Study of Retention of Learning of Computer Science Concepts in Ramban, Jammu & Kashmir

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ABSTARCT

Student retention is a hot topic because every stakeholder, from parents to policymakers, looks at student retention to measure a school's performance in District Ramban, Jammu & Kashmir State. Think about student retention as student success or successful completion. For example, a 2014 study showed that parents in Chicago wanted to send their teenagers to charter schools because they graduated 7-11% more students than public schools. In simple terms, the student retention rate was high because students dropped out or withdrew at a lower rate. An other example a, study of dropout rates of students of poonch District of J&K revealed that due to traditional methods of teaching and less retention, the dropout rate among students is 25.26 percent. It was found higher among rural areas as compared to urban schools.

Poor teaching methods adopted by teachers at senior schools in Nigeria have been identified as one of the major factors contributing to poor performance of students in biology (Ahmed & Abimbola, 2011; Kareem, 2003; Umer, 2011). Teachers often talks at the students instead of encouraging them to interact, ask questions, or make them understand the lesion thoroughly. Most classes involve rote learning, where a student depends on memorization without having a complete understanding of the subjects. Just passing the test, consists of descriptions, matching and other forms of indicators, is all that matters to complete the curriculum.

Because of this reason we have to change our traditional methods of teaching in class room situations and adopt innovative and more fruitful techniques for Teaching Learning process such as Web Quest method. Web quest of teaching and learning requires cooperation among team of learners who share the roles to complete the assigned task on the given concept. Every member contributes to complete the task in the web quest as per responsibilities assigned. The web quest also contributes to the development of higher-level thinking. The questions posed to students require more than just finding and reporting back information. Generally, students under Web quest method performed better than their colleagues in the traditional method of teaching. However students in web quest method had better retention than other traditional method.

KEYWORDS: Retention, Misconception, misunderstanding, webquest method, ICT, Ramban.

INTRODUCTION

Various Problems faced by students in Jammu & Kashmir State, Students and public of Jammu and Kashmir State facing various problems in Educational sector such as students always indulge in mass copying in examination, irrespective of study most of the students prefer copying in 10^{th} and 12^{th} standard board examinations, Students of class 8^{th} does not know proper reading and writing, Quantity increases day by day and but quality decreasing continuously from last several years. Govt. of Jammu and Kashmir State continuously takes various innovative steps but quality in education is not improved in some areas. Here I want to quote the example of Sh.Arvind kejrewal, Chief Minister Delhi, last year only 50% students of class 9^{th} is able to pass the examination because of advanced, innovative and strict system of School education. No doubt some peoples and students of Delhi are against that policy of education, but what we do those stuff which is deaf and dumb (unable to read/write/understand

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his/her responsibility towards Indian Society) and unable to take the burden of next generation on their shoulders.

After all Teachers are (Guru/Trainer/Guide) and they should trained their "Shishyas" properly and make them bold and developed in all fields so that in case any difficulty they are able to save their own Country from various internal or external dangers.

Another problem faced by J&K State, entry qualification for Govt. Teachers is just 12^{th} pass at present scenario in our State and since 2001 (inception of Sarva Shiksha Abhiyan in the State) to 2014, maximum Teachers are appointed in Govt. Schools on RET pattern (Village and Panchayat level selection) for five years, but they become part of the system, they no doubt helps in opening all closed schools once again but the standard (Quality) of Education in Schools reached at lower level because of lack of untrained & 10^{th} (EV) 12^{th} passed RETs in Schools.

After analyse the situation at ground level and come on the conclusion that students of 10^{th} class unable to understand different complex topics of all the subjects especially Math, Science, History and Computer because of traditional methods of Teaching. There is no use of webquest methods (Use of Computer, Audio/Video Aids, power point presentation etc.) of teaching students in 10^{th} class, no doubt maximum High Schools have Computer but are non functional and lack of skilled & Trained staff in those Schools. Moreover I also noticed that some Trained and skilled staff are engaged in other assignments in different offices for performing other duties besides teaching.

There is no doubt Teachers (Qualified, Experienced, well equipped with technology) has ability to change coming generation in positive direction and our India become more prosperous, powerful and developed Country.

