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Effect of Blended Instructional Strategy (BIS) on Fact Schema among non-native speakers of Hindi at the Elementary level in Relation to their Learning Style.

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Abstract
Basic aim of the present study is to examine the effectiveness of Blended Instructional Strategy (BIS) and Traditional Instructional Strategy (TIS) on the fact schema among non-native speakers of Hindi, in respect to their learning styles. For this study, a quasi-experimental pretest-posttest group design was used. In total 217 students participated in the study. The experimental group incorporated 108 students and the control group had 109 students. The experimental group was taught through Blended Instructional Strategy and the control group was taught throughTraditional Instructional Strategy. The pre-test and post-test scores were analyzed by using the't'-test in SPSS 23. The result reveals that Blended Instructional Strategy was effective on the fact schema of non-native speakers. The study also signifies that Blended Instructional Strategy was effective on the students with sensing, verbal, active, reflective and global learning styles buton the other hand it is not effective on students who had intuitive, visual, balance (active and reflective) and sequential learning styles.

Keywords: Instruction**,** Blended Instructional Strategy, non-native speakers, learning style, fact Schema, Hindi language.

Introduction

In the province-state of West Bengal, Hindi language is taught as 'third language' in Bengali medium and English medium schools under West Bengal Board of Secondary Education, abbreviated as WBBSE. The three-language formula proposed by Kothari Commission (1964-'66) and National Policy of Education (1986) promotes the education of modern languages of India and promoted inter-state languages. According to three-language formula, a student must be taught three languages from class VI to VIII. In non-Hindi speaking states, Hindi should be taught along with the local/regional language and English. Additionally, the National Policy of Education 2020 endorsed the three-language educational system, since it fosters on multilingualism and national integrity. According to this policy, two of the three languages chosen must be Indian languages, and the state government has the freedom of selecting the languages.

India is a multilingual country. National Curriculum Framework 2005 identified multilingualism in the class room as a resource. Learning a language is essential for establishing communication with various lingua-communities. This necessitates establishing communication among various lingua-community help in dwelling lingua-franca (Pharo, L.K. 2018). When a language is often used as a medium of communication across a wide geographical area, it is known as lingua-franca (Sebba, M.1997). The term lingua-franca is also known as a contact language. Hindi is the lingua-franca of India. M. K. Gandhi had said 'A Universal language for India should be Hindi'and it has the potential to be the national language of India as it fulfilled the

five criteria a language should fulfilled to be a national language. The criteria are (i) For the official class it should be easy to learn.(ii) The religious, commercial and political activity throughout India should be possible in that language.(iii) It should be the speech of the majority of the in habitants of India.(iv) For the whole of the country it should be easy to learn.(v) In considering the question, weight ought not to be put upon momentary short-lived conditions (Speech and writings of Gandhi, 1922). Language is a part and partial of human life. It is a tool for communication. Humansare social beings and communication is needed to interact with each other.The absence of language will deter humans from being social (Chanifa, A.M., et.al.2020).

Theoretical Framework

The present study is hinging upon three componentsof teaching and learning i.e instruction, students (i.e learning styles) and assessment of knowledge construction. For the first component of this study instruction, the researchers have used the theory of constructivism and the cognitive theory of multimedia proposed by Mayor, 2001. The theory of constructivism claims that knowledge is constructed by learners by participating actively in the teaching-learning process. A passive learner is not assumed as a knowledge constructor. The 5 E's model of constructivism was employed for engaging the students in the classroom. The 5E's are engage, explore, explain, elaborate and evaluate. Along with this information communication technology is also incorporated into this instruction. While selecting the videos, animations and other online materials, the cognitive theory of multimedia (CTML) was also taken into consideration. The coherent principle of CTML denotes that the content should be free of extraneous information the multimedia is used to use to deliver only pertinent information. Hence extra care was taken to ensure that the multimedia used in this study was free from unnecessary text, sound, and visuals. The principles of modality stated that, learners comprehend an idea better when both their ears and eyes are engaged. Each image was followed by an appropriate story and the voice principle was also used by confirming that the videos selected for the experiments were recorded with a human voice, not a robotic voice. To know these students and how they learn, learning-styles of students were considered. To identify learning styles of non-native speakers, theory proposed by Felder-Silverman was used for this study. This theory belongs to the flexible-stable family of learning styles, sensing-intuitive, visual-verbal, active-reflective, and global-sequential are the types of learning style. At last, for assessing whether the instruction is successful in the construction of knowledge among students. Taxonomy of knowledge proposed by Alexander Joseph Roszkowskiin 1981, known as 'Knowledge-schemata' was also employed in this study. The term 'Knowledge-Schemata' is a framework of knowledge. He considers knowledge as the information stored in the learner's mind. He categorized knowledge into two broad categories referred to as factual and conceptual or remembering and understanding and further divided the factual knowledge into two subcategories as fact and procedure schema and conceptual knowledge into concept and principle.

