International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182, Print ISSN: 2349-5979, Impact Factor: RJIF 5.72
www.allsubjectjournal.com
Volume 4; Issue 2; February 2017; Page No. 175-179

Enhancing self-regulated learning using concept mapping through life skills

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Abstract
Learner centred teaching is an essential requirement of present classroom atmosphere. The active performance of students depends on the one's inner potential and self-engagement. These kind of Learning stimulated by cognitive, metacognitive awareness and motivational beliefs called by self-regulated learning. Promoting students with self –regulated learning is a challenging task which requires several factors including teaching methodology, self-interest of instructors as well as learners, peer support and time management. To become a self-regulated learner, learner should be in the stage of psychological well being, emotionally balanced and belief of own. Incorporating Life skills can bring healthy aspects among the learners. The purpose of the present study highlights how Life skills training improves self-regulated learning assessed by concept mapping among the students from eleventh standard. The objective was to investigate the effectiveness of life skills training on self-regulated learning using concept mapping among students from eleventh standard. Modules on Life skills were prepared by the investigators. Motivated Strategies for Learning Questionnaire was used to measure self-regulated learning assessed by concept mapping adopted for investigation. The sample consisted of 130 eleventh standard students of biology elective group from Government higher secondary schools. Solomon four group design has been adopted to measure the effective of life skills treatment. The major findings showed that the effect of life skills training highly influenced four groups and treated groups have scored higher level of self-regulated learning than the control groups.

Keywords: life skills training, self-regulated learning, concept mapping

1. Introduction
Learning environment expects enthusiastic learning from the students with multiple potentials. The hidden potentials of students are lot but some instruments need to harvest the same. Zimmerman (1989) [15] stated that self-regulated learning as the process to which students are able to become active participants in the process of planning, monitoring and evaluating their own learning. Students who they are all capable to take challenging task to regulated their learning. What are the things required to stimulate them towards self-regulated learning? The investigators try to find in such a way. First they should aware about what is self-regulated learning and its importance. Second psychological well-being of the students who should believe themselves can do. Third the design of the study plan to do. Fourth instructional methodology used by the teachers. Learning is a process that should be an active process. Students while learning by new methodology, it creates deep interest and control over their learning. They try to create some strategy for how to read and get good academic skills. Pintrich (2004) [8] rightly described that self-regulated learning as an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, metacognition, motivation and behaviour to attain the goals. To regulate one's own learning they must behave with positive attitudes.
Life skills are abilities that help us to adapt and behave positively so that we can deal effectively with the challenges of everyday life (World Health Organization, 2001) [13]. Life skills education helps the students to reduce the learning challenges and develop higher order skills to strengthen and regulate the learning process. The interconnection between self-regulated learning and life skills depends on constructive way of learning and one increase, another one also increase. For example life skills training give active engagement and confidence to develop thirst of self-seeking trait whereas students can adopt structure of skills through self-regulated learning. Acquiring all these positive approach, students can get good personality and productive life. UNICEF (2002) [10] states that life skills defined as psychosocial and interpersonal skills that help people make informed decisions, communicate effectively, and develop the coping and self-management skills needed for a healthy and productive life.
In teaching and learning process, students can convey their thoughts and communicate with proper learning strategies while using Life skills as instructional methodology. Since it brings positive way of approach, students will become good self-regulated learners.

2. Reviews of the related literature
Having life skills and self-regulated learning of students play a major role in their academic performance. Many researchers have been done by different domains of the both. The result of Winsler *et al*., (2004) [12] and Chang (2005) [3] study revealed that the students who have more self-regulation, social skills and fewer behavioural problems exhibit significant interaction in school and are more efficient individual. This study was supported by Kristie and Byrnes (2006) [6] who revealed that the students can get a higher score in class room activities. Tarmyan (2003) [9] found that life skills training program plays major role in providing psycho-social specificity of children and adolescents. In addition, Lazakidou *et al* (2010) [7]

examined that teaching problem solving skills enhance decision making, transmission, and self-governance and responsibility in the students. To increase self-regulated learning, Decision making is one of the skills which is followed by Passe (1996) discovered that involvement of students in decision-making can improve student performance in various areas such as autonomy, classroom behaviour, student learning, and motivation.

