



PROSPECTIVE TEACHERS' CONCEPTIONS OF TEACHING AND LEARNING AND EPISTEMOLOGICAL BELIEFS

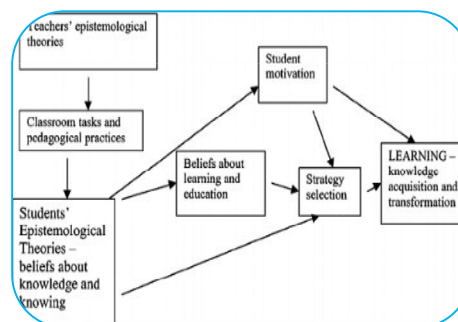
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ABSTRACT

The present study examines the conceptions of teaching and learning and epistemological beliefs for prospective teachers. One of the pre-requisite to be a good teacher is to understand the teaching learning process in depth. This facilitates better appreciation of the teaching profession as well as the process of imparting education. Effectiveness of teaching reflects interplay among a number of teacher-variables prominent among which the conceptions of teaching and learning and epistemological beliefs. Two major conceptions of teaching and learning are traditionalist and constructivist that have been delineated. Four components of epistemological beliefs are innate/fixed ability, learning effort/process, authority/expert knowledge and certainty knowledge that have been delineated. The purpose of this study was to determine if a majority of the prospective teachers in Colleges of Education, Greater Mumbai have constructivist conceptions of teaching and whether epistemological beliefs would influence their conceptions. Teaching and Learning Conceptions Questionnaire (TLCQ) (Chan & Elliott, 2004) and Epistemological Beliefs Scale (EBS) (Chan & Elliott, 2004) were administered to 327 prospective teachers selected through probability sampling. Finally, relationships were found among epistemological beliefs (innate/fixed ability, learning effort/process, authority/expert knowledge and certainty knowledge) and conceptions of teaching and learning (traditionalist and constructivist). The result indicates no difference in CTL with EB's authority/expert knowledge and certainty knowledge but a significant difference in CTL with EB's innate/fixed ability and learning/effort process. Thus, the prospective teachers who believed in their learning effort process more than the innate fixed ability showed a positive attitude towards the constructivist conceptions of teaching and learning. Implications of these results for improvement of conceptions of teaching and learning of prospective teachers and for further research have been drawn.



KEYWORDS: constructivist and traditionalist conceptions of teaching and learning; epistemological beliefs; prospective teachers.

INTRODUCTION

“Learning and teaching should not stand on opposite banks and just watch the river flow by; instead, they should embark together on a journey down the water. Through an active, reciprocal exchange, teaching can strengthen learning how to learn”(Malaguzzi).The teaching and learning

processes must go hand in hand as they are two different sides of a coin. The students learn what has been taught and the teacher teaches what has been learnt. The teaching and learning processes are influenced by different variables, some of them are epistemological beliefs and teaching and learning conceptions.

Beliefs about the nature of knowledge influence learning and teaching (Bendixen & Rule, 2004). These "epistemological beliefs" (EB) can vary across individuals and disciplines (Hofer, 2001; Kaartinen-Koutaniemi & Lindblom-Ylänne, 2008). According to Hofer (2001), epistemological beliefs involve beliefs about the definition of knowledge, how knowledge is constructed and evaluated, where knowledge resides and how knowing occurs. Epistemological beliefs express the beliefs on the nature of knowledge and gaining knowledge (learning). Epistemological beliefs are personal traits and the beliefs that individuals have in relation to the nature of knowledge for acquiring the knowledge. Schommer defines personal epistemology as a system which includes five independent dimensions and they can also be together knowledge organization, certainty of knowledge, source of knowledge and the control and the speed of knowledge acquisition. These beliefs also influence learning not only individually but also as a whole (Schommer, 1990, 1994).

Research suggests that there are mainly two major conceptions of teaching and learning. They are traditional and constructivist conceptions. The traditional conception, which is more prevalent in classrooms, places much emphasis on teaching as transmission of corpus of knowledge from authoritative sources like teachers and textbooks to students who are passive recipients. The constructivist conceptions of teaching are predicated on the principle that it is a process of assisting and guiding the learner during her/his attempts to construct meanings from series of experiences in her/his environment. Conceptions of teaching and learning are also important in the development of competent teachers. Studies comparing novice and expert teachers, Dunkin (2002) suggest that "expert teachers differ from their less experienced colleagues in the complexity and sophistication of their thoughts about teaching" (p.43). It is possible that the development of more and more appropriate conceptions of learning and teaching may aid new teachers. Despite their importance, to our knowledge, there is no previous published study on conceptions of teaching and learning and epistemological beliefs of prospective teachers as per researcher's knowledge. Hence, it is of a significant interest to study the conceptions of teaching and learning and epistemological beliefs of the prospective teachers admitted to teacher education institutions.