Review of Related Research Literature

Review of related research literature plays an important role in research. It not only helps in exploring the studies conducted in the past, but also helps in identifying the gaps. Studies conducted in the past act as a stepping stone for new researches. For the sake of the present study researchers had carried out a review of studies conducted on blended instruction, learning styles, knowledge schema and non-native speakers. The reviews of related research literature are as follows:

Studies Related to Schema and Knowledge Schemata

The concept of schema was first introduced by Barllet in 1932. The term 'schema' refers to the active organisation of prior acts or experiences that are always assumed to be

getting changed when new experiences and information were added. The plural form of schema is schemata, which is the organised form of one's information (Bartlett & Kintsch, 1995). According to Jean Piaget, schema plays an important role in the cognitive development of an individual. The schema keeps on changing with the process of accommodation and assimilation. Schemas are essentially dynamic. It continues to grow and transform as a result of acquiring new skills and information. It helps in comprehending new information. Declarative and procedural knowledge were parts of schema. Declarative knowledge is concerned withfacts (knowing things like objects, events, names, etc.); in nutshell, it refers to the things that are seen and can be recalled. Procedural knowledgeon the other hand is the ability to perform a task. Schemas can take many different forms because they are the mental representations of knowledge such as language schema, content schema, formal schema, cultural schema, self-schema, personal schema, role schema, event schema, and so on. Only when the learnersconnect the text content to relevant prior knowledge or schema a text can be understood (Carrell, 1984). Only when a concept was connected to something the person already knew could it have any real meaning (Kant,1781). The result of the interaction between text and schema is comprehension. The two interrelated operations known as the bottom-up process and the top-down process are primarily involved in the activity of reading and comprehending its meaning. According to Rick, (1990) these two tasks are further divided into five additional activities1) Decoding Plan postulation 2) schema postulation 3) Scheme enlargement 4) Reverse decoding 5) Changes to the schema. The first phase in the comprehension process is decoding, during which a reader applies his or her understanding of the text to determine the context's semantic value. For example how many characters are there? How do they act? Etc. Schema postulation is the second phase, where learners review and conclude itto least one schemata, to which the particular content appears to be significantly connected. The learner offered a pattern and that mapping gave an expansive structure characterising the assumption about the text, marking the third step of comprehension known as schema expansion. This procedure comes under the third step of comprehension known as schema integration. The fourth phase involves changing the decoding process. Using a schema, the individual begins to speculate about the unclear or foggy language/concept found in the text. A change in the schema is the final stage, when the learner has finished all four phases, the new knowledge they have learned is added to their existing schema, and a new schema is created. In this way, the cycle goes on and new knowledge or schemas are constructed and modified, that is why schemas are thought of as having a dynamic aspect.Whereas the term 'Knowledge Schemata' is a framework of knowledge. Alexander Joseph Roszkowski, a British educationalist has coined the term 'Knowledge Schema' in 1981. He considers knowledge as the information stored in the learner's mind. He categorized knowledge into two broad categories referred to as factual and conceptual or remembering and understanding and further divided factual knowledge into two subcategories as fact and procedure and conceptual knowledge into concept and principle.

Amirreza, k. (2022) found that schema is effective on reading skills of second language learners of English and also stated that schema theory plays an important role in the pre-learning stage of learners. (Dabbagh, A. & Babail. E. (2021) found that cultural schema is effective on non-native speakers. Roy, R. & Tirkey, N. (2020) stated that the principle schema of life science was positively affected by blended instructional strategy. Tirkey, N. & Roy, R. (2018) conducted a study to find the effectiveness of blended instructional strategy on the concept schema of life science achievement it was found that

blended learning is effective on the concept schema of class 9th student of Jharkhand. The blended instructional strategy is not effective on the concept and principle schema of life science but also effective on the fact schema (Tirkey, N. & Roy, and R.2018).

