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E-Content Development On 4c's for Learning Skills – An Exploratory Study

S. Janaki[1], dr. N. Devaki[2], p. Kalaivani[3]

[1]Research Scholar, UGC NFSC SRF, Department of Education, Gandhigram Rural Institute-Deemed to be University, Gandhigram, Tamil Nadu, India-624302.

[2]Assistant Professor, Department of Education, Gandhigram Rural Institute-Deemed to be University, Gandhigram, Tamil Nadu, India-624302.

[3]Research Scholar, Department of Education, Gandhigram Rural Institute-Deemed to be University, Gandhigram, Tamil Nadu, India-624302.

Abstract:The advancement of computers, technologies, and multimedia has greatly influenced the learning process. E-content serves as a valuable and efficient educational resource, allowing students to engage in an interactive, self-paced learning setting. It covers all types of content created and delivered through various media and books. The 4Cs of learning skills consist of Critical thinking, Creative thinking, Collaboration, and Communication. The developers produced e-content containing audio, video, text, FAQs, animations, tutorials, references, photos, illustrations, text combined with images, quizzes, assignments, and objectives. To ensure the quality of e-content, evaluations such as target group rating scale analysis, technical analysis, expert opinion, and SWOC analysis were conducted. The effectiveness of e-content was assessed through achievement test analysis. Additionally, experts concurred that the e-content was well-crafted, valuable, and provided students with a fresh learning platform. This research study presents a significant, positive, and beneficial contribution to the field of teacher education.

Keywords:*Critical Thinking, Creative Thinking, Collaboration, Communication, e-content and Prospective Teachers.*

Introduction

NEP 2020 aims to establish an "E-content Development Centre" to create a repository of top-notch digital resources for students, ensuring access to high-quality curriculum-aligned information for all children. "Learning Skills" encompass various tasks related to learning, including time management, note-taking, effective reading, study skills, and exam writing. The 4Cs, defined by the Partnership for 21st Century Learning (2011), are critical thinking, creative thinking, communication, and collaboration, seen as essential skills for students preparing for post-high school life. These skills are transferable across different tasks and job roles, providing individuals with versatile capabilities. According to the National Education Association (2015), integrating the 4Cs into reading and tutoring is crucial for preparing citizens and workers for the demands of the twenty-first century.

Critical Thinking: Critical thinking is the disciplined process of analyzing, synthesizing, and evaluating knowledge gathered through observation, experience, reflection, or communication, crucial for making informed decisions and taking effective action. Socrates introduced critical thinking through the Socratic method, emphasizing questioning to enhance reasoning abilities. Descartes revived this concept in the 17th century, while Dewey further developed and promoted it as a fundamental skill.

Creative Thinking: Creative thinking is essentially limitless innovation and exploration. When discussing "right brain" activity, individuals often refer to creative thinking, as stated by WJ Fransen (2003). Creativity enables individuals to showcase their unique skills, a trait that is distinct for each person according to Joanna Yanez.

COMMUNICATION: In the realm of communication, David Berlo (1960) is a notable figure who provided a clear definition of communication as a process. Viewing events and relationships as dynamic, ongoing, and

constantly evolving is crucial when accepting the concept of process. Communication is defined as the ability of one person to connect with another and effectively convey their message.

COLLABORATION: Collaboration, as highlighted by John Hamerlinck (2022), involves exchanging information, adjusting actions, sharing resources, and enhancing the capabilities of others for mutual benefit and the achievement of common goals. Employers are in search of individuals with soft skills, particularly those encompassing decision-making, adaptability, and problem-solving skills.

Need and Importance Of The Study

Creating and maintaining enthusiasm for the 4C skills in students poses a significant challenge for educators. Student disinterest is a major factor contributing to academic underachievement. By utilizing various specialized tools and engaging activities, interest in the subject matter can be effectively nurtured and sustained. Teachers are eager to enhance student involvement and the effectiveness of their teaching methodologies. A proficient educator not only comprehends their subject matter but also prioritizes understanding the learning journeys of their students to implement innovative strategies that foster improved outcomes. Experiencing novelty leaves a lasting impression on students, inspiring the investigator to develop e-content focusing on the four Cs of learning skills. The researchers endeavored to craft and authenticate e-content relating to specific aspects of Critical thinking, Creative thinking, Communication, and Collaboration.

