



Peer Learning As a Resource Management Strategy in Scaffolding Based Self-Regulated Learning System and Formal Learning System

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ABSTRACT

This descriptive study aimed at investigating the peer learning as Resource management strategy in both learning systems assessed by students at higher education level. Population of the study comprised 264 BCS & MCS/MS students from four selected Public Sector Universities and four selected Virtual University campuses of Khyber Pakhtunkhwa. 65 students from scaffolding based self-regulated learning system and 135 students from formal learning system. A part of Motivated Strategies for Learning Questionnaire (MSLQ) originally designed by Pintrich, Garcia & McKeachie (1993) related to peer learning was used for the study. Cross-tab, Chi-square test of Goodness of fit and paired sample t-test was applied to analyze the data. Peer learning is also one of the ways to study which modern educators emphasizes. So group activities and discussion with peers through video-conferencing as it is done in Scaffolding based self-regulated learning may be implemented in formal learning system.

KEYWORDS: Scaffolding-based Learning, Self-regulated Learning, Formal Learning, Peer learning, Learning.

INTRODUCTION

Peer Learning definition and Strategies to adopt

The term "Peer learning" came out of cognitive psychology which is one of the educational practice through which students seek help for learning and interest to get educational objectives. It can be said as cooperative learning.

In 1916, John Dewey also advocated peer learning while saying that education is not just telling but an active and constructive process.

Peer learning means the sharing of knowledge, ideas and experience between the participants. It is basically mutual learning. (Boud, 1988)

Peer learning is not a single educational strategy; there are varieties of models for peer learning (Griffiths, Houston and Lazenbatt, 1995). These model are proctor model, students partnership, discussion schemes, laboratory work, study groups, peer assignments, project work, community activities, etc.

Peer learning will be useful, if teacher provide intellectual scaffolding. Teacher can help students in selecting topic; can put guided questions to prompt students towards more sophisticated level thinking to make participation of all group members meaningful. (Nelson, 1999)

To make successful peer learning, following strategies can be adopted.

1. Buzz groups
2. Affinity group
3. Solution and critic group
4. Teacher-write-discuss (Johnson & Holubec, 1993).

Peer learning can give result in the form of:

- Team-building spirit
- Social competence
- Well communicative skills
- Self-esteem
- High attainment and increase yield in terms of enhanced learning outcomes. (Kaufman, Felder & Fuller, 1999)

