with few questions are created. 10 (38.4 per cent) lesson plans needed improvement, and 5 (19.2 per cent) lesson plans did not mention any activities.

#### 11. Teachers' support during online classroom

Regarding full support by the teachers during online classes, Korhonen et al. (2019) viewed that teachers act not only as instructors but play various roles, including planners, facilitators, guides, supervisors, coaches and evaluators, to effectively enhance students learning in online learning. Pre-training data showed only 8 (30.7) participants' lesson plans mentioned this in the way of observing the progress of learners, 11 (42.3 per cent) of the lesson plans mentioned an outline only and rated as improvement needed, and 7 did not include references to ways of observing or checking the progress of individual students. Post-training results showed 12 (46.1 per cent) lesson plans adequately indicated the support of the teachers, e.g., teachers mentioned clarifying the doubts/ queries, answering questions, providing learning materials, use of illustrations and addressing diversity, e.g. students with specific learning needs, conducting informative demonstrations, and providing valuable analogies. , 9 (34.6 per cent)

lessons need improvement, and 5 (19.2 per cent) lesson plans did not mention the teachers' support during online classes.

Example: Topic on Working of Institutions (Political science)

Gifted learners- will be guided to collect more information regarding the powers and functions of the President and the Prime Minister.

Struggling learners- Chapter will be made easier for them with the help of the worksheet and the flow charts.

## 12. Connecting the concept/ topic of one subject area to other areas

Research suggests that students connect knowledge most effectively in active social classrooms, where they negotiate understanding through interaction and varied approaches. Pre-training data revealed only 2 (7.6 per cent) of the participant's lesson plan lesson-related topics in another content area. For ex, one of the lesson plans on parliament prepared by the teacher in social science was related to the language for article writing. 9 (34.6 per cent) of the participant's lesson plans included the integration but were not clearly indicated in the presentation part of the lesson plan. 7 (26.9 per cent) of the participants did not include the connections of the topic with other topics. The post-training results showed only 3 (11.5 per cent) of the lesson plans had adequately connected the concepts with other content /subject areas, with 15 (57.6 per cent) needing improvement, and 8 (30.7 per cent) did not mention this. It seemed the participants did not benefit much from this component.

## 13. Making content or the topic connected with real-life/ world situations

Pre-training data showed, that only 3 (11.5 per cent) of the lesson plans related the content to life for ex: one of the teachers prepared a lesson plan on pollution, that was connected with real life by giving an example of climate change and its affect on the lifestyle of people, out of 26 participants, 10 (38.4 per cent) of the participants mentioned about the connections but not clearly indicated in their lesson plan methodology. , 13 (50 per cent) of the participant's lesson plans did not include it. Post-test results showed 14 (53.8 per cent) out of 26 lesson plans made the connection of the topic with real life, with 6 (23 per cent) lessons needing improvement, and the remaining 6(23 per cent) did not mention the connecting of knowledge to real life-situation.

## 14. Integration of arts in the concept/ topic

NEP (2020) emphasized the integration of art in the pedagogical approaches for immediate and long-lasting learning experiences. The training program covered sessions on online tools, e.g., book creator and thing links to add art to the lessons in the form of stories. The pre-training data showed only 2 (7.6 per cent) of the lesson plans included art in the way of pictures, 9 (34.6 per cent) lesson plans needed improvement, and 15 (57.6 per cent) did not mention it. The post-training data showed little improvement in the lesson plans on art integration. Only 4 (15.3 per cent) of the lesson plans mentioned art integration, with 9 (34 per cent) needing improvement and 13 (50 per cent) did not include any form of art. It revealed the teachers need intensive training on the integration of art in their teachings in an online education.