Studies Related to Instruction and Blended Instructional Strategies

The term blended learning is trending in academia. It denotes the combination of the asynchronous and synchronous learning environment. Most of the time the term instruction and learning are used inter changeably. But each term denotes different meaning. Learning is a process of acquiring knowledge whereas instruction is a teaching process that is goal oriented and pre-planned (Romiszowski, A.J. 1981). Various studies have been carried out to examine the effectiveness of instruction on the achievement of students at various levels. Eren & Dokme. (2022), Seage & Turegun. (2020,) Krishnan, D. (2019), Debrashi. (2017), Saha. (2019) Josephine. (2016), Krishnan, D. (2016), Bhagat & Chang, (2015) found that blended instruction is effective on the achievement ofstudents. Tirkey (2019) conducted a study to find the effectiveness of the blended instructional strategy and traditional instructional strategy on the life science achievement of IXth grade students of Jharkhand, India. They found that Blended Instrucion is effective on life science achievement. Kumar, J.J. (2020), Yadav, O. (2019), Kundal, D.B. (2016), Dave, Y.J. (2016), Kumar, P.S.L. (2014), Remani, V.N. (2018) and Ohri.N. (2015) carried out studies to find the impact of instruction which is integrated with information and communication technology on the Hindi language learning and found it effective.

Studies Related to Learning Style

Learning styles describes how a learner learns the information. Keefe, J. W. (1979) defined the concept of learning style as an overt behavior of an individual which indicates how a student or individual learns. Learning style is tetra-dimensional and has three elements that are cognitive, affective and physiological. Whereas Dunn and Dunn, (1992) described learning style as a capacity of an individual to assimilate and hold the received information. Also stated that the learning style of an individual differs from others based on environmental, emotional, social, physiological and psychological factors (Dunn, R. & Dunn, K., 1992). How a student receives and interprets information is indicated by their learning style (Felder, R. M., 1988). To discover the learning style of learners various theories were proposed and on the bases of theories, various assessment tools were developed. For understanding the trait of various learning style models and instruments it was categorized into five families. The first family of learning styles is known as constitutionally based learning styles, and it includes theories or models that hold that a learner's preferred method of processing information is fixed and consistent throughout life.Visual, auditory, kinaesthetic, and tactile learning styles are the major types identified under this group. Dunn and Dunn, Gregore Bartlett Betts, Gordon, Marks, Paivio, Richardson, Sheehan and Torrance are the major models of learning style under the first family of learning styles. The second family is named as cognitive structure family, all the learning style theories which assume that the learning styles of an individual are influenced by the personality structure are categorized under this family.The learning styles described by Riding, Brover man, Cooper, Gardner, et al., Guilford, Holzman, Klein Hudson, Hunt, Kagan, Kogan, Messick, and Pettigrew, are all placed together in this section. The third family is known as the stable personality type. Thecommon focus of the learning style instruments and models included in this family is on learning style as one observable manifestation of a reasonably stable personality type.Theorists in this family are interested in developing tools for comprehension of the personality characteristics that influence all facets of a

person's relationship with the outside world. The major theorist under this category is Myers-Briggs Apter, Jackson, Epstein and Meier, Harrison- Branson and Miller. The fourth family is named as flexibly stable learning preferences. According to those who have been categorized under this family, learning style is not a fixed characteristic but rather a differential preference for learning, which changes slightly from one circumstance to another. Allison and Hayes, Herrmann, Honey and Mumford, Kolb, Felder and Silverman, Hermanussen, Wierstra, de Jong and Thijssen, Kaufmann, Kirton, and Mc Carthy belong to this family. The fifth and last family was named as learning approaches and strategies. Theories under this family focus on the learning strategies and approaches rather than focusing on styles and considers the importance of prior experiences and contextual variables in learning. Biggs, Conti and Kolody, Grasha-Riechmann, Hill, Marton and Saljo, Mc Kenney and Keen, Pask Pintrich, Smith, Garcia and Mc Ceachie, Schmeck, Weinstein, Zimmerman and Palmer, Whetton and Cameron are examples of theorists under this family (Coffield, F., Moseley, D., Hall, E., and Ecclestone, K., 2004).

