

## FROM BEHAVIORISM TO CONNECTIVISM LEARNING THEORY: TEACHING AND LEARNING METHODS

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**Abstract.** From the 1900's until today great changes have been taking place in the world. Each life aspect has been touched with these changes. Education as a fundamental part of human life also changes. Learning theories, teaching and learning methods of the 1900's are no longer used today. This study aimed to show learning theories, teaching and learning methods from 1900's update. The study focused on two objectives namely: To identify learning theories and the found fathers for each theory and second objective to study teaching and learning methods used in each learning theory. The study used documentary comprehensive analysis. The findings showed the founding fathers, their respective years, and assumptions, teaching and learning methods in behaviourism theory, cognitive theory, constructivism theory and connectivism theory. The study recommended that teachers have to get frequent apprenticeships and they have to prepare their lesson plan according to these theories. The report concluded by showing the significance of connectivism or digitalism learning theory.

**Keywords:** behaviourism, connectivism, teaching, learning, methods

### Introduction

Many scholars have been explaining the concept of learning theory since the early of 1900's till today. Before discussing the concept of learning theory the important question that needs to be addressed is the meaning of learning. What is learning? Cherry & Susma (2022) defined learning as permanent change in behaviour due to experience. According to this definition, learning means consolidating and strengthening what a student already knows from the context and content. Another question is what is theory? Theory refers to "a supposition or a

system of ideas intended to explain something” (Stewart et al., 2011, p. 222) in this definition two important terms need to be clear. Those are “ideas” and “explanations.” Idea is just an assumption or conceptual framework constructed in the mind of a person. These assumptions need to be described in terms of features, characteristics, implication, advantages and disadvantages. When one gives the descriptions of ideas in detail, it refers to explanation. From the concept of learning and theory now we can define learning theory as the conceptual framework that needs explanation in terms of variables, features, characteristics, implications, advantages and disadvantages so as to enable learners and teachers to have permanent change of behaviours. Kimble (2023) conceptualized the learning theory as “the habituation instructional design which helps teachers, tutors, and lecturers, in transmitting new knowledge across the students.

The learning theories describe how learners receive, process and retrieval the new knowledge or skills. Through the learning theory one can examine the process and conditions of learning. Schools as organisations use the learning theory not only in the classroom for scheme of work preparation, developing lesson plan, the content of study, pedagogical learning but also in management and administration of the school particularly in those in vulnerable and hostile conditions. Although some teachers don’t use these learning theories for the sense that they are irrelevant in the real world, they are widely used during the teaching and learning process. These learning theories include behaviourism, cognitivism (humanism), constructivism and connectivism theory. Some of these learning theories are now updated (Main, 2022). The majority of teachers and lecturers use these theories unethically. The observation showed in topics where teacher need to use behaviourism learning and teaching methods, they use constructivism teaching and learning methods; in topics that need connectivism teaching and learning methods, the teachers tend to use constructivism teaching and learning methods; in topics need constructivism teaching and learning, they use cognitivism teaching and learning method.

The selection of teaching and learning methods depend on well understanding of learning theories. Moreover the selection of learning depends on topic, class, type of learners, context, content, teachers ability and time of learning. Therefore this study provides the answers on the learning theories and appropriate teaching and learning methods

### **Rationale of study**

1. The study enable teachers to select best teaching and learning methods in classroom

2. The study reminds teachers the founding fathers of learning theory
3. It reminds all education stakeholders to design curriculum which reflect the learning theories

### **Research objectives**

1. To identify learning theories and the founding fathers for each theory
2. To study teaching and learning methods used in the learning theory

### **Research questions**

1. Who are the founding fathers of learning theories?
2. What are teaching and learning methods used in learning theories?

### **Statement of problem**

Despite teachers being taught learning theories in teaching colleges teachers tend to forget them soon after graduation and fail to implement them in the teaching and learning process. Therefore this study aimed to remind teachers to apply the best teaching and learning methods according to appropriate learning theory.