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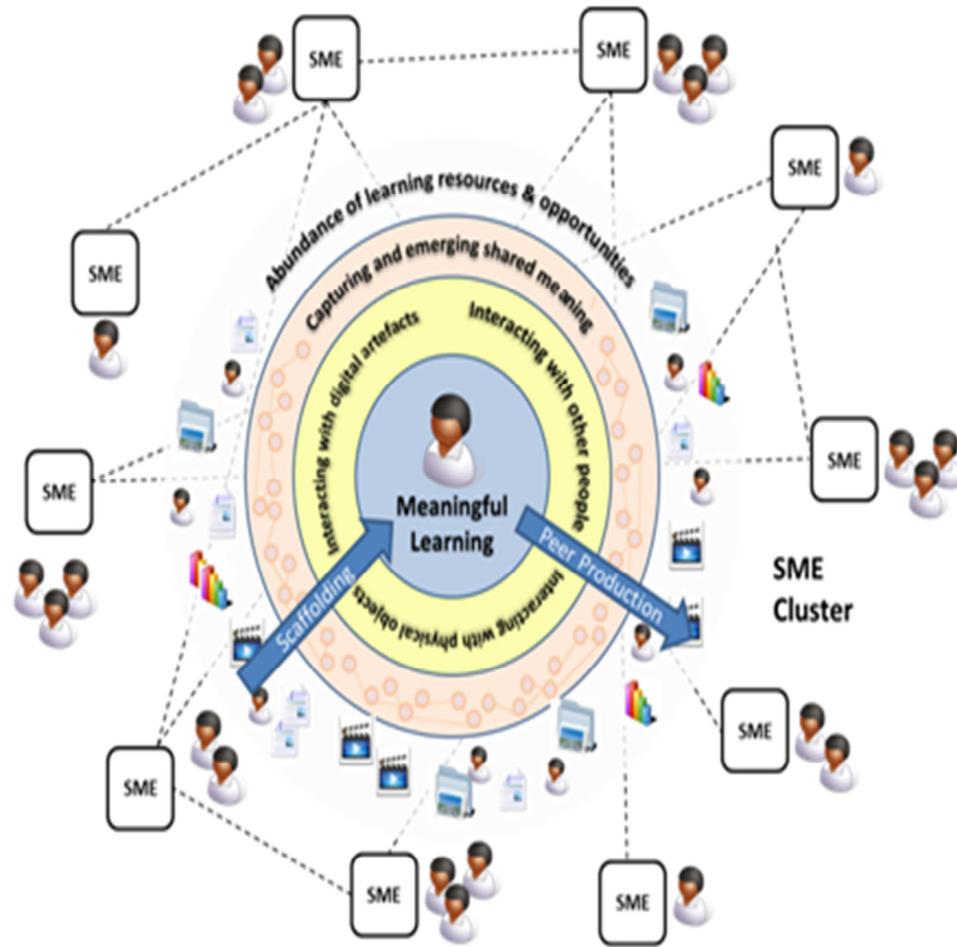
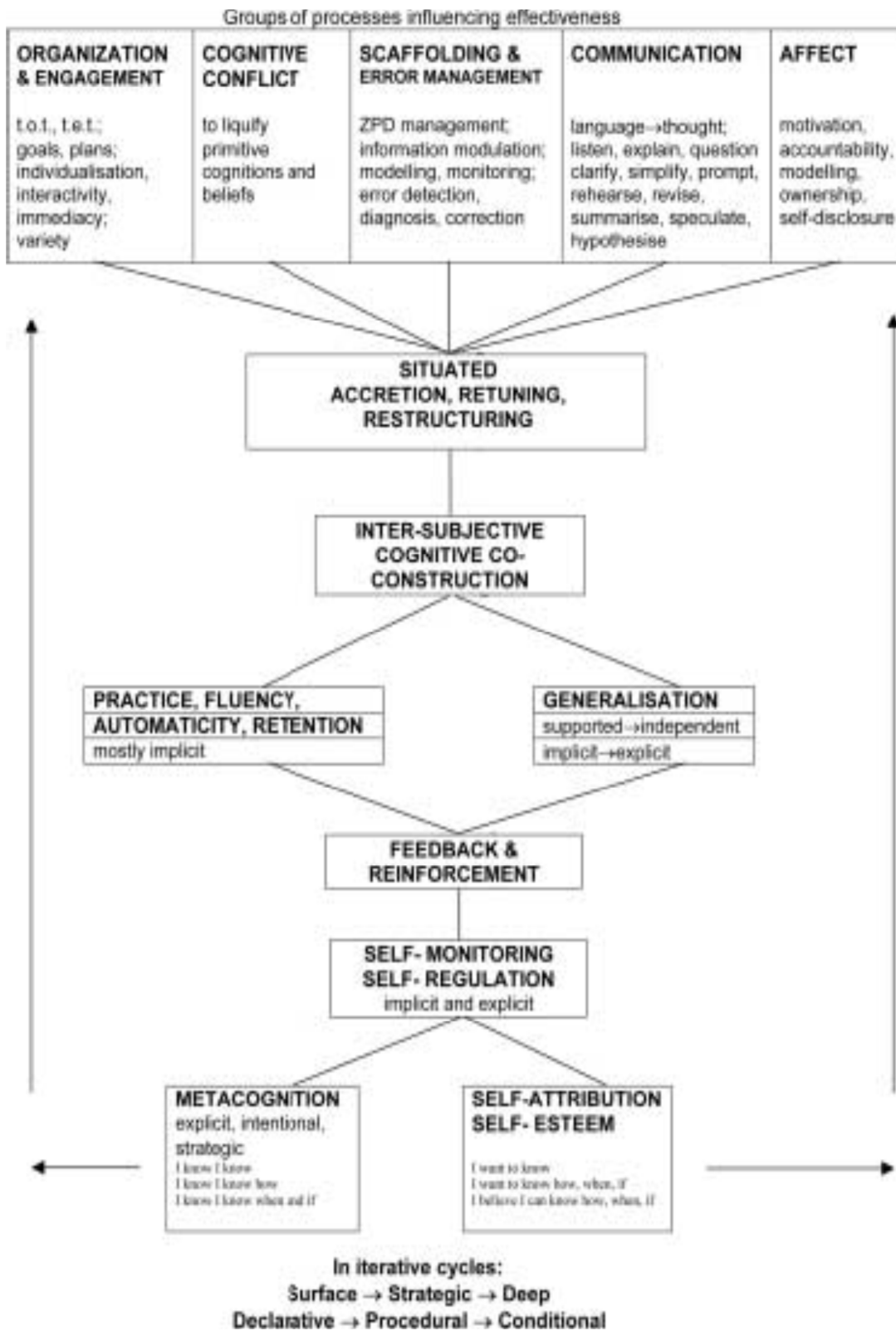