To make the students learn, it is important to know how they learn. The concept of learning style has become popular after promoting the concept of instruction and learning together.The notion is that every learner has the capacity to learn well only if instruction is scattered to the unique learning style of the learners.Secondly, it is easy to blame the education system if a child is not learning well then blaming the parent or child hence it is more tempting to believe that problem is within instruction being insufficient customized to once learning style rather than attributing one's failure to any another lack of talent or effort on one's part (Pasler, H and et al.2008).

Objectives of the Study

The main objective of this study was to study the impact of blended instructional strategy (BIS) and traditional instructional strategy (TIS) on the fact schema of non-native speakers with respect to the learning styles of the non-native speaker's i.e sensing-intuitive, visual-verbal, active-reflective and sequential- global.

Following were the four sub-objectives that were developed to help with the main objectives:

1. To identify the learning-styles of non-native speakers.
2. To determine which instruction is effective on the fact schema of non-native speakers.
3. To determine which instructionis effective on the fact schema of non-native speakers, with the perceptual dimension of the learning styles.
4. To determine which instructionis effective on the fact schema of non-native speakers, in relation to the input dimension of the learning styles.
5. To determine which instructionis effective on the fact schema of non-native speakers, with the processing dimension of the learning styles.
6. To determine which instructionis effective on the fact schema of non-native speakers, in relation to the understanding dimension of the learning styles.

Hypotheses

The hypotheses for the present study are as follow:

H_o1 There is no significant difference in the effect of blended and traditional instructional strategies on the fact schema of non-native speakers.

H_o2 There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers with the perception dimension (Sensing, balance and intuitive) of learning styles.

H_o3 There is no significant difference in the effect of blended and traditional instructional strategies on the fact schema of non-native speakers with

the input dimension (visual, balance and verbal) of learning styles.

H_o4 There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the processing dimension (active, balance and reflective) of learning styles.

H_o5 There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the understanding dimension (sequential, balance and global) of learning styles.

Methodology

Design of the Study

For conducting this experimental study pretest-posttest nonequivalent group design was selected.

Participants of the Study

Class VIII students of the West Bengal Board, who are studying Hindi language as a third language formed the sample for this study. In total 217 students were selected and then they were divided into the experimental and control group. The experimental group incorporates 108 students whereas the control group have 109 students.

Experimental Intervention

At first, the researchers administered a learning style questionnaire developed by Felder Solomon (1997) on both the experimental and control group with the purpose to identify the learning styles of non-native speakers of Hindi.

For checking the entry-level knowledge of the student pretest was conducted. Afterward, the experimental group was taught in blended instructional strategy (BIS) andthe control group was taught with traditional instruction strategy (TIS) the experimental was conducted for four weeks. After completing the experiment, a post-test was administered to both groups to compare the effect of instructions.

Measuring Tools

For the present study, the following instruments were used for collecting data from the sample:

i) Learning style questionnaire

Felder-Soloman (1997) was used for this study. For better comprehension of students, the learning style questionnaire was translated into Bengali. The direct translating technique was used for translation, grammar; sentence structure and content matter have been given special importance while translating. The test-retest method was adopted for testing the reliability of the tool and the reliability value was 0.83.

ii) Self-made Hindi language achievement test

The Hindi language achievement test was constructed by the researchersto find the impact of both the instructions on the fact schema of a non-native speaker.

Two Hindi language achievement tests were constructed for this study. A pre-test was constructed totest the entry-level knowledge and a post-test was constructed to test the effect of instruction on fact schema in both groups. The inter-rater reliability score for the pre-test was 85% and 84% for the post-test. The content validity ratio (CVR) was 0.85 and 0.87 for the pre-test and post-test respectively from the scores it was clear thatboth tests were reliable and valid.

Statistical Technique

For statistical technique, the data was tested to assure homogeneity among variance. For testing homogeneity, F-test and Levene's test was used. The following tables represent the homogeneity of variance among various groups employed for the study.

Table 1: test of homogeneity among experimental and control group

Group	Test	N	Mean	SD	F-test	Levene's test	Remarks
Experimental	Post-test	108	3.59	1.12	.742	.124	Homogeneous
Control	Post-test	109	2.60	1.30			

The experimental and control group of the study is homogeneous as the P- value of Levene's test is 0.124 which is greater than 0.05 and the table value of the F-test at 0.05 level of significance is 1.4622, which is higher than the computed F-value. Hence thevariance of both groups is homogeneous. So't'- test was used for analysing the mean of the experimental and control group on fact scores of non-native speakers.