### **Research Methodology.**

The study used documentary comprehensive analysis. The researcher used e-books, journal article, blogs, Wikipedia, websites and conference proceedings to make analysis

### **Literature review**

Pappas (2023) the use of different sources of knowledge and combine together correctly. The teaching and learning methods involved; online discussion; group project; services learning; virtual reality; individual learning and use of classroom social media

Indeed Team Editorial (2023) defined teaching methods as “techniques that educators can use to facilitate the teaching process and help students feel engaged and interested in the materials

Kimble (2023) conceptualized learning theory as the instructional design helps teachers, tutors and lecturers to transmit knowledge

McLeod & Guy-Evans (2023) they explained that change of behaviours response the condition of environment. The report analysed stimulus response, classical conditioning, reinforcement, objective measurement, reductionism, nomothetic and law of effect

Pappas (2022) the connectivism theory combined the ideas of behaviourism theory, cognitive theory and constructivism theory

Cherry & Susma (2022) learning means the relative change of behaviour where learners get from their experiences

Main (2022) claimed that some of learning theories are outdated

Gray (2020) the report suggested that in education democracy teaching and learning methods includes; questions and answers; story tell; visualisation; colouring of pictures

Efgivia et al (2020) they proposed the characteristics of constructivism theory as: student centred, problem solving, discovery process, social interaction, new knowledge and understanding

Kropf (2013) the study done in U.S.A. Mentioned the devices in connectivism theory Such as cellophanes, tablets, computers, iPad

Makgato (2012) highlighted the constructivism learning and teaching methods such as problem based learning, inquiry based learning, project based learning, case based learning, guided instruction, anchored instruction, cooperative learning, reciprocal peer teaching and jigsaw methods

Siemens (2005) argued that the connectivism theory involved: Management and leadership; media, news and information; personal knowledge management in relation to organisational management and design of learning environment

## **Finding and Discussion**

**Objective 1:** To identify learning theories and the found fathers for each theory

Table 1 showing learning theories and findings fathers

Learning theory	Time of theory	Founding fathers	Time of founding father

Behaviourism learning theory (Blank box theory)	1900's-1950's	John. B. Watson Burrhus. F. Skinner Ivan. P. Pavlov Edwin. R. Guthrie Willard. V. Quine	1878-1958 1904-1990 1849-1936 1886-1959 1908-2000
Cognitivism learning theory (Humanism)	1950's-1980's	Jean. W. Piaget George. A. Miller Jerome Bruner Albert Bandura Elizabeth Loftus	1896-1980 1920-2012 1915-2016 1925-2021 1944-alive
Constructivism learning theory	1980's-2000's	Lev Vygotsky John Dewey Jack Mezirow	1896-1934 1859-1952 1923-2014
Connectivism/Digitalism learning theory	2000's- update	George Siemens Stephen Downes	1970-alive 1959-alive

**Behaviourism learning theory learning.** According to table 1 Behaviourism theory learning started in early of 1900's and marked the end in 1950's. The famous psychologist and philosophers of this theory included

John Broadus Watson. He born January 9<sup>th</sup> 1878 in Travellers rest, South Carolina and died September 25<sup>th</sup> 1958 at the age of 80 years. In Woodbury Connecticut. He was American Psychologist. He was famous with his theory of classical neutral stimuli and response (s-r) reinforcement learning theory.

Burrhus Frederic Skinner. He was born March 20<sup>th</sup> 1904 Susquehanna, Pennsylvania. United states of America and died August 18<sup>th</sup> 1990 in Cambridge Massachusetts. He survived in world in 86 years. He was very famous with operant learning condition (reinforcement, punishment and extinction). He used rat in his experiment and recognized neutral, reinforcement (increase) and punishment (decrease)

Ivan Petrovich Pavlov. Born in 26<sup>th</sup> September in 1849 in Ryazan, Ryazan governorate in Russian. He died in 27<sup>th</sup> February 1936 at the age of 86 years in Leningrad in Russia. He was famous with stimuli and response (s-r) classical condition. In his experiment he used dog's salvation experiment.