Statement of the Problem

The goal of e-Content development is to establish a community abundant in information. Every individual within the community possesses the capacity to produce, receive, exchange, and utilize information for their personal progress. A meticulously crafted, enhanced, and authenticated e-Content will provide access to superior, significant digital material while also serving as a proficient virtual instructor. The four Cs of learning abilities enable educators to utilize a range of approaches. The capabilities of the 4Cs support educators in comprehending how to initiate the learning procedure, how to foster creativity, and how to promote collaboration. Therefore, the research is titled "E-Content Development on 4Cs of learning skills – A Study".

Objectives of the Study

The objectives of the study are:

1. To develop e-content for the 4Cs of learning skills (Creative thinking, Critical thinking, Communication, and Collaboration).
2. To Validate the e-content for the 4Cs of learning skills through
   - Technical Analysis
   - SWOC (Strength, Weakness, Opportunities and Challenges) analysis
3. to determine the effectiveness of e-content for 4Cs of learning skillsby using Achievement test.

Methodology of the Study

Population and Sample: The Population of the study is prospective teachers in Dindigul District and the sample size is 48 are selected for this study.

Research Design: The exploratory descriptive research method is adopted by Investigators.

Statistical Techniques: Data analysis was carried out qualitatively using descriptive analysis by percentage analysis and qualitatively using SWOC (Strength, Weakness, Opportunities and Challenges) analysis by experts' opinion and target group.

Tool: The 4C's learning Skills Scalewas adopted for this study. The "4C's learning Skills Scale" constructed and Standardized by Investigators. The scale is categorized into four dimensions, which comprises of totally forty items. The Split-Half Method and Spearmen Brown Formula {r = 2r / (1+r)} were adopted to find out the Reliability. The reliability value is 0.62

Data Analysis and Interpretation

1. Target group rating scale analysis on quality of e-content for 4Cs of learning skills

Table 1: Target Group Rating Scale Analysis on the Quality of the E-Content inCriticalThinking

CONTENT	PERCENTAGE(%)
AGREE	86%
NEUTRAL	13%
DISAGREE	1%

The table 1, shows that the target group rating scale based on technical analysis of e-content Development on 4Cs of learning skills particularly on critical thinking technical analysisrevealedthequalityofe-contentthat 86%ofrespondentsagreed,13% neutraland1% disagreed.

Table 2: Target Group Rating Scale Analysis on the Quality of the E-Content inCreative Thinking

CONTENT	PERCENTAGE(%)
AGREE	88%
NEUTRAL	11%
DISAGREE	1%

The table 2 reveals that, the target group rating scale based on technical analysis of e-contentdevelopment of 4Csof 21stcentury learning skills particularly creative thinking, Technical analysisrevealedthequalityofe-contentthat,88%ofthe respondentsagreed,11%neutraland1%disagreed.

Table 2: Target Group Rating Scale Analysis on the Quality of the E-Content inCommunication

CONTENT	PERCENTAGE(%)
AGREE	87%
NEUTRAL	12%
DISAGREE	1%

The table 3 states that the target group rating scale based on technical analysis of e-contentDevelopment on 4Cs of 21st century learning skills particularly on communication Technical analysisrevealedthequalityofe-contentthat 87% ofrespondentsagreed,12%neutraland 1% disagreed.

