

A study of self-regulated learning among prospective teachers

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Abstract

Self-Regulated Learning (SRL) is the self-directive process by which learners transform their dependent abilities into autonomous learning skills. Self-regulated prospective teacher can make students a well self-regulated learner so there is need to develop SRL skills and strategies first into the prospective teachers. The purpose of this study was to examine the Self-regulated learning of prospective teacher at certain demographic variable viz. gender, locale and caste. This study is descriptive in nature and survey has been adapted. Data were collected from 308 prospective teachers pursuing B.Ed. training. These consist of 138 male & 170 female, 179 Rural & 129 urban, and General, OBC, SC and ST prospective teachers from four different colleges/ university of four different States. "Self-regulated learning Scale (Likert type five point Scale)" developed by the researcher has been used in this present Study, consisted of 55 items. It measures seven major domains of prospective teachers. The data were analysed by applying normality test, t-test, ANOVA and post Hoc LSD test. The result of this study revealed the locale wise prospective teacher do not differ significantly i.e. they were found to have SRL to the similar extent. But gender wise and caste wise, they differ significantly.

Keywords: self-regulated learning, components of SRL, prospective teacher

Introduction

Considerations about enhancing prospective teachers (pre-service teachers) training often focus on one question, How must learning settings be designed to support prospective teachers in their development of proficiencies? In Indian educational institutions, teacher education programmes are running for in-service and pre-service teachers. Today's the challenges before institutions and people are that what types of quality must develop into the prospective teachers who are going to be a strong pillar of education and society. These prospective teachers who may foster the qualitative education into the learner "what to do and what to not do" in this scientifically advanced but distracting century. Although we are scientifically advanced & forward-looking yet this scientific progress and advancement have made us to live in the age of continuous distractions which have exerted extensive pressure on students and teachers' effort to use their time and ability. Consequently, they don't move at the right track for their study related actions and to cope up with this distracting life. So, there is need to regulate their learning by their own self. By keeping this aim, there is need to equip the prospective teachers with all that strategies and skills through which they could regulate their leaning which is being supported by teacher's educational programmes (Endedijk, et.al. 2012 ^[1]; Hagger, et.al. 2008) ^[2]. These self-regulated prospective teachers would transfer the Self-regulated leaning (SRL) strategies into the students through which students can perform well in their academic work as well as in life. Hence, SRL becomes important, to inculcate the all skills of SRL in prospective teachers. This article shows that whether prospective teachers have SRL skills for teaching well, whether they differ gender wise, locale wise & caste wise.

Self-Regulated Learning (SRL)

SRL is generally refers to awareness and knowledge of one's learning and cognition and control one's own cognition. This ability is essential in learning and development. This is an educational theory influenced by constructivism theory (Ben-Ari, 1998) ^[3] and social learning (Bandura, 2001) ^[4], follows self-directive process by which learners transform their mental abilities into academic skills. Learning is viewed as an activity that learner do for themselves in a proactive way rather than as a covert event that happens to them in reaction to teaching (Zimmerman, 2002) ^[5]. SRL includes self-generated thoughts, feelings, planned and adapted actions that are all managed by the learner to reach learning goal (Zimmerman, 2000 ^[6]; Postholm, 2010) ^[7]. Although the concept of self-regulated learning (SRL) plays a prominent role in the design of teacher education programmes yet research into SRL has mainly focused on how teachers can promote SRL of their students (Bolhuis & Voeten, 2001 ^[8]; Niemi, 2002 ^[9]; Perry, Hutchinson, & Thauberger, 2008 ^[10]; Kramarski & Michalsky, 2009 ^[11]) Rather than teachers' regulation of their own learning. Research on how student teachers plan, execute, control and evaluate their learning experiences is still in its infancy (Endedijk *et al.*, 2012) ^[11] and it is still unclear how prospective teachers differ in the self-regulative activities they use.

Incorporating SRL practices in classroom requires teachers to change their traditional teaching into innovative teaching. So it imperative to get insight into both stimulating and hampering factors influencing teachers' use of SRL practices (Vandevelde, Vandebussche and Keer2012) ^[12]. The SRL skills are viewed as vital not only to guide one's own leaning during formal schooling, but also to educate oneself and update

one's knowledge after leaving school. Knowledge about how to students become self-regulated learners and successful? Instruction will help us to bridge the gap between teaching students' disciplinary knowledge and allowing them to acquire strategic knowledge (Boekaerts, 1997) ^[13]. While talking about SRL the components (strategies) of it becomes necessary to know. As explained it below.