Information Communication Technology: Information Communication Technology, The 2007 Computer studies curriculum for junior secondary students 1-3 in Nigeria views the Computer as a major component of ICT which has singularly and dramatically continued to change the behaviour pattern of people and corporate entities by determining the way they socialise, learn, shop, conduct business, communicate and interact for multimedia dimensional mutual reason.

Teachers and students are using internet at all levels of education in order to search useful information on the web. According to Crawford & Brown (2002) students read extensively using internet, evaluate content of texts, select relevant information, and synthesize materials to construct meaning. Teachers use in their classes web quest, an enquiry oriented lesson, in which most or all the information that learners inquire, comes from the web.

Previous studies based on Webquest: Web quests have become a common technology application for teachers of alls School subjects and grade levels. As of December 2007, there were over 8 million hits to the WebQuest Garden website since February 1998 (Dodge, 2006). An ERIC search at the same time resulted in 96 hits on the keyword "Web Quest." Many of these articles, written by practitioners, focused on the uses of WebQuests and student and teacher perceptions of WebQuests (Libs comb, 2003; Mc Glinn & Mc Glinn, 2004; Perkins & McKnight, 2005; Strickland, 2005; Van Fossen, 2005; Yoder, 1999). Despite the fact that policy-makers are demanding evidence that their investments in educational technology have been worthwhile (Pollard & Pollard, 2004/2005, p. 146), there is a lack of research involving the effects of web quests on student learning. This lack of research is intriguing; in-depth studies need to be done to fill this void.

It refers to an inquiry method of teaching using internet which involves teaching steps like introduction, task, process, resources, evaluation, and conclusion.

Learning: It refers to the status of acquisition and understanding of computer science concepts of 10th class students of secondary schools located in Ramban District of Jammu & Kashmir.

Web quest: The web quest method of teaching and learning requires cooperation among team of learners who share the roles to complete the assigned task on the given concept. Every member contributes to complete the task in the web quest as per responsibilities assigned. The web quest also contributes to the development of higher-level thinking. The questions posed to students require more than just finding and reporting back information. They have to take the information they research and transform it into something else.

Web quest is based two principles of learning – (1) principle of children's natural sense of wonder at the complexity of the world is a powerful motivation for their learning; (2) the principle of learning as an active process of constructing knowledge, rather than simply acquiring knowledge. A web quest can be distinguished from other internet-based research on the basis of certain features. It is classroom-based. It emphasizes higher-order thinking (such as analysis, creativity or criticism rather than just acquiring information. The teacher preselects the sources, emphasizing information use rather than information gathering. Mostly, web quests are a group activity based on assigned task. The web quest method of teaching may be divided in to steps like introduction, task, process, resources, evaluation, and conclusion. The introduction is the first step that deals with background information that may help the learners to start the activity or the process of inquiry on a concept or topic being taught. The teacher may present a simulation that may motivate students to complete the task. The teacher may evaluate the time period for completion of the task, may give advice on a given task, and may engage a debate.

The standards should be fair, clear, consistent, and specific to the tasks set. The outcome for a web quest is usually a product, in most cases, in form of a written/oral report or multimedia presentation. An effective assessment tool to evaluate a product of a web quest is a rubric. Rubrics help make the teacher's expectations clear for students. Ideally, rubrics can be created collaboratively with students' input. The last step in the web quest method is conclusion. It involves reflection and discussion on possible extension of the performed task by learners. The time for reflection and discussion should be fixed. The teacher must receive the feedback of learners.

Retention of learning: It refers to the status of learning in computer science after 10 days of teaching either with traditional method or web quest method in 10th class students of secondary schools located in Ramban District of Jammu & Kashmir.

Students: It refers to 10th class students of secondary schools located in Ramban District of Jammu & Kashmir.

Computer science concepts: It refers to topics or aspects of computer science covered in text books of secondary schools located in Ramban District of Jammu & Kashmir.

Significance of the Present Work: The present study is an effort to investigate the integration of internet in teaching and learning of computer science as a school subject at the secondary level using web quest method. India and all other countries of the world are making all possible efforts to integrate ICT knowledge, pedagogical knowledge and content knowledge. Research work on the present work especially in school situations in Jammu & Kashmir has not been undertaken. The findings of the research will provide the directions regarding possible use of web quest in school situations in Jammu & Kashmir.