Huffman (1997) [5] examined that explicit problem solving instruction helps students to develop deeper levels of understanding compared to students who do not receive problem solving training. The major aim of life skills education and self-regulated learning is to create a lifelong learner. This is similar to the finding of Bolhuis (2003) [3] who found that problem-solving skills training enhance and facilitate lifelong learning of students. Reviews reported that Self-regulated learning and life skills both are vital elements for students to achieve academic success. Hence the present study examines how life skills treatment improves self-regulated learning of the students, for which the following research question was framed.

3. Materials and Methods

3.1 Research Question

Does training in Life skills improve Self-regulated learning assessed using Concept Mapping among students from eleventh standard?

3.2 Objective of the study

To investigate the effectiveness of Life Skills training on Self-regulated learning assessed using Concept Mapping among students from eleventh standard.

3.3 Hypothesis framed

There is no significant difference in Self-regulated learning assessed using Concept Mapping between the pupils given 'Life-skills' training and the pupils who are not given the Life skills training.

3.4 Sample used

Samples of 130 eleventh standard Biology students from four Government higher secondary schools of Chennai have been randomly selected for experimental study.

3.5 Tools used

Modules on Life skills from the lesson 'Genetics' was prepared by the investigators. The reliability and validity of the modules was found to be 0.90 and 0.92 respectively.

Motivated Strategies for Learning Questionnaire (Paul Pintrich and others, 1991) is a standardized self-report instrument used to measure Self-regulated learning. The Cronbach's alpha is ranging from .52 to .93 respectively. Concept Mapping has been sketched by the students to assess Self-regulated learning from the lesson 'Genetics'.

3.5.1 Tools Description

a) Modules on Life skills

Life skills modules were prepared using 'Genetics' lesson taken from text book which has five contents namely Multiple Alleles, Quantitive inheritance, Sex Determination, Sex - linked Inheritance and Pleiotropy. The contents were designed by selecting Life skills namely, communication, critical thinking, creative thinking and problem solving skills out of ten Life skills defined by World Health Organization (1993) were used to develop the modules. Lessons were taught by life skills and each skill had different methodology to enhance their self-regulated learning.

b) Standardized Motivated Strategies for Learning Questionnaire (MSLQ)

Was adopted to measure Self-regulated learning of the students from eleventh standard. This questionnaire divided into two parts including motivation and learning strategies.

c) Concept Mapping

Concept Mapping was adopted to measure self-regulated learning of the students. Cognitive strategies of Self-regulated learning dimensions in MSLQ tool namely Elaboration, Organization, Critical Thinking and Metacognitive self-regulation had been adopted to draw Concept Mapping by the students. Students were directed to follow few steps on how to draw the concept map by how organise the concepts, elaborate the concepts, critically make linkages with concepts and plan, monitor and evaluate it and thereby adopt few modifications if necessary through metacognitive skills.

d) Scoring procedure of Concept Mapping

The investigator allotted thirty marks for each dimension namely elaboration, organization, critical thinking and metacognitive self-regulation and the total score 120 was used to assess the concept mapping.

3.6 Representation of Sample Concept Mapping

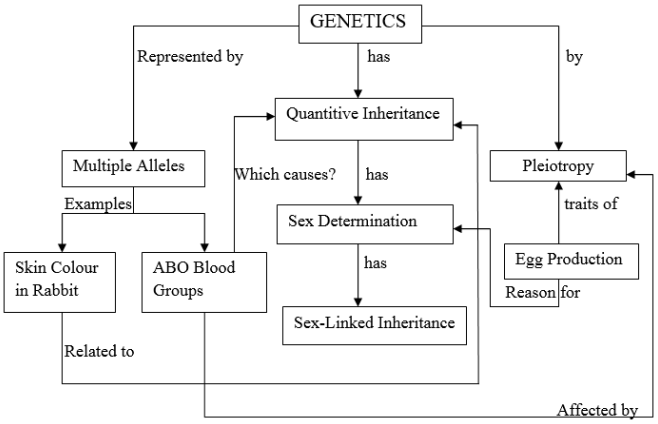


Fig 1: Sample Concept Mapping

3.7 Statistical Treatment

GLM Univariate ANOVA used to verify the hypothesis.