Components of Self-Regulated Learning

Zimmerman(1990) ^[14] identified & listed fourteen SRL strategies/components (*self-evaluation, organization and transformation, goal setting and planning, information seeking, record keeping, self-monitoring, environmental structuring, giving self-consequences, rehearsing and memorizing, seeking social assistance (peer, teacher, or other adult), & reviewing(notes, books, or tests)* and 3 phases (cyclic model of SRL) i.e. forethought, performance, and self-reflection phase. *Forethought* phase includes goal setting & planning, self-motivational beliefs (motivational control/self-efficacy, outcome expectations, task interest/ value learning goal orientation). *Performance phase*- involves process of self-control (imagery, self -instruction attention focusing/ goal directed behaviour towards environment & task strategies) and self-observation. *Self-reflection phase*- occurs when learners responds to their efforts with self-judgement i.e. self-evaluation (Zimmerman (2002 ^[5] and 2008 ^[15]). similarly, functioning process model of self-regulation has been developed by Pintrich. Schunk in 2005¹⁶, He identifies four phases of self-regulated learning with four possible areas of self-regulation. Viz. Cognition, motivation, behaviour, and reaction & reflection toward environment.

In this present study researcher has been applied seven SRL component namely, (i) Goal setting, (ii) Perception of metacognitive ability, (iii) Goal directed behaviour towards himself /planning, (iv) Goal directed behaviour towards environment, (v) Motivational source, (vi) Motivational control/ self-efficacy, and (vii) Self-evaluation to determine the self-regulated leaning of prospective teachers.

Prospective teachers' Self-Regulated Learning

Prospective teachers are those who are getting education and training intended about to be a teacher. In another word, they are in the process of being a decent teacher. As, NCFTE (2009) ^[17] had been stated in quality concerns in secondary teacher education. Though teachers are mainly responsible for implementation of the educational process at any stage. Therefore the teacher's teaching programme is concerned with the development of teaching proficiency and competence that would enable & empower the teacher to meet the necessity of the profession and face the challenges therein.

From the literature review it reveals that teachers' Self-Regulation distinct between the 'self-regulation of teaching' and the 'self-regulation of learning from teaching' (Delfino *et al.*, 2010 ^[18]; Kramarski & Michalsky, 2009 ^[11]; Randi *et al.*, 2011 ^[19]; Randi, 2004 ^[20]). Though teachers do not always self-regulate their learning, they often do self-regulate their teaching (Van Eekelen *et al.*, 2005 ^[21]).

Apart from this twofold division, self-regulated teachers are mostly defined as proactive agents who trigger certain educational beliefs, construct suitable instructional practices accordingly and proactively control the teaching environment and conditions (Randi, 2004 ^[20]). Moreover, teacher SR builds

on metacognitive processes (Manning & Payne, 1993 ^[22]) that follow a spiral procedure: teachers set goals for teaching and learning, plan appropriate actions, enact instructional strategies based on the predetermined goals, regulate and evaluate outcomes, and adapt and revise their approach when needed. Self-regulated teachers are decision makers that deliberately and preliminary reflect on their judgments (Manning & Payne, 1993 ^[22]; Randi, 2004 ^[20]). Therefore, teacher introspection and self-examination are critical and might lead teachers to modify and possibly supplement their knowledge about teaching and learning. As independent learners, self-regulated teachers have the essential skills to learn for teaching and are expected to apply similar SRL strategies as students, viz. seek help from mentors, look for feedback and search professional literature for new ideas. (Manning & Payne, 1993 ^[22]; Randi, 2004 ^[20]). Teachers' learning processes that are required to efficiently adopt the new instructional knowledge and strategies. It thus supports the effect of the professional development activities associated with the innovation process. The entire research paper is guided by objectives which have been clearly and precisely stated as follows:

Objective

1. To compare the mean Scores of SRL of male and female prospective teachers.
2. To compare the mean Scores of SRL of rural and urban prospective teachers.
3. To compare the mean Scores of SRL of prospective teachers of different caste (General, OBC, SC, and ST caste).

Hypotheses

1. There is no significance difference in mean Scores of SRL of male and female prospective teachers.
2. There is no significance difference in mean Scores of SRL of rural and urban prospective teachers
3. There is no significant difference in mean Scores of SRL among General, OBC, SC and ST's prospective teachers.

