

A Study of Constructivist Instructional Design and Teacher Effectiveness on Teacher Educators

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Abstract: *Constructivist approach of teaching learning process provides a very interactive model for explaining how knowledge is produced as well as how students learn in a creative and constructive atmosphere. Constructivist instructional design teaching practices have become more prevalent in teacher education programs, while demonstrating significant success in promoting student learning in concrete concept. In this paper, the author takes a serious look at constructivist instructional design teaching practices highlighting both the promises and potential problems of these practices. The author argues that educators who are teaching through constructivist instructional design has often been misinterpreted and misused, resulting in learning practices that neither challenge students nor address their needs as it requires a defined setup administrative support, practices and trained teacher for implementing in the real-world practices. Author outlines some of the ways in which constructivist instructional design has been effective for the learners beneficial for their overall development and analyzes several ways in which constructivist teaching has been used. The author also presents the comparative analysis on the basis of types of colleges and gender for using constructivist instructional design in their teaching learning process that illustrate the effective use of constructivist instructional design teaching and explains what makes them successful.*

Keywords: constructivism, instructional design, teaching, learning, gender

1. Introduction

Learning theories provides base for teaching-learning process by which discussion or explanation is done in a classroom teaching practice. Instructional design theory is an explanation for how to best implement learning theories and design curriculum as per the required teaching and learning skills by using constructivist instructional design so learning will take place more effectively and concrete. Prevailing thought and research hold that learners construct their own meaning and that learners are more likely to remain engaged in interactive classroom and e-learning in which they feel a sense of community with their teacher and classmates. Understanding how to best design instruction that reflects constructivist learning theory is critical to student engagement and success via various instructional design as each design requires a large number of practices, defined time barriers, supportive administrative background, and other educational requirements. Constructivist approach instructional design simply changes the role of the teacher making the teacher more of a guidance and expert resource in a particular field rather than a teller of knowledge. The teacher has to create both problem solving activities as well as inquiry-based activities to guide the students through the knowledge process.

2. Definitions of Key Concepts

- **Constructivist Approach:** Those teaching approaches in which learner construct their own understanding and the knowledge of the world through their own cognitive ability and perception.
- **Instructional Design:** It means the systematic planning for the instruction based on constructivist approach including needs, assessment, development, evaluation, implementation and evaluation of materials and practices.

- **Teacher Effectiveness:** It means teacher competence and teacher performance with the accomplishment of the teaching goals.
- **Teacher Educators:** By this the investigator means teachers who are teaching in teacher training colleges.

3. Instructional Design

The concept of instructional design can be described as the process to identify the most applicable strategy, design or instruction plan to create an effective teaching-learning situation. Instructional design includes the analysis of learning needs and systematic development of learning materials. The practice involves the planning and arrangement of content in such a manner that knowledge transfer (learning) can happen most effectively. For this reason, it is necessary for the designer to determine the current level of learner understanding, defining the final outcome of the teaching process (instruction), and creating some assistance in the process of understanding. Instructional design focuses on outcomes, accounting for a multicultural, multi-lingual, multi-faceted context that can only be predictive. It further acknowledges that given the variability in human capability; a guarantee of reliable learning outcomes is improbable. The nature of what is to be learned, the nature of the learner (prior knowledge, learning styles) and the nature of the learning environment should be taken into consideration in planning teaching or designing instruction. Instructional design can also be thought of as a process to ensure the quality of teaching because it is based on the theory of learning, i.e. how learning is taking place.

3.1 Constructivist Instructional Design

In traditional instructional design and constructivist views, different positions regarding their compatibility can still be identified. To acknowledge the eclectic nature of instructional design, objectivist and constructivist elements in instructional models can be combined. In assumptions

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about the nature of knowledge and its acquisition, instructional design and constructivism are thus considered fundamentally incompatible. A perspective inclines to maintain a distinction between systematic instructional design and constructivist educational intervention. Constructivist philosophy, rather than being a competing paradigm in the field of instructional design, can provide an alternative set of world views. Therefore, it is values and priorities of practitioners rather than paradigmatic issues that are at stake in the debate over the compatibility of the two approaches, and only at the extremes are the positions of constructivist philosophy and instructional design really antagonistic. Further contrasts concerned are enumerated in which the interpretations of the fundamental concepts like knowledge, learning and teaching are of paramount significance. Recently some comprehensive arguments concerning the cost-benefit tradeoffs associated with a broad set of issues arisen in designing learning environments. While traditional stances should not entirely be replaced by the constructivist ones, the great challenge presented to instructional designers is how to strive the right balance between these conflicting ideas.

