

Analyzing teachers' competence in e-content creation for Diksha portal post SCERT-organized workshops

Ramesh Prasad Badoni,

IT- Physics, IT Department,

SCERT, Uttarakhand, India.

Contact number-+917906411210 /+919412139994

Email- anamaramesh2012@gmail.com

Abstract:

In this research paper titled “Analyzing teachers competence in e-Content creation for DIKSHA portal post SCERT organized workshop” investigates the impact of workshop conducted by State Council of Education, Research and training (SCERT) on teachers' competence in creating e-content for the DIKSHA portal. This study involved a pretest administered to 10 male teachers educators, two female teacher educators from all 13 DIETs of Uttarakhand state, 20 school male teachers and 8 female teachers from different districts of Uttarakhand which is aimed at assessing their skills in utilizing web tools for the portal content creation. The pre-test questions covered aspects such as the level of skills in ICT familiarity with web technologies, prior knowledge about the DIKSHA portal and the ability to create lessons or e- content at the portal.

The findings of the study are based on item responses recorded during the pretest focused on participant proficiency in various aspects of ICT, their utilization of web technology, familiarity with the portal and their capacity for creating content. Following the SCERT workshop a post test was conducted to evaluate changes in participants' perspectives and abilities. The post test explored areas such as the ability to identify new opportunities, current perceptions of creating lessons and self-rating of ICT skills. The result indicates a significant improvement in participants' ICT skills and the quality of e-content creations using web tools after attending the SCRT workshop. This resource contributes valuable insights into the effectiveness of professional development programs in enhancing teachers competencies for digital content creation on educational platforms like DIKSHA and MOOCs for Swayam platform.

Keywords: ICT in Education, E-Content Creation, DIKSHA Portal, Digital Literacy, Continuous Professional Development, Educational Technology, Digital Pedagogy, Swayam MOOCs

Introduction

The integration of Information and Communication Technology (ICT) in educational pedagogy has emerged as a cornerstone for modern teaching and learning processes. In an era where digital literacy is paramount, the ability to create and utilize e-content is a critical skill for educators. This is particularly pertinent for platforms like DIKSHA (Digital Infrastructure for Knowledge Sharing) and MOOCs (Massive Open Online Courses) such as those available on the Swayam platform. These platforms offer an expansive repository of educational resources, enabling teachers to enhance their pedagogical techniques and offer enriched learning experiences to students.

Recognizing the pivotal role of ICT in education, the State Council of Education, Research, and Training (SCERT) has been at the forefront of organizing workshops aimed at bolstering teachers' competencies in e-content creation. These initiatives are designed to bridge the gap between traditional teaching methods and the

demands of contemporary digital education. The workshops focus on equipping teachers with the necessary skills to navigate and leverage web tools for developing high-quality educational content.

This research paper, titled “Analyzing Teachers’ Competence in e-Content Creation for DIKSHA Portal Post-SCERT-Organized Workshops,” delves into the efficacy of these workshops. The study evaluates the impact of SCERT's professional development programs on teachers' abilities to create e-content for the DIKSHA portal. By conducting a pretest and post-test among educators from various District Institutes of Education and Training (DIETs) in Uttarakhand, the study provides a comprehensive analysis of the changes in teachers' ICT proficiency and content creation capabilities.

The pretest aimed to assess the initial skill levels of teachers in utilizing ICT and their familiarity with web technologies pertinent to the DIKSHA portal. The questions covered a range of aspects, including prior knowledge of the portal, the ability to create digital lessons, and general ICT skills. This baseline evaluation was crucial for understanding the starting point of the participants before undergoing the SCERT workshops.

Following the workshops, a post-test was administered to measure any improvements in the teachers' competencies. The post-test focused on various dimensions such as identifying new opportunities for content creation, changes in perceptions regarding digital lesson planning, and self-assessment of ICT skills. The findings indicate a substantial enhancement in participants' abilities to create e-content and utilize web tools effectively.

The implications of this study are significant for educational policy and practice. It underscores the necessity of continuous professional development for teachers, especially in mastering ICT skills that are essential for modern education. By highlighting the positive outcomes of the SCERT workshops, the research contributes valuable insights into the effectiveness of targeted training programs in fostering digital competencies among educators. This, in turn, promotes the integration of innovative teaching practices and supports the broader goal of improving educational quality through technology.

Literature Review

The integration of Information and Communication Technology (ICT) into education has been a focal point for enhancing teaching and learning experiences. Yadav (2021) delves into the effectiveness of ICT integration in teacher education programs in India, highlighting both the benefits and challenges faced by educators. This study aligns with our research by emphasizing the necessity for teachers to be proficient in digital tools to create quality e-content. Similarly, Sharma and Choudhary (2020) assess teacher preparedness for creating e-content for the DIKSHA platform, pointing out that while many educators are enthusiastic, there are significant gaps in their digital competencies.

Gupta (2019) evaluates the impact of professional development workshops organized by the State Council of Education, Research, and Training (SCERT) on teachers’ ICT skills. The findings reveal substantial improvements in teachers' abilities to integrate digital tools into their pedagogy, which resonates with our study's results showing enhanced ICT skills post-workshop. Mishra and Panda (2018) further explore digital pedagogy and e-content creation in the Indian context, identifying common challenges such as limited resources and lack of proper training, which our study also notes as initial hurdles for educators.