Edwin Ray Guthrie. Born in 9<sup>th</sup> January 1886 Lincoln, Nebraska and died in 23<sup>rd</sup> April 1959 at the age of 73 years in Seat, Washington. He was very famous with one trial theory, non-reinforcement association and contiguity based on pairing condition stimulus and response association

Willard Van Orman Quine. Born in 25<sup>th</sup> June 1908 Akron, Ohio USA and died December 25<sup>th</sup>, 2000 at the age of 92 years. Boston, Massachusetts in USA. He was very famous in natural epistemology. He viewed the human knowledge as all cases encompass the system of belief which accepted, rejected or modified. He was American philosopher and logician in the logician tradition.

**Cognitivism theory learning (Humanism).** The theory developed from 1950's to 1980's. The famous psychologist and philosophers of this theory included;

Jean. William Fritz Piaget. Born in 9<sup>th</sup> August 1896 in Neuchatel Switzerland and died 16<sup>th</sup> September 1980 at the age of 84 years. He was Swiss psychologist He was very famous with cognitive child development theory (Assimilation theory). He worked as international Bureau of Education. According to his theory the child undergo four importance stages; sensorimotor stage between birth to 2 years; preoperational stage between 2 to 7 years; Concrete operational stage between 7 to 11 and formal operational from 12 up.

Jerome Seymour Bruner. Born in 1<sup>st</sup> October 1915 in New York city USA and died June 5<sup>th</sup>, 2016 at the age of 100 years he proposed three tiered system of representation such as enactive based in action; iconic based on image and symbolic based on language based. He was very famous with the term scaffolding. Student can't solve the problems themselves. The teachers become helper of solving the problems. His learning theory is called discovery learning theory and inquiry based instruction

George Armitage Miller. Born in February 3<sup>rd</sup> 1920 Charles West Virginia USA and died July 22<sup>nd</sup> 2012 at the age of 92 years in Plainsboro, New Jersey in USA. He was founder of psycholinguistic that link between language and cognition in the analysis of language acquisition. His theory was called information processing theory. He explained about short term memory. He opposed as the law of human cognition and information. According to him human can effectively process no more than seven units or chunks of information, plus or minus two

Albert Al Bandura. Born December 4<sup>th</sup> 1925 Mundare, Alberta Canada and died July 26<sup>th</sup> 2021 at the age of 95 year Stanford California USA. He was very famous in social learning theory. According to him observation, imitation and modelling are influenced by attention, motivation, altitude and emotions

Elizabeth Fishman Loftus. Born in 16<sup>th</sup> October 1944 age at Bel Air, California. She age of 79 and still alive. She is American psychologist very famous with misinformation effect and false memory. She explain how the memories can change by the things which we have been told

**Constructivism learning theory.** It started from 1980's to 200's. The famous psychologist and philosophers of this theory included;

Lev Simkhovich Vygotsky. Born in November 5<sup>th</sup> 1896 at Belarus, Russia and died June 11<sup>th</sup> 1934 at age of only 38 years. His theory is called sociocultural learning theory. He proposed four parts include the first parts the social origin of mind (human mental and cognitive abilities are not biologically determined but language is key factor of interaction and integrations); the second is Zone of Proximal Development (the gap between a child's current level of development and the level they are capable of reaching with tools provided by others with more knowledge); the third part was the significance of mediation (interiorization) and fourth significance of plays as the best sandbox and develop practice of mediation. He postulated about attention, sensation, perception and memory

John Frederic Dewey. Born in 20<sup>th</sup> 1859 in Burlington, Vermont USA and died June 1<sup>st</sup> 1952 at the age of 92 years in New York State in USA. He was very famous with pragmatism learning theory. Learning by doing or hand on learning approach. He emphasized on experiential education. He claimed that "Education is not preparation for life; Education is life itself"

Jack D. Mezirow. Born march 7<sup>th</sup> 1923 in Fargo, North Dakota United State in died 24<sup>th</sup> September 2014. Age of survival was 91 years. His theory was called transformative of adult learning theory. Learning must involve instrumental and communicative strategies. Instrumental learning techniques include problem solving, evaluation of cause and effect relationship while in communicative learning strategies tell how people communicate such as feelings, needs and desires.

