EFFECTIVE MODELS OF READING: AN INTERVENTION RESEARCH

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Abstract

Previous research studies have not provided a conclusive evidence on an effective instructional model for teaching reading in higher education. Therefore, this research study aims to investigate the efficacy of three approaches namely bottom-up, top down and integrative approach to reading. A mixed methods approach was used to test the efficacy of the three reading models. The results were analysed using SPSS version-24. It was found that the integrative approach was more effective than the other approaches to reading. The results of the study will be useful at the policy the pedagogical level.

Introduction

The draft of the national educational policy of the government of India (2019) stated that there is too little curricular emphasis on reading, right from the early stages of schooling. The report emphasizes on providing good grounding in reading skills at the early stages to nurture their lifelong learning skills. The draft further recommended reading on a daily basis for increased focus. The earlier research on reading was oriented towards cognitive approaches. According to Garner (1987) research on reading comprehension has primarily focused on the importance of cognition and meta-cognition (p.4.) Although there has been many research based projects on reading, there is no consensus on an appropriate method. There is no empirical evidence on a clear pedagogical model. Since there is no concretized approach or model for teaching reading there is a need for intervention research on the models of reading instruction.

Different Approaches to reading

Previous research studies have documented on the top down, bottom up and integrative approaches to reading. Lesgold, & Perfetti, (1978) claim that the top down approach focuses on triggering existing schema of the learners to understand the given reading passage. In the bottom up approach the learners start reading the text at the word level, followed by sentence level and paragraph level. The integrative approach is a synthesis of both top down and bottom up approaches. Ola Magntorn & Gustav (2007) studied on the effectiveness of bottom up perspective using an interview method. The results of the student interviews showed that the students learnt the abstract concepts when they were exposed to the linear instruction starting from the basic to the advanced. Jabri, et al., (2019) used an integrative approach to teach reading skills. They enlist

different strategies namely 1. Skimming (Skipping irrelevant details & reading quickly to understand overall meaning) 2.Scanning, (looking for specific information) 3. Structure signals (predicting the meaning) 4.Inference (guessing unknown meaning from the context) 5. Paraphrasing (summarizing the overall meaning of the passage) 6. Meta-phrasing- understanding both lexical and structural meanings).

Kieffer, & Christodoulou, (2020) also adapted an integrative approach to teach reading. They studied how integrative approach impacts reading comprehension and fluency. The research studies on all these three models have reported on its positive impact on fostering reading skills. But there is no scientific evidence on which among these models are effective. In order to fill this research gap the following objectives were drafted. They are to

- Study the existing pedagogies of teaching reading
- Develop a holistic framework to teaching reading
- Evaluate the effectiveness of top down, bottom up and integrative approach.

In alignment with the objectives of the study the research questions were formulated. They are

1. What is the most effective model for teaching reading?
2. To what extent do the learners exhibit fluency in reading after intervention?
3. To what extent is there an improvement in the higher order thinking skills after the reading intervention?

Research Method

Research methods in medical sciences have scientific rigor because of randomized control trials and intervention studies. If the same kind of rigorous designs are carried out in reading Instruction, we will have new perspectives on reading. To maintain scientific validity this research study has used an experimental design.

The Participants

There were 60 participants in the study comprising of 36 boys and 24 girls with a mean age of 20.5 and a deviation of 1.6. The reading comprehension scores of the previous semester was considered as a pretest score. The pretest scores indicated that the groups were homogenous by nature. Based on the performance of the previous semester the students were divided in three experimental groups comprising of 20 students in each group. The research was carried out by the research scholar at Cardamom Planter's Association (CPA) College in Theni district in Tamilnadu.

Instructional strategies framework

A holistic instructional design framework is used in the study. Instructional strategies framework was already attempted by Vijayakumar.et al., (2020). The framework proposed by the researchers is a combination of some of the best principles of theories of reading like schema theory, information processing theory and cognitive theory. Schema theory in reading gives an understanding of how students decode a text and comprehend its meaning based on their previous experience. Barrlett, (1932) was the first person to use the term schema. He remarked that the

target learners comprehend the meaning based on their knowledge of previous structures. Other seminal studies that talk about the impact of schema theory are Wang (2020) & Yan, N. (2020). The second theory used in our proposed model is the information processing theory. This theory explains about the nature of the brains capacity to encode, decode and retrieve information from memory. The implications of this theory is discussed at great length by Y. C. Liu and Y. Huang, (2020) . Finally the principles of Bandura's cognitive theory is applied in this model. According to Bandura (2005) cognition can be greatly enhanced if students work in collaboration. The second aspect of the framework illustrates three models namely bottom up, top down and integrative model of reading. The concepts of each of these models are already reviewed under the head different approaches to reading. The figure-1 illustrates these principles discussed above.