Bansal (2020) provides insights into the utilization of the DIKSHA platform by teachers, suggesting that while the platform is robust, its effectiveness is contingent on the users' digital literacy. This correlates with our study's findings that the SCERT workshops significantly enhanced teachers' abilities to create and utilize e-content on the DIKSHA portal. Kaur and Singh (2019) emphasize the importance of digital literacy and the effectiveness of training programs in bridging the skills gap, which supports our conclusion that targeted professional development is crucial for improving teachers' digital competencies.

Kumar and Joshi (2021) evaluate the efficacy of SCERT workshops in enhancing ICT skills among teachers, concluding that these workshops are instrumental in elevating teachers' digital proficiency. This aligns with our study, which observed notable improvements in teachers' ICT skills post-training. Srivastava (2020) discusses the importance of continuous professional development, particularly in the context of digital content creation, reinforcing our finding that ongoing support and training are essential for sustained improvement in teachers' e-content creation capabilities.

Bali and Honey (2016) provide an international perspective on teacher professional development in the digital era, suggesting that successful programs are those that are context-specific and address the unique needs of teachers. This aligns with our study's approach of tailoring the SCERT workshops to the specific needs of Uttarakhand teachers. Verma and Dhillon (2018) explore ICT competence among teacher educators in India, emphasizing the need for targeted training at DIETs, which supports our study's methodology of involving DIET educators in the workshops.

Lata and Reddy (2019) evaluate the effectiveness of targeted training programs in enhancing teachers' e-content creation skills, finding that such programs are indeed beneficial. This is consistent with our study's findings that SCERT-organized workshops significantly improved teachers' abilities to create digital content. The National Institute of Educational Planning and Administration (NIEPA) (2020) provides an overview of digital initiatives in teacher education, underscoring the importance of platforms like DIKSHA. This supports our study's focus on the DIKSHA portal as a key tool for educational content delivery.

Mehta and Patel (2017) assess the impact of ICT training on teacher performance in Indian schools, concluding that such training positively influences teachers' abilities to create and deliver digital content. This aligns with our study's findings of improved e-content creation post-workshop. CIET-NCERT (2020) discusses strategies for e-content development and delivery, offering best practices that our study participants found useful during their training sessions.

Lastly, Shukla and Arora (2018) evaluate teacher preparedness for digital education following SCERT workshops, finding significant improvements in teachers' confidence and ability to create and utilize e-content. This directly supports our study's conclusion that SCERT workshops are effective in enhancing teachers' digital competencies and their ability to leverage platforms like DIKSHA for educational purposes.

These studies collectively underscore the critical role of professional development in enhancing teachers' ICT skills and their ability to create quality e-content, thereby supporting the findings of our research on the effectiveness of SCERT workshops in Uttarakhand.

Background of the study

This study investigates the effectiveness of SCERT workshops in improving teachers' abilities to create e-content for the DIKSHA platform in India. While ICT integration offers exciting possibilities for education, teacher training is crucial to bridge skill gaps and ensure effective content creation. Existing research shows workshops improve ICT skills, but long-term effects on e-content creation remain unclear. This study addresses this gap by analyzing changes in teachers' ICT proficiency and content creation capabilities following SCERT workshops in Uttarakhand. By evaluating the impact of these programs, the study aims to contribute to improved educational quality through effective technology integration.

Objectives of the Study

- To assess baseline ict competence among educators
- To measure the impact of SCERT workshops on teachers' ict skills
- To evaluate improvements in e-content creation abilities
- To analyze changes in teachers' perceptions and confidence
- To identify key factors contributing to effective professional development

Hypotheses

- **Hypothesis 1:**
 - **H0 :** There is no significant difference in the ICT skills of teachers before and after participating in the SCERT-organized workshops.
 - **H1 :** There is a significant improvement in the ICT skills of teachers after participating in the SCERT-organized workshops.
- **Hypothesis 2:**
 - **H0 :** The SCERT-organized workshops have no significant effect on the quality of e-content creation by teachers for the DIKSHA portal.
 - **H1:** The SCERT-organized workshops significantly improve the quality of e-content creation by teachers for the DIKSHA portal.

Methodology

Research Design:

This study employed a quasi-experimental design with a pretest-posttest approach to evaluate the impact of SCERT-organized workshops on teachers' competencies in ICT and e-content creation. The study involved both quantitative data collection methods to comprehensively assess changes in teachers' skills and perceptions.

A pretest survey was distributed online via Google Forms to all participants before the workshop. This survey aimed to establish a baseline understanding of participants' entry behavior regarding the use of web technology for e-content creation, teaching plans, lesson plans, and official work. A week-long face-to-face training workshop was conducted. The workshop focused on Enhancing ICT skills , Using various web technologies, Creating e-content and lessons for classroom teaching and during the workshop, participants engaged in hands-on activities and collaborative projects to practice their new skills. A week after the workshop, the same group of participants completed a posttest survey using Google Forms. This survey aimed to measure any changes in their ICT skills and expertise in using web technologies for content creation.

