

EFFECTIVENESS OF CONNECTIVISM LEARNING APPROACHES IN DEVELOPING 21ST CENTURY PEDAGOGICAL COMPETENCIES AMONG THE PRE-SERVICE TEACHERS

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Abstract:

Connectivism is a learning theory that focuses on the modern technology that creates the social connection in the field of education. It suggests the knowledge is shared across the networks. The teaching and learning occur through the connections with different sources. It helps to promote the learning with the help of digital tools to boost the educational experience. The application of connectivism in the training of pre-service teachers teaches this theory that knowledge is distributed among the networks and emphasizes social connection technology and collaborative learning.

It blends connectivist principles for the pre-service teachers, it enhances the critical thinking teamwork and promotes the digital Awareness of competency among the upcoming future educators.

This study benefits for the pre-service teachers from Bachelor of Education including the personalized learning experience and recent information the study investigates the effectiveness of connectivism on the professional planning of 100 pre-service teachers for the future teaching practices.

Keywords: Connectivism learning theory, Technology, pre service, competencies, collaborative, networks.

Review of literature George Siemens Stephen Downes Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial Use Provided the Original Author and Source Are Credited.

Introduction:

As the 21st century is the century of the digital Era we all have connected to each other through this. even in the education field increasing integration of virtual learning gain at the large scale. The pre-service teachers or the teacher training must accept the change.

This research aims to describe how effectively connectivism practices and encourages pedagogical competencies for pre - service teachers.

Connectivism theory proposed by George Siemens (2005) and Stephen Downes, it is a well recognised learning theory.

Massive Open Online Courses (MOOCs) are a clear example of connectivism in action. They encourage learner autonomy, peer interaction, and open access to resources, which are the key principles of the theory. (Christopher Pappas ,2025)

Literature review:

Connectivism theory proposed by George Siemens (2005) and Stephen Downes, it is a well recognised learning theory. As it is a bridge between traditional and digital technology.

Connectivism represents a significant shift in understanding and facilitating learning in the digital age. Christopher Pappas ,2025)

It's not just another academic buzzword, but a game-changer in how we understand and facilitate learning in the 21st century. (Noah Young, 2024)

The study found that Connectivism was effective in promoting collaborative learning and in helping learners develop their social and networking skills (Dron and Anderson,2014)

Aim & Objectives of this study:

The aim of the study is to explore the pre-service teachers to be technological enhanced teaching strategies during the 21st century.

Objectives:

- 1 To encourage pre-service teachers to use technology based in classroom teaching.
- 2 To understand the skills, attitude and plans for the future teaching learning.
- 3 To investigate the impact of technology on teacher student or pre service teacher
4. To analyse the positive learning outcomes in pre service teachers.

Hypothesis of the study:

H1 Interactive and Technology supported connectivist learning activities profoundly increase pre-service teachers' interest in educational learning theory.

H2 connectivism creates the real classroom setting, positively to guide their attitude towards adopting the theory.

According to Crabtree and Milter 8 board categories were identified as relevant.

1. Use of Technology for productivity purposes.
2. Use of Technology for pedagogy purpose
3. planning for students' use of technology.
4. Using technology for teachers' presentation of information.
5. Facilitate and inspire student learning and creativity.
6. Design and develop using Technology
7. Digital age learning experiences an assessment
8. Using technology to engage in professional growth and leadership.

(contemporary issues in technology and teacher education CITE journal)

Meaning of connectivism:

Connectivism is social learning that is networked. Stephen Downes described it as, "... the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks" (Downes, 2007). (Betsy Duke,Ginger Harper)

Lecture rooms are no longer characterised by an educator with a blackboard and chalk, students with textbook, notepad and pen; they are now platforms where the educator is no longer the sole source of knowledge. The students get to contribute and there is the use of technological tools and applications during lesson delivery by both educators and students. There are new teaching and learning theories that facilitate student-centred teaching and learning, such as connectivism and constructivist theories.

The 21C further demands that students be oriented towards the acquisition of higher order thinking and innovation skills referred to as the 4Cs:

- 1) Creativity,
- 2) Critical 2 thinking
- 3) Communication
- 4) Collaboration (Partnership for 21st Century Learning, 2016).

(Nyarai Tunjera)

Technology plays a transformative role, creating learning networks (e.g., social media, online forums, digital tools). Pedagogy Teacher-centric, where the instructor directs learning.

Connectivism learning is not simply the acquisition of knowledge or information, but rather the creation of connections between ideas and experience as connections are facilitated by technology and social networks which allows learners to access and share information across a vast network of resources. (Md. Afroz Alam, 2023)

Research methodology.

The study is adopted by using a mixed method.

Research Design which involves qualitative and quantitative data. A Structured questionnaire is used 100 Pre Service teachers from the Bachelor of Education College in Maharashtra, Pune. The qualitative tool consist of 5pointLikert scale items measuring the digital competency networking behaviour and collaboration. It will be observed with semi structure interview where conducted with 100 participant for the qualitative inside the data will be analysing why using a descriptive statistics and thematic analysis.

Sample:

A sample of 100 pre-service teachers was selected using simple random sampling.

Instrument

A self-constructed questionnaire with three components:

Awareness of Connectivism

Use of connectivist tools (frequency-based)

Perceived effectiveness (5-point Likert scale)

Data Classification for Statistical Analysis:

Participants were categorized into:

High digital tool users (n = 70)

Low digital tool users (n = 30)

Table 1

Awareness of Connectivism Among Pre-Service Teachers (N = 100)

Sr. no.	Category	Count
1	Aware of Connectivism	72
2	Not Aware	28

Note. Awareness was self-reported by participants.

Table2

Sr. no.	Digital tools	Percentage Usage
1	Google class room, moodle	85%
2	You tube educational channels	92%
3	Google Docs	78%
4	Social Learning networks	88%

Means and Standard Deviations of Effectiveness Scores

Group n	Mean	SD
High Users	70	40.36 0.27
Low Users	30	3.99 038

Major findings:

1. Pre-service teachers strongly agree towards using digital platforms for collaborative learning.
2. Connectivism helps to improve the digital literacy and communication skills among the pre service teachers and the school students.
3. Learners develop the direct self learning habits and Awareness of the modern digital technology.
4. There are some challenges which include the limited institutional support in modern technology, networks and computer systems.

Conclusion and Recommendation:

Connectivism provides a meaningful Framework for the future teachers or preservice teachers in their teaching learning process to have the importance of modern technology in the educational field. It encourages learning through interaction, diversity, self organisation, self learning and motivation. However we all are toward the of

21st century so in educational field is modernized and Technology based for Teacher education institution in India should be integrated with this connectivism approach into the digital networking, collaborative projects ,and reflective work for the research makes more collaborative & long term effect of connectivity for the upcoming pre service teachers and to practice this in the classroom innovation.

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