## 15. Alternative assessments

To assess the learning of the students in online teaching, various free technologies may be chosen by the teachers. For ex, Kahoot may be used for formative assessment and review of the learning with fun activities, Padlet for open responses, meeting pulse and Slido for poll, open answers and objective question-based assessment, and Book Creator can used for presentation. Pre-training data showed only 1 (3.8 per cent) of the participants lesson plans used informal and formal assessment in which both the student and teacher are involved, with 7 (26.9 per cent) incomplete on this item and 18 (69.2 per cent) participants' online lesson plans did not indicate the use of alternative assessments.

Post training data revealed improvement in using the alternative assessments by the teachers in their lessons. 10 (38.4 per cent) lesson plans adequately included variety in assessment in the form of creating videos, posters, presentation, writing article , 12 (46.1 per cent) lesson plans mentioned but not clearly indicate the types of assessment to be utilized with 4 (15.3 per cent) lesson planned did not indicate the alternative assessments.

## 16. Self-evaluate the progress and Knowledge

Castro and Tumibay (2019) viewed that "students should be encouraged to work independently in an environment that provides proper guidance and ample support". Pre-training lesson plans written by the participants did not adequately mention the self-evaluation techniques, 2 (7.6 per cent) mentioned the idea of self-evaluation in general in the lesson

plan but did not clearly indicate it at a point in the lesson, and 24 (92.3 per cent) of the participant's lesson plan did not mention about self-evaluation. The training session covered the topic of creating a rubric for the evaluation along with online tools. Five lesson plans (19.2 per cent) adequately mentioned creating a rubric for self-evaluation along with self-regulatory strategies, 10 (38.4 per cent) lessons mentioned a few strategies, e.g. questioning, but how to use not clearly indicated, with 11 (42.3 per cent) lesson plans did not give any evidence of self-evaluation.

## Participants' feedback on the Training Programme

Post-training feedback also showed positive responses from the participants. The majority of the participants expressed gain in their capacities and skills - "learnt teaching pedagogies and strategies for effective teaching-learning process in virtual classes", "improving teaching style in digital mode", "being more competent in designing the online lesson plan", "new ideas of integration and inclusion were interesting part to teach online", "making teaching-learning process more innovative and interesting", "effective lesson plan to teach online", "understanding students needs", " Knowing about OER was something new", " designing a rubric for evaluation ", " freemind software for graphic organizer was new and really interesting" were the emerging themes. Overall, the training programme enhanced the teachers' competencies to design their lessons, keeping in view the evidence-based practices and phases of lesson plans based on life-based experiences, hands and mind activities, task-based, learner-centred, and hence making learning more meaningful.

## Conclusion

The goal of this study was to train school teachers in planning online lessons by embedding instructional strategies based on the blend of all the best features of three learning theories. In-service training is one of the elements of professional development (Seffer & Demirel, 2022). The data analysis results showed the training programme has the potential to equip teachers in using innovative instructional elements with ideas and principles of learning theories which can increase student engagement and their learning outcomes in the digital era.

The ultimate goal of teaching is to foster critical thinking and skills acquisition—even to bring about a change in attitudes. Strengthening teachers' capacities to develop online lessons and awareness of innovative instructional strategies are highlighted and emphasized in the New Education Policy 2020.

The author developed the connection

between instructional approaches and learning theories in the light of available literature. Keeping in view the time and scope of the study, it aimed to develop competencies among the teachers in designing online lessons however, the author left the scope for further research in this area. It would be beneficial and advantageous to explore the effectiveness of the designed lesson plan on student engagement and learning outcomes. The results of the study have the potential to empower in-service and pre-service teachers to plan and implement integrated theories-based instructional approaches in both online/ blended/hybrid and F2F classes as envisioned in NEP2020.

(Acknowledgement: The authors would like to thank the participants who were part of the training programme and DTE, NCERT for recognizing the research work under the National Award for Innovative Practices and Experiments in Education, 2021-22.)

