

Constructivist approach in Teaching and Learning: Meta-Analysis of Literature Review

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ABSTRACT

The present research paper is a sincere attempt to explore the related literature and studies on the theme of constructivism, with a persuasion approach in which the researcher critically examine the content of the review with the help of a set of defined parameters and logically develop the arguments by meta-analysis of the review data. This will help the researcher to find out the research gap of each review and to ascertain the strength and weakness of each research study. For the meta-analysis of the data, the researcher has analysis 90 articles on constructivism which were published in reputed journals. The articles published from 2009 to 2018 were taken into consideration for the analysis. The articles of the journals categorized into different sub elements to derive meaningful findings. The major findings of the study are: constructivism studies are conducting across the globe and along with the developed countries developing countries are also exploring and researching on the various aspects of constructivism and its impact on teaching and learning; the frequency of the number of work published on the topic of constructivism has been increasing exponentially; many authors from various disciplines are working in the field of constructivism independently and in collaboration mode; constructivism studies on the aspect of teaching and learning are going on across the disciplines with inter and multi disciplinary style and the number of citation and reference list are increasing in the constructivism researches which are publishing in the past decade. The present paper will help the new researchers in the field of education and social sciences to establish the research gap in the field of constructivism in the last decade. The findings and discussion of the study will contribute a reflective roadmap for researchers in the field of constructivism with a special focus on teaching and learning.

1. Introduction

The teaching and learning process in the twenty-first century is so complex that the teacher could not satisfy the needs and demands of the learner merely by a conventional lecture method. The students are coming from the digitalized environment and they have many gadgets to explore and understand the multi dimensional aspects of the concepts. The World Wide Web, Open Educational resources and e recourses are both accelerated and decelerated the young minds if they are not guided by a proper facilitator. Students can acquire maximum information through the above resources. In this process, learners and teachers can straightforwardly communicate and interact with each other through the social network sites. They also create the news content beyond the classroom (Greenhow and Askari, 2017). Their learning environment more democratic and learner express the idea of concern subject. Teacher share the classroom responsibility among students. Curriculum must be designed to accommodate the collaborative learner-centered environment (Boholano, 2017). Educational environment should provide opportunity to learner to develop the critical thinking which could help in the decision making power of students. In particular situation, teacher design the child-orient classroom where learner discover the intended content (Hammer, 1997). "Educational innovations can improve learning outcomes and the quality of education provision" (Peña-López, 2016). The content which is transmitted inside

the classroom should innovative in order to activate the real thought process.

Pedagogy is most important component of teaching and learning process. In other words teaching's heart is pedagogy. Knowles (1990) define the pedagogy "art and science of teaching children". It is guide to learning process for effective and efficient activities. *Constructivism* is one of the most popular Pedagogy; where learners are creating new knowledge based on previous acquire experiences. Von Glasersfeld (1989) states that cognitive behavior is supporting to active construction of knowledge, not passively receive it, their function is adoptive the experiential world. For enhancement of learning outcomes is based on active interaction with real world by learner (Chen, 2011; Chen & Tsai, 2012). Vygostky (1078) and Fogarty (1999) socio-cultural interaction is create learner new form of reality. Further, Bruner (1966) stated that information is acquired through the discovering method, which is based on problem-solving approach. Piaget (2013) work of genetic epistemology is link to process of knowledge construction, where constructivism advocates that learning is not experimental work but is a mental construction of reality.

2. Objectives of the study

The present study is based on the following objectives

- To Meta analysis the review of related literature and studies on the theme constructivism with special reference to the following variables/elements
 - Place of execution of the study
 - Publication year of the article
 - Number of author(s) involved in the study
 - Approach used for the study
 - Discipline of the study
 - Theme of the study
 - Tools and techniques of the study
 - Data analysis procedure
 - Numbers of references
- To critically examine the bandwidth of research studies on constructivism across the globe.
- To recommend the scope of the research in constructivism based on the meta- analysis of the review of literature on constructivism.

3. Methodology

As the present research study is on the examination of review of related literature and studies on the theme of constructivism, the method used for the study was *persuasion* in which the researcher critically examine the content of the review with the help of a set of defined parameters and logically develop the arguments by meta-analysis of the review data. This will help the researcher to find out the research gap of each review and to ascertain the strength and weakness of each research study. The various attributes of the study with special focus on the numerous sub themes of the study could be able to wipe out through the meta-analysis of the review of literature. For the meta-analysis of the data, the researcher has analysis 90 articles on constructivism which were published in reputed journals. The articles published from 2009 to 2018 were taken into consideration for the analysis. The articles of the journals categorized into different sub elements to derive meaningful findings. It explores the number of studies Place of execution of the study, Publication year of the article, Number of author(s) involved in the study, Approach used for the study, Discipline of the study, Theme of the study, Tools and techniques of the study, Data analysis procedure, Numbers of references. This papers based on constructivist learning approach were included.

4. Analysis of the data & findings

The analysis of the data was done on the following tables and the findings were derived accordingly. The findings are followed by the suggestions and recommendations on the theme constructivism.

Table 1: Data & Results based on the meta-analysis of data on the basis of *place of execution of the study*

Nature of the Country	Number of Articles
Developed Country	53
Developing Country	35
Under Developed Country	2
Total	90

The analysis of data on the table (1) shows that out of the 90 studies reviews from 2009 to 2018 shows that 53 studies were executed in developed nations and 35 for developing and 2 for underdeveloped countries. This shows constructivism

studies on the aspect of teaching and learning are going on across the globe.

