Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills

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Abstract: Many institutions have embraced digital education to augment face to face learning. To be able to leverage the potential of technology to the maximum, teachers need to be equipped with robust digital skills. This paper entitled 'Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills' is the result of three online workshops for in-service teachers conducted using Google Classroom. Over 500 teachers were part of the exercise where approximately 80 % completed all prescribed activities successfully. The remaining 20% have completed part of the activities. In this mixed method study, the investigator sought feedback from 181 participants of the third batch of participants and also closely observed how they use Google Classroom as a platform for remote learning. The discussions in this paper are based on the structured feedback and the field notes made by the investigator during the training. The major conclusion drawn is that an online training programme using a robust instructional design, complemented with adequate mentoring and motivational devices can be successfully used to train teachers in the development of digital skills needed to teach in online mode.

Key Words: Google Classroom as an LMS, digital skills for teachers, online teaching

Introduction

Technology has influenced education in a great way. The introduction of Web 2.0 allowed teachers and students to create, collaborate, edit and share content that is user generated. Web-based learning environment offers an opportunity to provide interactive tasks to students. Quiz creation, submission of online assignments, facility to learn 24 x7, inclusion of e-authoring tools, multi media supported learning and the inclusion of multiple mentors became commonly used features of the virtual learning environment. Constructivism, connectivism, and collaboration have formed the philosophical and sociological bases of learning in virtual environments.

In-service teachers need to keep themselves abreast with changes in education, especially changes in educational technology. Tight schedules may be a hurdle to attend a face to face training sessions. Hence teachers teaching across all levels often resort to online faculty development programmes. Web 2.0 helps them to collaborate and learn from peers. E forums provide a platform for discussion and query solving. All this is done without the restrictions of time and space and hence Virtual Learning Environments are a very powerful avenue for faculty development.

Need for the study

The Covid-19 pandemic ushered a sudden need for teachers to get equipped with digital teaching skills. While most teachers have been using Blended Learning to a fair extent, the thought of going cent percent digital was a bit unnerving for many teachers. Several questions such as 'What is a viable and effective platform to deliver lectures? How can we evaluate students? How do we make online sessions interactive? What if students and teachers cannot be online at the same time due to power shortage or internet unavailability' emerged. Virtual Learning Environments provide an answer to these questions. The investigator had used Google Classroom extensively for Blended Learning. With the experience

garnered through this, she decided to launch an online programme for training teachers in digital skills.

Review of Related Literature

Keith Heggart and Joanne Yoo1 in their study 'Getting the most from Google Classrooms: A Pedagogical Framework for Tertiary Educators' found that Google Classroom increased student participation and improved classroom dynamics.. The investigators constructed a framework to evaluate the use of online platforms by including four concepts viz pace, ease of access, collaboration and student voice/agency. With reference to Personal Learning Environments (PLEs), Dron (2007) suggests that the effective use of such tools allows students to engage in their own meaning making. Rubin (2010) argues that PLEs can be tools for educational self-empowerment because they encourage self-direction of learning. Izwaan Shahranee and Jastini Jamil have opined that comparative performance is good in the areas of ease of access, perceived usefulness, communication and interaction, instruction delivery and students' satisfaction towards the Google Classroom's learning activities. Other studies done on various Virtual Learning Environments and on Google Classroom in particular also point out to the efficacy of these platforms for promoting learning.

Title of the Study

The title of the study is 'Development and Deployment of an Online Course for Training In-Service Teachers in Digital Skills'.

Operational definitions

Online course here refers to a ten-day course conducted via Google Classroom in asynchronous mode.

Digital Skills in this research refers to skills in creating online tests, online worksheets, online infographics, online story books, online classroom, interactive e-content, blogging, converting PowerPoint Presentations to videos, launching a YouTube channel.