Method and Design

The present Study is descriptive in nature and survey has been adopted. This Study was undertaken to Study the SRL of prospective teachers at different demographic variables i.e. Gender, Locality, and caste.

Participants

This present Study was carried out on 308 prospective teachers pursuing B.Ed. training in session 2014-15. These consist of 138 male and 170 female, 179 Rural and 129 urban, General, OBC, SC and ST prospective teachers from four different colleges/ university of four different States (RIE, Bhuvneshwer, Utkal university; Guru Ghasidas Vishwavidyalaya, Chhattisgarh; ST. Xavier college, Ranchi university, Ranchi; and University of Kashmir, Kashmir. selected through Stratified cluster random sampling technique.

Tool used

"Self-regulated learning Scale" developed by researcher has been used in this present Study. This likert type five point Scale is consisted of 55 items. It measures seven major domains (Goal setting, Perception of metacognitive ability, Goal directed behaviour towards himself /planning, Goal

directed behaviour towards environment, Motivational source, Motivational control/ self-efficacy, and Self-evaluation) of prospective teachers.

Statistical treatment

The data was analysed by applying t-test, ANOVA and post Hoc LSD test.

Distribution and normality test of data

Many parametric statistical tests require that the variable are approximately normally distributed. For this the Skewness and kurtosis measures must be calculated and its value should be as close to Zero as possible. For this, the descriptive table are given-

Table 1: Descriptive table for skewness and kurtosis

Descriptive				
		Statistic	Std. Error	
SRL of prospective teachers	Mean		202.33	1.208
	95% Confidence Interval for Mean	Lower Bound	199.96	
		Upper Bound	204.71	
	5% Trimmed Mean		202.01	
	Median		202.00	
	Variance		449.650	
	Std. Deviation		21.205	
	Skewness		.184	.139
Kurtosis		-.035	.277	

The skewness and Kurtosis measures should be as close to zero as possible. When measure (statistics) divided by its standard error will give the Z-value, which should be somewhere between - 1.96 and + 1.96. In the above table Skweness of SRL 0.184 which is close to zero, if it divided by standard error 0.139 will be equal to 1.32. (0.184/0.139= 1.32). Kurtosis of SRL -.035 which is also close to zero, and if it divided by standard error 0.277 will be equal to 1.26 (-0.035/.277=1.26). Thus skewness and Kurtosis are almost closed to zero and their Z value are between - 1.96 and + 1.96. Therefore we can assume that data is approximately normally distributed in term of Skewness and Kurtosis.

Table 2: Test of normality table for the

SRL of prospective teachers	Tests of Normality					
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
	.032	308	.200*	.994	308	.244*

*Significant (P > 0.05)

To make sure that the data is normally distributed so that there must be significant value (P -value) in KS test and Shapiro-Wilk test (0.200 and 0.244 respectively) are greater than 0.05 (in table 2). Hence data is normally distributed.

Result and Discussion

Self- regulated learning scale consisted of Fifty five items (statements) were distributed and collected from 308 prospective teachers. The questionnaires were distributed in class with the instructors’ supervision in order to make sure that the prospective teachers answer all the questions. The instructor managed to recollect all the distributed scales and all the scales were deemed usable for further analysis.

Table 3: Gender wise N, M, SD, and t-value of SRL

Variable	Gender	N	Mean	Std. Deviation	t-value	Remark
SRL	Male	138	204.04	22.902	2.104	Sig. (2 tailed) P .036* P < .05
	Female	170	198.95	18.681		

*significant (df = 306)

Table 3, presents the descriptive findings in terms of gender for the first objective. This objective was to compare mean Score of SRL of male and female prospective teachers. The data were analysed with the help of t-test by using SPSS.

Based on the result it can be seen that the t-value is 1.27 and p value (.036) is less than .05 level at two tailed test (p < .05) which is significant. It shows that mean Score of SRL of male and female prospective teachers differ significantly. Thus the Null hypothesis (H₀) that there is no significant difference in mean Scores of SRL of male and female prospective teachers is rejected. It may, therefore, be said that both male and female prospective teachers were found to have SRL unlike.