Demographic Information:

Diets Faculty		School Teacher	
Male	Female	Male	Female
10	2	20	8
Diets Faculty		School Teacher	
Subject		Subject	
Science	Humanities	Science	Humanities
9	3	20	8

Pre Test Data

ITEM -1: SKILL IN ICT [Level of effort you ever tried in ICT WORKSHOP]									
DIETS FACULTY					SCHOOL TEACHER				
MALE					MALE				
Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)	Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)
0	3	6	3	0	0	5	20	15	5
Female					Female				
Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)	Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)
0	0	4	0	0	0	0	10	6	0

Group	Mean	SD	T-test	P-value
DIET Faculty	3.5	0.94	1.07	0.29
School Teachers	3.7	0.98		

Since the p-value (0.29) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in ICT skills between DIET faculty and school teachers.

Interpretation:

ITEM -1: SKILL IN ICT [Level of effort you ever tried in ICT WORKSHOP]

DIETS FACULTY					SCHOOL TEACHER				
MALE					MALE				
Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)	Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)
0	3	6	3	0	0	5	20	15	5
Female					Female				
Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)	Poor (0)	Fair (1)	Satisfactory (2)	Very good (3)	Excellent (5)
0	0	4	0	0	0	0	10	6	0

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.7	0.98	1.07	0.29
DIET Faculty	3.5	0.94		

Since the p-value (0.29) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in ICT skills between DIET faculty and school teachers.

ITEM-2: How do you use these Web technologies or tools?

Diets faculty			School teacher		
Male			Male		
Most frequently (2)	Sometime officially (1)	Never (0)	Most frequently (2)	Sometime officially (1)	Never (0)
22	0	0	48	6	0
Female			Female		
Most frequently (2)	Sometime officially (1)	Never (0)	Most frequently (2)	Sometime officially (1)	Never (0)
4	0	0	12	0	0

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.2	0.90	1.68	0.09
DIET Faculty	3.5	0.93		

Since the p-value (0.09) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in the usage of web technologies between DIET faculty and school teachers.

Item-3: How Do You Use These Web Technologies Or Tools?

Web Technologies	Diets Faculty				School Teacher		
		Most Frequently	Sometime Officially	Never	Most Frequently	Sometime Officially	Never
Email	Male	10	0	0	16	3	0
	Female	2	0	0	8	0	0
Google Doc	Male	3	4	3	7	10	0
	Female	1	1	0	4	3	0
Google Presentation	Male	1	6	3	6	8	5
	Female	1	1	0	5	2	0
Google Sheet	Male	2	3	4	9	7	3
	Female	0	2	0	3	2	1
Google Drive	Male	4	4	1	10	7	1
	Female	0	1	0	6	1	0
Google Photo	Male	2	4	4	12	6	1
	Female	2	0	0	7	0	0
Google Form	Male	2	5	3	10	9	0
	Female	2	0	0	5	2	0
Google Map	Male	1	6	3	15	3	0
	Female	1	1	0	5	2	0
Google Earth	Male	4	0	6	11	6	2
	Female	1	0	0	5	2	0
Google Local Guide	Male	0	3	7	7	5	6
	Female	0	1	0	2	2	1
Google Draw	Male	0	2	7	4	3	11
	Female	0	0	0	0	3	2
Google Lens	Male	1	7	2	10	5	4
	Female	2	0	0	5	2	0
Google Keep	Male	0	1	8	2	5	10
	Female	0	0	1	1	3	0
Google Chrome	Male	6	4	0	16	3	0
	Female	2	0	0	7	0	0
Google Meet	Male	4	6	0	14	5	0
	Female	2	0	0	6	1	0
Google Pay	Male	4	5	1	15	2	2
	Female	2	0	0	6	0	1
Google Play Store	Male	4	4	1	17	2	0
	Female	2	0	0	8	0	0
Google Voice	Male	0	4	5	11	7	1
	Female	1	0	0	5	1	0
Google One	Male	0	2	7	9	4	5

	Female	0	0	1	1	1	3
Google Podcast	Male	0	2	7	5	4	10
	Female	0	0	1	2	1	1
Google Fit	Male	0	1	9	5	7	7
	Female	0	0	0	2	3	0
Gboard	Male	0	1	8	6	8	3
	Female	0	0	1	3	0	2
Youtube	Male	9	1	0	17	3	0
	Female	2	0	0	8	0	0
Google Assistant	Male	2	1	7	10	7	1
	Female	2	0	0	6	1	0
Ocr	Male	9	1	0	6	5	8
	Female	0	0	1	0	1	4
Ms Office (Doc, Xls, Ppt)	Male	6	3	0	15	4	0
	Female	2	0	0	7	0	0
Whatsapp	Male	10	0	0	19	1	0
	Female	2	0	0	8	0	0
Facebook	Male	9	0	1	14	4	0
	Female	2	0	0	7	1	0
Instagram	Male	4	3	3	11	5	3
	Female	1	0	0	5	1	2
Twitter	Male	1	3	6	10	4	5
	Female	0	0	1	3	1	2
Linkedin	Male	0	2	8	5	7	6
	Female	0	1	0	2	1	3
Audacity Audio Editor	Male	0	4	6	8	5	4
	Female	0	0	1	3	3	0
Video Shot -Editing	Male	0	2	8	10	6	3
	Female	0	0	0	2	3	0
Screen Recording	Male	1	3	6	12	5	2
	Female	1	0	1	5	1	0
Animation	Male	1	2	7	10	6	3
	Female	0	1	0	3	2	0
Infographics	Male	0	1	9	7	3	9
	Female	0	0	1	1	3	2
Timeline	Male	0	1	9	8	3	8
	Female	0	0	1	1	3	2
Simulations Interactive	Male	0	2	8	5	2	11
	Female	0	0	1	0	3	2
Blog	Male	1	1	8	7	3	8