Figure 1
Source: dbis.rwth-aachen.de

According to Topping (2001), When planning peer learning, the following aspects should be considered:

1. Context
2. Objectives
3. Curriculum area
4. Participants
5. Helping techniques
6. Contact
7. Materials
8. Training
9. Process monitoring
10. Assessment of students
11. Evaluation
12. Feedback.

Theoretical Model of Peer learning (Topping & Ehly, 1998)



Dee Fink (2002) describes that small groups can be used in three ways: casual, cooperative and team-based.

Casual group can be a quick creation in class of two or three students engage in discussing the problem and solve it by themselves. They are allowed to get help with the material provided.

Cooperative learning is basically team based learning to engage the group in more structured activities intentionally.

Peer Learning and Information Technology

There are different ways to promote peer learning. Information Technology is one of the various ways. Peer learning through distance learning with online facility has been expedited nowadays. Graham (2002) reviewed that in virtual environment i.e. for distance education groups are formed online and are structured for learning activities like quiz and can share knowledge and clear concepts with group interactions.

Davies (2000) worked on computerized peer assessment at university level. He developed software which helped to manage peer learning and proper management information system was provided for the coordinator or facilitator of a program. (Bull & McCalla, 2002) Through this software, which assess the tutoring system formatively, will give regular, frequent and timely feedback to both helpers and helped on the effectiveness of peer learning. (Topping, 1999)

There are some challenges too for peer learning which are unclear aims and objectives, no proper program design and arrangements. No proper assessment, even the program and individual boundaries are not clear.

Aims and objectives should be SMART- Specific, Measurable, Achievable, Realistic and Time specific. (Walker & Avis, 1999) It needs to be determined that they will follow formal approach of learning or informal approach will be more suitable for them. Selection should be based on the ability and need of the target group. Community based setting may be more appropriate. (Shinner, 1999) Another important issue for peer learning is that there is no proper assessment in past to evaluate the effectiveness of the peer learning for both the learning group and educator (Milburn, 1995).

Peer learning as a resource management strategy has been utilized at higher education level to train extensively in many learning strategies (e.g. Time Management, Effective Studying, Exam Preparation, Note-making, Reading and Retention, Focus and Concentration). Such activities will facilitate to develop team work skills, to present work effectively, develop leadership qualities and other student development opportunities.

Current Study

The word “Scaffolding” is a symbol given to a type of assistance by a teacher or a capable peer. The teacher helps the student to complete the given task or get mastery over the concept which he is unable to grasp at the beginning. The teacher gives him chance to complete most of the task unassisted but help in those parts in which he is primarily unable to take hold of independently.

It is an instructional approach which supports beginners by limiting the complexities gradually and learners gain the knowledge, skills, and confidence to handle complexities (Young, 1993).

Jerome Bruner (1976), a Cognitive Psychologist presented scaffolding Theory at first in 1950s. He explained the word in the context of young children’s oral language acquisition. The first tutors are their parents who help them to speak and provided with natural structures to learn a language in traditional way.