3.2 Role of Teacher Educators in Implementing Constructivist Approach Instructional Design

Teacher should be knowledgeable expert in his discipline and it is obligatory for him to enable student to understand the importance of learning for the benefit of society and Nation. They play a central role in planning and implementing the various approaches of teaching. It is therefore feasible that students learning can be improved by bringing changes in the ways teacher deliver the lessons and deals with discussions as both are crucial in teaching and learning. The two major roles which are suggested for teachers to teach in a classroom are: First one is to introduce new ideas and concept with proper guidance and support so that student can build new knowledge at their own. Second one is to observe and identify the ways in which exploratory activities are being interpreted by the students for further learning. Their duty is to plan appropriate experiences and execute in simple way, so that students can easily comprehend the meaning of the concepts.

3.3 Teaching Models based on Constructivism

Table 1: Teaching Models based on Constructivism

Steps	Three Stage Model	Steps	4 E Model	Steps	5 E Model	Steps	7 E Model
I	Exploration	I	Exploration	I	Engage	I	Excite
II	Term Induction	II	Explanation	II	Explore	II	Explore
III	Concept Application	III	Expansion	III	Explain	III	Explain
		IV	Evaluation	IV	Elaborate	IV	Expand
				V	Evaluate	V	Extend
						VI	Exchange
						VII	Examine

Among these the most primitive was “Three Stage Model” which was developed by Robert Karplus who was a physicist at California University, Berkeley. Karplus along with his team members developed three phases that were important for the teaching process. These primitive phases were “preliminary exploration,” “invention,” and “discovery”. These phases were later modified as “exploration,” “term induction”, and “concept application” (Marek & Cavallo, 1997). “Three - Stage Model” served as the foundation for the researchers to develop other models like 4 E, 5 E and 7 E. The most useful among these models is the 5 E Learning cycle Model that was propounded by Roger Bybee who is one among the innovators of Biological Science Curriculum Study (Ergin, Kanli & Unsal, 2008). A common model of instructional design is the ADDIE model. While there are many different models of instructional design, many of them are based on the ADDIE model. The component steps of the ADDIE model are analysis, design, development, implementation, and evaluation (Kruse).

4. Teacher Effectiveness

Teaching effectiveness is important because effective teaching helps student learning. It has become even more important as the emphasis on quality in higher education has increased. Effective teaching does not occur by chance. Effective teachers have become good at what they do because they evaluate their practice. James (n/d) suggests that “educational evaluation is a professional responsibility

for academic staff, arising from a commitment to understanding the effects of teaching on students and to enhance student learning.” There are numerous ways of evaluating teaching or monitoring its effectiveness.

Constructivist approach influences the teacher training program very effectively. To increase the quality in teacher educator, it is important that constructivist learning activities and performance based or authentic assessment methods to be used. As the teacher education models which lack holistic and spiral approaches are insufficient for teacher education, approaches regarding the acquisition of constructivist teaching skills and constructivist learning principles are applied.

Constructivist learning experiences can provide the teacher educators with the opportunities for self-development based on their interest and needs and to learn effectively. Moreover, teacher educators, if trained with constructivist principles and methods, can train their students using these principles and methods in futures. It is difficult for the teachers trained in the traditional learning environments to carry out constructivist teacher roles. The constructivist activities in teacher training program influence the teacher educators ‘opinions about concepts, planning, instruction and reflection positively. In this way teacher educators do not memorize information, but learn in a meaningful way. Learners learn how to learn in constructivist learning environment.

4.1 Effective Teacher Qualities

Teachers impact our learning, our development, and may even make a difference in what we become. How does one become the kind of effective teacher that truly makes a difference in the lives of students? What is the effective teacher? What does the effective teacher do? What and how does the effective teacher think? Answers to these questions are:

- Those who have a command of subject matter
- A deep caring and concern for students, and
- A distinctive memorable attribute or style of teaching.

5. Objectives of the Study

- To study the level of developed constructivist approach based instructional design of the teacher educators.
- To study the level of teacher effectiveness of the teacher educators.
- To find the significant difference in the mean scores between male and female teacher educators in their attitude towards constructivist approach.
- To find the significant difference in the mean scores among private and government colleges teacher educators in their attitude towards constructivist approach.

