

Relationship between Learner's Perception towards Self Directed Learning, Constructive Learning Environment, Problem Solving and Team Work Skills

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ABSTRACT

Self Directed Learning (SDL) is broadly defined as a process in which a learner takes an initiative (with or without the help of others) to formulate his or her learning goals, to identify resources (both human and material) for learning, to choose and implement appropriate learning strategies and evaluate learning outcomes (Knowles, 1975). The learning environment of 21st century is a combination of various pedagogies and different technologies in order to provide ample of opportunities to promote Self Directed Learning (Fanhoe and Mishra, 2013). SDL and Problem Solving both have common components thus they are associated with each other. Team work Skills is a skill possessed by the learners to work collaboratively in a team where they share knowledge and skills in order to solve any given problem. Problem solving is most effective when it is done in teams (Lin, 2003). As the variables have most of the components common and associated with each other therefore it is essential to examine relationship between all the four variables. The present research has its focus on studying relationship between Self directed learning, Constructive learning environment, Problem solving and Team work skills as per learners' perception. The present study is a correlational study and the sample consists of 58 high school students (30 girls and 28 Boys) of Greater Mumbai and to select it random sampling was done. The tool used to assess the perception of learners towards SDL, Constructive learning environment, Problem solving skills and Team work Skills is a five-point Likert scale which is valid and reliable. The Cronbach alpha reliability for CLE was ranged from 0.79 to 0.98. The Cronbach alpha coefficient for SDL, Problem solving skills and team work was 0.92, 0.86, 0.89 respectively. Descriptive analysis was carried out in order to obtain mean, median, mode and standard deviation. Pearson r was also calculated by using Microsoft Excel. The finding of the research revealed that the mean value of girls was higher for CLE, SDL and Team work compared to boys. But the mean value of boys was slightly higher for problem solving

skills compared to girls. Mean scores for girls were found to be higher for Learning about technology, learning to speak out and learning to communicate, whereas for Learning to learn mean score of boys were found to be higher compared to girls. Standard deviation of girls was found to be higher for CLE compared to boys while for SDL, Problem Solving and Team work skills Standard deviation for boys were higher compared to girls. The findings of the study also revealed that there is substantial correlation between CLE and SDL, Team work and SDL, Problem solving and Team work. Moderate correlation is found between CLE and Problem solving, CLE and Team Work, Problem solving and SDL. As there was significant relationship between all the four variables null hypothesis was rejected. The study signifies that if learners are provided with constructive learning environment, they can improve their problem solving and team work skills as well as for self directed learning.

Keywords: Self Directed Learning, Constructive Learning Environment, Problem Solving, Team Work Skills

Introduction

The concept of Self-Directed Learning is found to be prevalent in the framework of 21st century learning. The 21st century learning framework considers SDL as a critical component of individualized learning experiences. The 21st century learning is characterized by online learning, greater access to technology, personalized learning experiences, easy access to information and resources. SDL differentiates learning, it changes the role of learner and teacher in the classroom and it alters the time and place of learning and basically changes the structure of traditional schooling. Recent developments in educational aspects such as online learning opportunities, shifts in pedagogy, use of computers, laptops, smart phones with internet facilities expects learners to take more initiative in their own learning. 21st century classrooms have completely changed the role of teachers. A teacher's role is to address questions and provides individualized instruction and students manage resources, become more independent and self disciplined. Teachers are thus required to enhance student's abilities for accessing self directed learning (Fanhoe and Mishra, 2013).

Self Directed Learning

The chief proponent of the concept of Self-Directed Learning was Malcolm Knowles. Self Directed Learning (SDL) is broadly defined as a process in which learners takes an initiative (with or without the help of others) to formulate his or her learning goals, to identify resources (i.e both human & material resource) for learning, to select and implement appropriate learning strategies and to evaluate learning outcome (Knowles, 1975). In SDL learners are motivated to assume personal responsibility and they

themselves monitor and manage the learning process in order to attain meaningful learning environment. SDL enables learners to learn actively and collaboratively at their own pace in a constructive environment (Ramsey & Couch, 1994)