Table 2: Data & Results based on the meta-analysis of data on the basis of *publication year of the article*

Years	Number of Articles
2009	5
2010	3
2011	9
2012	7
2013	6
2014	10
2015	15
2016	12
2017	16
2018	7
Total	90

The analysis of data on the table (2) shows the publication year from 2009 to 2018 shows that in every year studies were executed on the area of constructivism. But it is found that after 2013 the frequency of the number of publications on the topic of constructivism has increased.

Table 3: Data & Results based on the meta-analysis of data on the basis of *number of author(s)*

Number of author	Number of Articles
1	47
2	30
3	5
4	6
5	1
6	1
Total	90

The analysis of data on the table (3) with respect to the number of author (s) shows that majority of studies i.e. 47 studies were one author and 30 studies were two author and very few studies were found to be having multiple author(s).

Table 4: Data & Results based on the meta-analysis of data on the basis of *approach used for the study*

Approach	Number of Articles
Qualitative	51
Quantitative	29
Both (Qualitative & Quantitative)	10
Total	90

The analysis of data on the table (4) shows that 51 studies were used the qualitative approach and 29 studies for quantitative approach. 10 studies were followed the both (qualitative & quantitative) approach. This shows constructivism studies are executing both by quantitative and qualitative approach on the aspect of teaching and learning.

Table 5: Data & Results based on the meta-analysis of data on the basis of *discipline of the study*

Discipline	Number of Articles
Teacher education	16
Languages	10
Science	24
Social Science	20
Inter & Multi-disciplinary	20

Total	90
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The analysis of data on the table (5) shows that majority of 24 studies were from the discipline of science and 20 studies from social science and Inter & Multi-disciplinary areas. 16 studies were observed to be from the discipline of teacher education and 10 from different languages. This shows constructivism studies on the aspect of teaching and learning are going on across the disciplines.

Table 6: Data & Results based on the meta-analysis of data on the basis of *theme of the study*

Theme of the study	Number of Articles
Focus on Students	32
Focus on Teachers	11
Focus on both (students and teachers)	11
Focus on inter & multi disciplinary themes	36
Total	90

The analysis of data on the table (6) shows that out of the 90 studies reviews from 2009 to 2018 shows that 36 studies were focus on inter & multi disciplinary themes and 32 for students and 11 studies each were focus on teachers.

Table 7: Data & Results based on the meta-analysis of data on the basis of *tools and techniques of the study*

Tools & techniques	Number of articles
Interview	6
Survey	2
Introspection	7
Observation	2
Questionnaire	22
Schedule	2
Secondary literature	49
Total	90

The analysis of data on the table (7) shows that out of the 90 studies reviews from 2009 to 2018 shows that majority of 49 studies were based on secondary literature and 22 studies used questionnaire as a data collection tools and in all other studies different tools were used for conducting in the constructivism research.

Table 8: Data & Results based on the meta-analysis of data on the basis of *data analysis procedure*

Data Analysis	Number of articles
Descriptive Statistical technique	14
Inferential statistics technique	15
Content & Documentary Analysis	61
Total	90

The analysis of data on the table (8) shows that out of the 90 studies reviewed from 2009 to 2018 shows that in 61 studies the data analysis was made through content & documentary analysis and 15 used inferential statistics technique. 14 studies were followed descriptive statistical technique. This shows constructivism studies on the aspect of teaching and learning conducted through multiple data analysis technique.

Table 9: Data & Results based on the meta-analysis of data on the basis of *number of references*

Numbers of references	Number of studies
01-20	21

21-40	29
41-60	23
61-80	10
81-100	3
101-120	4
Total	90

The analysis of data on the table (9) shows that out of the 90 studies reviewed from 2009 to 2018, 29 studies were given a total reference ranges from 21 to 40 in number, 23 studies having reference in between 41 to 60, 21 studies were made reference in between 01 to 20, 10 studies were studies were done in between 61 to 80 and rest of them have the reference more than 80. This shows that constructivism article have a good number of citation and review across the globe regarding the concept of teaching and learning.

5. Discussions based on the findings

After a thorough review analysis using the process of meta-analysis on the concept of constructivism in teaching and learning the researcher found that the constructivism studies have been ongoing across the globe in various domains. The nature of the work was so comprehensive and cohesive with the coverage of various attributes of the constructivism. The following are the discussions derived based on the findings of the study.

- The constructivism studies are conducting across the globe and along with the developed countries developing countries are also exploring and researching on the various aspects of constructivism and its impact on teaching and learning.
- The frequency of the number of work published on the topic of constructivism has been increasing exponentially.
- Many authors from various disciplines are working in the field of constructivism independently and in collaboration mode.
- Constructivism studies are executing both by quantitative and qualitative approach on the aspect and triangulation approach in constructivism has been emerging as a recent trend.
- Constructivism studies on the aspect of teaching and learning are going on across the disciplines with inter and multi disciplinary style.
- The constructivism studies have been executed not only among students but other stakeholders are also engaged in the process of enquiry.
- Both qualitative and quantitative research instruments including various methods, techniques and tools are used for the data gathering research work of constructivism.
- Both descriptive and Inferential data analysis of quantitative method, content and documentary approach of qualitative method are used by various researchers for the data analysis and interpretation.
- The number of citation and reference list are increasing in the constructivism researches which are publishing in the past decade.

Hence the research in constructivism has a large scope in both school and higher education. The present paper will help

the new researchers in the field of education and social sciences to establish the research gap in the research work in constructivism in the last decade. The findings and discussion

of the study will contribute an reflective roadmap on the new emerging concept of constructivism and its special focus on teaching and learning.

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