6. Hypothesis of the Study

- There will be no significant difference in teacher effectiveness between Male and female teacher educators teaching through constructivist approach instructional design.

- There will be no significant difference among private, government and missionary College’s teacher educator in their attitude towards constructivist approach.

7. Testing of Hypothesis

Ho 7.1. There will be no significant difference in teacher effectiveness between Male and female teacher educators teaching through constructivist approach instructional design.

To test the hypothesis t-test was applied and the results are summarized in table

Table 2: Showing t-Ratio Teacher Effectiveness of the Sample

Gender	N	Mean	SD	t- Ratio	Level of Significance
Male	78	137.91	8.911	1.983	Significant at 0.05 level
Female	122	135.52	7.234		

(At 5% level of significance, the table value of t is 1.96)

It is inferred from the above table that the calculated value is 1.983 which is more than the table value 1.96 at 0.05% level of significance. Hence the null hypothesis is rejected. It means that there is significant difference between Male and Female teachers in their teaching effectiveness. The mean score of male teachers was found to be higher than the female counter part. Hence it can be inferred that male teachers have higher teacher effectiveness.

The graphical representation of N, Mean Score and S.D of Gender wise teacher effectiveness is shown in Fig. No.1.

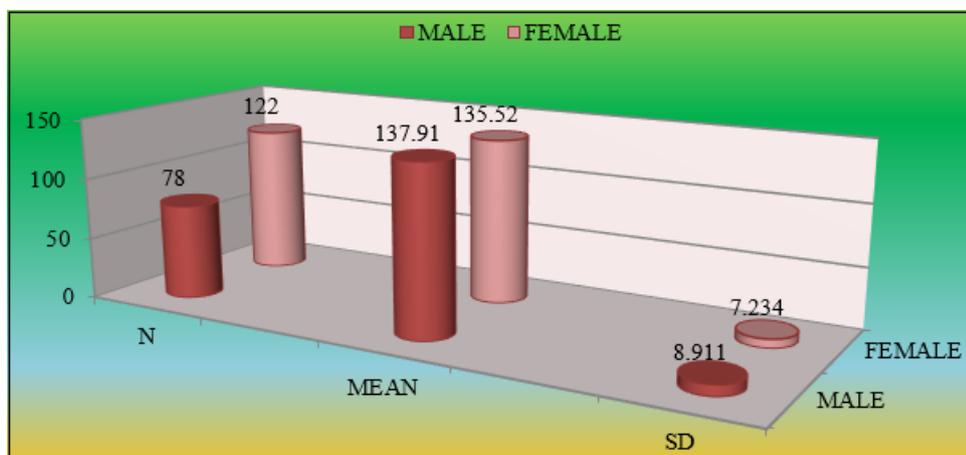


Figure 1: N, Mean Score and S.D of Sample wise Teacher Effectiveness

Ho 7.2. There will be no significant difference in teacher effectiveness among private government and missionary B.Ed. college teacher educator in their teaching through constructivist approach instructional design.

To test the hypothesis F- test was applied and the results are summarized in Table No. 3

Table 3: Showing F ratio Types of College Wise Teacher Effectiveness

Types of College	Sum of squares	df	Mean squares	F- ratio	Level of significance
Between group	536.450	2	268.225	4.338	Significant at 0.05 levels.
Within group	12181.145	197	61.833		
Total	12717.595	199			

(At 0.05% level of significant, the table value of F is 3.03)

It is inferred from the above table that the calculated value of F is 4.338 which is more than the critical value 3.03. Therefore, the hypothesis is rejected, it means that there is

significant difference between government, private and missionary B.Ed. college teachers in their teaching effectiveness.

To know the inter group differences following hypothesis were formulated.

Ho7.2.1: There is no significant difference in the mean scores of teacher effectiveness between private and government B.Ed. college teachers.

To test the hypothesis t-test was applied and the results are summarized in table 4.:

Table 4: Showing t-Ratio Teacher Effectiveness of Government and Private College wise Teachers

Types of College	N	Mean	S.D	t-Ratio	Level of Significance
Private	42	131.80	8.21	3.87	Significant at 0.05 level
Government	79	137.34	5.96		

(At 0.1% level of significance, the table value of t is 3.340)

It is inferred from the table 4.10.1 that calculated value is 3.87 which is more than the table value 3.340 at 0.1% level of significance. Hence the null hypothesis is rejected. It means that there is significant difference between the mean score of teacher effectiveness between private and government B.Ed. college teachers.