Objectives of the Study

1. To evaluate the efficacy of Google Classroom as a platform for online training of inservice teachers

2. To find the opinion of teachers regarding the perceived use of online tools for teaching

Variables involved

The independent variable involved in the study was the online course to train in-service teachers in digital skills. The dependent variables are the opinion of teachers regarding perceived use of online tools and the work of participants which is an indication of the efficacy of Google Classroom as a platform for online training. The investigator is mindful that extraneous variables such as age, experience in teaching, experience in the use of the technology, interest of participants in digital learning, the creativity of participants, time available to explore the platform, motivation levels of the participants etc., are likely to impact the findings. However, these variables have not been taken into account as controlling these variables will entail much ground work and in this case, training the teachers in digital skills was of prime importance. Besides in any training programme, one can expect heterogeneous participants with a wide range of need, interest and motivation and trainers have to identify a pedagogical/ andragogical approach that caters to all kinds of participants.

Methodology of the Study

The study comprises of mixed method research designs. The quantitative dimension of the study was a descriptive survey where data was gathered through a rating scale to find the opinion of teachers regarding use of online tools for teaching. The study also used qualitative data, which was in the form of field notes maintained by the investigator based on daily interactions, analysis of work output and queries raised by participants. Thus, the qualitative research design used was a grounded theory approach as the investigator studied the processes and interactions in order to develop some middle range theory about the experience of the participants. It was essential to employ a mixed method research design to have a richer and more informed understanding of how online training can be organized for better effect.

The study was designed and deployed using the ADDIE Model as shown in the table below:

Steps	Details
Analysis	• **Learner Analysis**: School and Junior College teachers with varied experience from SSC/ HSC, CBSE Boards. • **Need Analysis:** digital learning needed in crisis as well as normal situations • **Content Analysis:** interactive digital tools* for learner centric learning with focus on teaching-learning and evaluation • **Media Analysis:** suitable platforms to launch online training with focus on easy navigation, resolution of queries, showcasing participant work, continual evaluation, mentoring
Design	• Use of Google Classroom (asynchronous interaction) and Zoom webinars (synchronous interaction) . • Learning outcomes, learning resources and learning output were duly formulated in synch with analysis phase • Selection of digital skills and appropriate free online tools • Time frame: seven to ten days. • Three level mentoring: by course developer, other mentors, peers
Develop	• Google Classroom was prepared with emphasis on sections for orientation, input of digital skills, showcasing participants' work and answering of queries. Provision made on platform for final output, feedback and certification • Mentors added and oriented to assist the investigator • Training tools used were evaluated by selected teachers for ease of use and navigation

Steps	Details
Implement	• Code of Google Classroom distributed via Teachers' WhatsApp group • Online orientation of participants via video • Webinars organised to provide inputs and add-ons • Self paced Coursework done by participants' as per their convenience • Mentoring by experts and peer mentoring within participants • Detailed feedback provided to work showcased
Evaluate	• Qualitative Evaluation of tasks by investigator and mentors • Quantitative and qualitative evaluation of course done by participants via Google Forms

*The interactive digital tools identified were as follows:

1. Online Tests using Google Forms/ Quiz
2. Digital Posters created with Canvas
3. Converting ppts to videos using screen capture tools like Screencastomatic/ Camstudio
4. Creating online story books using Storyboard
5. Creating infographics with Canvas
6. Use of drag and drop tools and flash cards using H5P tools
7. Creating interactive videos using H5P tools
8. Launching a Google Class
9. Creating blogs and YouTube channel
10. Exploring useful websites according to one's subjects

Participants pursued the course at their own pace. About seven to ten days were required to complete all activities and assimilate the skills. The generic form of skill development is denoted below:

1. Orientation to skill using videos and text based guiding documents	2. Participant practices the skill and generates own output	3. Showcasing of output on the Google Class Learning from peers' output	4. Mentoring by peers and mentors	5.Query resolution through designated section in Google Class

Sample of the study

243 in-service teachers from CBSE and SSC board affiliated schools registered for the course. 181 completed the course successfully by completing all mandatory activities in ten days. (Data of 62 participants is not included in this study. From these, some have submitted the assignments after ten days due to professional reasons like moderation work of SSC papers. Some participants did the activities partially and requested to be permitted some more days to complete. Their responses are not included in this study.)