3.8 Research Design

Solomon Four Group Design has been used to find out the result of the study. In this experimental design, one experimental group was taught by life skills treatment after pre-testing whereas another experimental group followed by the same procedure without pre-testing. Control groups followed by traditional method. Among two control groups, one group received pre-testing. Post test was applied to all the four groups simultaneously. The research design is diagrammed as follows

3.8.1 Solomon Four Group Design

	Pre-test	Treatment	Post-test
Ex (1)	Pr	X	Po
Con (1)	Pr	-	Po
Ex (2)	-	X	Po
Con (2)	-	-	Po

Pr- Pre-test; Po- Post-test; X- Life skills Training

3.9 Experimental Procedure

Groups chosen for experimental study, randomly selected and equalised on the basis of Achievement in Science from above 65% i.e., marks which has been scored in tenth standard board exam. The data for the present study have been collected from Government higher secondary school students alone in order to create opportunity for them to establish their knowledge and skills at wider level. Initially students were asked to give personal details followed by sample concept mapping taught by the investigator. Pre-testing was adopted for one experimental and one control group by Self-regulated learning (MSLQ) Questionnaire and Concept Mapping simultaneously. After accounting pre-test, Life skills' training was started for two experimental groups while control groups followed by traditional method of teaching at the same time. After four weeks of training, Post-test was conducted with the same by all together.

4. Analysis and Interpretation:

Univariate ANOVA was used to test the significance difference if any, due to the effects of Life skills programme on Self-regulated learning using concept mapping among the students from eleventh standard.

Table 1: Between – Subjects Factors

Groups	Value Label	N
Experimental Groups 1 3	Experimental 1	32
	Control 1	33

Table 2: Means and Standard Deviations of Dependent variable of the Experimental study

Groups	Variables		N	Mean	SD
Expt. Group 1	SRL using Con. Map	Pre-test	32	36.5	5.73
		Post-test		103.87	6.93
Expt. Group 2	SRL using Con. Map	Post-test	33	93.3	4.16
Control 1	SRL using Con. Map	Pre-test	33	30.33	4.61
		Post-test		91.48	4.87
Control 2	SRL using Con. Map	Post-test	32	84.66	7.42

Here, the scores of means and standard deviations for pre-test and post-test of self-regulated learning using concept mapping for the pupils in the experimental study are given in the above table.

Table 3: Tests of Between – Subjects Effects Dependent Variable: Self-Regulated Learning using Concept Mapping

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2721.478[a]	4	680.369	20.206	.000	0.574	80.824	1.000
Intercept	13063.728	1	13063.728	387.973	.000	0.866	387.973	1.000
Pre-test SRL using Concept Mapping	163.629	1	163.629	4.860	0.031	0.75	4.860	0.583
Groups	1905.446	1	1905.446	56.589	.000	0.485	56.589	1.000
Error	2020.307	60	33.672					
Total	623721.000	65						
Corrected Total	4741.785	64						

a. R Squared = .574 (Adjusted R Squared = .546)
b. Computed using alpha =

Here, the scores of pre-test in Self-regulated learning using Concept Mapping has been added as covariate and it is found that the pre-testing significantly affects the linear relationship. Hence it is important to account for the influence of pre-testing before concluding on the effect of treatment with 'Life-skills' program. From the corrected model, Groups are significant which means that the differences between the experimental and control groups are significant. The 'treated groups' have scored better than the control groups on Self-regulated learning using concept mapping.

In the corrected model, 48.5% of variance for 'groups' could be ascribed to the dependent variable from the effect size which is measured as the Partial Eta Squared. The 'observed power' is the probability of correctly rejecting the null hypothesis and here it indicates that the corrected model has the power to reject the null hypothesis. Hence we can conclude that the 'treatment with Life Skills' has influenced the treated groups. Further the value of Adjusted R-Square 0.57 is an estimate of the predictability of the model for self-regulated learning using concept mapping and hence this model is highly predictable.

