

Teacher's Attitude Towards Constructivist Approach Of Teaching At Secondary School Level

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Abstract

Constructivist teaching is based on the belief that learning occurs as learners are actively involved in a process of constructing meaning and knowledge as it opposed to passively receiving information of learners from the instructor. Learner is itself the maker of meaning and knowledge. Constructivist teaching and learning requires creativity, critical thinking and innovative idea from teachers and active involvement of learners. Constructivism is the latest catchword in educational circles applied both to teaching and learning theory, both to how people learn and to the nature of knowledge. We need to think about our work in relation to the theories of learning and teaching. The present study was proposed to observe the attitude towards constructivist approach of teaching at secondary school level teachers. Eighty-six (86) secondary school teachers (44 male and 42 female) were taken for the sample from twelve secondary schools (6 government and 6 private schools) in which (43 government and 43 private schools teachers) of district Rajouri Division Jammu, were taken for the sample to observe the difference with respect to gender and type of schools of school teachers at secondary level. Descriptive research design were employed to yield the better results of the study, Statistical treatments like mean, standard deviation and t-test were applied to analyze the obtained data statistically. It was found the teachers need to reflect on the work in order to employ these objectives to their work how constructivist activities are helping in gaining understanding. Constructivist learning approach not only creates student own knowledge but also creates interest to them for learning and understanding at all. It can be said that there no any commitment is existing for adopting the advanced strategy of teaching (teaching through Constructivism). Hence it can be said that teaching through constructivist approach of teaching is very progressive for both the teachers and learners in the contemporary world, to go advanced in teaching and learning is to teach and learn through constructivism.

Keywords: Constructivism; Constructivist teaching; Constructivist approach of teaching

1. Introduction

Constructivism is an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner' (Elliott 2000). Constructivism is the theory of knowledge which argues that humans generate interaction between their experiences and their ideas. The essential core of constructivism is that learners actively construct their own knowledge and meaning from their experiences (Fosnot, 1996). Philosophically this core focuses on subjectiveness and relativism. However the concept that denotes reality may exist separate from experiences. It can only be known through thought experience resulting in a personally unique reality. This core has roots that extend back through many years and many philosophers like (John Dewey, 1938).

1.1. Constructivist teaching and learning

Constructivist approach of Teaching is based on constructivist learning theory developed by Jean Piaget (1896-1980). Constructivist teaching is based on the belief that learning occurs as learners are actively involved in a process of constructing meaning and knowledge as opposed to passively receiving information from the instructor. Learner is itself the maker of meaning and knowledge. Constructivist learning requires creativity, critical thinking and innovative idea from teachers and active involvement of learners George. W Gagnon and Michelle Collay, advocated that constructive learning design need a lot of collaboration. The constructive designs are being used now and had been gone through a variety of revisions in the past several years. There are six elements like situation, grouping, bridge, question, exhibit and reflection. These elements are designed to provoke teacher planning and reflection about the process of situation for students to explain and the teacher selects process for grouping of materials, the teacher builds a bridge between what student already know and what they want to learn. The teacher asks question to be answered by students in controversy and discussions. The teacher encourages students to exhibit a record of their thinking by sharing with others and solicit students in reflections about their learning. The objectives, outcomes and results need to be evaluated as per board curriculum by the concerned teacher.

Constructivist pedagogy: The philosophy behind constructivist pedagogy in the human can understand only what they have themselves constructed. The general concept for constructivist pedagogy is the effort to identify 'learner' as an important agent in the learning process. The interest and the characteristics of the learners are taken into consideration and it is stated that learning should build on prior knowledge into learners understand how to construct new knowledge from authentic experience and also to support active participation and engage learning. Constructivism is the best understood in terms of how individuals use information resources and to help others to build and improve their mental models and their problems solving strategies (Wool Folk 2007).

1.2. Strategies of constructivist pedagogy

Scaffolding: In education, scaffolding refers to a variety of instructional techniques used to move students progressively toward stronger understanding and, ultimately, greater

independence in the learning process. The term itself offers the relevant descriptive metaphor: teachers provide successive levels of temporary support that help students reach higher levels of comprehension and skill acquisition that they would not be able to achieve without assistance. Scaffolding is considered as the essential element of effective teaching. In addition, scaffolding is often adopted as to bridge learning gaps, which means to differentiate what the students have learned and what they are expected to learn and to be able to do at a certain point in their future.