SDL and Constructive Learning Environment

Constructive Learning Environment (CLE) means Learning Environment based on the principles of constructivism. Constructivism is a learning theory basically found in psychology which explains how to acquire knowledge and how to learn. According to this theory knowledge is constructed by learners, it is not just a piece of information fed by the instructors (Lin, 2003). The present study examines learner's perception on four dimensions of CLE. (i) Learning about technology (ii) Learning to speak (iii) Learning to learn (iv) Learning to communicate. The study also focuses on relationship between SDL and CLE as per the discernment of learners. The 21st Century CLE is the amalgamation of various pedagogies & technologies which provides opportunities for SDL. Technology helps learners to connect with each other, to explore their topic of interest and to participate and engage. It also provides resources both material & human which in terms makes learning inquiry based. In this digital era learners need to be knowledgeable regarding selection of the resources as well as managing and using relevant resources appropriately (Lankshear, 1997). Present digital technologies configures the classrooms in order to provide greater flexibility to learners in selection of the topics as well as selection of approaches i.e individual or collaborative to study that particular topic. All these have significant implications for developing SDL. Learning environment which is designed on the basis of SDL principles allows flexible schedules in order to have longer duration for projects and collaboration. SDL based learning environment provides easy access to technology for problem solving, content designing and professional development of teachers.

SDL and Problem-Solving Skills

In psychology problem solving is the prime focus. While confronting a problem learner should be well versed with the following steps: 1) Learners should be able to identify the issues 2.) Learner should set the learning goal for themselves 3) Learner should proactively identify and select resources which are essential to solve the problem 4) Learner should self evaluate their knowledge and learning strategies 5) and finally Learners should actively take decision by themselves. Problem solving is a process which consists of four basic steps explained as follows: 1.) Defining or identifying the problem 2.) Identifying and developing possible solutions for the problem 3.) Implementing the solution 4.) Evaluating. The process initiates with defining the problem and after defining learners will possibly try to develop solutions by using divergent thinking. Learner tries to identify best solution by applying convergent thinking. This process is particularly applicable while solving problems in teams. Problem based learning like SDL has its base in constructivism therefore both are associated with each other. It is an essential component for both lifelong learners and problem solvers. Both problem-based learning

and SDL has common components such as formulating questions, applying knowledge in order to attain possible solutions (Lin, 2003).

SDL and Team Work Skills

Learning with others is important because it enables a learner to test his or her own understanding. Learning in a collaborative group not only helps learners to test their own understanding but also examine understanding of others. This mechanism is used for enriching, interweaving and expanding understanding of specific issues or phenomena. Successful learning depends on controlling learning tasks and communication capabilities (Garrison, 1997). In co-operative learning peers are resources not competitors because they encourage learners in sharing of ideas with each other. Internet technology helps to built up better and improved collaborative environment in order to pass information and ideas amongst each other irrespective of the distance. While working in collaboration, learners acquire problem solving skills by sharing knowledge. Learning provides motivation and opportunity to the learner in order to identify their strengths as well as their weaknesses (Petraglia, 1998).

Aim of the Study

The broad aim of the research is to study the relationship between learner's perception towards Self Directed Learning, Constructive Learning Environment, Problem Solving and Team Skills.

Objectives of the Study

To achieve the aims, following objectives were formulated:

- (i) To study learner's perception towards Self Directed Learning on the basis of gender (Boys and Girls)
- (ii) To study learner's perception towards Constructive Learning Environment on the basis of gender (Boys and Girls)
- (iii) To study learner's perception towards Problem Solving Skills on the basis of gender (Boys and Girls)
- (iv) To study learner's perception towards Team Work Skills on the basis of gender (Boys and Girls)
- (v) To study multiple correlations between self directed learning, constructive learning environment, problem solving and team work skills.

Hypothesis of the Study

To achieve the objectives of the study following null hypotheses were formulated:

- (i) There is no significant difference in learner's perception towards Self Directed Learning based on gender (Boys and Girls)
- (ii) There is no significant difference in learner's perception towards Constructive Learning Environment based on gender (Boys and Girls)
- (iii) There is no significant difference in learner's perception towards Problem Solving Skills based on gender (Boys and Girls)

- (iv) There is no significant difference in learner’s perception towards Team Work Skills based on gender (Boys and Girls)
- (v) There is no significant relationship between self directed learning, constructive learning environment, problem solving and team work skills.

Method

The present study employs correlational method which investigates correlation between self directed learning, constructive learning environment, problem solving and team work skills. The study also focuses on gender wise differences in the variables.

Participants and Data Collection

The participants for the present study were high school students of Greater Mumbai. The participants were selected using convenient sampling technique. The final data collected for the present study includes 58 high school students i.e 28 boys and 30 girls after separating out blank and incomplete forms.