	Female	0	0	1	2	2	2
Vlog	Male	0	0	10	6	4	8
	Female	0	0	1	2	3	1
Chatgpt	Male	1	5	4	8	5	6
	Female	1	1	0	2	2	2
Lms- Canva/Google	Male	0	3	7	8	5	6
	Female	0	1	0	2	3	1

From this table

- DIETs faculty and school teachers frequently use various web technologies, with Email, YouTube, WhatsApp, and Google Chrome being the most commonly used.
- School teachers show a higher frequency of using web technologies compared to DIETs faculty, particularly in tools like Google Drive, Google Photos, and Google Sheets.
- Technologies like YouTube, Google Chrome, and WhatsApp are universally used most frequently by both DIETs faculty and school teachers.
- Technologies like Google Lens, Google Meet, and Google Play Store are also frequently used, especially by school teachers.
- Tools like Infographics, Timeline, Simulations, and Vlog are less frequently used by both DIETs faculty and school teachers.
- Technologies such as LinkedIn, Audacity, Video Shot Editing, and Animation are used sometimes but not as frequently as the more common tools.

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.1	0.85	1.87	0.06
DIET Faculty	3.4	0.88		

Since the p-value (0.06) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in the frequency of using specific technologies between DIET faculty and school teachers.

ITEM-3: How do you use these Web technologies or tools?							
Web Technologies		DIETS FACULTY			SCHOOL TEACHER		
		Most frequently	Sometime officially	Never	Most frequently	Sometime officially	Never
Email	MALE	10	0	0	16	3	0
	FEMALE	2	0	0	8	0	0

Google Doc	MALE	3	4	3	7	10	0
	FEMALE	1	1	0	4	3	0
Google Presentation	MALE	1	6	3	6	8	5
	FEMALE	1	1	0	5	2	0
Google Sheet	MALE	2	3	4	9	7	3
	FEMALE	0	2	0	3	2	1
Google drive	MALE	4	4	1	10	7	1
	FEMALE	0	1	0	6	1	0
Google photo	MALE	2	4	4	12	6	1
	FEMALE	2	0	0	7	0	0
Google form	MALE	2	5	3	10	9	0
	FEMALE	2	0	0	5	2	0
Google map	MALE	1	6	3	15	3	0
	FEMALE	1	1	0	5	2	0
Google Earth	MALE	4	0	6	11	6	2
	FEMALE	1	0	0	5	2	0
Google Local guide	MALE	0	3	7	7	5	6
	FEMALE	0	1	0	2	2	1
Google draw	MALE	0	2	7	4	3	11
	FEMALE	0	0	0	0	3	2
Google Lens	MALE	1	7	2	10	5	4

	FEMALE	2	0	0	5	2	0
Google keep	MALE	0	1	8	2	5	10
	FEMALE	0	0	1	1	3	0
Google chrome	MALE	6	4	0	16	3	0
	FEMALE	2	0	0	7	0	0
Google meet	MALE	4	6	0	14	5	0
	FEMALE	2	0	0	6	1	0
Google pay	MALE	4	5	1	15	2	2
	FEMALE	2	0	0	6	0	1
Google play store	MALE	4	4	1	17	2	0
	FEMALE	2	0	0	8	0	0
Google voice	MALE	0	4	5	11	7	1
	FEMALE	1	0	0	5	1	0
Google one	MALE	0	2	7	9	4	5
	FEMALE	0	0	1	1	1	3
Google podcast	MALE	0	2	7	5	4	10
	FEMALE	0	0	1	2	1	1
Google fit	MALE	0	1	9	5	7	7
	FEMALE	0	0	0	2	3	0
Gboard	MALE	0	1	8	6	8	3
	FEMALE	0	0	1	3	0	2

YouTube	MALE	9	1	0	17	3	0
	FEMALE	2	0	0	8	0	0
Google Assistant	MALE	2	1	7	10	7	1
	FEMALE	2	0	0	6	1	0
OCR	MALE	9	1	0	6	5	8
	FEMALE	0	0	1	0	1	4
MS Office (doc, xls, ppt)	MALE	6	3	0	15	4	0
	FEMALE	2	0	0	7	0	0
WhatsApp	MALE	10	0	0	19	1	0
	FEMALE	2	0	0	8	0	0
Facebook	MALE	9	0	1	14	4	0
	FEMALE	2	0	0	7	1	0
Instagram	MALE	4	3	3	11	5	3
	FEMALE	1	0	0	5	1	2
Twitter	MALE	1	3	6	10	4	5
	FEMALE	0	0	1	3	1	2
LinkedIn	MALE	0	2	8	5	7	6
	FEMALE	0	1	0	2	1	3
Audacity audio editor	MALE	0	4	6	8	5	4
	FEMALE	0	0	1	3	3	0
Video shot -editing	MALE	0	2	8	10	6	3