- 1) **Active learning:** Active learning is any learning activity in which the student participates or interacts with the learning process, as opposed to passively taking in the information. The idea of active learning was developed by the philosopher Jean-Jacques Rousseau (1712–1778). Active learning is a method of learning in which students are actively involved in the learning processes.
- 2) **Case study:** Case study means in depth exploration of an individual, group of peoples or any social units. Frederic Le Play first developed the concept of case-study method into social science in 1829. In all disciplines, case studies were applied on an occasion for postulating new theories, as in the grounded-theory work of sociologists Barney Glaser (1930) and Anselm Strauss (1916-1996). A major advantage of teaching with case studies is that the students are actively engaged in figuring out the principles by abstracting from the example. The case method is a participatory, discussion-based way of learning where students gain skills in critical thinking, communication and group based learning often seen in the professional schools of medicine, law and business. The case study method of now used successfully disciplines such as engineering, chemistry, education and journalism. Students can work through a case during class as a whole or in small groups.
- 3) **Project based learning:** Project Based Learning (PBL) is a teaching method in which students learn by actively engaging in the real-world environment and on particularly meaningful projects. John Dewey (1952) is recognized as one of the earlier proponent of (PBL) through the idea of "learning by doing". PBL integrates knowing and doing by students learn knowledge and elements of the core curriculum. In PBL the teachers take advantage of digital the tools to produce high education on the students.
- 4) **Role playing:** Role-playing is the change in one's behavior to assume a role, either unconsciously to fill a social role, or consciously to act out an adopted role. While the Oxford English Dictionary offers a definition of role-playing as "the changing of one's behavior to fulfill a social role" Role-play, as similarly an Approach to Teaching and Learning. Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

Role-playing is in four senses:

- a) To refer to the playing of roles generally such as in a theatre, or educational setting;
- b) To refer to taking a role of a character or person and acting it out with a partner taking someone else's role, often involving different genres of practice;
- c) To refer to a wide range of games including role-playing video game (RPG), play-by-mail games and more;
- d) To refer specifically to role-playing games.

- 5) **Spiral curriculum:** A spiral curriculum can be defined as a course of study in which students will see the same topics throughout their school career, with each encounter increasing in complexity and reinforcing previous learning. Spiral curriculum is developed by Jerome Brunner (1960). It involves regularly revisiting on the same topic over the course of subject till the students achieve mastery and have learned completely. In spiral learning each time the content is revised by the learner to gain a deeper understanding of the topics.

1.3. Role of Teacher in Constructive Approach of teaching

In constructivist approach of teaching the role of the teacher is not the instructor only, the teacher acts as a facilitator in the teaching and learning process as the learners construct knowledge and side by side the teacher assists and guides to the students for making progress and improvement. In traditional type of teaching the teacher was transferring knowledge and the learners were passively receiving and memorize it. But the approach like constructivist teaching is totally different from all of that the students construct meaning and knowledge by its own and the teacher only minds their ideals to their students. Constructivist approach believes that the teacher should act as a facilitator that it will promote creative ideas into the minds of students. Thus the teacher's role is to support a child in learning environment as facilitator, guide, and as a coach. The integral point of constructivist teaching is to provide a curriculum that is malleable and can be re-imagined when a student's experiences, interests and skills become part of the event. It is vital to appreciate that each student will respond to and evaluate information according to their own philosophy and learning episodes should reflect this variance. A teacher's central role is to ensure their students feel safe to learn freely and are supported in their individual learning styles in a pleasurable environment.

2. Review of the related literature

Kaushik (2016) studied an analytical study of constructivist approach of teaching at senior secondary level. The main aim of the study was to identify the different instructional approaches used in the secondary schools radically. 603 secondary school teachers were taken for the sample. Survey method was used to collect the data. The results of the study were found that there is a difference in the favourable opinion of teachers of government and private school in using constructivist approach of teaching.