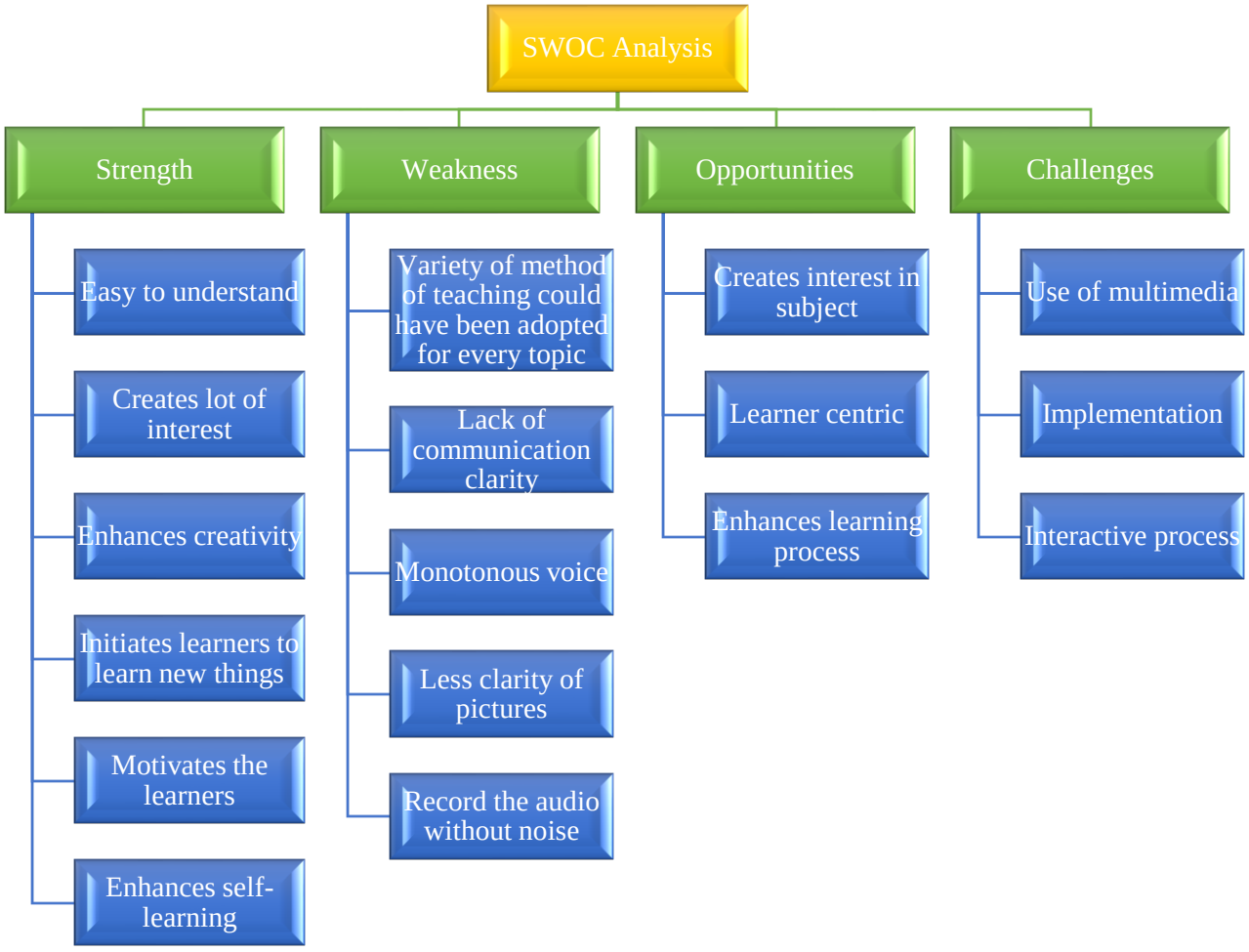
Table 4: Target Group Rating Scale Analysis on the Quality of the E-Content inCollaboration

CONTENT	PERCENTAGE(%)
AGREE	84%
NEUTRAL	14%
DISAGREE	2%

The table 4 shows that the target group rating scale based on Technical analysis of e–contentdevelopment on 4Cs of e-content on collaboration Technical analysis revealed the quality of e-content that, 84% of the respondents agreed that quality of e- content is good, quality of e – content is neutral for 14% ofrespondentsand 2% disagreed.

2. SWOC Analysisfor e-content in 4c's of learning skills

The investigators have collected the SWOC Analysis individually for their respective 4C's from the experts and it has been listed below for all the 4c's of learning skills. The strength, weakness, opportunities, challenges and other suggestions have been listed below.



