

Impact of Self-Regulated Learning and Epistemological Beliefs on Academic Achievement of Pupil Teachers in Online Learning Environments

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Abstract—At present, online learning is an identity of higher education. Today there is a need to learn globally and online learning makes this objective easy and true. In this perspective, self-regulated learning and epistemological beliefs are needed to study in relation to academic achievement. Self-regulated learning is a process that assists students in managing their thoughts, behaviours, and emotions in order to successfully navigate their learning experiences. According to Heo (2000), “One way to increase learner responsibility is to develop self-regulated learning skills and encourage learner autonomy”. Epistemological beliefs are beliefs held by individuals about knowledge and learning.

The present study is aimed at achieving three objectives i.e. to study the impact of self-regulated learning and epistemological beliefs on academic achievement of pupil teachers, to compare self-regulated learning between male and female pupil teachers, to compare epistemological beliefs between male and female pupil teachers. For achieving these objectives, descriptive survey research method has been employed by the researchers. Simple random sampling method has been used to select the sample and 70 pupil teachers have been selected from Faculty of Education, Dayalbagh Educational Institute, Agra. Self-regulated learning inventory and epistemological beliefs inventory are used to collect the data. The marks of B.Ed. II Semester examination are considered as their academic achievement. Multiple regression and t-test have been employed as statistical technique. The findings show that self-regulated learning and epistemological beliefs significantly predicts academic achievement of pupil teachers in online learning environments. No significance difference is found in self-regulated learning among male and female pupil teachers in online learning environments. Epistemological Beliefs are also equal among male and female pupil teachers in online learning environments.

1. INTRODUCTION

Online learning is catalysing a pedagogical shift in teaching and learning process. There is a shift away from top-down lecturing and passive students to a more interactive, collaborative approach in which students and instructor co-create the learning process. E-learning provides an excellent method of course delivery unbound by time or location

allowing for accessibility to instruction at anytime from anywhere. The ability to access a course and content from any computer with Internet access, twenty four hours a day, seven days a week is a tremendous incentive for every student.

In online environment, students are learnt in virtual classes, such that they do not need to meet their facilitators or peers, but they communicate online. The students get assignments which sent to them online thereafter they complete and deliver them online within set deadlines. They do not need to submit a large amount of fee in schools and colleges, whereas they can enrol themselves in online courses and learn what they want according to their speed and timings. Students can also search any type of content, knowledge and practices through online mode of learning. It reduces the problems of traditional classrooms and helps the students in regulating their learning by their own learning styles.

In this perspective a term “self-regulation” is needed to understand. Self-regulation can help students in creating better learning habits and strengthen their study skills (Wolters, 2011), applying learning strategies to enhance academic outcomes (Harris, Friedlander, Sadler, Frizzelle, & Graham, 2005), monitoring their performance (Harris et al., 2005), and evaluating their academic progress (De Bruin, Thiede & Camp, 2011). Therefore, self-regulated learning is developed through online learning environments.

Self-regulated learning is a process that assists students in managing their thoughts, behaviors, and emotions in order to successfully navigate their learning experiences. This process occurs when a student’s purposeful actions and processes are directed towards the acquisition of information or skills. Pintrich (1995) defined self-regulated learners as (a) attempting to control their behavior, motivation and affect, and cognition, (b) attempting to accomplish some goal, (c) the individual learner must be in control of his actions. Zimmerman and Martinez-Pons (1990) identified 14 learning

strategies which are used by self-regulated learners. These learning strategies include self-evaluation, organization and transformation, goal setting and planning, seeking information, keeping records, and monitoring, environment structuring, self-consequences, rehearsing and memorizing, seeking social assistance and reviewing records.

Everyone knows that Knowledge is a familiarity, awareness or understanding of someone or something such as facts, information descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning. Knowledge refers to a theoretical or practical understanding of a subject. It can be implicit (as with practical skill) or explicit (as with the theoretical understanding of a subject). In philosophy, the study of knowledge is called epistemology. Epistemology can be defined as the branch of philosophy that investigates what knowledge is and how people know whether they know something (BonJour, 2002). It addresses questions such as: What is knowledge? How do people know if they really have knowledge? What provides a justification for any knowledge that they have? Therefore, people possess their beliefs regarding knowledge which are called epistemological beliefs.