Lyngdoh (2016) worked on the construction and standardization of teachers attitude scale on constructivist approach of teaching. The main purpose of this study was to construct teacher attitude scale towards constructivist approach in teaching. 895 student-teachers and teacher-educator were selected randomly for the sample. The tool for the collection of the data was constructed by the investigator itself. It was revealed that there was no significant difference in the level of attitude towards constructivist approach of teaching of both male and female teachers.

Mondal (2014) examined a study of constructivism approach towards teaching learning. In this study the main objective was to identify the effectiveness of constructivist approach in teaching learning process. 103 students and 109 teachers were taken for the sample for the

study. t-test and ANOVA was employed to analyse that data. It was found that the male teachers have more constructivist approach in their teaching as compared to female teachers.

Olusegen (2015) studied constructivism learning theory. The main purpose of the study was to discuss the constructivism learning theory as a paradigm for teaching and learning and to make the conceptual understanding of the instructions. Seven pedagogical goals of the constructivist learning environment and six benefits of constructivist classroom were spelled in a tabular form. It was found the teachers need to reflect on the work in order to employ these objectives to their work how constructivist activities are helping in gaining understanding.

Patil & Kudte (2017) studied teaching learning with constructivist approach. The main purpose of the study was to study about different constructivist models used in educational system. The models studied taught under constructivist environment where IMSTRA, TEAL and TPACK which were used in teaching learning process. It was found that constructivist learning approach not only creates student own knowledge but also creates interest to them for learning and understanding at all.

3. Significance of the study

In constructivist approach of teaching the role of the teacher is not the instructor only, the teacher acts as a facilitator in the teaching and learning process as the learners construct knowledge and side by side the teacher assists and guides to the students for making progress and improvement. Noel, Jana R (1993) observed, Constructivism is a perspective on learning that is initiated from the learner's perspective rather than by that of the teacher; understanding is constructed by the learner rather than placed upon the learner. If constructivism is fostered in teacher education, practical reasoning can encourage teacher development to its fullest. However Lyngdoh, (2016) worked on the construction and standardization of teachers attitude scale on constructivist approach of teaching. The main purpose of this study was to construct teacher attitude scale towards constructivist approach in teaching. It revealed that there was no significant difference in the level of attitude towards constructivist approach of teaching of both male and female teachers. Constructivist approach of teaching and learning is the approach of teaching to make education in lines of advancement of teaching and learning. Its application and use of technology depends upon the readiness and adoption of its instructors, as Kaushik (2016) studied an analytical study of constructivist approach of teaching at senior secondary level. The main aim of the study was to identify the different instructional approaches used in the secondary schools radically. The results of the study were found that there is a difference in the favourable opinion of teachers of government and private school in using constructivist approach of teaching. Constructivist approach of teaching and learning is the approach of teaching to make education in lines of advancement of teaching and learning. Its application and use of technology depends upon the readiness and adoption of its instructors. The present study purported to observe the teacher's attitude towards constructivist approach of teaching at secondary school level in relation to both gender (male and female) and school (government and private) secondary school teachers.

4. Objectives of the study

1. To find the level of male and female secondary school teachers on their attitude towards constructivist approach of teaching.
2. To compare the attitude towards constructivist approach of teaching on the basis of gender (male and female).
3. To find the level of attitude towards constructivist approach of teaching on the basis of type of schools (government and private schools).
4. To compare the attitude towards constructivist approach of teaching on the basis of type of schools (government and private schools).

5. Hypotheses of the study

Ho 1. There is no significant difference between both male and female secondary school teachers on attitude towards constructivist approach of teaching.

Ho 2. There is no significant difference between government and private secondary school teachers on the attitude towards constructivist approach of teaching.

6. Methodology and sampling of the study

Descriptive research design was applied to yield the better result of the study. Descriptive research is concerned in describing the characteristics and functions of the current situation, problem and investigating the existing phenomenon and the relationship that exists in relation to the current situations.