3. Achievement test analysis for e-content in 4c's of learning skills

Table 5: Effectivenessofe-ContentonCreativeThinking

S.NO	SCORE	PERCENTAGE
1	60-70(AVERAGE)	**4.08%**
2	70-80(GOOD)	**32.65%**
3	80-90(VERYGOOD)	**26.53%**

4	90-100(EXCELLENT)	**36.74%**

The table 5 reveals that the level of achievement through percentage analysis on Creative thinking. The analysis indicated that 4.08% of students scored average mark (60-70), 32.65% of students scored good marks (70-80), 26.53% of students scored very good marks (80-90) and 36.74%students scored excellent marks (90-100). Thus the statistical analysis proves the effectiveness of e-content on Creative thinking.

Table 6: Effectivenessofe-ContentonCommunication

S.NO	SCORE	PERCENTAGE
1	50-60(BELOWAVERAGE)	**2.04%**
2	60-70(AVERAGE)	**2.04%**
3	70-80(GOOD)	**46.94%**
4	80-90(VERYGOOD)	**20.40%**
5	90-100(EXCELLENT)	**28.58%**

The table 6 states that, the level of achievement through percentage analysis on Communication. The analysis indicated that 2.04% of students scored below average mark(50- 60), 2.04% of students scored average mark(60-70), 46.94% of students scored good marks(70-80), 20.40% of students scored very good marks(80-90) and 28.58%students scored excellent marks(90-100).Thus the statistical analysis proves the effectiveness of e-content on Communication.

Table 7: Effectivenessofe-ContentonCritical thinking

S.NO	SCORE	PERCENTAGE
1	50-60(BELOWAVERAGE)	**6.12%**
2	60-70(AVERAGE)	**10.21%**
3	70-80(GOOD)	**30.61%**
4	80-90(VERYGOOD)	**34.69%**
5	90-100(EXCELLENT)	**18.37%**

The table 7explores that, the level of achievement through percentage analysis on Critical thinking. The analysis indicated that 6.12% of students scored below average mark(50-60), 10.21% of students scored average mark(60-70), 30.61% of students scored good marks(70-80), 34.69% of students scored very good marks(80-90) and 18.37%students scored excellent marks(90-100).Thus the statistical analysis proves the effectiveness of e-content on Critical thinking.

Table 8: Effectivenessofe-ContentonCollaboration

S.NO	SCORE	PERCENTAGE

1	50-60(BELOWAVERAGE)	**6.12%**
2	60-70(AVERAGE)	**8.1%**
3	70-80(GOOD)	**44.89%**
4	80-90(VERYGOOD)	**28.58%**
5	90-100(EXCELLENT)	**12.24%**

The table 8 reveals that the level of achievement through percentage analysis on Collaboration. The analysis indicated that 12.24% of students scored below average mark (50-60), 28.58% of students scored average mark (60-70), 44.89% of students scored good marks (70-80), 8.10% of students scored very good marks (80-90) and 6.12%students scored excellent marks (90-100). Thus, the statistical analysis proves the effectiveness of e-content on Collaboration.

Findings of the Study

1. The investigators developed the e-content meticulously for their respective topics in 4c's
2. E-content integrated elements like text, audio, video, pictures, examples, illustrations, documentaries, simulations, PPT's, YouTube videos, demonstrations, self-check exercises, brain teasers (question and answers), references and FAQ's.
3. Target group rating scale analysis on quality of e-content for 4c's of learning skills
   - Critical thinking reveals that 86% of the respondents agreed, 13% is neutral and 1% disagree
   - Creative thinking reveals that 88% of the respondents agreed, 11% is neutral and 1% disagree
   - Communication reveals that 87% of the respondents agreed, 12% is neutral and 1% disagree
   - Collaboration reveals that 84% of the respondents agreed,14% is neutral and 2% disagree
4. Achievement test analysis on effectiveness of e-content for 4c's of learning skills reveals the average value of e-content on Creative thinking is 21.224, Critical thinking is 20.061, Communication is 20.653, Collaboration is 19.938

Recommendations and Suggestion For Future Research

The present investigation has opened up new avenues and perspectives for future research.