Level	Primary school teachers	Secondary school teachers	Higher Secondary school teachers	Total
No of teachers	75	92	14	181

Table No.1. Distribution of sample

Data Collection and Analysis

Data regarding the perceived use of digital tools for learning and response of participants towards use of Google Classroom was gathered through a rating scale which sought information on confidence generated in participants regarding online teaching, general opinion regarding the course, usability of various tools in teaching –learning process and opinion of the participants regarding various digital tools learned in the course. Analysis of quantitative data is done using percentages. The investigator maintained field notes of observation of work showcased by participants and their queries raised by them. Thus the Google classroom itself became a source of data as the nature of participants' contributions (in form of tasks), involvement (evaluated through consistency of work) and feedback (in form of comments expressing satisfaction, difficulties faced) gave a lot of insights to the investigator.

Findings of the study

1. General opinion regarding the course: Most of the participants either strongly agreed or agreed that the learning objectives of the course were clear; the course was well planned and organized. They also found it interesting and were of the opinion that the content load was appropriate enough to be completed without stress.

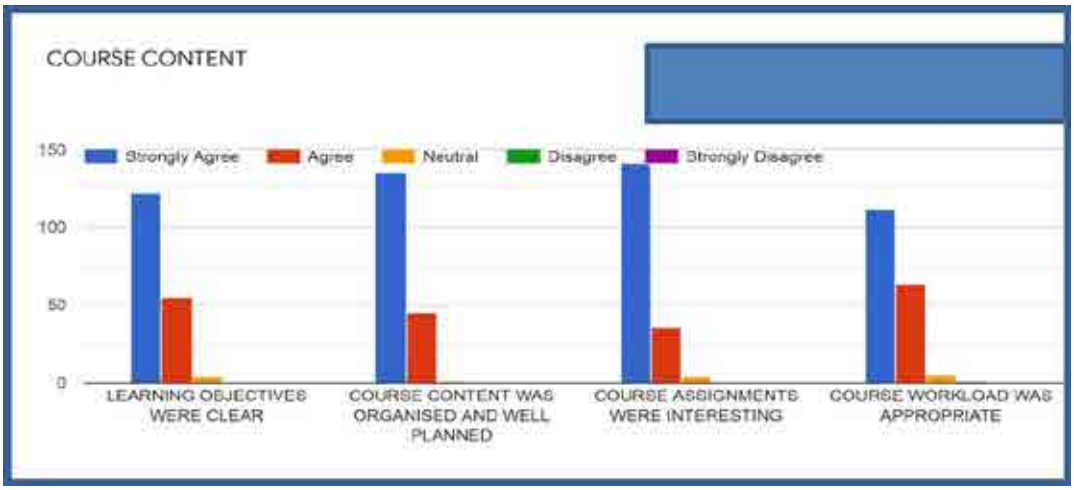

Table No 2. Graphical summary of participants' opinion regarding course content

2. Confidence generated by the course: 95% participants said that the course had given them high or fairly high confidence to launch into online teaching. Most participants had started practice by creating their own Google Classroom and had started adding interactive material and formative evaluation activities into the same.

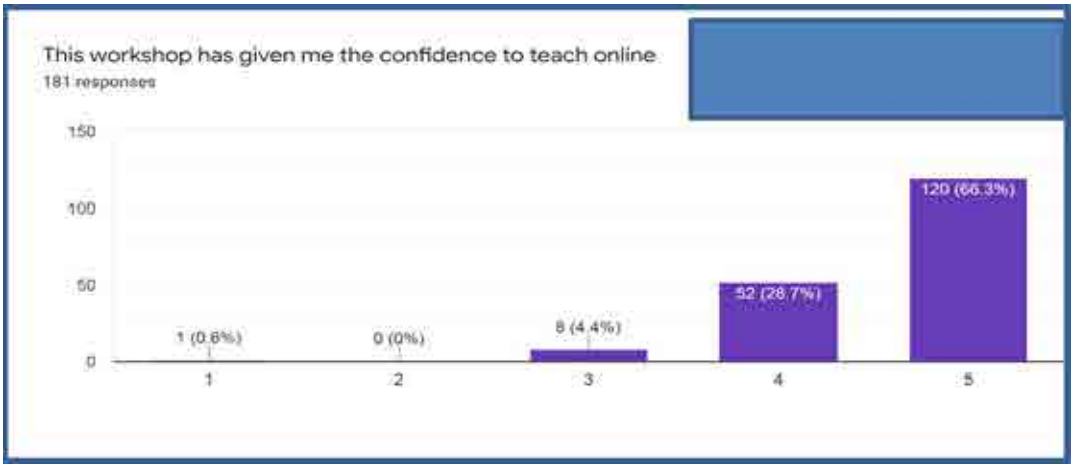

Table No 3. Graphical summary of participants opinion regarding confidence generated with respect to online teaching