Table 2: test of homogeneity perception dimension among the experimental and control group

	Perception Dimension							
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**F-Test**	**Levene's test**	**Remarks**
Fact	Sensing	BIS	16	3.69	1.30	1.000	.941	homogeneous
		TIS	49	2.55	1.30			
	Balanced	BIS	42	3.69	1.02	0.562	.067	homogeneous
		TIS	43	2.53	1.36			
	Intuitive	BIS	50	3.48	1.16	1.100	.870	homogeneous
		TIS	15	3.07	1.10			

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

Table 2 depicts the groups of students among the perception dimension of learning style based onthe experimental and control group of students. The p-value of Levene's test sensing, balanced and intuitive learning styles are .941, .067 and .870 respectively, which is greater than 0.05 and the F- values are 1, .562 and 1.1 for sensing, balanced and intuitive learning styles respectively, which is lessthe table of value. This signifies that all the groups of perception dimensions have fulfilled the assumption of homogeneity, hence 't'-testhas been used for comparing the mean scores of fact schema among the experimental and control groups of sensing, balanced and intuitive learners.

Table 3: test of homogeneity input dimension among the experimental and control groups

	Input Dimension							
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**F-test**	**Levene's test**	**Remarks**
Fact	Visual	BIS	23	3.48	1.11	.729	.442	homogeneous
		TIS	34	2.65	1.30			
	Balanced	BIS	48	3.65	1.13	.721	.286	homogeneous
		TIS	39	2.51	1.33			
	Verbal	BIS	37	3.78	1.08	.679	.253	homogeneous
		TIS	36	2.64	1.31			

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

The variance among the groups of input dimension among the experimental and control group is homogeneous. There is no such significant difference among the variance of groups of visual, balance and verbal learners.

Table 4: test of homogeneity processing dimension among the experimental and control groups

	Processing Dimension							
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**F-Test**	**Levene's test**	**Remarks**
	Active	BIS	31	3.81	1.19	.754	.457	homogeneous

Fact		TIS	26	2.27	1.37			
	Balanced	BIS	45	3.29	1.14	.734	.364	homogeneous
		TIS	26	2.77	1.33			
	Reflective	BIS	32	3.81	.965	.596	.121	homogeneous
		TIS	57	2.67	1.25			

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

The experimental and control group of processing dimension on the scores of fact schema among the active, balance and reflective learners are homogeneous.

Table 5: Test of homogeneity understanding dimension among the experimental And control groups

	Understanding Dimension							
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**F-test**	**Levene's Test**	**Remarks**
Fact	Sequential	BIS	23	3.52	1.44	1.2	.508	homogeneous
		TIS	40	2.68	1.28			
	Balanced	BIS	39	3.67	1.06	.644	.178	homogeneous
		TIS	40	2.48	1.32			
	Global	BIS	46	3.57	1.02	.579	.100	homogeneous
		TIS	29	2.66	1.34			

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

The sequential, balanced and global learners of the experimental and control group fulfilledthe assumptionofhomogeneity of variance. That's why the't'-test was used for the comparison of the mean among the various groups.

Findings

Identifying the learning styles of non-native speakers was the first objective of this study. After administeringthe learning style questionnaire constructed by Felder-Soloman (1997), it was found that in the perception dimension among the experimental group 14.8% are sensing, 38.9% are balanced and 46.3% are intuitive. Whereas in the control group the figure for sensing, balanced and intuitive are 44.9%, 41.4% and 13.7% respectively. In the input dimension among the experimental group the visual is 21.3%, balanced are 44.4% and verbal is 34.3% and in the control group 31.2%, 35.8% and 33% are for sensing, balanced and intuitive learning styles respectively. In the processing dimension in the experimental group the percentage of active, balanced and reflective are 28.7, 41.7 and 29.6 respectively on the other hand in the control group the number of active are 23.9%, balanced is 23.9% and reflective is 52.3%. For the understanding dimension of learning style, there are 21.3% sequential, 36.1% balanced and 42.6% global in the experimental group. Where as in the control group 36.7 % are for sequential learners and balanced learners and 26.6% for global learners.