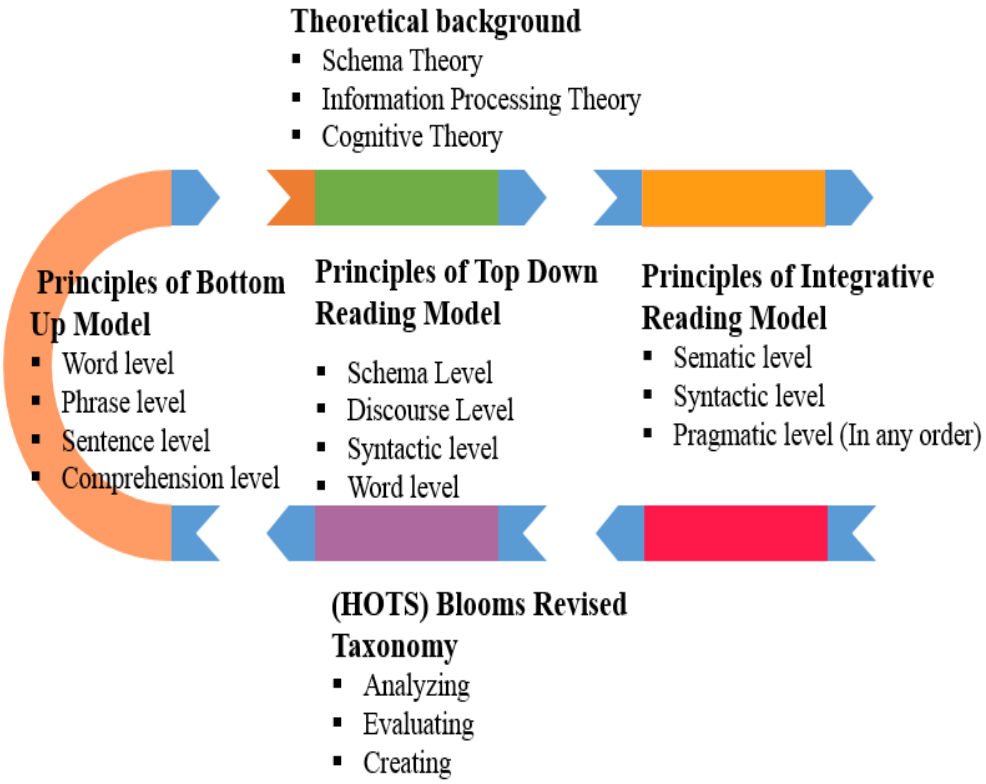

Figure-1. Saddfunisha & Vijayakumar, The Reading Pedagogy Framework.

The final aspect of the model is the higher order thinks skills (HOTS) which is based on blooms revised taxonomy. HOTS was used to evaluate the efficacy of these models. The three aspects that are evaluated are 1. The student ability to analyze the text 2.their ability to analyse the passage and 3. Their ability to create new meanings from the given context.

The instruction Cycle

The learning objectives are to enable the student to i) critically analyze the reading passage ii) defend their views iii) reformulate the passage and give creative conclusions. The objectives are in alignment with the Blooms higher order thinking skills. For all three group of learners there were pre-reading exercises, initial reading tasks, post reading tasks and extended reading tasks. They are mentioned in figure-2.