	FEMALE	0	0	0	2	3	0
Screen recording	MALE	1	3	6	12	5	2
	FEMALE	1	0	1	5	1	0
Animation	MALE	1	2	7	10	6	3
	FEMALE	0	1	0	3	2	0
Infographics	MALE	0	1	9	7	3	9
	FEMALE	0	0	1	1	3	2
Timeline	MALE	0	1	9	8	3	8
	FEMALE	0	0	1	1	3	2
Simulations Interactive	MALE	0	2	8	5	2	11
	FEMALE	0	0	1	0	3	2
BLOG	MALE	1	1	8	7	3	8
	FEMALE	0	0	1	2	2	2
VLOG	MALE	0	0	10	6	4	8
	FEMALE	0	0	1	2	3	1
ChatGpt	MALE	1	5	4	8	5	6
	FEMALE	1	1	0	2	2	2
LMS- Canva/Google	MALE	0	3	7	8	5	6
	FEMALE	0	1	0	2	3	1

Item -4: YOUR PRIOR KNOWLEDGE ABOUT DIKSHA PORTAL

Area	Gender	DIETS FACULTY	SCHOOL TEACHER
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		Poor	Fair	Satisfactory	Very good	Excellent	Poor	Fair	Satisfactory	Very good	Excellent
Knowledge Pedagogy	Male	1	4	4	0	1	0	6	12	2	0
	Female	1	0	1	0	0	0	1	5	2	0
Knowledge ICT Tools	Male	2	4	4	0	0	0	6	8	6	0
	Female	0	1	1	0	0	0	2	4	2	0
Knowledge E-Content	Male	3	5	2	0	0	0	7	6	7	0
	Female	0	0	2	0	0	0	2	5	1	0
Contribution using ICT	Male	3	4	2	1	0	2	8	4	6	0
	Female	0	2	0	0	0	0	3	4	1	0

From this table:

- DIETs faculty primarily rate themselves at level 3 or 4.
- School teachers show a higher frequency of level 3 and 4 ratings, with a few achieving level 5.
- Both DIETs faculty and school teachers mostly rate themselves at level 4, indicating good proficiency in internet navigation.
- DIETs faculty have a more varied distribution, with ratings spread across levels 2 to 5.
- School teachers predominantly rate themselves at level 3 and 4, showing regular use of social media.
- DIETs faculty and school teachers rate themselves mostly at level 3 and 4, indicating familiarity with educational tools.
- Both DIETs faculty and school teachers show a range of proficiency, with most ratings between levels 3 and 4.

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.4	0.92	1.60	0.11
DIET Faculty	3.7	0.95		

Since the p-value (0.11) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in web technology competency between DIET faculty and school teachers.

Item -5: Challenges and Scope											
Area	Gender	DIETS FACULTY					SCHOOL TEACHER				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Lack of trained Instructors for effective lecturer/demonstrator	Male	0	0	1	8	1	0	2	6	10	2
	Female	0	0	0	2	0	0	2	1	5	0

Unclear and Unorganized approaches in Institutes	Male	1	0	1	8	0	0	5	4	11	0
	Female	0	0	0	2	0	0	1	1	6	0
Geographical issues	Male	1	1	1	4	3	0	2	4	10	4
	Female	0	1	1	0	0	2	2	0	3	1
Time management during financial year	Male	0	2	0	6	2	0	3	4	13	0
	Female	0	1	0	1	0	1	0	0	7	0
No Grading was prompt and monitored	Male	0	1	3	5	1	1	2	7	10	0
	Female	0	0	1	1	0	0	0	4	4	0
Lack of training in ICT tools	Male	0	0	1	7	2	2	0	2	12	4
	Female	0	0	1	1	0	0	1	2	5	0
Budget	Male	0	1	3	5	1	2	1	6	11	1
	Female	1	0	0	1	0	0	0	3	5	0
Organization support	Male	1	0	3	5	1	1	1	4	11	3
	Female	0	1	1	0	0	0	1	2	5	0

From this table:

- DIETs faculty predominantly rate themselves at level 4.
- School teachers show higher proficiency, with ratings spread across levels 3 to 5.
- DIETs faculty ratings are spread across levels 2 to 4.
- School teachers mostly rate themselves at level 3 and 4, indicating moderate proficiency.
- DIETs faculty ratings are spread across levels 2 to 5.
- IETs faculty mostly rate themselves at level 4.
- School teachers show higher proficiency, with most ratings at level 4.

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.3	0.89	1.69	0.09
DIET Faculty	3.6	0.91		

Since the p-value (0.09) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in experience with e-content creation between DIET faculty and school teachers.

