Analysis of the effectiveness of Self Questioning as a meta cognitive classroom practice on the academic achievement and the meta cognitive awareness of Malayalam language students at secondary level

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Abstract:

Questioning is a rich resource to promote intellectual involvement of learners in the learning task to advance student thinking, learning and achievement. Effective use of questions serves as the first foundational skill for active processing of information and it helps students to deeply engage in orchestrated learning experience. It will create a culture of inquisitiveness towards helping students to develop the skills needed for asking good questions. This learning strategy can guide learners' performance of a learning task before, during and after the task is completed. The present study intends to find out the effectiveness of Self Questioning as a meta cognitive classroom practice on the academic achievement and the meta cognitive awareness of Malayalam language students at secondary level .For that purpose the investigator used tools like Lesson transcript based on Self Questioning and Meta cognitive awareness rubric. In the present context, Duke and Pearson's Apprenticeship Model was effectively implemented towards developing systematic questioning practices among the students . The components of Meta cognition like Planning, Monitoring and Evaluating are systematically implanted. The investigator felt that this questioning process, classroom discussions and sharing of thoughts help them to internalize quality practices in questioning and the appropriate wait time allows them to make thoughtful responses towards attaining improvement in learning. The present study substantiated the fact that the expositions of the select Meta cognitive practices sharpened the power of learners and sparked their interest towards enhancing improvement and intellectual capacities with regard to the specific content.

Keywords: *Meta cognitive components, Self Questioning, Meta cognitive awareness*

I. INTRODUCTION

Beginning with Socrates asking questions as a teaching learning strategy has been a best practice throughout the recorded history. Questioning is a rich resource to promote intellectual involvement of learners in the learning task to advance student thinking, learning and achievement. Effective use of questions serves as the first foundational skill for active processing of information and it helps students to deeply engage in orchestrated learning experience (Pate,2011). In 'Developing more curious minds', John Barell established the nature of good questions. According to him a good question reflects a genuine desire to find out, a deep feeling or waiting to know more than we already know and it helps us think. It will create a culture of inquisitiveness towards helping students to develop the skills needed for asking good questions. This learning strategy can guide learners' performance of a learning task before, during and after the task is completed. It also enhances the development of Meta cognitive strategies where in teachers can guide the students with reflective questions that trigger their Meta cognition.

II. REVIEW OF RELATED LITERATURE

Lee (2010) conducted a study, which provides teachers with blended questioning supports to enhance teachers' questioning skills in pre-kindergarten science activities. Pate (2011) used a randomized post test only control group experimental design to determine the effects of regulatory self questioning on secondary level students. Berkeley et al. (2005) investigated the effectiveness of self-questioning strategy for improving student reading comprehension of grade level social studies text material.Heng etal (2010) examined the effects of self questioning techniques on problem solving and Meta cognition for ill structured work place problems.

III. STATEMENT OF THE PROBLEM

Analysis of the effectiveness of Self Questioning as a meta cognitive classroom practice on the academic achievement and the meta cognitive awareness of Malayalam language students at secondary level .

IV. HYPOTHESES OF THE STUDY

1. The select meta cognitive classroom practice, namely Self Questioning , is better than the prevailing activity oriented modes of curriculum transaction in enhancing academic achievement of Malayalam language students at secondary level.
2. The select classroom practice namely,Self Questioning is better than the prevailing activity oriented modes of curriculum transaction in enhancing the meta cognitive awareness of Malayalam language students at secondary level.

V. OBJECTIVES OF THE STUDY

1. To find out the effectiveness of select meta cognitive classroom practice, namely Self Questioning in

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enhancing academic achievement of Malayalam language students at secondary level.

2. To find out the effectiveness of select meta cognitive classroom practice, namely Self Questioning in enhancing meta cognitive awareness of Malayalam language students at secondary level.

Sample selected for the study: 165 Secondary school students from four schools belong to three districts of Kerala namely, Pathanamthitta, Alappuzha and Kottayam were selected as experimental and control groups.

Methodology adopted for the study: In the present study a mixed method of research design, incorporating both quantitative and qualitative data collection and analysis was used.

Research design :A pre test post test non equivalent non group design was selected for the study.

Tools employed for the study: Lesson transcript based on Self Questioning ,Meta cognitive awareness rubric.

Procedure adopted for the study: In the present context, Duke and Pearson's Apprenticeship Model (2002) was effectively implemented towards developing systematic questioning practices among the students at secondary level . The components of Meta cognition like Planning, Monitoring and Evaluating are systematically implanted as guide milestones in the select classroom practice towards facilitating effective retention and recall and there by heightening the academic achievement in Malayalam language learning. A five-phased Self Questioning practice was adopted for the study. They are: Describing, Modeling, Scaffolding, Prompting, and Evaluating. The sequencing of the model is given in the Figure below.