The graphical representation of N, Mean Score and S.D of private and government College wise teacher effectiveness is shown in Fig. No.: 2.

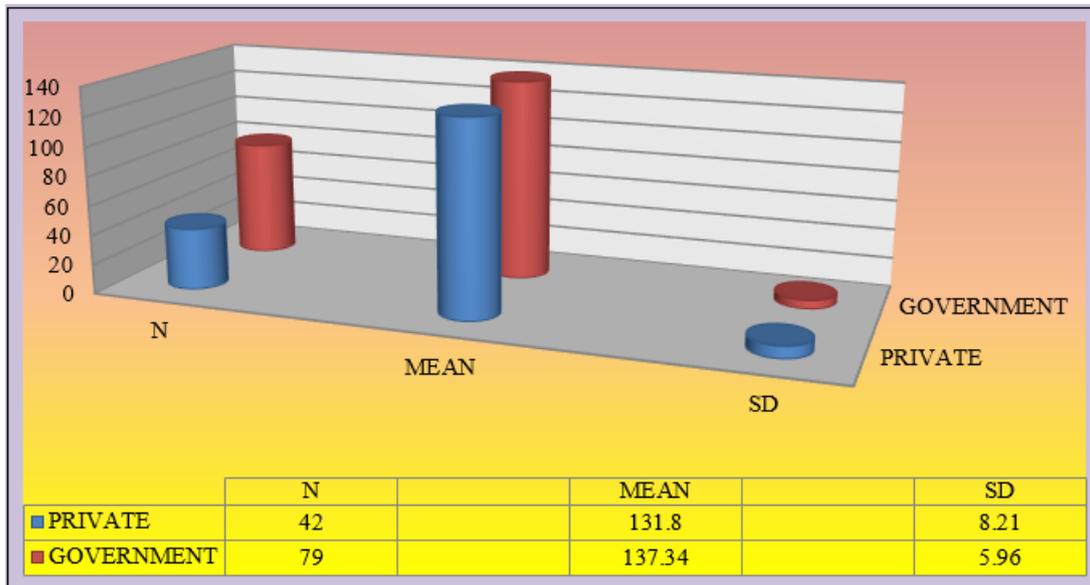


Figure 4.10: N, Mean Scores and S.D of Government and Private College wise Teacher Effectiveness

Ho 7.2.2 There is no significant difference in the mean score of teacher effectiveness between private and missionary B.Ed. College teachers.

To test the hypothesis t-test was applied and the results are summarized in table 5:

Table 5: Showing t-Ratio Teacher Effectiveness of Private and Missionary College Wise Teachers

Types of College	N	Mean	SD	t-Ratio	Level of Significance
Private	42	131.80	8.21	3.89	Significant at 0.05 level
Missionary	79	138.04	8.78		

(At 0.1% level of significance, the table value of t is 3.340)

It is inferred from the table 4.10.2 that calculated value is 3.89 which is more than the table value 3.340 at 0.1% level of significance. Hence the null hypothesis is rejected. It means that there is significant difference between the mean score of teacher effectiveness between private and missionary B.Ed. college teachers.

The graphical representation of N, Mean Score and S.D of private and missionary College wise teacher effectiveness is shown in Fig. No.: 3.