- Teachers may be trained to create e-content packages for teaching learning skills and providing information in a variety of formats.
- It is imperative that suitable digital infrastructure be installed on college campuses.
- Provide greater hands-on training in generating e-content for all topics at the secondary and post-secondary levels.

Discussion

The purpose of education is to assist individuals in developing into their best selves across all aspects of life, not solely within the realm of knowledge. Electronic content proves to be extremely beneficial for educational purposes. This resource is accessible for our utilization at any time and place of our choosing. E-content serves as a highly effective tool for instruction. Students and educators from various fields can gain advantages from utilizing e-content. Knowledge enriches the capacities of the heart, hands, and mind. Utilizing animation and other audio-visual components can aid learners in comprehending the material and make it more engaging. It also paves the way for future generations to experience joy and beauty. In essence, the primary objective of e-content is to eliminate educational disparities among students through effective teaching methods. The approach to e-content instruction differs from traditional methods by incorporating technological elements like captivating images, animations, links, sounds, and videos. Researchers can merge different components more effectively and enhance their technological proficiency through the creation and validation of e-content based on the four Cs of learning skills. Research has shown that the 4 C's are crucial for navigating the contemporary world (Eaton, 2010; Trilling & Fadel, 2009). (A. Khoiri et al., 2018) emphasized that educational backgrounds influence variations in students' 21st-century skills related to the 4 C's. Creativity is founded on the capacity to

generate novel and suitable ideas (Anwar, Aness, Khizar, Naseer, & Muhammad, 2012; Diki, 2014; Tendrita, Mahanal, & Zubaidah, 2016), thereby achieving the objective of science education to adapt, think flexibly, be creative, think critically, show respect for the community, and embrace diverse ideas (Ogawa, 1986; Okwara &Upu, 2017). Moreover, creative thinking abilities are integral to learning skills (A. Khoiri et al., 2019; A. Khoiri&Sunarno, 2019; Türkmen, 2015), involving cognitive processes to find solutions for problem-solving (Malik, Nuraeni, Samsudin, &Sutarno, 2019) and generating ideas to address these issues (Silaban& Utari, 2015; Sumarta, 2017; Supriyadi, Haeruddin, &Nurjannah, 2016). Integrated skills learning, which includes a variety of skills, is the most effective approach to foster the 4 Cs (communication, collaboration, critical thinking, and creativity). Integrated skills learning also plays a key role in nurturing creativity. Studies by Klimoviene et al. (2006) and Zivkovil (2016) demonstrated an enhancement in students' critical thinking skills through collaborative constructivist learning. Another study conducted by Gokhale (1995) supported this notion by highlighting that collaborative-critical thinking led to improved learning outcomes, including enhanced critical thinking skills among students. The researchers acquired substantial technical expertise in developing e-content. This represents a significant endeavor to meet the requirements of learner-centered education and provide digital natives with a top-tier educational experience.

Conclusion

The swift progression of technology has brought about significant changes in how we work, learn, live, and interact. The future has become more challenging and uncertain as a result of these transformations. The modern-day students require skills relevant to the 21st century, which can be categorized into literacy skills, life skills, and learning and innovation skills (4Cs). These competencies are crucial for achieving success in this evolving world. Hence, educational institutions in general, and EFL courses in particular, should assist students in acquiring and enhancing these skills. According to a statement by the ministry, a specialized unit will be established within the MHRD to oversee the development of digital infrastructure, digital content, and capacity building to address the e-education requirements in both school and higher education. To promote the use of technology in education, the National Educational Technology Forum (NETF), an autonomous body, will be established. The National Education Policy 2020 (NEP) envisions an educational system that is deeply rooted in Indian values, contributing directly to the transformation of India into a fair and dynamic knowledge-based society. This will be achieved by offering high-quality education to all and positioning India as a global knowledge hub. Consequently, it is recommended that subsequent action research studies involving prospective teachers from this research, who will be teaching at various levels, be conducted to enhance their understanding of the 4Cs and their integration into teaching practices. Moreover, such a follow-up study could assess the extent to which teachers and their students are meeting the current expectations for 21st century learning.

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