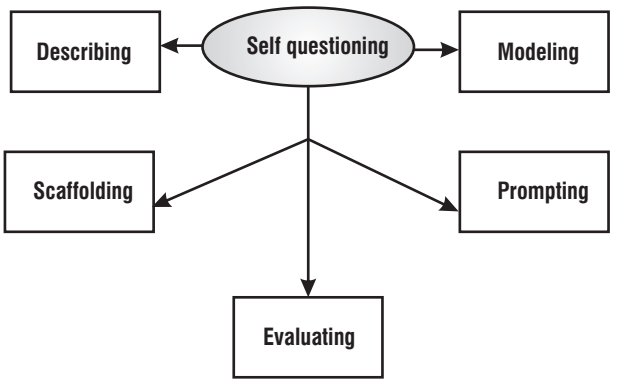

Figure 1.Apprenticeship Model – A Syntax of automatically generated self-questioning.

Stage 1. Describing.

The initial phase begins by an explicit explanation about the significant and remarkable benefits incorporated in this particular mode of learning experiences. The investigator describes the power of quality questions, which enables the learners to engage at varied and appropriate levels of cognition. The features of this stage are highlighted in Figure 2 .

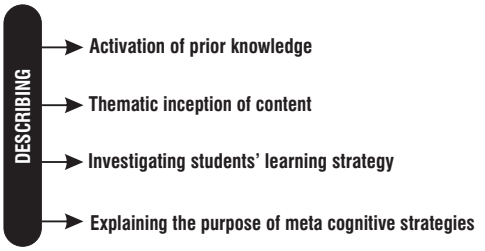

Figure.2. Highlights of 'Describing'.

Stage 2. Modeling.

Subsequently the investigator illustrates the classroom practice through 'Modeling', which gives the learners a real lesson context with a commitment to continuous improvement in learning. The major highlights of the stage are given in Figure 3.

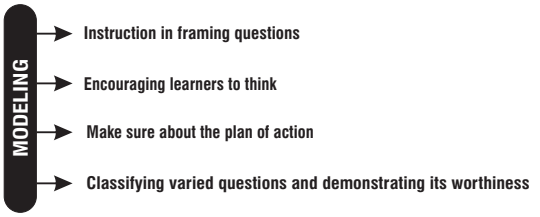

Figure.3. Highlights of 'Modeling'.

Stage 3. Scaffolding.

The next phase 'Scaffolding' is intended to help the students to apply the classroom practice in a particular learning context through constructing their own questions. The focal points considered in this stage are depicted in Figure 4.

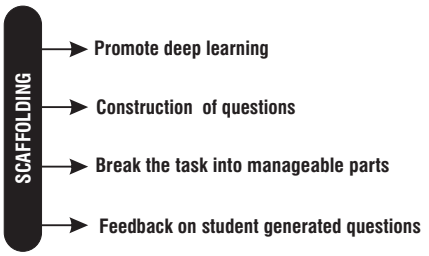

Figure. 4.. Highlights of 'Scaffolding'.

Stage 4. Prompting.

'Prompting' enables the students to generate questions and engages in self-monitoring with the help of prompts . The major highlights are given in Figure 5 .

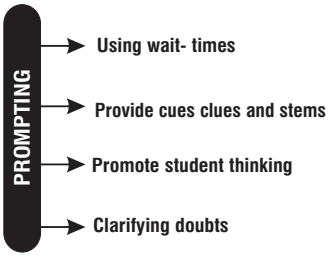

Figure.5. Highlights of 'Prompting'

Stage. 5 Evaluating.

This final phase enriches learners' self-monitoring capabilities and changes the classroom dramatically through the active participation of the students. The highlights of the stage are given in Figure 6.

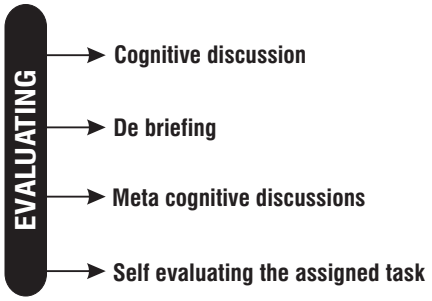

Figure.6. Highlights of 'Evaluating'

The effectiveness of the classroom practice on the academic achievement of students selected for the study was analyzed by comparing the pre test and post test achievement scores of experimental and control group .

Table- 1 Descriptive statistics of pretest and post test achievement scores of total students in experimental and control group.

variable	group	N	AM	SD	SE	LCL	UCL
pretest	Control	83	4.33	1.83	0.20	3.93	4.72
	Expt.	82	4.78	2.24	0.25	4.29	5.27
Post test	Contl	83	9.17	1.83	0.20	8.77	9.57
	Expt.	82	22.30	4.54	0.50	21.31	23.

From table 1, it is understood that the pre test achievement scores in two groups are approximately equal to the population mean .

Determining the effectiveness using ANCOVA. ANCOVA with pre experimental status in achievement as co variate was employed to investigate the effectiveness of the Meta cognitive classroom practice,self questioning in improving academic achievement of secondary school students over present activity oriented modes of curriculum transaction. The details are given in Table 3.