Epistemological beliefs are personal beliefs about learning and knowledge. Epistemological beliefs are defined as beliefs about the nature and acquisition of knowledge (Bruning, Schraw, Norby & Ronning, 2007). Schommer (1994) pioneered an epistemological beliefs system of five more or less independent beliefs, which are: stability of knowledge, structure of knowledge, source of knowledge, control of knowledge and the speed of knowledge acquisition. These beliefs have been found to have important implications of learning. Fostering critical thinking and exploring the nature of knowledge with students are ways teachers can create the right environment to enhance the development of students' epistemological beliefs (Hofer, 2001). These "epistemological beliefs" (EB) can vary across individuals and disciplines (Hofer, 2001; Kaartinen-Koutaniemi & Lindblom-Ylänne, 2008).

Psychologists have questioned if people have beliefs about epistemological questions (called epistemological beliefs) and whether these beliefs affect in any way their learning or reasoning. Therefore, self-regulated learning and epistemological beliefs can be related to each-other and both the variables can affect the achievement of students.

2. REVIEW OF RELATED LITERATURE

Previous research studies showed that self-regulated students are more engaged in their learning. These learners commonly seat themselves toward the front of the classroom (Labuhn, Zimmerman, & Hasselhorn, 2010), voluntarily offer answers to questions (Elstad & Turmo, 2010), and seek out additional resources when needed to master content (Clarebout, Horz, & Schnotz, 2010). Most importantly, self-regulated learners also manipulate their learning environments to meet their needs

(Kolovelonis, Goudas, & Dermitzaki, 2011). Researchers have explored that self-regulated learners are more likely to seek out advice (Clarebout et al., 2010) and information (De Bruin et al., 2011) and pursue positive learning environments (Labuhn et al., 2010), than their classmates who show less self-regulation. Due to their resourcefulness and engagement, it is not then surprising that findings from recent studies suggest that self-regulated learners also perform better on academic tests and measures of student performance and achievement (Schunk & Zimmerman, 2007; Zimmerman, 2008).

Labuhn et al. (2010) found in a study of high school students that learners who were taught SRL skills through monitoring and imitation were more likely to elicit higher levels of academic self-efficacy and perform higher on measures of academic achievement compared to students who did not receive SRL instruction. It seems as though SRL can make the difference between academic success and failure for many students (Graham & Harris, 2000; Kistner, Rakoczy, & Otto, 2010).

Tsai and Chuang (2005) explored the association between epistemological beliefs and the meta-cognitive learning preferences among learners in the online environment. In finding a significant association, Tsai and Chuang (2005) suggest that educators must be aware of the epistemological beliefs of learners in order to successfully implement self-regulated learning activities in the online learning environment. Brownlee et al. (2001) implemented a teaching program with postgraduate education students that required them to reflect on their epistemological beliefs extensively throughout a year-long educational psychology unit. Students in the teaching program, as compared to a control group not involved in the program, developed more sophisticated epistemological beliefs and continued to maintain such beliefs over the first 2 years of their teaching experience (Brownlee, 2003). While evidence supporting the overt focus on developing sophisticated epistemology in pre-service teachers accumulates, few coursework subjects in education focus on epistemology, and very few do so through empirically valid methods (Brownlee et al., 2001; Gill et al., 2004; Schoenfeld, 1999; Wideen et al., 1998). Mohamed, M.T. & El-Habbal (2013) explored that academically better students were more able to adapt to the system requirement by adopting simple epistemic beliefs. Ricco, Pierce, and Medinilla (2010) found that epistemic beliefs develops scientific knowledge and needs thereafter justification were positively related to mastery goal and high self- efficacy. However, they also found that uncritical acceptance of authority, and believing that knowledge is certain were positively related to the high level mastery motivational variables, but negatively related to science grades