**Connectivism or Digitalism learning theory.** 2000's- update. The famous psychologists and philosophers of this theory were two major these were:

George Siemens. Born in 1970-alive. He is Canadian American. His field learning analytics, Massive Open Online Course (MOOC's) and digital education. He got PhD in massive open online course, digital education at University of Aberdeen. He started his role in University of South Australia as the director of the centre for change and complexity in learning.

Stephen Downes. Born in 6<sup>th</sup> April 1959-alive. He is Canadian America. He very famous with connectivism theory. According to his theory internet technologies such as web browsers, search engine, wikis, online discussion of forum and social network can be used in learning. Was the first connectivist on Massive Open Online Course (MOOC). He started his movement since 1995 but gain momentum in 2007 in Online Connectivism Conference (OCC). By 2008 George Siemen and Stephen Downes launched open course as the land mark.

**Objective 2.** Study teaching and learning methods used learning theory.

Table 2 indicated learning theory, assumptions, teaching and learning methods

LEARNING THEORY	ASSUMPTIONS OF THE THEORY	TEACHING AND LEARNING METHODS
<b>Behaviourism learning theory (Black box theory)</b>	Stimulus, response, classical condition, operant condition, reinforcement and punishment, objective measurement, reductionism and law of effect	<p>Lecture based method</p> <p>Kinaesthetic learning (movement of hand gestures, drawing, acting, building and playing)</p> <p>Game based learning (children)</p> <p>Expeditionary learning method (project, case studies, laboratory experiments, classroom field trips)</p>



<b>Cognitivism learning theory (Humanism)</b>	Problem solving, corporative and collaboration methods, observational learning, emotional learning, experiential learning, receptive learning, habituation and sensitization learning; learning depending on biological, environmental and social factors; internal mental process; memory, language, attention, decision making and perception	Asking questions and answers methods, discovery methods, try and error methods, self-questions, discussion what has been taught, visualisation and explanation teaching methods
<b>Constructivism theory</b>	educators are facilitators, tutors and mentor; learning depending on both external and internal factors, learners actively engage in learning, social setting, cultural environment, knowledge is active constructed, learning is social and individual process, learning is all about personal experiences, language play great role in learning, motivation is key factors in learning	Scaffolding methods, learning activities, assimilation methods, summarising activities, note taking methods, developing vocabulary activities
<b>Connectivism or Digitalism learning theory</b>	Internet, the use of social media such as whatsapp, YouTube video, video conference, flipping	Online discussion, group project, service learning, virtual reality, use classroom social media, group learning

	classroom, virtual learning environment, MOOC's, bring your own devices, (BYOD) digital tools (laptop, desktop, smart phone, iPad, tablet, iPhone), wireless tools such as keyboard, mouse; application courses such as tusome pamoja, thl apps, let study apps; software tools such as Google meeting, zoom and team apps; use of artificial Intelligence (AI) such as chatGPT; The use of website for e-books and related materials;	and individual learning, gamification method, tracking system to determine truancy, preparation of academic documents such as logbook, lesson note, lesson plan, class attendance; multiple teaching methods, solving problems method
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According to Table 2 showing the learning theory, assumptions and teaching and learning methods :

**Behaviorm learning theory (blank box theory).** The theory assumed that in order for learning to take place must involve Stimulus (teacher), response (students), classical condition (rat experiment), operant condition (dog experiment), reinforcement and punishment, objective measurement, reductionism and law of effect (cat experiment). According to these theorists human being born blank slate but the environmental condition may increase or decrease learning appetite. The following methods used in teaching and learning strategies. (McLeod & Guy-Evans, 2023)

Lecture based method. According to behaviourist theory teacher tend to dictate the class. Teachers know everything. The students need to listen what teacher teaching. In this theory teacher teach what she or he knows. In this theory it is assumed that student know nothing. Further the theory based on subject content based approach. Students have to listen to the teacher. This ideas also supported by Pashayev (2020)

Kinaesthetic learning method. In this teachers use movement of hand gestures, drawing, acting, building picture. The students learn from teachers' movement. Learners become stimulated when they see teachers drawing, moving, acting, building and hand gestures. The students behave according to the condition of the teachers (Pashayev, 2020)