Similar result in some studies found that there is gender wise difference. But here it is import to discuss that table 3, made clear about male science prospective teachers who applied the SRL strategies more than female. But some studies revealed that Female are more self-regulated than male. Likewise, Bozpolat, (2016) [24] also examined the self-regulated learning strategies and found that gender of the students predicted the self-regulated learning strategies to a significant level. Female students used the self-regulated learning strategies more than the male students. And Explained the success of males in mathematics, meta-cognitive self-regulation, regulation of time and study environment which are learning strategies based on self-regulation, have positively significant effects, whereas in explaining the success of females in mathematics, only effort regulation strategy had a positively significant effect. In the support of this, some more researches such as Pajeres & Valiante (2002) [25], Zimmerman & Martinez-Pons (1990) [26] and Pokay & Blumenfield (1990) [27] also concluded that female were more self-regulating than male and they surpassed male in goal setting, planning, strategies and self-monitoring. Female also used more cognitive and metacognitive strategies than male.

But result was found by Jahedi, S. (2007) [23] in his study and Interpreted that all components of self-regulated learning influenced the performance of students. The outcomes from gender difference showed that there was no significant difference between male and female on the components.

So the finding of the present study is in agreement with these earlier studies. Overall, the self-regulated learning differ gender wise. It may be due to unaware of different SRL strategies among science prospective teachers. Therefore, still they are not able to equip themselves with SRL skills. Hence it would be inferred that they are failure to impart SRL into the students. Thus it pointed out that both male and female prospective teachers must know all strategies/ domains of self- regulated learning equally for fostering learning skills.

Table 4: Locale wise N, M, SD, and t-value of SRL

Variable	Locale	N	Mean	Std. Deviation	t-value	Remark
SRL	Rural	179	202.12	20.617	0.211	Sig (2 tailed) p=.833* P > .05
	Urban	129	202.64	22.072		

*not significant (df =306)

The second objective was to compare mean Score of SRL of Rural and Urban prospective teachers. The data were analysed with the help of t-test and the result are given in table 4. From table 4, it can be observed that the t-value is 0.211 and significant p value (.833) is greater than 0.05 level at two tailed test ($P > .05$) which is not significant. It shows that mean Score of SRL of rural and urban prospective teachers do not differ significantly. Thus the Null hypothesis (H_0) that there is no significant difference in mean Scores of SRL of rural and urban prospective teachers is not rejected. It may therefore, said that both Rural and Urban prospective teachers were found to have SRL alike.

While in some research reviews, it revealed that urban prospective teachers and students are more self-regulated. Similarly, R.D. Mulia (2015) [28] found that more number of students have SRL from urban area than rural area but Mean value was higher in case of rural students. In case of Non SRLs, the situation was entirely inverted as it had more students from rural area: the Mean score of non SRLs was higher for Urban than Rural students. So from the finding of present study it might be say that science prospective teachers of both urban and rural areas have knowledge of SRL skills and strategies. Hence they would be able to transact the science curriculum well.

Table 5: Summary of the result of one way ANOVA

Source of variance	df	Sum of Squares	Mean Square	F	Table value	Remark
Between Groups	3	4116.606	1372.202	3.115**	F. _{.05} (3, 304) = 2.65 F. _{.01} (3,304) =3.88	P < 0.05
Within Groups	304	133925.949	440.546			
Total	307	138042.555				

**Significant at 0.05 level for df (3,304).

The third objective was to compare the mean Scores of SRL of prospective teachers of different caste. General, OBC, SC, and ST were the four levels of caste. Thus data were analysed with the help of one way ANOVA and result is given in the table 5. From the table 5, it can be observed that the F-value is 3.115 which is significant at 0.05 level with df = 3/304. It indicates that the mean Score of SRL of General, OBC, SC & ST prospective teachers differs significantly. Thus Null hypothesis

(H_0) that there is no significant difference in mean Score of SRL of General, OBC, SC & ST prospective teachers is rejected. In order to know which caste mean Scores of SRL differs significantly, the data were analysed with the help of Post Hoc multiple comparison LSD (Least Significant Difference) test of significance. Results are given in table 6.