A problem is commonly faced by the students that when students learn unfamiliar topics, however, they may not know the best ways to approach the task or what goals might be the

most appropriate. A large number of students feel perplexed because they are unable to practice self-regulated learning for completing their unfinished knowledge. Therefore, self-regulated learning has been considered for studying in present investigation in relation to their academic achievement. Researchers also want to explore whether epistemological beliefs affect the academic achievement of students. Therefore, present study is aimed to provide a genuine experience through quantitative analysis of self-regulated learning and epistemological beliefs.

3. EMERGENCE OF THE PROBLEM

After reviewing the previous researches, the researchers have found that various researches separately have been done on self-regulated learning and epistemological beliefs. But no research has been conducted for studying pupil teachers' self-regulated learning and epistemological beliefs in online learning environment and its impact on their academic achievement. Following research questions have also been arisen after review of related literature:

1. Is there any effect found of self-regulated learning on academic achievement of pupil teachers in online learning environments?
2. Do epistemological beliefs affect the academic achievement of pupil teachers in online learning environments?
3. Self-regulated learning is similar among male and female pupil teachers or not?
4. Do male and female pupil teachers possess identical epistemological beliefs or not?

Therefore, to find out the answers of these research questions present research study has been designed.

4. OBJECTIVE

1. To study the impact of self-regulated learning and epistemological beliefs on academic achievement of pupil teachers in online learning environments.
2. To compare self-regulated learning between male and female pupil teachers.
3. To compare epistemological beliefs between male and female pupil teachers.

5. HYPOTHESIS

1. There exists no significant impact of self-regulated learning and epistemological beliefs on academic achievement of pupil teachers in online learning environments.
2. There exists no significant difference in self-regulated learning between male and female pupil teachers.
3. There exists no significant difference in epistemological beliefs between male and female pupil teachers.

6. RESEARCH METHOD

For achieving objectives of the present study, descriptive survey research method has been employed by the researchers.

7. SELECTION OF SAMPLE

The research has been conducted on pupil teachers who are learning in online environments. Simple random sampling method has been used to select the sample. 70 pupil teachers have been selected from Faculty of Education, Dayalbagh Educational Institute, Agra. There are 35 male and 35 female pupil teachers selected.

8. RESEARCH INSTRUMENTS

According to Pintrich, Smith, Garcia and McKeachie, the Motivational Strategies for Learning Questionnaire (MSLQ) scales are designed to be modular and can be used to fit the needs of researchers. 24 Likert scaled items were taken from the MSLQ and used to assess participant ratings on the self-regulated learning.

Self-developed Epistemological beliefs inventory has been employed to study the epistemological beliefs of the pupil teachers. This is 5 point Likart type scale which comprises 32 items. Its reliability has been measured 0.69 through Cronbach's Alpha method.

9. STATISTICAL TECHNIQUES

Researchers have used Mean, Standard Deviation, Multiple Regression and t-test as statistical technique for analysing the data.

10. RESULTS AND DISCUSSION

First objective of the present investigation is to study the impact of self-regulated learning and epistemological beliefs of pupil teachers. For achieving this objective, Stepwise Multiple Regression has been employed.

Table 1: Exhibiting correlations among the Self-Regulated Learning, Epistemological Beliefs and Academic Achievement

Variables	N	Mean	SD	r
Academic achievement	70	22.64	5.99	0.932
Self-Regulated Learning	70	120.75	14.74	
Academic Achievement	70	22.64	5.99	0.940
Epistemological Beliefs	70	106.62	13.66	

Table 1 presents correlations between self-regulated learning and academic achievement and between epistemological beliefs and academic achievement of pupil teachers. The coefficient of correlation is found 0.932 between academic achievement and self-regulated learning. This correlation value shows high positive correlation between academic achievement and self-regulated learning of pupil teachers. It means is self-regulated learning is change the academic

achievement of pupil teachers is also changed in same direction. This table also shows relationship between epistemological beliefs and academic achievement of pupil teachers. The coefficient of correlation is found 0.940 which is high positive correlation. It clears that if epistemological beliefs will be high, pupil teachers' achievement will also be high. Therefore, self-regulated learning and epistemological beliefs are positively related to the academic achievement of pupil teachers in online learning environments.