Delimitation of the study: The present study limited to students of 10th class enrolled in secondary schools of District Ramban of J&K State.

STATEMENT OF THE PROBLEM: " A study of retention of learning in Computer Science concepts in students with and without the use of webquest methods".

Area of Research: The area of research in the present research work is application of internet in teaching the teaching and learning of school subjects in school situations in the state of Jammu & Kashmir.

Review of Literature: The father of web quests Bernie Dodge defined a web quest as an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the internet. Bernie Dodge created the web quest strategy in 1995 at San Diego University (March, 2005) to help teachers integrate the power of the web with student learning.

According to Prapinwong (2008), once the popularity of WebQuests extended, a question arose as to what exactly constituted WebQuests. In effect, the original definition failed to capture the meaning and theoretical foundations of the WebQuest concept.

Web Quest and Motivation, Keller (1999), in Perez Torres (2006), identifies four strategies for achieving the creation of a motivating and instructive activity: attention, relevance, confidence and satisfaction. March (2003) in Perez Torres (2006) also considers that motivation can also be a filter to distinguish an authentic.

WebQuests and Cooperative Work, According to Lopez Morales (2003), since the WebQuests follow the constructivism philosophy, they tend to focus on cooperative learning and scaffolding, and provide an opportunity to work cooperatively allowing the students to exchange ideas, insights, and opinions on different topics.

WebQuests and Language Learning, According to Perez Torres (2004) in Revés (2011), a WebQuest for teaching and learning a second language is "an inquiry orientated activity placed in a relevant thematic context, in which the development of the task implies the use of web resources and the development of higher order thinking processes in a collaborative environment". At the same time, the author states that WebQuests provides the students with the opportunity to learn and put in practice some linguistics skills, supported by a set of linguistic and procedural scaffoldings.

March, T. (2007): The WebQuest strategy for integrating the World Wide Web into classroom learning was launched in early 1995 by Professor Bernie Dodge at San Diego State University. The present author had the opportunity to work closely with Dodge for five years to develop the web quest from his early "Thoughts About" (Dodge, 1995) to a fairly-well codified strategy.

Reiners, Renner, & Schreiber, (2008), Technology has shown to be crucial for enhancing students' attitudes towards learning a second language. As stated by Reiners, Renner, & Schreiber, (2008), technology improves motivation, engagement and interest when students use multimedia programs and software designed to develop skills and knowledge.

Abbit, J., &Ophus, J. (2008) investigated the impact of the web quest instructional strategy on teaching and learning. The WebQuest instructional strategy is often praised as an inquiry-oriented activity, which effectively integrates technology into teaching and learning.

Revés (2011) refers to Perez Torres (2004) with the purpose of explaining that for a webQuest to be a successful language learning tool, it has to have four conditions for language learning which are: exposure, use, motivation and instruction. An examination of the statistics of computer and Internet use in schools today provides a picture of the inclusion of technology in classrooms. Literature review reveals that web quest is an effective strategy on the development of writing and oral skills in English.

Independent Variables:

- Learning Variable: Initial level of learning of computer science concepts by 10^{th} class students of secondary schools located in Ramban District of Jammu & Kashmir.

Dependent Variable:

- Learning: Final level of learning of computer science concepts by 10th class students of secondary schools located in Ramban District of Jammu & Kashmir.
- Retention of learning:
  Retention of computer science concepts by 10th class students of secondary schools located in Ramban District of Jammu & Kashmir after treatment with traditional method of teaching or web quest method of teaching after an interval of 10 days or subsequent level of learning after an interval of 10 days.

Treatment: Teaching with webquest method and traditional method

Tools to measure learning and retention of learning: The pre and post tests will be developed to measure the learning before and after teaching with traditional method or web quest method. The post test will be used to measure the retention of learning after an interval of 10 days.