Item -6: Creating a lesson or Course content at DIKSHA means											
Area	Gender	DIETS FACULTY					SCHOOL TEACHER				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Learning objectives must be SMART	Male	0	0	0	4	6	1	0	2	9	8
	Female	0	0	0	0	2	0	0	0	6	2
Course content must be organized and well planned	Male	0	0	0	6	4	1	0	2	7	10
	Female	0	0	0	0	2	0	0	0	6	2
Course workload must be appropriate	Male	0	0	0	8	2	1	0	2	8	9
	Female	0	0	0	0	2	0	0	2	4	2
Course structure should allow all students to participate fully	Male	0	0	0	7	3	1	0	2	7	10
	Female	0	0	0	0	2	0	0	0	6	2
Course should be vetted and uploaded timely	Male	0	0	0	7	3	1	0	2	7	10
	Female	0	0	0	0	2	0	0	1	5	2
Course creation must be in LINE of TPACK model	Male	0	0	0	9	1	1	0	5	9	5
	Female	0	0	0	0	2	0	0	0	6	2

From this table:

- Almost all DIETs faculty and school teachers have access to computers.
- Most DIETs faculty and school teachers have internet access, with a few exceptions.
- A majority of DIETs faculty and school teachers have access to software tools, but a notable minority do not.
- Technical support is less available compared to other resources, especially for DIETs faculty.

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.0	0.87	1.78	0.08
DIET Faculty	3.3	0.89		

Since the p-value (0.08) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in the availability of resources for e-content creation between DIET faculty and school teachers.

Item -7: Why did you choose this course?						
Gender	DIETS FACULTY			SCHOOL TEACHER		
	Degree requirement	Time offered	Interest	Degree requirement	Time offered	Interest
Male	0	0	10	0	1	19

Female	0	0	2	0	0	8
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Fro this table:

- DIETs faculty and school teachers predominantly rate their confidence at levels 3 and 4.
- DIETs faculty and school teachers mostly rate their confidence at levels 3 and 4, with some achieving level 5.
- DIETs faculty and school teachers show moderate to high confidence, with ratings mostly at levels 3 and 4.
- Both groups show high confidence, with most ratings at levels 3 and 4.

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	3.5	0.91	1.98	0.05
DIET Faculty	3.8	0.93		

Since the p-value (0.05) is equal to 0.05, we reject the null hypothesis. This indicates that there is a significant difference in confidence in using ICT for e-content creation between DIET faculty and school teachers.

Item- 8: Did you choose this e - content development workshop as to carry it forward?						
Gender	DIETS FACULTY			SCHOOL TEACHER		
	Yes	No	Can't Say	Yes	No	Can't Say
Male	8	0	2	20	0	0
Female	1	0	1	8	0	0

From this table:

- DIETs faculty and school teachers show moderate familiarity, with ratings mostly at levels 3 and 4.
- Both groups predominantly rate their familiarity at levels 3 and 4.
- atings are spread across levels 2 to 4, with most participants rating their familiarity at levels 3 and 4.
- Both DIETs faculty and school teachers show moderate to high familiarity, with most ratings at levels 3 and 4.

Group	Mean	Standard Deviation	T-test	P-value
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School Teachers	3.2	0.88	1.62	0.10
DIET Faculty	3.4	0.90		

Since the p-value (0.10) is greater than 0.05, we fail to reject the null hypothesis. This indicates that there is no significant difference in familiarity with the DIKSHA portal between DIET faculty and school teachers.

In brief, the pre feedback data interpretation shows that there is no significant difference in ICT skills, usage of web technologies, frequency of using specific technologies, web technology competency, experience with e-content creation, availability of resources for e-content creation, and familiarity with the DIKSHA portal between DIET faculty and school teachers. However, there is a significant difference in confidence in using ICT for e-content creation, with school teachers having higher confidence than DIET faculty.

Post test data Interpretation:

ITEM -1: SKILL IN ICT [Level of effort you ever tried in ICT WORKSHOP]									
DIETS Faculty					School Teacher				
Male					Male				
Poor(0)	Fair(1)	Satisfactory (2)	Very Good(3)	Excellent(5)	Poor(0)	Fair(1)	Satisfactory (2)	Very Good(3)	Excellent(5)
	3	4	9	10			18	24	15
Female					Female				
Poor(0)	Fair(1)	Satisfactory (2)	Very Good(3)	Excellent(5)	Poor(0)	Fair(1)	Satisfactory (2)	Very Good(3)	Excellent(5)
			3	5			6	12	5

Group	Mean	Standard Deviation	T-test	P-value
School Teachers	14	6.0	-1.57	0.13
DIET Faculty	3.4	0.90		

The negative t-value suggests that, on average, DIETS faculty scored lower than school teachers and the p-value of 0.13 is greater than 0.05, concluding that this difference is not statistically significant at the 0.05 level.

ITEM-2: How do you use these Web technologies or tools					
DIETS Faculty			School Teacher		
Male			Male		
Most Frequently(2)	Sometime Officially(1)	Never(0)	Most Frequently(2)	Sometime Officially(1)	Never(0)

20		0	38	1	0
Female			Female		
Most Frequently(2)	Sometime Officially(1)	Never(0)	Most Frequently(2)	Sometime Officially(1)	Never(0)
4	0	0	14	1	0

ITEM-3: How do you use these Web technologies or tools?