Formal learning is an organized, systematic, structured system having set of definite norms and rules, with fixed curricula, methodology and evaluation procedure regarding objectives. It involves a triangular relationship of teacher, the students and institution. It requires students’ classroom attendance. This learning involves both formative and summative evaluation. Usually punitive and mono-directional methodology is applied which fails to stimulate students and to provide their active participation in the learning process. This system is not learner centred and usually ignores the students’ standards, values and attitudes and for most of the time, teachers pretend to teach and students pretends to learn (Dib, 1987).

Motivated Strategies for Learning Questionnaire (MSLQ) originally designed by Pintrich, Garcia, and McClatchy (1993) was adapted and only one part related to peer learning was taken for BCS and MCS students studying in both Public Sector Universities of Khyber Pakhtunkhwa and Scaffolding based self-regulated learning system to determine the peer learning strategies as merits and demerits of both learning systems at higher education level and compare the effectiveness of peer learning in both learning systems.

Basically this study proposed a better learning system that involves the self-study by using peer learning strategies to sustain their interest in self-learning. Further research in different situations and contexts can be conducted to get different results.

OBJECTIVES OF THE STUDY

Following were the objectives of the study.

To determine the effectiveness of peer learning as a resource management strategy in Scaffolding based self-regulated learning system and formal learning system at university level. Furthermore, to compare the effectiveness of peer learning as resource management strategy in Scaffolding based self-regulated learning system and formal learning system at university level as assessed by the students.

HYPOTHESES OF THE STUDY

Following were the null hypotheses of the study.

- Ho1.** There is no significant difference among the views of students about peer learning as a resource management strategy studying in scaffolding based self-regulated learning system at higher education level.
- Ho2.** There is no significant difference among the views of students about peer learning as a resource management strategy studying in formal learning system at higher education level.
- Ho3.** There is no significant difference among the views of students about peer learning as a resource management strategy studying in both scaffolding based self-regulated learning and formal learning system at higher education level.

METHOD

This research was descriptive and survey type in nature.

Participants

For survey, all BCS and MCS students studying the subject of Database System in four selected Public Sector Universities of Khyber Pakhtunkhawa, Pakistan.

1. University of Peshawar, Peshawar.
2. Kohat University of Science and Technology, Kohat.
3. University of Science and Technology, Bannu.
4. Gomal University, D.I. Khan.

and four selected campuses of Virtual University,

1. Virtual University Campus, Peshawar.
2. Faran Educational Complex, Kohat.
3. Virtual University Campus, Karak.
4. Virtual University Campus, Bannu, Pakistan constituted the population of this study.

Procedure

For survey, the sampling frame for the study was IT students enrolled to study Database subject in which 135 out of 185 students in selected Public Sector Universities of Khyber Pakhtunkhawa and 65 students out of 79 students studying in four selected Virtual University campuses were randomly sampled.

Motivated Strategies for Learning Questionnaire (MSLQ) originally designed by Pintrich, Garcia & McKeachie (1993) was adapted and permission was sought from the developers.

The following 5- point Likert rating scale was applied to this study. The scale was adopted from Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1991). A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ), National Centre for Research to Improve Postsecondary Teaching and Learning. Ann Arbor: University of Michigan.

Questionnaire in its original form is already standardized, having high validity. However, suggestions and expert opinion were also taken from experts working in different Universities of Khyber Pakhtunkhawa and were incorporated.

Moreover, for reliability and validity, considering the issue of culture laden questionnaire, it was personally administrated to 10 subjects as a pilot run. The reliability coefficient through SPSS-16 at Cronbach's alpha was .78

Data was collected personally from the above mentioned universities and Virtual University Campuses of Khyber Pakhtunkhawa, Pakistan.

RESULTS AND DISCUSSION

On the basis of the objectives of the study, the collected data were entered in SPSS-16 and Equal probability Chi-square test of Goodness of fit was used to measure the Scaffolding based self-regulated system and formal

learning system. Paired sample t-test was used to compare the students' peer learning strategies of both learning systems at university level.