Research Questions:

1. How much the students of 10th class of District Ramban in Jammu & Kashmir gain in learning as a result of the difference in pre-test mean score and post-test mean scores in computer science concepts as a result of teaching computer concepts using web quest method?
2. How much the students of 10th class of District Ramban in Jammu & Kashmir gain in learning as a result of the difference in pre-test mean score and post-test mean scores in computer science concepts as a result of teaching computer concepts using traditional methods?
3. How much the students of 10th class of District Ramban in Jammu & Kashmir gain in learning as a result of teaching computer concepts using web quest method and traditional methods of teaching computer science?
4. How much gain in learning in computer science concepts is retained after teaching using traditional methods at an interval of 10 days or after subsequent intervals of 10 days?
5. How much gain in learning in computer science concepts is retained after teaching using web quest method at an interval of 10 days or after subsequent intervals of 10 days?
6. How much is the difference in the mean gain score of retention of learning as a result of using web quest method and traditional methods?

Objectives of present Study:

1. To investigate the gain in learning in computer science concepts in 10th class students of District Ramban in Jammu &Kashmir as a result of the difference in pre-test mean score and post-test mean scores after teaching with traditional methods.
2. To investigate the gain in learning in computer science concepts in 10th class students of District Ramban in Jammu &Kashmir as a result of the difference in pre-test mean score and post-test mean scores after teaching with web quest method.
3. To investigate the difference in the mean values of gain in learning computer science concepts in 10th class students of District Ramban in Jammu & Kashmir as a result of teaching with traditional methods ad web quest method.
4. To investigate the retention of gain in learning of computer science concepts using traditional methods of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days.
4. To investigate the retention of gain in learning of computer science concepts using web quest method of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days.

5. To investigate the difference in the retention of gain in learning of computer science concepts using web quest method and traditional method of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days.

Null Hypotheses:

1. There is no statistically significant gain in learning in computer science concepts in 10^{th} class students of District Ramban in Jammu &Kashmir as a result of the difference in pre-test mean score and post-test mean scores after teaching with traditional methods.
2. There is no statistically significant gain in learning in computer science concepts in 10^{th} class students of District Ramban in Jammu & Kashmir as a result of the difference in pre-test mean score and post-test mean scores after teaching with web quest method.
3. There is no statistically significant difference in the mean values of gains in learning computer science concepts in 10^{th} class students of District Ramban in Jammu & Kashmir as a result of teaching with traditional methods ad web quest method.
4. There is no statistically significant retention of gain in learning of computer science concepts using traditional methods of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days.
5. There is no statistically significant retention of gain in learning of computer science concepts using web quest method of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days.
6. There is no statistically significant difference in the retention of gain in learning of computer science concepts using web quest method and traditional method of teaching in 10th class students of District Ramban in Jammu & Kashmir after an interval of 10 days

Research design:

Experimental research design having control and experimental groups. The control group will be taught by tradition methods and experimental group will be taught by web quest method. The changes in mean values of learning in the students of 10^{th} class in secondary schools located in Ramban District of Jammu & Kashmir will be investigated.

COLLECTION OF DATA: The researchers took the permission from the Chief Education Officer (CEO) Ramban for visiting the selected schools. Out of all 15 Schools visited by researcher three times for data collection (Pre-test, Treatment (Teaching) and Post-test) afte a gap of at least 7 to 10 days.

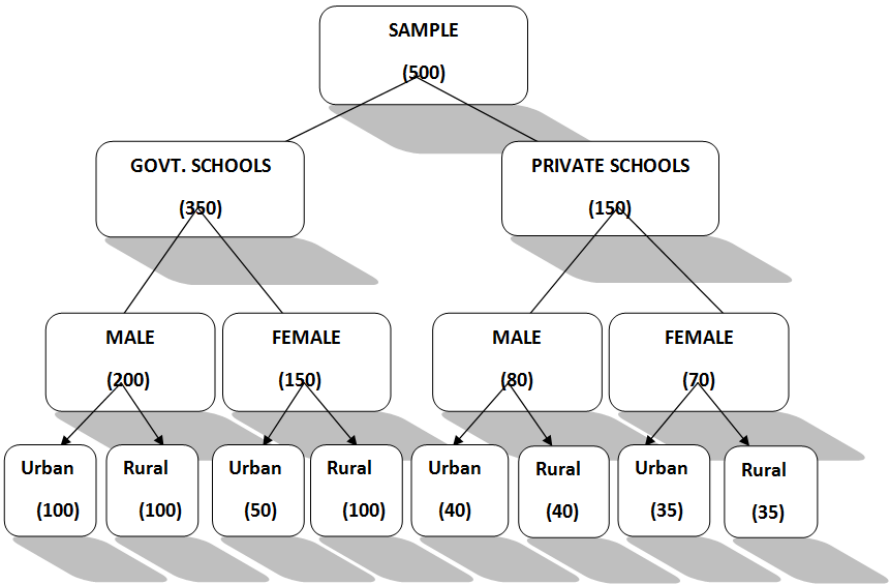
In my experimental study when I used this Webquest method in a sample of 500 students of 15 Schools (Govt./Private/Rural/Urban/Co educated/Girls/Boys) of 10^{th} class of District Ramban in Jammu and Kashmir State.