## References

- Almaiah, M.A., Al-Khasawneh, A. & Althunibat, A. Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Educ Inf Technol* 25, 5261–5280 (2020). <https://doi.org/10.1007/s10639-020-10219-y>
- Andrade, H., & Valtcheva, A. (2009) Promoting learning and achievement through self-assessment. *Theory into Practice*, 48(1), 12–19. <http://dx.doi.org/10.1080/00405840802577544>
- Bieda, K. N., Lane, J., Evert, K., Hu, S., Opperman, A., & Ellefson, N. (2020). A large-scale study of how districts' curriculum policies and practices shape teachers' mathematics lesson planning. *Journal of Curriculum Studies*, 52(6), 770–799. <https://doi.org/10.1080/00220272.2020.1754921>
- Brookhart, S. M. (2016). START WITH Higher-Order Thinking. *Educational Leadership*, 74(2), 10–15.
- Bye, L., Smith, S., & Rallis, H. M. (2009). Reflection Using an Online Discussion Forum: Impact on Student Learning and Satisfaction. *Social Work Education*, 28(8), 841–855. <https://doi.org/10.1080/02615470802641322>
- Castro, M.D.B. and Tumibay, G.M. (2019) A Literature Review: Efficacy of Online Learning Courses for Higher Education Institution Using Meta-Analysis. *Education and Information Technologies*.
- Chen, Suanrong & Zhang, Bo. (2019). Improving Prospective Teachers' Lesson Planning Knowledge and Skills through Lesson Study. 10.1007/978-3-030-04031-4\_27.

- Ertmer, P. A., & Newby, T. J. (2013). *Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective*. *Performance Improvement Quarterly*, 26(2), 43-71. [https://edtechbooks.org/lidtfoundations/behaviorism\\_cognitivism\\_constructivism](https://edtechbooks.org/lidtfoundations/behaviorism_cognitivism_constructivism).
- Huang, H. (2002). Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology*, 33(1), 27-37. <https://doi.org/10.1111/1467-8535.00236>.
- JamaliNesari, A., & Heidari, M. (2014). The important role of lesson plan on educational achievement of Iranian EFL teachers' attitudes. *International Journal of Foreign Language Teaching and Research*, 2(5), 27-34.
- Jonassen D, Davidson M, Collins M, Campbell J and Haag B B (1995) Constructivism and Computer-Mediated Communication in distance education *The American Journal of Distance Education* 9 (2) 7-23.
- Korhonen, Anne-Maria & Ruhaalahti, Sanna & Veermans, M.. (2019). The online learning process and scaffolding in student teachers' personal learning environments. *Education and Information Technologies*. 24. 1-25. 10.1007/s10639-018-9793-4.
- Marfuah, M., et al (2022). Providing Online Learning Situations for In-Service Mathematics Teachers' External Transposition Knowledge During COVID-19 Pandemic: Case of Indonesia. *The Electronic Journal of e-Learning*, 20(1), pp. 69-84, available online at [www.ejel.org](http://www.ejel.org)
- Mittal, N., Garg, A., Singh, P., Singh, S., & Singh, H. (2021). Improvement in learning enthusiasm-based TLBO algorithm with enhanced exploration and exploitation properties. *Natural Computing*, 20(3), 577-609. <https://doi.org/10.1007/s11047-020-09811-5>
- Ozan, C., & Kincal, R. Y. (2018). The Effects of Formative Assessment on Academic Achievement, Attitudes toward the Lesson and Self-Regulation Skills. *Educational Sciences: Theory & Practice*, 18(1), 85-118. <https://doi.org/10.12738/estp.2018.1.0216>
- Pang, M. (2016). Pedagogical Reasoning in EFL/ESL Teaching: Revisiting the Importance of Teaching Lesson Planning in Second Language Teacher Education. *TESOL Quarterly*, 50(1), 246-263. <http://www.jstor.org/stable/43893814>.
- Sefer, A., & Demirel, M. V. (2022). Online In-service Teacher Training: Perspectives of Turkish L2 Lecturers. *International Online Journal of Educational Sciences*, 14(2), 419-431. <https://doi.org/10.15345/iojes.2022.02.010>
- Sommer, M., Ritzhaupt, A. D., Kohnen, A., & Hampton, J. (2022). Instructional elements in an online information literacy Open Educational Resource (OER) and their influence on learner achievement, satisfaction and self-efficacy. *Journal of Information Literacy*, 16(1), 70-90. <https://doi.org/10.11645/16.1.3113>
- UNESCO (2022). *Education: From disruption to recovery*. Retrieved 22 November, 2022 from <https://www.unesco.org/en/covid-19/education-disruption-recovery>.
- Villablba C and Romiszowski A j (2001). Current and ideal practice in designing, developing and delievering web-based training in Khan B H (ed) *Web-based Training ETP*, Englewood Cliff, NJ, 325-342.