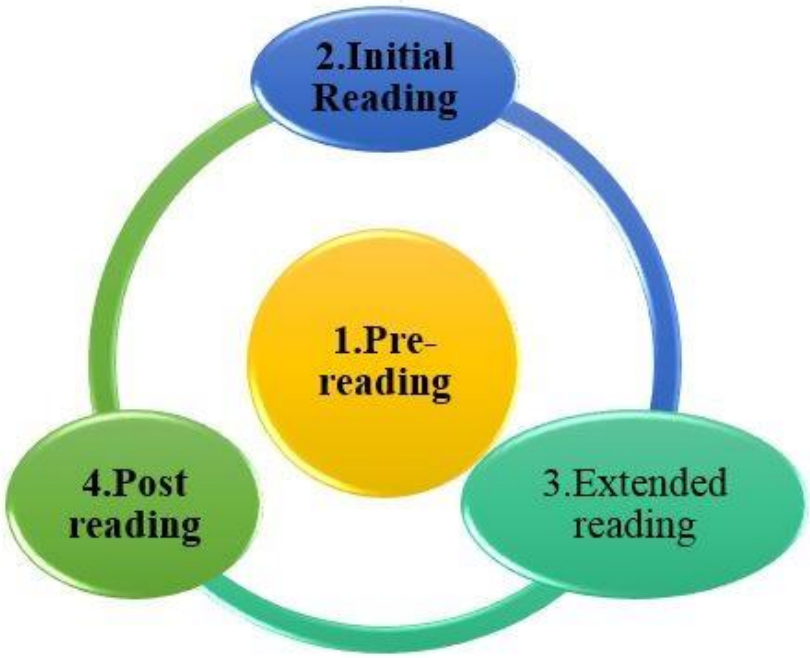

Figure-2. The instruction cycle adapted in the study.

The students were asked to do the reading tasks collaboratively. They were assigned in small groups. After the instructional phase the students were given reading exercises related to reading comprehension. Although the content framework was the same for all the three groups the method of instruction was different. The students of group-A were instructed using the bottom up model; group-B using top down model and group-C using the integrative model. The instructional methods adapted for the three groups is given in table-1.

Table-1

Summary of Instructional Strategy of three groups.

Group-A Bottom-Up	**Group-B Top-Down**	**Group-C Integrative**
Word level reading activity- Vocabulary Matching tasks.	Triggering Schema- Discussion on the learners prior knowledge of content	Sematic level discussion and triggering background knowledge.
Phrase level discussion	Syntactic level discussion	Both phrase and syntactic level discussion.
Sentence level discussion using WH questions	Discussions at discourse level.	Combination of both
Discussion at comprehension level	Discussion at lexical level	Discussion at pragmatic level

The evaluation Phase

The questions for the reading comprehension passages were formulated based on the verbs in higher order thinking skills (HOTS) advocated Bloom as mentioned by Sosniak (1994). The list of verbs used for designing the questions is presented in figure-3.

Figure-3 List of verbs used for HOTS
Source: Teach Thought.com

Results

The performance of Group-A, B and C was evaluated after the intervention phase. The intervention research in the language teaching context has already been used. (Vijaya Kumar, & Revathi, (2018) As mentioned earlier group-A was exposed to bottom up approach to reading, group-B to top down approach and group-C to integrative approach. Both descriptive and inferential statistics were used for data analysis. SPSS version 23 was used. The maximum marks for each group was 40 marks. The performance test was conducted after the intervention phase. The performance of the candidates after the intervention phase is presented in table-2.

Table-2 Reading Scores of three Models

READING –RAW SCORES - Max Marks-40			
	Bottom up	Top Down	Integrative model
1	22	26	30
2	19	21	29
3	17	18	24
4	28	32	30
5	22	26	36
6	25	29	39
7	24	24	26
8	21	27	34
9	23	29	35
10	11	14	21
11	9	13	19
12	22	26	30
13	19	21	29
14	17	18	24
15	28	32	30
16	22	26	36
17	25	29	39
18	24	24	26
19	21	27	34
20	23	29	35

It is evident that the students in the interactive model have performed better than the students of bottom up and top down approaches. The orange line in the graph represents the bottom up approach, yellow represents top down approach, and green refers to integrative model of reading instruction. It is clear that the students of the integrative approach have performed significantly. The graphical representation of the performance of each group is graphically represented in the figure-4.