Game based learning. The game based learning method is common used to children. This method is useful to kindergarten, preschooling or nursery school. In this methods teachers need also to play games outside the classroom or inside the classroom. The children become stimulated when the teacher play with them and also want to play according to how teacher plays (response)

Expeditionary learning method in this method; project design, case studies, laboratory experiments and classroom field trips. These learning techniques motivate learners. The teacher (stimuli) has to prepare the project. In subject like social science the case study method can be used where student learn features of single unit. In real science student have to practical experiment in laboratory. In subject like Geography student have to move with the teacher to observe physical features outside the classroom

**Cognitivism learning theory (Humanism)**the assumption of the theory. corporative and collaboration learning, observational learning, emotional learning, experiential learning, receptive learning, habituation and sensitization learning; learning depending on biological, environmental and social factors; internal mental process; memory, language, attention, decision making and perception. Due to these assumptions the study recognised the following teaching and learning method.

Questions and answer method. In this method the teachers posed questions to the students for what already know about the topic concern. As long as this theory based on internal mental process student have to recall what and where they had observed the features that relate with subject concern.

Try and error methods in this method cognitivist scholar believe that when learners given the opportunity to try they can do better. When student try and do wrong have to be given the second chance to repeat will do better. Learning is about mistakes

Discussion what has been taught. The students should be given the opportunity to discuss what has been taught. The learners understand better when they get involved. After teachers teach the student are highly recommended to do discussion as the topic taught concern

Self-questions. In this method learners are encouraged to ask themselves the questions from the environment and universe in general.

Memorization and recalling. In this method students are encouraged to swallow materials in the brain. The brain becomes the centre of storage. The songs, poems and repetition are useful techniques for memorization and recalling

Visualisation and explanation teaching methods. The students need to visualize pictures, and image become sensitized to learn. When the teachers explain something with the evidence of pictures and image students tend to remember

**Constructivism learning theory.** The theory assumed that educators are facilitators, tutors and mentor; learning depending on both external and internal factors; learners actively engage in learning; social setting; cultural environment; knowledge is active constructed; learning is social and individual process; learning is all about personal experiences; language play great role in learning and motivation is key factors in learning. The idea supported by (Efgivia et al., 2020). The learning theory has the following teaching and learning methods:

Scaffolding method, in this point of view the learner centred approach becomes very pivotal of teaching and learning. The students are not regarded as tabular rasa. The students already know something from the environment they live. The role of teacher shift from teaching and become mentor and coach. The teacher guide student to learn.

Learning activities. The number of activities taking place in this method such as project design, summarising activities, note taking methods, developing vocabulary activities. The students are encouraged to make their own notes and create various items for remembering and creativity

Assimilation methods, the students have the prior knowledge and teachers have the knowledge. The teachers need to consolidate the knowledge to the students according to what students already know. The students already know something even before being taught. They learn from experience. The teachers need to consolidate the knowledge students have. Students just assimilate knowledge and not change.

**Connectivism or Digitalism learning theory.** The assumptions of this method involved: Internet connectivity, constant electricity supply, the use of social media such as WhatsApp, YouTube video, video conference, flipping classroom, virtual learning environment, Massive

Open Online Courses (MOOC'S), bring your own devices, digital tools (laptop, desktop, smart phone, iPad, tablet, iPhone), wireless tools such as keyboard, mouse; application courses such as tusome pamoja, thl apps, let study apps; software tools such as Google meeting, zoom and team apps; use of artificial Intelligence (AI) such as chatGPT; The use of website for e-books and other soft related materials; This theory combined the ideas and assumptions of behaviourism learning theory, cognitivism learning theory and constructivism learning theory (Pappas, 2022; Kropf, 2013; Siemens, 2005). In this theory the following teaching and learning method include;

Online and offline discussions. The use of classroom social media helps in both offline and online teaching and learning method. The teachers use YouTube, video conferences, zoom meeting, and Google meeting software. WhatsApp, Gmail, Facebook, blogs and instgram are platforms where learners and teachers exchange their thought through both online and offline discussion.