6.1. Sample

Eighty-six (86) secondary school teachers (44 male and 42 female) were taken for the sample from twelve secondary schools (6 government and 6 private schools) in which (43 government and 43 private schools teachers) of district Rajouri Division Jammu (Jammu and Kashmir State) to observe the difference in the teachers attitude towards constructivist approach of teaching at secondary school level with respect to gender (male and female) and type of school (government and private). Statistical techniques like mean, standard deviation and t-test were applied to analyze the obtained data statistically. The breakup of the sample is as following;

The breakup for the sample of the present study

	Male	Female	Total
Government	22	21	43
Private	22	21	43
Total	44	42	86

6.2. Tool used

Teacher's attitude towards constructivist approach of teaching scale by Susan Wandaphisha Lyngdoh (TASCAT-2016).

The Teachers Attitude Scale towards Constructivist Approach to Teaching (TASCAT-2016) by Susan Wandaphisha Lyngdoh has been developed with the aim of finding out the attitude of teachers towards Constructivist Approach. It will enable the teachers to know whether they are still rooted in the traditional role of the teacher or whether they are open to changes that come along with the application of Constructivist Approach in teaching and learning. The TASCAT is a Likert five point Summated Rating Scale.

Components of the Scale: The Scale has six components. These are: - 1.Reflection, 2.Learning Process, 3.Autonomy-Community, 4.Authority-Facilitator, 5. Power-Empowerment, 6. Evaluation.

6.2.1. Validity of the scale

The validity of the scale has been done on the basis of the following two methods, Face validity and Content validity.

6.2.2. Reliability of the scale

For finding out the reliability of the test, the split half method to estimate the internal consistency of the scale was used on a sample of 200 elementary and secondary school teachers

Table No. 1

	Frequency	Percent	Valid Percent	Cumulative Percent
MALE	44	51.2	50.0	51.2
FEMALE	42	50.0	48.8	100.0
Valid Total	86	100.0	100.0	

from various schools in Shilong.

7. Analyses and interpretation of data

To find the level of both male and female secondary school teachers on their attitude towards constructivist approach of teaching.

The above table shows the level of the teachers on their attitude towards constructivist approach of teaching on the basis of gender.

The table shows the level of ATCAT of secondary school teachers on the basis of gender (male and female teachers). The percentage of the male teachers was maximum than female teachers as shown in the table above the total number of male teachers were 44 (51% cumulative record) and 42 female (48% cumulative record). It verifies that the level of male teachers is maximum than female teachers teaching in secondary schools.

To compare the attitude towards constructivist approach of teaching on the basis of gender.

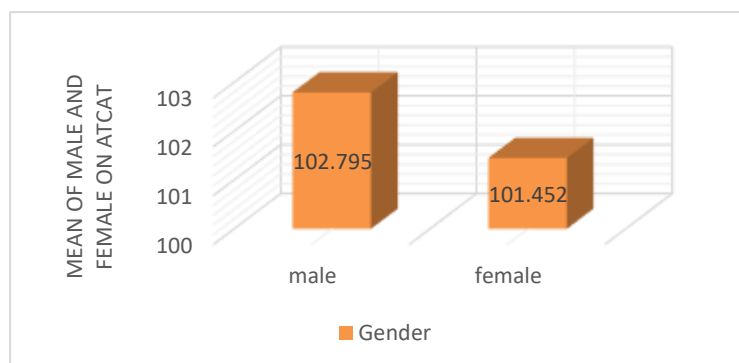
To compare the the attitude towards constructivist approach of teaching of secondary school teachers with respect to gender, the independent sample t-test was employed whose results are presented in the table below:

Table No.2

GENDER		N	Mean	SD	SEM	t	df
ATCAT	MALE	44	102.79	9.68	1.46	.644	83.84
	FEMALE	42	101.45	9.65	1.48		

The table shows the difference of mean scores in the attitude towards constructivist approach of teaching of male and female secondary school teachers.

The data in table shows the difference of attitude towards constructivist approach of teaching of male secondary school teachers (M=102.79; SD=9.68) and female secondary school teachers (M=101.45; SD=9.65) is insignificant at 0.05 level; t-value (.644); (i.e., $p > .05$). The table further reveals that the male and female secondary school teachers have common on the attitude towards constructivist approach of teaching. Thus the Null-hypothesis which reads as, “There is no significant difference in the the attitude towards constructivist approach of teaching of male and female secondary school teachers” is accepted.



The Figure 1. shows mean comparison of male and female secondary school teachers on the attitude towards constructivist approach of teaching.