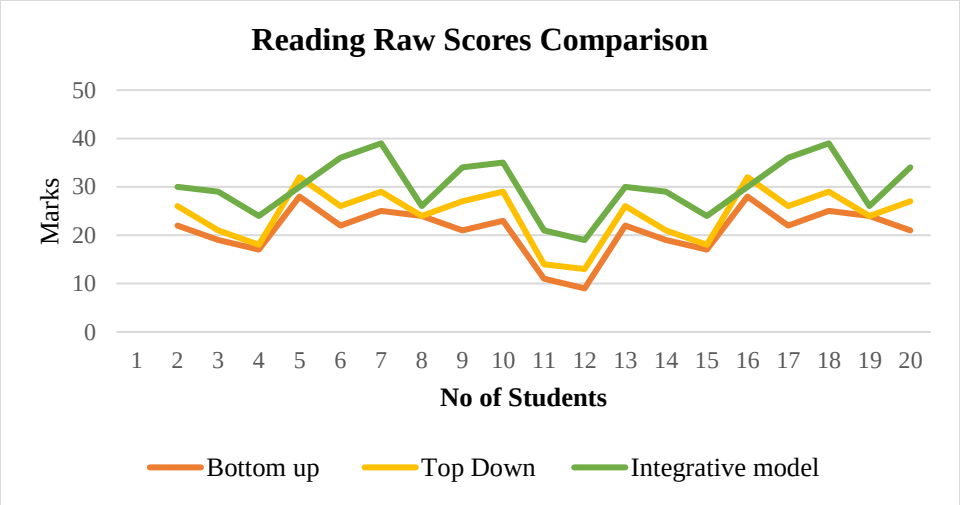

Figure-4- performance of three groups

Although it is clear that the performance of the integrative approach is much better than the other two intervention groups further validation is required. Hence a one sample t-test was conducted. Table-3 shows the mean scores of all the three groups. N refers to the number of students. The performance mean of the bottom up approach is 21.1 with a SD of 4.83 whereas for the top down it is 24.5 with a SD of 5.46. The mean scores of the integrative approach it is 30.3 with a deviation of 5.7.

Table-3 Comparison of Means.

	N	Mean	Std. Deviation	Std. Error Mean
Bottom Up	20	21.1000	4.83300	1.08069
Top down	20	24.5500	5.46255	1.22146
Integrative	20	30.3000	5.72253	1.27960

The SPSS output of the one sample t-test is shown in table-4. The significance level of the t test was set at an alpha level of .05.The t-value of the bottom up approach is 19.52. The t-value is slightly higher in the top down with 24.09. The t-value was the highest in the integrative group with 23.6. The lower the two tailed value the more significant the results are. The alpha value is significant in all three groups. However the significant two tailed value is much lower in the integrative group. Similarly, both the lower and the upper confidence intervals are significant in the integrative approach.

Table-4 –SPSS output of t-test

Approaches	t	df	Sig. (2-tailed)	Lower	Upper
Bottom Up	19.525	20	.003	18.8381	23.3619
Top down	20.099	20	.002	21.9934	27.1066
Integrative	23.679	20	.000	27.6218	32.9782

Discussion

The current research study aimed to investigate the effectiveness of three reading models. Initially three research questions were formulated. This section focusses on discussing the implications of these research questions.

R1.What is the most effective model for teaching reading?

The descriptive and inferential statistical analysis show that the integrative model is the most effective model for teaching reading. In this approach the instructor had a discussion pertaining to the passage and triggered their background knowledge which has perhaps motivated the learners to comprehend better. The discussion at the sematic, phrasal and syntactic level has also helped the learners to understand the passage better.

R2. To what extent do the learners exhibit fluency in reading after intervention?

The repeated reading tasks and fostering good reading habits has undoubtedly enhanced their reading fluency. Their ability to score better than other groups is an indication of their improvement in reading efficacy. The candidates in the interactive model has performed at an alpha level of less than 0.5

R3. To what extent is there an improvement in the higher order thinking skills after the reading intervention?

The reading tasks were focused on measuring the higher order thinking. The reading comprehension questions were formulated based on higher order thinking skills and using the list of verbs mentioned in figure-3. The teacher focused on HOTS questions not only in the evaluation phase but also in the classroom reading tasks. The t-test scores presents a clear evidence that the integrative approach to reading has triggered their higher order skills in reading.

Implications of the study

The results of the study show that the higher order thinking skills and the reading comprehension skills of the students will improve dramatically if they adopt the integrative framework for reading instruction. Our results of this study was aligned with previous research studies on reading pedagogy. (Chandra et al., 2020; Gentilini, & Greer. 2020). The results of the study show that application of the principles of interactive approach will adequately equip the candidates to face the reading tasks and evaluation tasks with confidence. The model was designed for the students of higher education. But it can be further modified according to the level of the learners. This study has presented a concrete solution to the pedagogical dilemmas associated with reading. Although the positive impact of integrative model of reading is proved , further research with a large sample and cross sectional studies are needed to further validate the research objective.

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