Instrument

The instrument used for data collection consists of a self-report questionnaire of 77 items in all which was divided into four sections. (1) perception of constructive learning environment; (2) self directed learning readiness; (3) problem solving skills; (4) team work skills. The Cronbach alpha reliability for the first section ranged from 0.79 to 0.98, for second, third and fourth sections were 0.84, 0.86 and 0.89 respectively (Lin, 2003)

Data Analysis and Hypothesis Testing

Testing of Hypothesis 1: The null hypothesis states that there is no significant difference in learner’s perception towards Self Directed Learning based on gender (Boys and Girls). The technique used to test this hypothesis is t-test. As the obtained t-value 2.29 is more than table value 2.00 therefore it is significant at 0.05 and hence the null hypothesis is rejected. The following table shows a relevant statistic of learner’s perception towards Self Directed Learning (SDL) based on gender (Boys and Girls).

Table 1.1 Relevant statistics of learner’s perception towards Self Directed Learning (SDL) based on gender (Boys and Girls)

Variable	Group	Sample Size	Mean	S.D	Table value		‘t’ value	l.o.s
SDL	Girls	30	80.56	9.83	0.05	0.01	2.29	Significant at 0.05
	Boys	28	72.75	15.34	2.00	2.66		

Table 2: Descriptive Analysis of learner’s perception towards Constructive Learning Environment based on gender (Boys and Girls)

Sub Variables of CLE	Mean		S.D	
	Girls	Boys	Girls	Boys
Learning about technology	22.13	21.21	3.42	4.18
Learning to speak out	22.1	21.46	3.69	4.00

Learning to learn	19.23	20.46	5.90	4.27
Learning to communicate	23.33	20.46	4.45	6.47

Table 2 shows the comparison of the mean of the sub variables of constructive learning environment. Mean Scores for girls were higher for learning about technology, learning to speak out and Learning to communicate whereas boys scored for learning to learn. Though there was not a very vast difference in the mean scores of the sub variables therefore overall scores for constructive learning environment was subjected to t-test as explained below in table 2.1.

Testing of Hypothesis 2: The null hypothesis states that there is no significant difference in learner’s perception towards Constructive Learning Environment based on gender (Boys and Girls). The technique used to test this hypothesis is t-test. As the obtained t-value 1.01 is less than table value 2.00 at 0.05 and 2.66 at 0.01 therefore it is not significant and hence the null hypothesis is accepted. The following table shows a relevant statistic of learner’s perception towards Constructive Learning Environment based on gender (Boys and Girls)

Table 2.1 Relevant statistics of learner’s perception towards Constructive Learning Environment based on gender (Boys and Girls)

Variable	Group	Sample Size	Mean	S.D	Table value		‘t’ value	l.o.s
CLE	Girls	30	86.8	12.05	0.05	0.01	1.01	Not Significant
	Boys	28	83.60	11.98	2.00	2.66		

Testing of Hypothesis 3: The null hypothesis states that there is no significant difference in learner’s perception towards Problem Solving Skills based on gender (Boys and Girls). The technique used to test this hypothesis is t-test. As the obtained t-value 0.40 is less than table value 2.00 at 0.05 and 2.66 at 0.01 therefore it is not significant and hence the null hypothesis is accepted. The following table shows a relevant statistic of learner’s perception towards Problem Solving Skills based on gender (Boys and Girls).

Table 3.1 Relevant statistics of learner’s perception towards Problem Solving Skills based on gender (Boys and Girls).

Variable	Group	Sample Size	Mean	S.D	Table value		‘t’ value	l.o.s
Problem Solving Skills	Girls	30	69.7	9.18	0.05	0.01	0.40	Not Significant
	Boys	28	70.85	12.09	2.00	2.66		

Testing of Hypothesis 4: The null hypothesis states that there is no significant difference in learner’s perception towards Team Work Skills based on gender (Boys and Girls). The technique used to test this hypothesis is t-test. As the obtained t-value 1.10 is less than

table value 2.00 at 0.05 and 2.66 at 0.01 therefore it is not significant and hence the null hypothesis is accepted. The following table shows a relevant statistic of learner's perception towards Team Work Skills based on gender (Boys and Girls).

Table 4.1 Relevant statistics of learner's perception towards Team Work Skills based on gender (Boys and Girls).

Variable	Group	Sample Size	Mean	S.D	Table value		't' value	I.o.s
Team Work Skills	Girls	30	50.06	7.78	0.05	0.01	1.10	Not Significant
	Boys	28	47.84	9.47	2.00	2.66		

Testing of Hypothesis 5: The null hypothesis states that there is no significant relationship between self directed learning, constructive learning environment, problem solving and team work skills. For testing this hypothesis Pearson's coefficient of correlation has been computed. As the obtained value of r is more than the tabulated value $r = 0.250$ at 0.05 and $r = 0.325$ at 0.01 I hence the null hypothesis is rejected.