Table 2: Exhibiting Model Summary

Model	R	R ²	R ² Change	F	Sig.
1	0.94	0.88	0.88	519.99	0.000
2	0.94	0.89	0.014	296.79	0.000

1: Epistemological Beliefs

2. Epistemological Beliefs, Self-Regulated Learning

Table 2 presents model summary with R², R² change and F value. It is inferred from the table that for epistemological beliefs, the R², R² change and F value are found 0.88, 0.88 and 519.99 respectively at 0.000 level of significance. The value of R² shows 0.88% of variation in achievement of pupil teachers is explained by their epistemological beliefs. It shows significant effect of epistemological beliefs on academic achievement of pupil teachers. When Self-Regulated Learning is added in the model 2 with Epistemological Beliefs, the R², R² change and F value are found 0.89, 0.014 and 296.79 respectively at 0.000 level of significance. It is inferred that 0.89% of variation in achievement of pupil teachers is explained by epistemological beliefs and self-regulated learning. Therefore it is revealed that there exists significant effect of epistemological beliefs and self-regulated learning on academic achievement of pupil teachers.

Second objective of the present research is to compare self-regulated learning between male and female pupil teachers. t-test is used to achieve this objective.

Table 3: Exhibiting Comparison between Male and Female Pupil Teachers in Self-Regulated Learning

Gender	Mean	SD	t-value
Male	130.53	14.13	0.44
Female	118.09	13.86	

Table 3 presents the difference in self-regulated learning among male and female pupil teachers. The calculated t-value is 0.44 which is not significant at 0.05 level. Therefore the null hypothesis that "There exists no significant difference in self-regulated learning between male and female pupil teachers" is accepted. The result reveals that there exists no significant difference in self-regulated learning between male and female pupil teachers. Male and female pupil teachers possess equivalent self-regulated learning.

Third objective of the present research is to compare epistemological beliefs between male and female pupil teachers. t-test is used to achieve this objective.

Table 4: Exhibiting Comparison between Male and Female Pupil Teachers in Epistemological Beliefs

Gender	Mean	SD	t-value
Male	114.8	13.97	0.016
Female	104.4	12.82	

Table 4 shows difference in epistemological beliefs among male and female pupil teachers. The calculated t-value is 0.016 which is found insignificant at 0.05 level. Therefore the null hypothesis that "There exists no significant difference in epistemological beliefs among male and female pupil teachers" is accepted. No significant difference has been found in epistemological beliefs among male and female pupil teachers. Male and female pupil teachers possess identical epistemological beliefs.

11. CONCLUSION

It can be concluded that best predictor of academic achievement in online learning environment is epistemological beliefs. Epistemological beliefs as well as self-regulated learning positively affect the academic achievement of pupil teachers in online learning environments. But on the basis of variation in academic achievement accounted by epistemological beliefs and self-regulated learning, maximum effect of epistemological beliefs on academic achievement is found. Self-regulated learning affects academic achievement less than the epistemological beliefs in online learning environments. It is also found that male and female pupil teachers possess same epistemological beliefs and self-regulated learning. If students have strong beliefs regarding their knowledge, they use it in improving their achievement. Therefore epistemological beliefs affect positively the academic achievement of pupil teachers. When students learn unfamiliar topics in online learning environment, however, they may not know the best ways to approach the task or what goals might be the most appropriate. In this confusion, the students may not be able to regulate their learning in a right style. Therefore, self-regulated learning significantly affects achievement of pupil teachers.

It is suggested that if students are learning in online environments, they should be facilitated for understanding their self-regulation in learning. Suitable learning styles are important to know to the students so that they can learn effectively and make their achievement high.

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