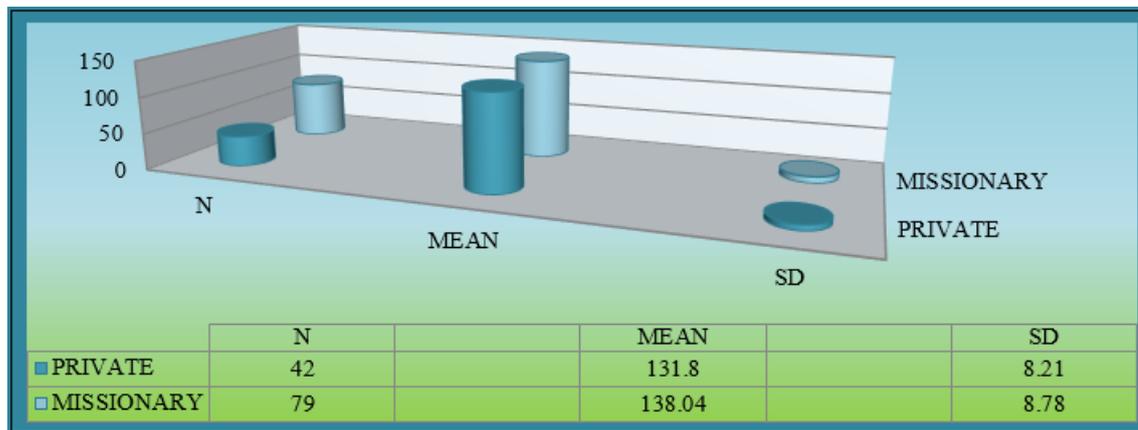


Figure 4.11: N, Mean Score and S.D. of Private and Missionary College wise Teacher Effectiveness

Ho 7.3 There is no significant difference in the mean score of teacher effectiveness between missionary and government B.Ed. college teachers.

To test the hypothesis t-test was applied and the results are summarized in table 6:

Table 6: Showing t-Ratio Missionary and Government College Wise Teacher Effectiveness of Teachers

Types of College	N	Mean	SD	t-Ratio	Level of Significance
Missionary	79	138.04	8.78	0.586	NS
Government	79	137.34	5.96		

(At 5% level of significance, the table value of t is 1.96)

It is inferred from the table 4.10.3 that calculated value is 0.586 which is less than the table value 1.96 at 5% level of significance. Hence the null hypothesis is accepted. It means that there is no significant difference between the mean score of teacher effectiveness between missionary and government B.Ed. college teachers.

The graphical representation of N, Mean Score and S.D of Government and Missionary College wise teacher effectiveness is shown in Fig. No.: 4.

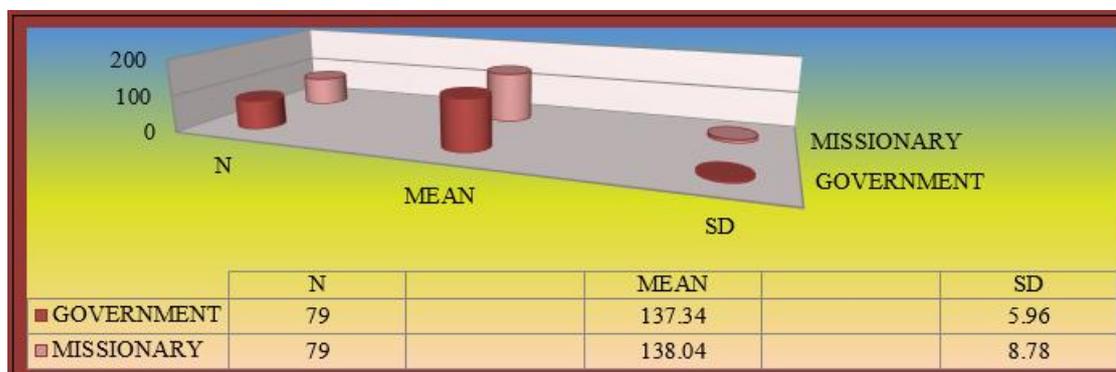


Figure 4.12: N, Mean Scores and S.D of Missionary and Government College wise Teacher Effectiveness

8. Conclusion

The study showed that most of the male teachers have good level of teacher effectiveness towards constructivist approach instructional design than the female teacher educators however, this should not be an excuse for the teacher educators to reduce the inclusion of constructivist approach instructional design which will surely make learning a more enjoyable and memorable experience in the teaching learning process. The research also showed that there is significant difference found in the types of college by teaching towards constructivist approach instructional design and teacher effectiveness of government, private and missionary teacher training colleges. As missionary college have higher teacher effectiveness than the private and government teacher education colleges teacher educators.

Even though shifting to constructivist approach instructional design may appear to be a challenging task yet, with more awareness, practice and knowledge about this approach, it is hoped that students, teachers and teacher educators across the country will be more inclined towards this approach and will implement it in real classroom situations. As our attitudes are based on information, so the more information we gather about constructivist approach instructional design, there will be more possibilities for attitude change and teacher effectiveness towards constructivist approach instructional design. The implication of this approach can sometimes takes more time, but the results and the knowledge acquired last long. So, there is a need to upgrade teacher’s capabilities, especially with regard to content and pedagogy, and in facilitating hands-on activities in teaching-learning process, as well as on the introduction of contemporary technologies to enhance student interest,

achievement and retention in the teaching learning process.

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