Table 5 Significance of 'r' for self directed learning, constructive learning environment, problem solving and team work skills

Correlated variables	df	Obtained 'r'	Tabulated 'r' at		I.o.s
			0.05	0.01	
CLE and SDL	60	0.687	0.250	0.325	Significant
CLE and Problem Solving		0.544	0.250	0.325	Significant
CLE and Team Work		0.596	0.250	0.325	Significant
Problem Solving and SDL		0.588	0.250	0.325	Significant
Team Work and SDL		0.747	0.250	0.325	Significant
Problem Solving and Team Work		0.607	0.250	0.325	Significant

Findings of the Study

The finding of the study reveals that there is a significant difference in learner's perception towards Self Directed Learning on the basis of gender and greater mean scores ($Mean = 80.56$) of girls proves that girls were more self-directed learners compared to boys ($Mean = 72.75$) but the study shows no significant difference towards Constructive

Learning Environment, Problem solving and Team Work Skills on the basis of gender. On the basis of descriptive analysis of sub variables of CLE, the mean score of girls were more for sub variable like learning about technology (*Mean = 22.13*), learning to speak out (*Mean = 22.1*) and learning to communicate (*Mean = 23.33*) while mean score of boys were more on learning to learn (*Mean = 20.46*). The study shows significant relationship between all the four variables at 0.05 and 0.01. Substantial correlation was found for CLE and SDL ($r = 0.687$), Team work and SDL ($r = 0.747$) and problem-solving skills and Team work skills ($r = 0.607$). There was moderate correlation between CLE and Problem solving ($r = 0.544$), CLE and Team Work ($r = 0.596$), Problem solving and SDL ($r = 0.588$).

Discussion

The findings of the study align with study of Lin, S H. (2003) where it was found that Constructive Learning Environment was significantly correlated with self-directed learning, problem-solving skills, and teamwork skills. The results of the study are consistent with study of Lin, S H. (2003) in which the mean scores of learning to communicate was found to be higher compared to means of other sub-variables like leaning about technology, learning to speak out or learning to learn. According to previous study done by Lin, S H. (2003) learners presenting constructivism in their learning environment were more self-directed learners and have better team work and problem-solving skills compared to the learners who were not applying constructivism in their learning environment. The present study also has strong conceptual connections with the model proposed by Hmelo and Lin (2000). Their study indicated that many features of problem-based learning support the development of SDL. The research also shows consistency with the study done by Fanhoe and Mishra (2013) in which the purposely designed 21st century learning environment showed a higher perception of self directedness compared to the traditional ones. The previous study also suggests that the design of the learning environment allows the learners to engage in topics of interest and collaboratively solve the problems encountered by them. The findings emphasize on the open-ended technology rich environment to develop self regulated learners (Fanhoe and Mishra, 2013).

Conclusion

From the above discussion it is cleared that all the variables are correlated to each other. Thus, promoting effectiveness in one variable can bring effectiveness in other variables too and vice versa. Learning Environment which has a basis in constructivism facilitates self directed learning and ultimately improves the quality of teaching as well as the quality of learning. Learners can become more self-directed in their learning with additional support and motivation by their teachers. The role of teachers in 21st century is not to spoon feed the learners but to interact with the learners, to engage the learners with tasks or activities, to collaborate them with peers, adapt new technologies which can

make teaching effective and for this the teachers need to design constructive learning environment carefully and strategically. Self directed learning environment allows flexibility in learning and is very useful for long term application. Self directed learners are more independent and self reliant and can construct their own learning without relying on teachers or any one else. In self directed learning the teachers should design a learning environment where learners can communicate with their peers, where they can work in groups or teams. Collaborative team work helps to enhance their problem-solving skills. Learners are actively engaged in solving real problem or issues, for that they present and try to defend their ideas, exchange diverse beliefs, question and brainstorm and generate new ideas and solutions for the problem. In present era of multimedia and digitalization, learning environment should incorporate technology used for learning. For eg use of websites, internet and social media like facebook, blogs, webinars etc in providing learning resources and materials which can be incorporated into a lesson in order to make learning authentic and applicable in real time situation. Thus, improvement in learning environment improves and enhances problem solving and team work skills and makes learner more and more self directed. A well planned and properly implemented learning environment allows more flexibility in learning and also increases self directedness in learners and thus improves their future learning and their future lives.

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