Table 6: learning style of non-native speakers

Dimensions	**Experimental group(BIS)**			**Control group (TIS)**		**Total**	
	Learning	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**

	style						
Perception	Sensing	16	14.8	49	44.9	65	29.9
	Balanced	42	38.9	45	41.4	87	40
	Intuitive	50	46.3	15	13.7	65	29.9
	total	**108**	**100**	**109**	**100**	**217**	**100**
Input	Visual	23	21.3	34	31.2	57	26.3
	Balanced	48	44.4	39	35.8	87	40
	Verbal	37	34.3	36	33	73	33.7
	Total	**108**	**100**	**109**	**100**	**217**	**100**
Processing	Active	31	28.7	26	23.9	57	26.3
	Balanced	45	41.7	26	23.9	71	32.7
	reflective	32	29.6	57	52.3	89	41
	Total	**108**	**100**	**109**	**100**	**217**	**100**
Understanding	Sequential	23	21.3	40	36.7	63	29
	Balanced	39	36.1	40	36.7	79	36.4
	Global	46	42.6	29	26.6	75	34.6
	Total	**108**	**100**	**109**	**100**	**217**	**100**

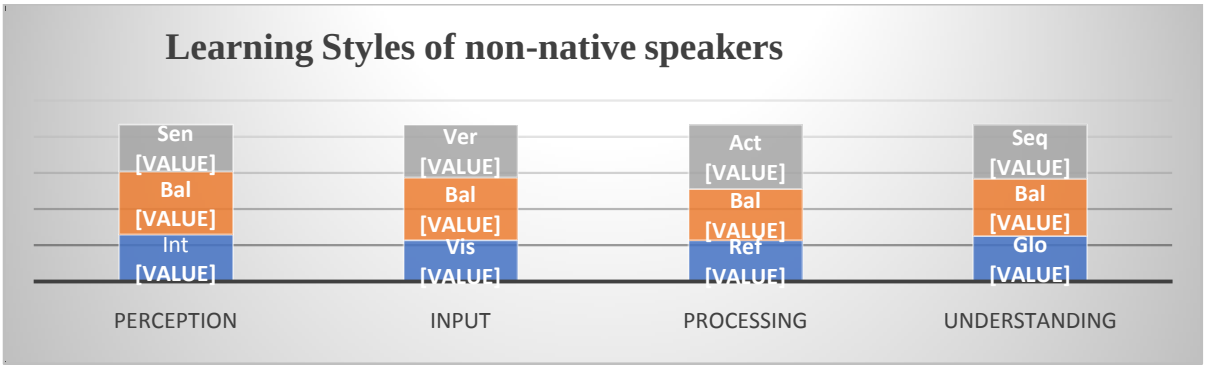

Figure 1: Learning Styles of non-native speakers

H_o1- There is no significant difference in the effect of blended and traditional instructional strategies on the fact schema of non-native speakers.

The analysis of the mean score of fact schema among the non-native speakers depicts that the blended instructional strategy is more effective on the fact schema of the experimental group than the control group taught with the traditional instructional strategies.

Table 7: Difference between the means of fact schema among the experimental group and control group of non-native speakers.

Pair	Group	Test	N	Mean	SD	df	't'	p	Remarks
1	BIS	Pre-test	108	2.67	1.48	107	8.68	.000	Significant
		Post-test	108	3.59	1.12				
2	TIS	Pre-test	109	2.46	1.41	108	1.58	.116	Not Significant
		Post-test	109	2.60	1.30				
3	BIS	Post-test	108	3.59	1.12	215	5.890	.000	Significant
	TIS	Post-test	109	2.60	1.30				

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

H_o2- There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the perception dimension (Sensing, balance and intuitive) of learning styles.

When the score of fact schema among the experimental and control group was compared with respect to the perception dimension. It was found that a blended instructional strategy is effective for sensing and balanced learner but not effective for the intuitive learners. In other words, sensing and balanced learning styles have performed well when taught with blended instructional strategy but intuitive learners have not learned well. It can be concluded that the blended instructional strategy is effective on the fact schema of sensing and balanced learner but not on the intuitive learners.