## Appendix-A

### Post Training Lesson Plan Desinged by the Participant

<b>Teacher:- ABC</b>	<b>School:-1234</b>
Subject Area(s):English	Grade Level/ Class:VII
Lesson Title/Topic: FIGHT MANJU FIGHT (Lesson 4- English Literature)	Estimated Duration:4 Periods
Lesson Goals/ Objectives:	<p>After completion of this lesson, the students will be able to:</p> <ul style="list-style-type: none"> <li>• understand the message/ theme of the story.</li> <li>• know the importance of setting goals.</li> <li>• Be more sensitive towards inclusion</li> </ul>
Curriculum Addressed:	<p>After completing the lesson, students will be able to:</p> <ul style="list-style-type: none"> <li>• develop reading and comprehension skills.</li> <li>• learn right values of being human first before being anything else.</li> <li>• Students will be able to recognise and apply new words and frame sentences</li> </ul>
Technology Addressed:	<p>The blended learning initiative will:</p> <ul style="list-style-type: none"> <li>• extend students' learning beyond the classroom.</li> <li>• provide students with the tools to understand the concept on a higher level.</li> </ul>
Technology Required:	<ul style="list-style-type: none"> <li>• MS Teams</li> <li>• YouTube video based on text</li> <li>• Whiteboard</li> <li>• Google forms</li> <li>• Laptop/ Mobile phone/Tab/ Desktop</li> </ul>
Other Materials/ Resources:	<ul style="list-style-type: none"> <li>• You tube video : <a href="https://www.youtube.com/watch?v=A3ogm6StETU">https://www.youtube.com/watch?v=A3ogm6StETU</a></li> <li>• Textbook</li> <li>• Notebook</li> <li>• Pen/ pencil</li> <li>• Textbook</li> <li>• YouTube video</li> <li>• Notebook</li> <li>• Pencil/Eraser</li> </ul>
Student Engagement	<ul style="list-style-type: none"> <li>• Students will be asked about their future plans in the class.</li> <li>• They will also be asked if they have ever changed their mind in context of their choices.</li> <li>• Students will be encouraged to look around them and apply inclusion as part of life</li> </ul>



Student Exploration	<ul style="list-style-type: none"> <li>• Students ask for clarity of meaning when they come across new words.</li> <li>• They share their own similar experiences.</li> <li>• Students will put up a role play to understand the plot and characters with clarity</li> </ul>
Explanation	<ul style="list-style-type: none"> <li>• Various questions based on the story will be asked during the course of explanation to engage students and make them understand the lesson.</li> <li>• The lesson will be taught with emphasis on Value education.</li> <li>• Discussion and exploration about SDG 6,REDUCE INEQUALITY, will be taken up to provide the students with a global perspective</li> </ul>
Elaboration	<ul style="list-style-type: none"> <li>• Students share their own experience in the context of the chapter.</li> <li>• They understand the importance of mutual respect and dignity of living</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Students participating actively in brainstorming round taken with the help of Whiteboard fi.</li> <li>• Students assess themselves by means of test conducted through Google forms.</li> </ul>
Teacher Self-Assessment:	<ul style="list-style-type: none"> <li>• Students understood the lesson well.</li> <li>• The learning outcomes were fully achieved.</li> </ul>