Table 6: Post Hoc ANOVA multiple comparison LSD test of significance

Multiple Comparisons							
Dependent Variable: Score							
	(I) 4	(J) 4	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	General	OBC	-.753	2.774	.786	-6.21	4.71
		SC	-8.530*	4.311	.049	-17.01	-.05
		ST	6.183	3.590	.086	-.88	13.25
	OBC	General	.753	2.774	.786	-4.71	6.21
		SC	-7.776	4.299	.071	-16.24	.68
		ST	6.936	3.576	.053	-.10	13.97
	SC	General	8.530*	4.311	.049	.05	17.01
		OBC	7.776	4.299	.071	-.68	16.24
		ST	14.713*	4.866	.003	5.14	24.29
	ST	General	-6.183	3.590	.086	-13.25	.88
		OBC	-6.936	3.576	.053	-13.97	.10
		SC	-14.713*	4.866	.003	-24.29	-5.14

*. The mean difference is significant at the 0.05 level.

From table 6, it revealed that the mean difference value of SRL of General & SC prospective teachers is 8.530 and least significant value is .049 which is significant at 0.05 level. It indicates that mean score of SRL of General and SC prospective teachers differs significantly. It may therefore said that both General & SC prospective teachers found to have dissimilar SRL. Similarly, the mean difference value of SRL of SC & ST prospective teachers is 14.713 and least significant value is .003 which is significant at 0.05 level. It indicates that mean score of SRL of General and SC prospective teachers differs significantly. It may, therefore said that both SC & ST prospective teachers found to have dissimilar SRL. Subsequently, the mean difference value of SRL between OBC & General is 7.776 (sig. value .786) and between OBC & SC is

6.936 (sig. value .071) and between OBC & ST is 6.936 (sig. value .053) which are not significant. It shows that mean score of OBC with General, SC & ST prospective teachers do not differ significantly. It may therefore said that Genera, SC & ST prospective teachers comparing with OBC prospective teachers has SRL in similar extent. findings of Hefer Bembenutty (2007) [29] supported the notion that pre service teachers with a greater sense of teaching efficacy in fact reported a high academic sense of intrinsic interest, task value, and control of time and study environment. Prospective teachers with high task value reported high use of metacognitive strategies, self-efficacy for learning, and teachers' self-efficacy. Teacher candidates with high intrinsic interest reported high task value, use of metacognitive

strategies, self-efficacy for learning and teacher self-efficacy. Teacher candidates with high control of their time and study environment reported high self-efficacy belief for learning and teacher self-efficacy.

Conclusion

Findings revealed that there is significant difference in mean Scores of SRL of male and female science prospective teachers. Moreover it revealed that Male used more SRL skills and strategies than female. The Similar results were found by some previous studies in respect to mean score difference of domain of SRL but also advocated that Female are more self-regulating than male prospective teachers (Bozpolat, 2016^[24]; Pajeres & Valiante (2002)^[25]). So Self-regulatory programmes like motivational programmes, activities & exercises which can promote self-regulation of learning in both male and female prospective teachers should be integrated with the science curriculum. This would rise level & extent of self-regulation amongst. There were more number of SRLs among prospective teachers which suggest that training teachers tend to relax & take it easy. So necessary steps should be taken to sustain the motivation and thereby level of self-regulation for self and for students would be integrated. It is also established by earlier researches that SRL leads to greater teaching and academic success therefore more efforts should be made to spread the awareness of its importance. Worthy news is that self-regulation is not a fixed personality trait but is a set of attitudes, approaches and skills that can be taught & developed. It is quite possible to become a self-regulated learner to understand and promote SRL into the student. Also to increase its level. In the second objective, locale wise science prospective teachers do not differ significantly that is rural and urban science prospective teachers were found to have SRL to the dissimilar extent. Since they are looking alike, so it might be say that both rural and urban teachers used SRL strategies and skills in their classroom teaching. They are aware of SRL in similar extent. But some researches are not backup it because they would concluded that urban prospective teachers are more self-regulated that is they know more Self-regulatory strategies to regulated their own learning rather than rural prospective teachers because of having less exposer of SRL skills in rural areas and lack of awareness of it. Moreover, in Indian context result show that SRL capacity varies caste wise. As result indicating the mean Score of SRL of General, OBC, SC & ST prospective teachers differs significantly specially between General & SC; and SC & ST. But some studies revealed that these variations are lacunas not due to caste but due to lack of offering practise, applications, exercise and exposer to switch dependent to independent and self-regulated learning and teaching.

In present day's teacher training centres as well as in other institutions for vocational education, SRL is highly valued. So it is hope that result of this study will help to get better and additional informative picture of how prospective teachers can vary in their self-regulation activities, As well as their conceptions of learning how to teach and made it lean into the students. This result and explanation might help teacher educator to identify different configuration of SRL.

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