In order to examine the attitude towards constructivist approach of teaching of secondary school teachers on the basis of gender the independent sample t-test was employed to analyse the difference in the attitude towards constructivist approach of teaching of male and female secondary school teachers. It was found that there is no significant differences between male and female secondary school teachers on the attitude towards constructivist approach of teaching. The present output is supported by the findings of Ates & Yilmaz (2018), Kumar

(2017), Anees (2013), Gokce (2010), who revealed that there is no significant difference in the the attitude towards constructivist approach of teaching of male and female secondary school teachers.

The result for this finding may be due to the similar teaching trainings, similar instructional technologies applied in the classroom situations by both the male and female secondary school teachers. The teaching programmes (preservice and in-service programmes) are provided to both male and female secondary school teachers to enrich their knowledge of subject matter and develop their teaching skills that also can effect to the attitude of their teaching system.

To find the level of attitude towards constructivist approach of teaching on the basis of type of schools (government and private schools)

Table No.3

	Frequency	Percent	Valid Percent	Cumulative Percent
GOVERNMENT	43	50.0	50.0	50.0
PRIVATE	43	50.0	50.0	100.0
Valid Total	86	100.0	100.0	

The table shows the level of the teachers according to the type of schools

The table shows the level of ATCAT of secondary school teachers on the basis of schools (government and private). Both the government and private secondary schools were taken on similar basis. 43 government teachers and 43 private teachers with their cumulative record of 50% government and 50% private secondary school teachers.

To compare the attitude towards constructivist approach of teaching on the basis of type of schools (government and private schools)

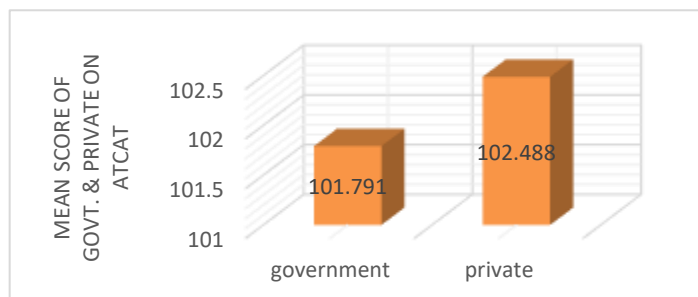
Table No. 4

SCHOOL	N	Mean	SD	SEM	t	df
ATCAT GOVERNMENT	43	101.79	10.33	1.57	.334	82.42
PRIVATE	43	102.48	8.99	1.37		

The table shows the difference of mean scores in the attitude towards constructivist approach of teaching of government and private secondary school teachers.

To compare the attitude towards constructivist approach of teaching of secondary school teachers with respect to the type of schools (government and private), the independent sample t-test was employed whose results are presented in the table below;

The data in table shows the difference of attitude towards constructivist approach of teaching of government secondary school teachers ($M=101.79$; $SD=10.33$) and private secondary school teachers ($M=102.48$; $SD=8.99$) is insignificant at 0.05 level; t -value (.334); (i.e., $p>.05$). The table further reveals that the government and private secondary school teachers have common on the attitude towards constructivist approach of teaching. Thus the Null-hypothesis which reads as, “There is no significant difference in the the attitude towards constructivist approach of teaching of government and private secondary school teachers secondary school teachers” is accepted.



The Figure 2. shows mean comparison of male and female secondary school teachers on the attitude towards constructivist approach of teaching

In order to examine the attitude towards constructivist approach of teaching of government and private secondary school teachers the independent sample t -test was employed to analyse the difference in the attitude towards constructivist approach of teaching of government and private secondary school teachers. It was found that there is no significant differences between male and female secondary school teachers on the attitude towards constructivist approach of teaching. Kumar (2017) and Gokce (2010), who revealed that there is no significant difference in the attitude towards constructivist approach of teaching of government and private secondary school teachers. The teaching in government and private secondary schools do have different teaching learning strategies and different system of education in accordance with the different type of assessment procedures but the teachers in government and private schools may have similar attitude in approach towards the application of educational technology and the use of ICT in education system and the implementation of all new advanced learning systems in teaching and learning.