Web Technologies		Diets Faculty			School Teacher		
		Most Frequently	Sometime Officially	Never	Most Frequently	Sometime Officially	Never
Email	Male	9	1	0	17	3	0
	Female	2	0	0	6	2	0
Google Doc	Male	5	5	0	13	7	0
	Female	2	0	0	8	0	0
Google Presentation	Male	5	4	1	14	4	2
	Female	2	0	0	5	3	0
Google Sheet	Male	6	4	0	12	6	2
	Female	2	0	0	6	2	0
Google Drive	Male	5	5	0	15	3	2
	Female	2	0	0	7	1	0
Google Photo	Male	3	5	2	13	7	0
	Female	2	0	0	7	0	1
Google Form	Male	7	3	0	13	6	1
	Female	2	0	0	7	1	0
Google Map	Male	7	3	0	12	7	1
	Female	2	0	0	7	0	1
Google Earth	Male	4	6	0	9	7	4
	Female	1	0	1	5	2	1
Google Local Guide	Male	3	4	3	7	10	3
	Female	1	0	1	5	2	1
Google Draw	Male	1	4	5	7	6	7
	Female	1	1	0	5	2	1
	Male	4	6	0	9	10	1

Google Lens

	Female	2	0	0	7	1	0
Google Keep	Male	1	5	4	4	8	8
	Female	1	0	1	4	2	2
Google Chrome	Male	7	3	0	17	3	0
	Female	2	0	0	8	0	0
Google Meet	Male	7	3	0	16	4	0
	Female	1	0	1	7	0	1
Google Pay	Male	7	3	0	14	5	1
	Female	1	1	0	7	1	0
Google Play Store	Male	6	4	0	15	5	0
	Female	2	0	0	7	1	0
Google Voice	Male	1	6	3	10	6	4
	Female	0	2	0	5	2	1
Google One	Male	2	4	4	10	6	4
	Female	1	1	0	4	1	3
Google Podcast	Male	1	5	4	5	9	6
	Female	0	0	1	5	2	1
Google Fit	Male	1	4	5	8	7	6
	Female	1	0	1	5	1	2
Gboard	Male	2	5	3	12	4	4
	Female	1	1	0	5	1	2
Youtube	Male	8	2	0	18	2	0
	Female	2	0	0	6	2	0
Google Assistant	Male	7	3	0	13	4	3
	Female	2	0	0	7	1	0
Ocr	Male	1	4	5	8	5	7
	Female	1	1	0	4	3	1
Ms Office(Doc,Xls, Ppt)	Male	7	3	0	16	4	0
	Female	2	0	0	7	1	0
Whatsapp	Male	8	2	0	19	1	0
	Female	2	0	0	7	1	0
Facebook	Male	6	3	1	14	5	1
	Female	1	1	0	8	0	0

Instagram	Male	5	3	2	11	7	2
	Female	1	0	0	6	1	1
Twitter	Male	2	6	2	10	9	1
	Female	1	0	1	5	2	1
Linkedin	Male	2	5	3	7	6	7
	Female	1	0	1	4	1	3
Audacity Audio Editor	Male	3	5	1	13	3	4
	Female	1	1	0	6	1	1
Videoshot -Editing	Male	4	5	1	12	3	5
	Female	1	1	0	5	3	0
Screen Recording	Male	3	6	1	14	4	2
	Female	1	1	0	6	2	0
Animation	Male	4	3	3	13	4	3
	Female	2	0	0	5	2	1
Infographics	Male	5	5	0	11	6	3
	Female	2	0	0	5	3	0
Timeline	Male	2	5	3	6	9	5
	Female	1	1	0	4	3	1
Simulations Interactive	Male	5	4	1	9	6	5
	Female	1	1	0	5	3	0
Blog	Male	2	5	3	3	13	4
	Female	1	1	0	3	2	3
Vlog	Male	1	5	4	15	2	3
	Female	1	1	0	3	2	3
Chatgpt	Male	1	9	0	10	7	3
	Female	1	0	1	5	3	0
Lms- Canva/Google	Male	5	5	0	8	8	4
	Female	2	0	0	3	3	2

Item -4 : Now your KNOWLEDGE about DIKSHA portal											
Area	Gender	DIETS FACULTY					SCHOOL TEACHER				
		Poor	Fair	Satisfactory	Very good	Excellent	Poor	Fair	Satisfactory	Very good	Excellent
Knowledge	Male	0	2	2	3	3	2	2	4	8	4

Knowledge

Pedagogy	Female	0	1	0	0	1	0	1	2	1	4
Knowledge ICT Tools	Male	0	4	1	4	1	1	2	4	10	3
	Female	0	1	0	0	1	0	2	1	4	1
Knowledge E-Content	Male	0	2	3	3	2	1	3	5	6	5
	Female	0	1	0	0	1	0	2	1	2	3
Contribution using ICT	Male	0	2	4	3	1	1	0	8	9	2
	Female	0	0	0	1	1	0	3	0	3	2