It has been found that Retention level of students is greatly affected by using Webquest method in TLP in class room situation in 10^{th} class. During data collection process I visit all the schools personally and repeatedly and conduct both activities (Pre-test and Post-test). During the process of experimental Research I take sample of 30 to 40 students of class 10^{th} of every School by using random sampling technique (all odd Roll No.s take in Group A and even roll No.s are take in Group B) and provide them printed questionnaire of 30 questions based on Computer Science Concepts. All the students attempt all the question in a strict atmosphere there is no copy at all and no any guidance was provided to students for attempting the same.

Sample: Considering the time as an important factor the investigator was taken only five hundred (500) students from all over District Ramban in J&K. To obtain the sample of sixteen Schools were selected eight from rural area and eight from urban area covering 225 students and Rural area covering 275 from district Ramban as per convenience of the investigator. The

list of Schools and number of students selected from each (Rural & Urban) Schools is given as below:-

S.No	Name of the State	No.of Schools covered	Total no. of students	Name of the District	Male	Female
01	Jammu & Kashmir	15	500	Ramban	300	200



Analysis and interpretation of Results:

Experimental Research step wise: Firstly I visited 16 Schools (Govt/Private) of District Ramban for pre Test and collect data related to Computer concepts in which 30 thirty questions ask to students, as it is pre-test activity no treatment is given to any of the group.

Step-I

Pre-Test Activity: Two groups A and Group B Allot them printed questionnaire to both the groups by giving them fixed time of 40 minutes. After that I collect all the answer sheets from the students.

Step-II :

Teaching phase: In this phase both the groups taught with different strategies, Group A taught by Webquest methods by taking the complete use of projector, laptop and students show all the contents with Powerpoint presentation and also allot them related task in relation to Webquest method. Group B also taught but with traditional method i.e with the use of Black board, pointer and by use of all the skills except technology.

In this phase I taught both the groups separately. Group A by Webquest methods (use of Projector and Laptop and all contents shown to students with Powerpoint presentation) and Group B with as usual traditional method.

Step-III:

After a gap of 7-10 days: When I visited to all the a schools once gain for Post-test both the groups again Tested for the same questionnaire by giving them same time of 40 minutes for testing "Retention of Learning".

Break/Gap of 7-10 days: Suddenly check their retention level again after a gap of 7-10 days respectively but no any direction was given to both the groups for conducting the same questionnaire again.

Step IV:

Post-test: When same groups A & B once again tested after a gap of 7-10 days respectively and allot them same time of 40 minutes to attempt the Post-test questions.

Statistical analysis of collected data:

Analysis of data (pre-test): Firstly I evaluate all the questionnaire of Pre-test (Groups A and Group B) and find their means which are as under:

S.No.	Name of the Schools	Pre-Test Activity	
		Mean of Group A	Mean of Group B
01	Govt.High School Kanga	5	7
02	Govt.High School Pernote	6	5
03	Govt.High School Chanderkote	5	6
04	Govt.High School Tatarsoo	10	10
05	Govt.High School Batote	9	8
06	Govt.Hr.Sec. School Batote	4	5
07	Govt.High School Bhataya	2	4
08	Govt.High School Seri	1	3
09	Govt.Hr.Sec.School Ramban	5	2
10	Govt.Girls High Ramban	4	5
11	Ramban Public School,Ramban	6	2
12	National Academy Ramban	2	4
13	Chenab English Medium Ramban	4	4
14	Bhartiya Vidya Mandi, Ramban	1	3
15	Paryas Hemkrish Model School	3	2

Conclusion: From the table we can clearly understand that only 5 to 10 are correctly attempted by both the groups.