RATIONALE OF THE STUDY

Conceptions of teaching and learning shape teaching practices and are, therefore important to understanding how prospective teachers learn to teach. There is abundant research about conceptions of teaching and learning in general; however, research on the conceptions of teaching and learning of prospective teachers, the future teachers, is scarce. Furthermore, there is a need to understand the prospective teachers' conceptions of teaching and learning because prospective teachers' beliefs about knowledge, teaching and learning plays a crucial role in their own learning (Uzuntiryaki & Boz, 2007) and in their pedagogical understanding, as well as their teaching methods and classroom practices (Bryan, 2003). Therefore, the researcher of the present study attempted to study the conceptions of teaching and learning with the components of epistemological beliefs that are innate/fixed ability, learning effort/process, authority/expert knowledge and certainty knowledge. The aim is to determine its influence, if any, on the conceptions of teaching and learning of the prospective teachers because every interpretation brings with it a different view of knowledge, learning and teaching as the blends of constructivism have emerged over time to reflect these views. Hence, the researcher is keen to study the conceptions of teaching and learning and epistemological beliefs of prospective teachers. The following are the research hypothesis and null hypothesis that were tested for the present study:

RESEARCH HYPOTHESIS

H₁: There is a significant difference in conceptions of teaching and learning on the basis of epistemological beliefs of prospective teachers.

Null Hypothesis

H₀: There is no significant difference in conceptions of teaching and learning on the basis of epistemological beliefs of prospective teachers.

Method

The purpose of the present study was to examine the conceptions of teaching and learning of the prospective teachers on the basis of epistemological beliefs. The descriptive research method of the causal-comparative type under the quantitative paradigm was used for the present research.

Participants

The data were collected from three hundred and forty two prospective teachers and out of which fifteen incomplete tools were rejected. The final sample size was three hundred and twenty seven prospective teachers from various B.Ed. colleges across Greater Mumbai and affiliated to University of Mumbai.

Instrument

Data on prospective teachers' conception of teaching and learning were collected using Teaching and Learning Conceptions Questionnaire (TLCQ) which was designed by Chan and Elliott (2004). The scale was validated by administering it to a sizeable sample of teacher education students in Hong Kong. It includes thirty items which are scored on a Likert scale of five points (1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always). It is a two-factor, 30-item questionnaire designed to measure the Traditionalist Conception and Constructivist Conception of teaching and learning. It consists of an 18 - item traditionalist conception (TC) and a 12 - item constructivist conception (CC). The total internal consistency of the scale using Cronbach's alpha was 0.84.

The two factors/dimensions of the TLCQ are briefly described as follows:

Constructivist conception: This dimension advocates the use of the learner-centered instructional approach in teaching and learning.

Traditional conception: This dimension advocates the use of the teacher-centered instructional approach in teaching and learning.

The questionnaire (EBQ) was developed from adaptation of Schommer's 63-item epistemological beliefs questionnaire but the data on prospective teachers' epistemological beliefs were collected using Epistemological Beliefs Scale (EBS) (Chan & Elliott, 2004). This scale encompasses 30-items that are rated on a five-point Likert scale, ranging from 'Strongly Disagree' (1) to 'Strongly Agree' (5). It was developed and validated by Chan and Elliott (2004b) and was reported to have satisfactory psychometric properties. The epistemological beliefs scale aims at measuring four components of epistemological beliefs, i.e. Innate/Fixed Ability (8 items), Learning/Effort Process (11 items), Authority/Expert Knowledge (6 items) and Certainty Knowledge (5 items). The total internal consistency of the scale using Cronbach's alpha was 0.89.

The components of EBQ are briefly described as follows:

Innate/ Fixed Ability: This dimension refers to ability being innate and fixed at one extreme point, while at the other extreme point ability is considered as changeable. Learning Effort/ Process: This dimension refers to hard work; at one extreme, effort spent in drilling while at the other end, understanding is used.

Authority/ Expert Knowledge: This dimension refers to knowledge being imparted by authority person/experts on one extreme point, and knowledge being constructed by individuals on the other extreme point.

Certainty Knowledge: This dimension refers to whether knowledge is certain, permanent and unchanged at one extreme, and knowledge is ever-changing at the other extreme point.

Sampling Techniques

The researcher used a three stage-sampling technique. At the first stage, B.Ed. colleges were selected through stratified random sampling wherein the strata were North, Central and South Mumbai. At the second stage, the sampling technique used was stratified random sampling and the strata were government, private-aided and self-financed colleges. At the third stage, prospective teachers were selected from these colleges using simple random sampling procedures. TLCQ and EBS were administered to the participants by the researchers. The participants responded and returned the questionnaire to the researchers immediately. This guaranteed maximum retrieval. The responses were scored as described under "Instrument" in the previous section. Frequency counts and percentages of responses under each response option were determined. Data were analyzed using Microsoft Excel 2007 and VassarStats: Website for Statistical Computation. (<http://vassarstats.net/>)

Analysis

(1.) The null hypothesis states that there is no significant difference in conceptions of teaching and learning (CTL) on the basis of epistemological beliefs (EB) of prospective teachers. To test this hypothesis, Two-Way Factorial ANOVA for Independent Samples was used. Table 1 represents summary data of the CTL on the basis of EB of prospective teachers.