Conclusions

The present study concerned the teacher’s attitude towards constructivist approach of teaching at secondary school level. The main purpose of the study was to observe the difference of secondary school teachers on their attitude towards constructivist approach of teaching on gender basis and on the type of schools. Forty-six (46) secondary school teachers (25 male and 21 female) were taken for the sample from six secondary schools (3 government and 3 private schools) in which (23 government and 23 private schools teachers) of district Rajouri Division Jammu, were included in the sample. The result of the study revealed that the gender has no significance difference on their attitude towards constructivist approach of teaching it purports

that the male and female secondary school teachers have common on the attitude towards constructivist approach of teaching and both the teachers teaching in government and private secondary schools have similar attitude towards constructivist approach of teaching. Thus the study further reveals that both the gender and schools had no commitment for adopting the advanced strategy of teaching (teaching through Constructivism). As Patil. & Kudte. (2017). studied teaching learning with constructivist approach. The main purpose of the study was to study about different constructivist models used in educational system. The models studied taught under constructivist environment where IMSTRA, TEAL and TPACK which were used in teaching learning process. It was found that constructivist learning approach not only creates student own knowledge but also creates interest to them for learning and understanding at all. Hence it can be said that teaching through constructivist approach of teaching is very progressive for both the teachers and learners in the contemporary world, to go advanced in teaching and learning is to teach and learn through constructivism.

Findings of the study

1. The finding for the first result purported that the level of male teachers is maximum than female teachers teaching in secondary schools. The percentage of the male teachers was maximum than female teachers as shown in the table above the total number of male teachers were 44 (51% cumulative record) and 42 female (48% cumulative record).
2. In order to examine the attitude towards constructivist approach of teaching of secondary school teachers on the basis of gender the independent sample t-test was employed to analyse the difference for the attitude towards constructivist approach of teaching of male and female secondary school teachers. It was found that there is no significant differences between male and female secondary school teachers on the attitude towards constructivist approach of teaching, t-value (.644); (i.e., $p > .05$). The result for this finding may be due to the similar teaching trainings, similar instructional technologies applied in the classroom situations by both the male and female secondary school teachers.
3. In order to examine the attitude towards constructivist approach of teaching of government and private secondary school teachers the independent sample t-test was employed to analyse the difference in the attitude towards constructivist approach of teaching of government and private secondary school teachers. It was found that there is no significant differences between government and private secondary school teachers on the attitude towards constructivist approach of teaching, t-value (.334); (i.e., $p > .05$). It can be said that the teaching in government and private secondary schools may have different teaching learning strategies and different system of education in accordance with the different type of assessment procedures but the teachers in government and private schools may have similar attitude in approach towards the application of educational technology and the use of ICT in education system and the implementation of all new advanced learning systems in teaching and learning.

Educational implications of the study

1. Constructivist approach of teaching is only strategy of teaching to meet the challengeable demands of our educational system in contemporary world, in which the learner construct

meaning from knowledge rather than passively receive information as in traditional times. Constructivism is the catch word of the contemporary world. Teaching through constructivist approach is the contemporary trend to meet all the challenges going to the progress and development of educational systems.

2. The models studied taught under constructivist environment where IMSTRA, TEAL and TPACK which were used in teaching learning process. It can be said that constructivist approach not only helps teachers but learning through constructivist approach is the active involvement of the learners in the classrooms for effective learning and understanding at all rather passively receive information traditionally. Hence it can be said that teaching through constructivist approach is very useful and progressive for both the teachers and learners in this contemporary world, to go advanced in teaching and learning is to teach and learn with constructivist approach and constructivist pedagogy.

Delimitations of the study

1. The study was confined to only secondary school teachers
2. The study can be generalized only to the attitude towards secondary school teachers, not higher secondary and college teachers.