Analysis of data for Post-test: Once again I evaluate all the questionnaire of Group A (use of webquest methods) and Group B (Traditional methods) in detail and it is found that there is great difference in comparison to Pre-test activity. Maximum students attempt correct question in both the groups and when we analyse Group A and Group B thoroughly there is also a gap in correct reply. The performance of both the Groups is as under:

S.No.	Name of the Schools	Post-Test Activity	
		Mean of Group A	Mean of Group B
01	Govt.High School Kanga	25	11
02	Govt.High School Pernote	23	10
03	Govt.High School Chanderkote	28	09
04	Govt.High School Tatarsoo	26	12
05	Govt.High School Batote	27	13
06	Govt.Hr.Sec. School Batote	28	12
07	Govt.High School Bhataya	22	10
08	Govt.High School Seri	28	12
09	Govt.Hr.Sec.School Ramban	29	13
10	Govt.Girls High Ramban	28	11
11	Ramban Public School,Ramban	25	12
12	National Academy Ramban	24	10
13	Chenab English Medium Ramban	24	11

14	Bhartiya Vidya Mandi, Ramban	27	12
15	Paryas Hemkrish Model School	29	13

Conclusion: No doubt the performance of the students increased in Post-test, because all the students taught the same content but with different methods of Teaching. It is actual "Retention of Learning" because I conduct Post-test after a gap of at least 7 to 10 days without intimating to students.

S.No	Name of the School	After Post-test activity			
		Group A Webquest Method	Group B Tradational method	Rank Difference	Area of Locality
01	Govt.High School Kanga	25	11	14	Rural
2	Govt.High School Pernote	23	10	13	Rural
3	Govt.High School Chanderkote	28	09	19	Urban
4	Govt.High School Tatarsoo	26	12	14	Rural
5	Govt.High School Batote	27	13	14	Urban
6	Govt.Hr.Sec. School Batote	28	12	16	Urban
7	Govt.High School Bhataya	22	10	12	Rural
8	Govt.High School Seri	28	12	16	Rural
9	Govt .Hr. Sec School Ramban	29	13	16	Urban
10	Govt.Girls High Ramban	28	11	17	Urban
11	Ramban Public School,Ramban	25	12	13	Urban
12	National Academy Ramban	24	10	14	Urban
13	Chenab English Medium Ramban	24	11	13	Urban
14	Bhartiya Vidya Mandi, Ramban	27	12	15	Urban
15	Paryas Hemkrish Model School	29	13	16	Rural

Findings:

In a sample of 500 students of District Ramban J&K state comprising 15 different Schools including Govt. As well as Private recognised schools of class 10^{th} and found that Teaching with web quest methods has higher rate of Retention of learning in comparison to Traditional method of teaching. If Teacher use webquest method while teaching there will be maximum Retention of learning in Students in different schools weather these schools are located in Rural/Urban areas and even there is co education or Boys/Girls only doesn't matter.

It has been verified at ground level when I check this in a sample of 500 students of class 10^{th} of District Ramban in Jammu and Kashmir State that when I applied webquest method to group A and use traditional method to Group B. There is great variation in Retention of learning and from this it has been verified that when Teacher use Webquest method in TLP in any class room students understand all the concepts in a best way and also retain these facts for long time in comparison to those Teachers who use Traditional method (as usual method) in their class room situations and also students create less interest in class because of traditional and one way communication with students.

Recommendation: In this arena students of class 10^{th} unable to understand all the concepts well due to the use of Traditional methods of teaching and no proper use of technology in Teaching Learning process. If teaching become more affective and interesting and we are able to take full concentration of the students. Teaching learning process should including learning Chain learning, Projector based, use of Technology. That's why I recommended Webquest

method of teaching which include all these strategies which are helpful to make lesson ,more affective, interesting and understandable, and also encourage learning by doing.

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