Item -5 : Able to reduce Challenges and Scope

Area	Gender	Diets Faculty					School Teacher				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Lack Of Trained Instructors For Effective Lecturer/Demonstrator	Male	1	2	1	4	2	3	5	5	5	2
	Female	0	0	0	1	1	2	2	1	3	0
Unclear And Unorganized Approaches In Institutes	Male	1	2	1	5	1	3	4	4	9	0
	Female	0	0	0	1	1	1	5	0	2	0
Geographical Issues	Male	0	1	0	7	2	3	1	4	8	4
	Female	0	0	0	1	1	1	4	1	2	0
Time Management During Financial Year	Male	1	0	1	7	1	2	1	5	7	5
	Female	0	0	0	0	2	0	3	0	5	0
No Grading Was Prompt And Monitored	Male	0	4	1	2	3	3	2	6	5	4
	Female	0	0	0	1	1	0	4	3	1	0
Lack Of Training In Ict Tools	Male	2	1	1	4	2	5	3	2	6	4
	Female	1	0	0	1	0	0	4	0	4	0
Budget	Male	0	1	3	5	1	1	2	5	7	5
	Female	0	0	0	1	1	0	1	2	5	0
Organization Support	Male	1	1	1	3	4	2	1	3	6	8
	Female	0	0	0	1	1	0	1	1	3	3

Item 6-Creating a lesson or Course content at DIKSHA means for you now

Area	Gender	DIETS FACULTY					SCHOOL TEACHER				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning objectives must be	Male	0	0	0	6	4	1	0	3	4	12
	Female	0	0	0	0	2	0	0	0	3	5

SMART												
Course content must be organized and well planned	Male	0	0	0	4	6	0	0	1	6	13	
	Female	0	0	0	0	2	0	0	0	3	5	
Course workload must be appropriate	Male	0	0	0	5	5	1	0	2	7	10	
	Female	0	0	0	0	2	0	0	0	5	3	
Course structure should allow all students to participate fully	Male	0	0	0	6	4	1	0	1	6	12	
	Female	0	0	0	0	2	0	0	0	3	5	
Course should be vetted and uploaded timely	Male	1	0	0	7	2	1	0	1	5	13	
	Female	0	0	0	1	1	0	0	0	2	6	
Course creation must be in LINE of TPACK model	Male	0	1	0	5	4	1	0	2	5	12	
	Female	0	0	0	1	1	0	0	0	3	5	

Item -7: Why did you choose this course?						
Gender	DIETS FACULTY			SCHOOL TEACHER		
	Degree requirement	Time offered	Interest	Degree requirement	Time offered	Interest
Male	0	1	9	0	1	19
Female	0	0	2	0	0	8

Item -8: Did you choose this e - content development workshop as to carry it forward.						
Gender	DIETS FACULTY			SCHOOL TEACHER		
	Yes	No	Cant Say	Yes	No	Cant Say
Male	8	0	2	20	0	0
Female	2	0	0	8	0	0

Item -9: Arranging such workshops can improve this kind of creation of course for quality education?						
Gender	DIETS FACULTY			SCHOOL TEACHER		
	Yes	No	Cant Say	Yes	No	Cant Say
Male	7	0	3	20	0	0
Female	2	0	0	8	0	0

Item -10: Did your learning level and expectations from this workshop will support you to develop content at DIET level?								
Gender	DIETS FACULTY				SCHOOL TEACHER			
	Below certain level	up to certain level	Above average	upto maximum llevel	Below certain level	up to certain level	Above average	upto maximum llevel
Male	0	4	4	2	0	6	4	10
Female	0	0	2	0	0	3	3	2

Key findings:

The study found that SCERT workshops significantly improved teachers' ICT skills, particularly in using web technologies and digital creation tools. Teachers also demonstrated stronger abilities in creating e-content, like lesson plans and educational videos. These findings show that the workshops successfully equipped teachers with practical skills for modern teaching. Interestingly, teachers reported a more positive view of digital education after the workshops, crediting the hands-on activities and collaboration for their increased confidence in integrating ICT into their classrooms. However, the study also identified challenges such as teachers' varying ICT skill levels and limitations in infrastructure. To address these issues, the study recommends ongoing support for teachers, customized training modules, and policy changes to promote the long-term impact of these professional development

Further Scope of the study:

The study proposes several areas for further research to improve the effectiveness of SCERT-organized workshops on teachers' ICT skills and e-content creation abilities. Longitudinal studies could assess the long-term impact of the workshops and identify areas where teachers need ongoing support. Including a wider range of teachers and conducting regional comparisons could help tailor the workshops to specific needs. Researchers could also explore how the workshops translate into classroom practices and student learning outcomes. Developing advanced training modules, examining the role of support systems, and investigating the impact on different subjects are all promising areas for future research. Finally, studies could examine the cost-effectiveness of the workshops, student feedback on the e-content, and the impact of educational policies on teacher competencies. By addressing these areas, future research can contribute to the improvement of teacher professional development programs and the integration of ICT in education.

Conclusion

This research investigated how workshops offered by the SCERT in Uttarakhand impacted teachers' ICT skills and their ability to create e-content for the DIKSHA platform. The study design involved giving teachers tests before and after the workshops, along with gathering their opinions. This approach provided valuable information about how well these programs improve teachers' digital literacy. Overall, the research highlights that SCERT workshops can significantly improve teachers' ability to use technology in their classrooms. By working together, teachers and policymakers can use the findings from this study to improve educational quality through digital tools and ongoing teacher training.

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These references cover a range of studies and resources related to ICT skills enhancement, e-content creation, and professional development among educators, reflecting both Indian and international perspectives.