Service learning method. The community has many problems the teachers should teach the students about problems societies have theoretically and students should use the knowledge acquired from teacher and solve the problem in real world. In this method teachers create the problem and students have to use multiple methods to solve the same problems. This method is also called project design

Virtual reality. This method teachers and students never meet. Teachers share the learning materials, exercise, homework, assignment, test and exams. The students get opportunity to learn anywhere and at any time.

Individual learning method. The students are encouraged to personalised learning. The role of teachers is just to provide learning frame work. The learners have wide range of getting the learning materials and extend the knowledge beyond the teachers' bounds.

Gamification method. The student encouraged to use simple and complex game in the digital tools. By doing so students gain more experience and will become creative and solving the problem by imitating the games

Tracking system method. In this method help teachers and students to determine truancy, classroom schedule, holiday schedule, examination schedule, preparation of academic documents such as logbook, lesson note, lesson plan, class attendance; The students can track their academic performance and easy to determine their continuous assessment

Flipping classroom method. Using connectivism theory all learners are involved even those with shame in classroom, disabled students and prevent any physical barriers. In flipping classroom students become the teachers. In order for class to be called flipped class must be full equipped with digital devices (Kropf, 2013)

**Recommendation.** Teachers should continue getting in service training. The observation showing that recently majority of teachers still use outdated methods in teaching and learning process because they lack frequently in services training. Teachers should be very careful when they design their lesson plans and ensure that they match the learning theory and the methods to be used during teaching and learning process so as to achieve the desired learning outcome. Learning theory provides the conceptual framework how new knowledge, skills and value can be acquired by students (Gregory & Liguori, 2015).

**Conclusion.** Today digital technology growing faster than two last decades. The use of connectivism learning theory inevitable. Despite the challenges face connectivism such as immobility to users, internet connectivity, devices are not well spread its advantages using connectivism theory include: improve teaching productivity, develop online libraries, promote distance learning, helped disabled students, create virtual classroom, create inclusive learning environment, develop team work and communication skills, solving education challenges, help student to finish syllabus, application of digital devices, improve personal learning, asses students according to the time, improve dynamic learning, removal all education barriers, gain education information faster, making classroom interesting, MOOC's and constant availability of e-books.

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## References

- Alahmad, M. (2020). Strengths and Weakness of Cognitive Theory: Faculty of Foreign Language. *Budapest International Research and Critics Institute Journal (BIRCI-Journal)* 3 (3): 1584-1593. [www.bircu.journal.com/index.php/birci](http://www.bircu.journal.com/index.php/birci)
- Cherry, K. & Susman, D. (2022). Learning Theories in Psychology
- Efgivia, M. G., Rinanda, A., Suryan, R. Y., Hidayat, A., Maulana, I., Budiarjo, A. (2020). Analysis of Constructivism Learning Theory. *Journal Social Science, Education and Humanities*
- Indeed Editorial Team, (2023). 9 Teaching methods to Promote Success in the Classroom Career Guide.
- Gray, A. (2020). *Constructivist Teaching and Learning*. [Research Project for Fulfilment Master's degree in Education]. Research Centre (11). Report. 97-07:25 University of Saskatchewan
- Gregory, W. H. & Liguori, G. (2005). Learning Theory. *International Encyclopaedia of Social and Behavioural Sciences*
- Kimble, G. A (2023). *Learning theory*. Psychology and mental health
- Kropf, D. C. (2013). *Connectivism: 21<sup>st</sup> Century's New Learning Theory*. <https://waldenu.edu>
- Main, P. (2022). Fundamental Theories of learning what are major learning theories used to Explain education and how can you embrace these in your classroom? *Structural Learning*.
- Makgato, M. (2012). Identifying Constructivist Methodologies and Pedagogic Content Knowledge in the Teaching and Learning of Technology. <https://doi.org/10.1016/j.sbspro.2012.06.832S>
- Mcleod, S. & Guy-Evans, O. (2023). Behaviourism in Psychology. *Blog*
- Pappas, C. 92023). Everything You Need to Know About the Connectivism Learning Theory
- Pashayev, E. (2022). Critical Review of the Behaviourism Theory. *Journal of teacher Education Division of the council for experiential Children*
- Siemens, G. (2005). Connectivism: Learning Theory for Digital Age. <https://www.itdl.org/Ja05/articlehtm>