References

- Barman, P., & Bhattacharyya, D. (2015). Effectiveness of Constructivist Teaching Method : an Experimental Study. 5, 69–76.
- Elliott, S.N., Kratochwill, T.R., Littlefield Cook, J. & Travers, J. (2000). Educational psychology: Effective teaching, effective learning (3rd). Boston, MA: McGraw-Hill College.
- Fernando, S. Y., & Marikar, F. M. (2017). Constructivist Teaching/Learning Theory and Participatory Teaching Methods. *Journal of Curriculum and Teaching*, 6(1), 110. <https://doi.org/10.5430/jct.v6n1p110>
- Fosnot, C. T., & Perry, R. S. (1996). Constructivism: A Psychological Theory of Learning. *Constructivism: Theory, Perspectives, and Practices*, 0, 28. <http://rsperry.com/fosnotandperry.pdf>
- Gagnon, G W., Collay, M (2001). *Designing for Learning: Six Elements in Constructivist Classrooms*. A Sage Publications Company, 2455 (ED451136). Retrieved from <http://www.corwinpress.com>.
- Gangwar, B. P., & Savita. (2017). Constructivist Approach in Teaching. *Deliberative Research*, 34(1), 71–74. http://iaset.us/view_archives.php Of, A. S., Between, R., & Aptitude, M. (2016). Review of researches on constructivist approach. March.

- Kaushik . (2016). A study of constructivist approach in classroom teaching at senior secondary school level at Jaipur District. Banashthali University Rajasthan, retrieved from (<https://hdl.handle.net/10603/138874>).
- Lyngdoh, S.W. (2016). Construction and standardization of teacher attitude scale towards constructivist approach of teaching. North Eastern University Shillong, retrieved from (<https://hdl.handle.net/10603/217108>).
- Maheshwari, G., & Thomas, S. (2017). An analysis of the effectiveness of the constructivist approach in teaching business statistics. *Informing Science*, 20, 83–97. <https://doi.org/10.28945/3748>
- Markovits, J., & Walden, K. (2018). Julia Markovits and Kenneth Walden Contribution to Routledge Handbook of Practical Reason Draft of March 9, 2018. 3, 1–19.
- McHenry, A. L., Depew, D. R., Dyrenfurth, M. J., Dunlap, D. D., Keating, D. A., Stanford, T. G., Lee, P., & Deloatch, G. (2005). Constructivism: The learning theory that supports competency development of engineers for engineering practice and technology leadership through graduate education. ASEE Annual Conference and Exposition, Conference Proceedings, 2263–2268.
- Mondal, R. (2014). A study of constructivist approach towards teaching learning in the secondary school of shantinekatan. North Eastern University Shillong, Meghalaya, retrieved from (<https://hdl.handle.net/10603/169894>).
- Nayak, R. K. (2017). A Study on Effect of Constructivist Pedagogy on Students Achievement in Mathematics at Elementary Level. *National Institute of Open Schooling*, 3(3), 1–15.
- Nessipbayeva, O. (2019). The competencies of the modern teacher. *International Perspectives on Education*, 148–154. <http://bit.ly/2fRwNoY>
- Olusegun, S. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. *IOSR Journal of Research & Method in Education Ver. I*, 5(6), 2320–7388. <https://doi.org/10.9790/7388-05616670>
- Patil, A.M., & Kudte, S. (2017). Teaching Learning with Constructivist Approach. *IJEDR*, 5(4), 308–312. <https://www.ijedr.org/papers/IJEDR1704047.pdf>
- Rezanova, Z. I., & Khlebnikova, A. L. (2015). Gender Metaphors in Russian and English Linguocultures: A Comparative Study. *Procedia - Social and Behavioral Sciences*, 215(June), 273–278. <https://doi.org/10.1016/j.sbspro.2015.11.634>
- V, D., & A, Y. (2016). Constructivism: A Paradigm for Teaching and Learning. *Arts and Social Sciences Journal*, 7(4). <https://doi.org/10.4172/2151-6200.1000200>

Vintere, A. (2018). A Constructivist Approach to the Teaching of Mathematics to Boost Competences Needed for Sustainable Development. *Rural Sustainability Research*, 39(334), 1–7. <https://doi.org/10.2478/plua-2018-0001>

Wach-kakolewicz, A. M., Wach-kałolewicz, A., & Muffoletto, R. (2017). Constructivist Approach in Teaching in Higher Education Perspectives on Computer Gaming in Higher Education Edited by : January.

Woolfolk, A. (2007). Social cognitive and constructivist views of learning (Chapter 9). *Educational Psychology* (p. 204-245). Upper Saddle River, NJ: Prentice Hall. Conceived by <https://sites.google.com/site/swkcep900>