Table 1: Student's views about Resource Management Strategies: Peer Learning in scaffolding based self-regulated learning system. (N = 65)

S. N	Statement	f	SDA	DA	UD	A	SA	X ²	P
1.	When studying for this course, I often try to explain the material to a classmate or friend.	O	3	11	9	32	10	37.69	.00
		E	13	13	13	13	13		
2.	I try to work with other students from this class to complete the course assignments.	O	2	12	13	19	19	14.92	.01
		E	13	13	13	13	13		
3.	When studying for this course, I often set aside time to discuss course material with a group of students from the class.	O	3	9	23	18	12	18.62	.00
		E	13	13	13	13	13		
Overall		O	8	32	45	69	41	34.87	.00
		E	39	39	39	39	39		

A significant difference was found in the views of students studying in both system between the observed and expected frequencies (with X² = 34.87 and p-value = .00). Therefore the null hypothesis "There is no significant difference among the views of students about peer learning of scaffolding based self-regulated learning at higher education level" is rejected at 0.05 level of significance.

Table 2: Student's views about Resource Management Strategies: Peer Learning in Formal learning system. (N = 65)

S. N	Statement	f	SDA	DA	UD	A	SA	X ²	P
1.	When studying for this course, I often try to explain the material to a classmate or friend.	O	5	8	10	59	53	1.05	.00
		E	27	27	27	27	27		
2.	I try to work with other students from this class to complete the course assignments.	O	2	12	20	56	45	76.4	.00
		E	27	27	27	27	27		
3.	When studying for this course, I often set aside time to discuss course material with a group of students from the class.	O	4	9	37	57	28	68.67	.00
		E	27	27	27	27	27		
Overall		O	11	29	67	172	126	45.67	.00
		E	81	81	81	81	81		

Table No. 2 shows that there is significant difference between the observed and expected frequencies with X² = 45.67 and p-value = .00. Therefore the null hypothesis "There is no significant difference among the views of students about peer learning of Formal learning system at higher education level" is rejected at 0.05 level of significance.

Table 3: Comparison of students' view about Peer learning strategies in both learning systems (N= 65)

System	Mean	S.D.	t	p- value
Scaffolding	10.6	2.81	2.7	0.01
Formal	11.8	2.09		
Total			2.7	0.01

Table 3 shows that there is significant difference among the students' view about peer learning in both learning systems at higher education level. Therefore, the null hypothesis "There is no significant difference among the views of students about peer learning of scaffolding based self-regulated learning and formal learning system at higher education level" is rejected at 0.05 level of significance.

Hogan, Diane M. (etal) (1999) presented in their article "Implication of Vygotsky theory for peer learning" that there are certain conditions under which collaboration is most likely to foster cognitive growth.

In a research article published on October, 2005 in Studies in Higher Education with title "Peer learning as pedagogic discourse for research education" by D. Boud and A. Lee, University of Technology, Sydney, Australia.

It was suggested that a more suitable teaching way should be adopted for 'peer' for research study. Through this way, peer learning would be more effective for the research in education.

In article "Implication of Piagetian theory of peer learning" by De Lisi (etal) (2012) showed that peer interaction can enhance learning outcomes in tasks within a developmental framework. Peer interactions also support cognitive change through dialogue and discussion more effectively than independent, individual work.

In this study, according to students' views peer learning is more active in formal learning as compare to scaffolding based self-regulated learning system. There is significant difference in the views of students in both learning systems about peer learning at university level. There is one hour video conferencing section in scaffolding based self-regulated learning system which enhance peer learning to broaden horizon the vision across the country among all virtual university campuses.

CONCLUSIONS AND RECOMMENDATIONS

From the analysis and interpretation, it can be concluded that:

1. According to students' views of scaffolding based self-regulated learning system, there is significant difference about peer learning of scaffolding based self-regulated learning system at higher education level.
2. According to students' views of formal learning system, there is significant difference about peer learning of formal learning system at higher education level.
3. There is significant difference among the students' views about peer learning of scaffolding based self-regulated learning system and formal learning system at higher education level.

On the basis of the conclusions, the following recommendations can be made:

1. Peer learning is also one of the ways to study and modern educators emphasize its importance. So group activities and discussion with peers through video-conferencing as it is done in Scaffolding based self-regulated learning may be implemented in formal learning system. It will broaden the horizon as well as expression power of the students.
2. If peer learning is properly planned then it enhances communicative power, retention, fluency, automaticity etc.
3. Further researches can be conducted in different situations and contexts to compare the results of both learning systems.

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