Table 3. ANCOVA of post test achievement scores by eliminating the effect of pre test achievement scores of total students in experimental and control group.

variable	SV	SS	df	MSS	F	P
Adj. post test	BV	6920.42	1	6920.42	586.77**	<0.01
	wv	1910.63	162	11.79		
	T	8831.06	163			

**: Significant at 1% level (P<0.01), R squared=0.789(Adjusted R Squared=0.787)

ANCOVA shows that the experimental and control group differ significantly in the post test achievement scores after eliminating the effect due to their initial pre test achievement scores (F=586.77, P<0.01). It can be inferred from the ANCOVA that the experimental group performed better than the control group. Comparative bar diagram of pre test, posttest and Adj. posttest achievement scores of total students in experimental and control group are given below.

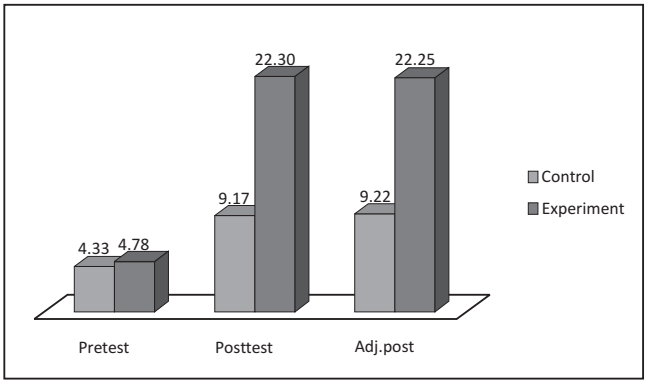

Figure 9. Comparative bar diagram of pre test, posttest and Adj. post test achievement scores of total students in experimental and control group.

The graph indicates that the students who were exposed to the select Meta cognitive classroom practice showed significant improvement in their academic achievement in Malayalam over their counterparts in the control group.

Analysis of the effectiveness of self questioning on strengthening the Meta cognitive awareness of students

A Self assessment Rubric was employed for this purpose which comprised of various criterion levels of awareness like, 'Exceeds Expectations',(E.E) 'Meets Expectations,' (M.E) 'Partially Meets Expectations' (P.M.E) and 'Doesn't Meet Expectations.' (D.M.E). The results shows that none of the students deserves the categorization, 'Exceeding Expectation' (both control and experimental groups). A negligible proportion of them could be categorized as the strata, 'Meet Expectations'. The following section deals with the analysis of the post scores of total students with respect to their Meta cognitive awareness.

Analysis of self-assessment of secondary school students on their Meta cognitive awareness-Re administration of the Rubric.

After the intervention, the variations in the attainment level of Meta cognitive awareness of secondary school students were found out by re administering the Meta cognitive awareness rubric to both control and experimental groups. The change in perceptions of students is detailed in the Table 6.

Table 6. Comparison of post scores of students in experimental and control groups with regard to their Meta cognitive awareness.

Levels of performance	E.E		M.E		P.M.E		D.M.E	
	Contl.	Exptal	Contl.	Exptal	Contl.	Exptal	Contl.	Exptal
Planning	Nil	2	4	23	16	45	80	30
Monitoring	Nil	2	3	21	10	50	87	27
Evaluation	Nil	1	4	20	3	51	93	28
Average	Nil	1.66	3.66	.21.33	9.66	48.66	86.66	28.33

By referring the Table, it can be noted that there is no significant changes in the levels of learners in the control group. However, in the case of experimental group levels of learners under M.E, E.E P.M.E categories have increased considerably and the levels of learners under D.M.E category have decreased.

Summary and conclusions: The experimental group admits the efficacy of the practice towards attaining a better outcome in the learning of Malayalam language and producing a higher quality in the learning process at varied levels. The investigator felt that the questioning practice enables the learners to build relationships among them and allow expression of affect through becoming better listeners. The classroom discussions and sharing of thoughts help them to internalize quality practices in questioning and the appropriate wait time allows them to make thoughtful responses towards attaining improvement in learning. 'Planning,' enabled the learners to internalize the learning goals and emphasized a clear-cut way for reaching the desired target. 'Monitoring' kept them in the track and acted as an exemplar of sustaining motivation among the students. Considerable discussions about the process of learning and the participatory mode of evaluation energized the learners to become authentic about the most important component of self-directed learning, 'Evaluation'.

Implications of the study: The new trends in innovative practices and instructional designs need to focus on the higher order forms of thinking which depict the process of learning rather than the product of learning.It helps to clarify the theoretical concepts of effective learning with practical clarity. The guided practices inculcated in the classroom instruction offered a gradual release of responsibility from the part of the teacher, which is the corner stone of constructivist paradigm. Use of self-generated questions advanced student thinking, learning and achievement and made them confident through the production of appropriate frames of questioning practices. The present study substantiated the fact that the expositions of the select Meta cognitive practices sharpened the power of learners and sparked their interest towards enhancing improvement and intellectual capacities with regard to the specific content. It also helped them to engage and focus on transformation of information in an innovative set up and fortify their Meta cognitive awareness in a deep structured way.

VI. REFERENCES

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