Table 1: Summary Data of CTL by EB

| | Epistemological Beliefs | | Total |
|-----------------------|-------------------------|-------------------------|---------|
| | Innate/Fixed Ability | Learning/Effort Process | |
| Traditionalist | -8.1154 | -3.7963 | -5.9151 |
| Ambivalent | -6.5 | -6.6364 | -6.5692 |
| Constructivist | -8.8103 | -2.697 | -6.5934 |
| Total | -7.7529 | -4.7843 | -6.3639 |

In table 1, there are three rows and two columns. Rows represent CTL mean scores on the basis of EB's two dimensions/components namely Authority/Expert Knowledge and Certainty Knowledge combined scores where the first rows mean score represents traditionalism, second rows mean score represent ambivalence i.e. undecided or having mixed feelings and the third rows mean score represent constructivism.

Columns represent CTL mean scores on the basis of EB's other two dimensions/components namely Innate/Fixed Ability and Learning/Effort Process combined scores where the first columns mean score represent innate/fixed ability i.e. traditionalism and second columns mean score represent learning/effort process i.e. constructivism.

Table 2 represents statistics on the CTL on the basis of EB of prospective teachers.

Table 2: ANOVA Summary of CTL by EB

| Standard Weighted-Means Analysis (3 rows x 2 columns) | | | | | |
|--|----------|-----|--------|------|--------|
| Source | SS | df | MS | F | P |
| Rows | 31.63 | 2 | 15.82 | 0.1 | 0.9049 |
| Columns | 717.44 | 1 | 717.44 | 4.39 | 0.0369 |
| r x c | 563.4 | 2 | 281.7 | 1.73 | 0.1789 |
| Error | 52411.22 | 321 | 163.27 | | |
| Total | 53723.69 | 326 | | | |

From the preceding table it is clear that F-ratio for rows is not significant as the obtained value of P = 0.9049. Thus, there is no significant difference in CTL on the basis of Authority/Expert Knowledge and Certainty Knowledge dimension of EB. Hence, the null hypothesis is accepted. Whereas the F-ratio

for columns is significant as the obtained value of $P = 0.0369$. Thus, there is a significant difference in CTL on the basis of Innate/Fixed Ability and Learning/Effort Process dimension of EB. Hence, the null hypothesis is rejected. Therefore, it can be concluded that higher the score of a prospective teacher, higher is likely to be her/his inclination towards constructivism.

DISCUSSION

In the present study also it was found that the prospective teachers who believed in their learning effort process rather than the innate fixed ability showed a positive attitude towards the constructivist conceptions of teaching and learning. The findings of the present study can get support from a study conducted by Chan (2004) which states that there exist clear relations between pre-service teachers' epistemological beliefs and their conceptions with regard to what constitutes effective teaching and learning. This in turn means that the prospective teachers would like to form their conceptions of teaching and learning based on the principles of constructivism. Constructivism is also known as student-centered approach. It is based on Piagetian theory that refers to the belief that perspectives or conceptions are constructed by the interpretations of experiences (Kegan, 1982, 1994 cited in Cheng et al, 2009). Guskey's (1986) model which states that change in teaching practice precedes change in student learning outcomes which leads to change in their teaching beliefs. Hence, the teacher educators must understand the feelings of the prospective teachers and as good teachers must encourage the students to think for answers themselves. The teacher educators' instructions should be flexible enough to accommodate individual differences amongst the prospective teachers. These are some guidelines or pathways for effective teaching that are evolved from the constructivist conceptions of teaching and learning which in turn the prospective teachers will follow in their future teaching endeavors.

CONCLUSION

The result indicates significant difference in conceptions of teaching and learning and epistemological beliefs of the prospective teachers. The findings of this study support the conclusion that the conceptions of teaching and learning of prospective teachers with epistemological beliefs is influenced by their belief about learning/ effort process and not by any other dimensions/components of epistemological beliefs. Therefore, a teacher must not think that learning occurs only when the matter is remembered that had been taught but learning takes place when the teacher gives opportunities to the students to express their ideas.

IMPLICATIONS

The present paper gives insight into a few concepts of teaching and learning and beliefs of prospective teachers, especially at the higher levels of education. Even prospective teachers have some beliefs regarding teaching and learning and also, might have witnessed various realities before and during the process of the teacher education programs. This also influences the conceptions of teaching and learning. The content developers and teacher educators must keep in mind that student learning outcomes are more desirable as compared to the teaching or the content. Teaching development work that led to changing conceptions to more student/learning oriented conceptions would, therefore, probably be almost universally acceptable. Supporting prospective teachers to reflect upon their epistemological beliefs and also, about conceptions of teaching and learning is the need of the hour. This is necessary because the future generation will be shaped and influenced by these prospective teachers. However, it must be mentioned that the fragmentary nature of data presented in this study can only lead to suggestions rather than conclusions and this is why the implication drawn from it is restricted to the population used in this study. It is hoped that the present study had generated curiosity adequate enough to simulate further studies of this phenomenon.

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