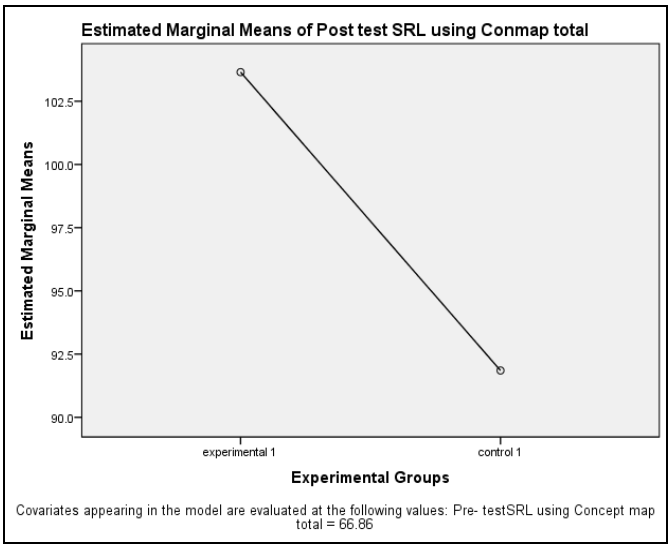
Table 4: Univariate Tests Dependent Variable: SRL using Concept Mapping

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Square d	Noncent. Parameter	Observed Power[a]
Contrast	1905.446	1	1905.446	56.589	.000	0.485	56.589	1.000
Error	2020.307	60	33.672					

The F tests the effect of Experimental Groups. This test is based on the linearly independent pair wise comparisons among the estimated marginal means.
a. Computed using alpha=

From the Univariate test table, The 'F' values for Self-regulated learning using concept mapping is significant at 0.0001 level and 48.5% of effect size can be attributed to the treatment effect.

Profile Plots for the Dependent variable



Here, it is understandable that experimental group has scored higher than the control group of self-regulated learning using concept mapping.

5. Major finding

→ There is a significant difference in Self-regulated learning using Concept Mapping between the pupils given 'Life-skills' training and the pupils who are not given the Life skills training.

6. Discussion

The present study revealed that there is significant difference in Self-regulated learning using concept mapping between the pupils given 'Life-skills' training and the pupils who are not given the Life skills training which agreed with the result of Andertonn (2006) who found statistically significant differences in MSLQ scores, measured online students' Self-regulated learning behaviour from pre-test to post-test after participation in a Metacognitive monitoring intervention. Mental health of the students behind Life skills training are clearly considered to strengthen self-regulated learning of the students. Teachers should incorporate innovative methodology in order to prepare the students for next level. Teaching Life skills makes self-awareness (i-e) self-monitoring, self-discipline about what and how they are learning. Research results of Welch (2009) rightly examined that training of problem-solving skills is effective in self-learning, self-monitoring, and self-discipline of students.

In the contrary, Cho (2004) did not find statistically significant differences from pre-test to post-test scores on the Self-regulated learning Strategies Questionnaire, among online undergraduate students in Korea. Bringing self-regulated learning is not an easy task among the students. The domains of teaching and learning strategies are significant that should assess inner potential of the students. From that discussion, self-regulated learning requires valuable teaching methodology and psycho-social well being to make control over the learning. Here the evidence that Life skills methodology acts as a promising tool to bring self-regulated learning among the students.

7. Conclusion

The findings of the present study showed that Self- regulated learning is possible through the training of Life skills programme. In higher education, many researches are found for self-regulated learning and only a few studies can be seen in higher secondary education. Hence more researches need to be conducted in self-regulated learning for school students to construct solid foundation. The needs of the students must be identified by the teachers as well as parents. Teachers should be aware of the importance of self-regulated learning and life skills and also aware about how both helps to reduce learning difficulties among the students. Students should ask questions, make discussion and find answers themselves when teaching the lesson. Teachers should assist them to learn in proper way and update the current knowledge. Hence increasing effort of teachers will bring motivational beliefs in students.

Proper training of students can mould their skills and knowledge. Students should come forward to learn on their own and ask help from others to enhance the learning strategies and mental health to express the ideas. Students are asked to deliver their ideas in front of the class to eliminate the hesitation which is used to develop communication skills among them. Giving examples play a vital role to prepare the students with higher order skills. They should think creatively and critically for giving possible suggestion through examples. These are basic strategy of self-regulated learning of students. Learning environment should address appropriate teaching and learning strategies with time management in order to strengthen Self-regulated learning. In this competitive world, the learners should be aware and take challenges to prove their ability and knowledge. The result of present study will help the school students to bring self-regulated learning which is an essential requirement of 21st century classroom to facilitate lifelong learning.

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