3. Participants' response to the usability of digital skills and tools: Participants learned various digital tools that can be used to teach and learn. The graph below shows their opinion regarding the use of these tools. Interactive videos, online story books, online quizzes were the tools that they found most useful. The participants have opined that other tools will also be useful in online teaching.

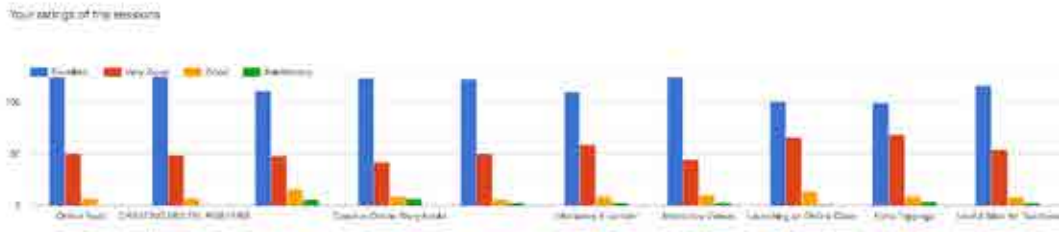

Table No 4. Graphical summary of Participants' response to usability of digital skills and tools

4. Rating of the course: The participants were asked to rate the course on a scale of 1 to 5. 75.1 % participants have given the highest rating of 5, followed by 23.2% giving a rating of 4 and 1.7% giving a rating of 3.

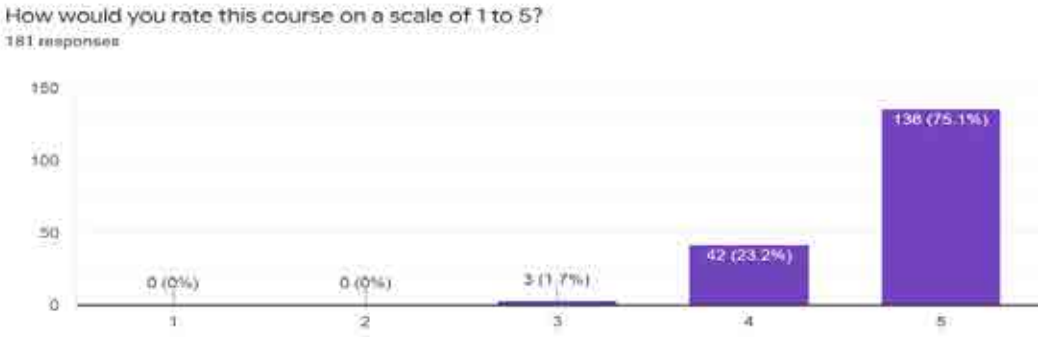

Table 5 Graphical summary of Participants' rating of the course

Discussion of analysis of work observed by the investigator

The investigator carefully analyzed the following:

i. Work submitted on Google Classroom: Participants showcased their work in designated areas on the Google Classroom. The work was not submitted as assignments but rather as posts. Submitting individual work in the form of posts helped other participants to view one another's view. If this work was

submitted as an assignment, then only the teacher/investigator gets to see the work and this does not help peer learning. Good quality work was posted. Some participants went one step ahead of the expected tasks. For example, when told to create an online story book, some even added audio to the book. Such actions are very helpful as learners with reading difficulty can benefit. Also, it helps the user of the story book to hear the right pronunciation and intonation. At times the investigator had oriented one particular digital tool for a task. But if the participants found tools that were more user friendly, then they would share that information on the Google Class. This was very beneficial in exploring different avenues.

ii. Involvement of participants in terms of regularity of use of Google Classroom : Conducting a skill training course asynchronously and entirely through online mode has some restrictions as the trainer does not meet participants face to face neither do they meet online synchronously at a fixed time. (The investigator had chosen asynchronous mode expecting that different individuals would need to work at different times of the day due to different domestic schedules and variable free time got by participants.) It was heartening to note that participants were very regular in their work. In the orientation video, the participants were advised to work and practice one digital skill daily and showcase their product. Daily there would be around 150-170 tasks submitted. If unable to do a task on a particular day they posted two tasks the next day. This shows their interest and commitment to completing the course. Some practised more than one skill per day. Past experience of participants, their interest in technology, free time on hand varied and hence such variation in regularity of work submission was expected 75% of participants completed all tasks in ten days, thus working on average one task a day. Initially navigating the Google Classroom, getting adjusted to only online inputs, understanding how to post work was difficult. But in two days participants became familiar with the architecture of the Google Class and work got more efficient and organized. Though certain tasks like launching one's YouTube channel and creating a blog were kept optional many participants went ahead and successfully completed these tasks. The reason was they were very motivated and success in earlier tasks built their confidence. They also realized that blogs and YouTube have high potential for teachers to display their content.

iii. Queries and comments posted regarding the work done: The queries were generally related to the technicalities of the digital tools. Different platforms/tools such as Canvas, Google Apps, screen capture tools, Storyboard, YouTube were used. Each platform/tool had a different operational style. Mostly participants would try to resolve their own query (constructivism approach) or by co ordinating with peers (connectivism approach). If still unresolved the query would be posted on the Google Classroom where the teacher-mentor or some peer would resolve (Use of More Knowledgeable Other and learning through social constructivism) . The comments posted revealed high level of satisfaction. Thus intrinsic motivation was evident. Some comments are shared below

- *It was an enriching experience. Even though I am not tech-savvy, I was able to understand and do the assignments.*
- *Teaching by these techniques can surely develop interest among students. I can't wait to teach my own students by using these techniques.*
- *I love the way it is designed and delivered. I learned a lot. The most important part is that I enjoy every bit of the session.*
- *It was really a wonderful experience. I teach Marathi and Hindi. I thought it would be so difficult for me but as completed the task, it was more fun learning online. I learnt to prepare presentation in Marathi.*

The analysis of data has been encapsulated in the form of implications which help to develop insights to the functional aspect of online training thus justifying the qualitative nature of the study.

Implications of the Study

- **Implications with respect to Google Classroom as a platform for training**

1. An LMS like Google Classroom is a viable option for training as it is accessible, easy to navigate and promotes robust organization of work.

2. Online skills development courses must capitalize on the fact that peer learning is very effective and hence showcasing one's work must be an integral part of such training.

3. Mentoring is very essential in a remotely run course. Ensure a healthy mentor to participant ratio for enhancing the efficacy of an online course.

- **Implications with respect to skill-based online training programmes**

1. Skills must be in synch with immediate needs of participants as this increases chances of completion of course. Hence need analysis stage of Instructional Design is a must.

2. Participants will vary with respect to their pre-programme skills. If this data is sought and duly analysed before the programme it will help to design inputs in synch with the most felt needs.

3. Face to face training may be the best approach for skill training as participants can be monitored closely. Mistakes can be reduced. However, when the situation demands it, online programmes conducted systematically can also be equally effective. Visualise the expected difficulties and have troubleshooting mechanisms in the form of FAQs or guiding videos. In an online training entailing skill development, the learner explores on his/her own and thus, this experience may be more enriching than a face to face training session.

The road ahead

The investigator has conducted three courses so far. Two participants of the first course turned to mentors for the next course and they are now conducting the course on their own with guidance from the investigator. It is very satisfying to note that these mentors have since developed the programme still further by including more skills according to the needs of specific groups. The investigator hopes to have a repository of learning sources (created by teachers in such sessions)

which will be available for all as OERs. The study reveals that faculty development programmes can be conducted through virtual mode where Personalised Learning Environments help participants to learn through constructivist and connectivist approach.

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