Table 8 Mean scores of the experimental and control group with perception dimension

	Perception Dimension										
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**SEM**	**Mean difference**	**df**	**'t'-value**	**'p'-value**	**Remarks**
Fact	Sensing	BIS	16	3.69	1.30	.325	1.140	63	3.04	.003	Significant
		TIS	49	2.55	1.30	.186					
	Balanced	BIS	42	3.69	1.02	.204	1.160	83	4.44	.000	Significant
		TIS	43	2.53	1.36	.207					
	Intuitive	BIS	50	3.48	1.16	.164	.410	63	1.214	.229	Not significant
		TIS	15	3.07	1.10	.284					

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

H_o3- There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the input dimension (visual, balance and verbal) of learning styles.

The input dimension determines how a learner prefers information to be presented.Students with visual learning styles prefer to use graphic and figurative information in the processes of information processing. And verbal learners learn by assimilation of educational material when using words in written and oral form, pronouncing and writing down educational material.

The results show that verbal and balanced learners are benefited from blended instructional strategywhereas visual learners are not benefited.

Table 9 Mean scores of the experimental and control group with input dimension

	Input Dimension										
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**SeM**	**Mean Difference**	**df**	**'t'-value**	**'p'-value**	**Remarks**
Fact	Visual	BIS	23	3.48	1.11	.231	8.30	55	2.50	.055	Not significant
		TIS	34	2.65	1.30	.223					
	Balanced	BIS	48	3.65	1.13	.163	1.140	85	4.32	.000	significant
		TIS	39	2.51	1.33	.213					
	Verbal	BIS	37	3.78	1.08	.178	1.140	71	4.06	.000	significant
		TIS	36	2.64	1.31	.218					

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

H_o4- There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the processing dimension (active, balance and reflective) of learning styles.

The processing dimension identifies a learner's preferred method of information processing. Active and reflective are the types of learning styles under the processing dimension. Balance learners are those who process the information by activity and reflection. Active learning styles students assimilate information via active exploration and practice, preference to do and then evaluate the result. On the other hand, reflective learnersprefer studying in a calmsetting, working alone, and carefully considering each move.

The results concluded that the blended instructional strategy is effective on active and reflective learning styles but not effective on the balanced learner over fact schema.

Table 10: Mean scores of the experimental and control group with processing dimension

	Processing Dimension										
Schema	**Learning styles**	**Group**	**N**	**M**	**SD**	**SEM**	**Mean Difference**	**df**	**'t'-value**	**'p'-value**	**Remarks**
Fact	Active	BIS	31	3.81	1.19	.214	1.540	55	4.54	.000	significant
		TIS	26	2.27	1.37	.269					
	Balanced	BIS	45	3.29	1.14	.170	0.520	69	1.74	.086	Not significant
		TIS	26	2.77	1.33	.261					
	Reflective	BIS	32	3.81	.965	.171	1.140	87	4.46	.001	significant
		TIS	57	2.67	1.25	.166					

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

H_o5 - There is no significant difference in the effect of blended and traditional instructional instruction strategies on the fact schema of non-native speakers in relation to the understanding dimension (sequential, balance and global) of learning styles.

The understanding dimension determines the learner's preferred method for constructing and developing knowledgeunderstanding.Learners with the Sequential learning style develop the complete picture gradually as information is perceived in a continuous, step-by-step manner using logic, linear thinking, and analysis. Whereas rapid and discontinuous learning; preference towards seeking innovative solutions to significant challenges are the pattern of global learners.

After analysing the data it was found that blended instructional strategy benefited balanced and global learners whereas sequential learners are not benefited.

Table 11: Mean scores of the experimental and control groups with the understanding dimension

Understanding Dimension											
Schema	Learning styles	Group	N	M	SD	SEM	Mean Difference	df	't'-value	'p'-value	Remarks
Fact	Sequential	BIS	23	3.52	1.44	.300	0.840	61	2.39	.020	Not significant
		TIS	40	2.68	1.28	.202					
	Balanced	BIS	39	3.67	1.06	.170	1.190	77	4.41	.000	significant
		TIS	40	2.48	1.32	.209					
	Global	BIS	46	3.57	1.02	.150	0.910	73	3.32	.001	significant
		TIS	29	2.66	1.34	.249					

*BIS = Blended Instructional strategy (experimental group), TIS= traditional instructional strategy (control group)

Discussion and conclusion

The first objective was framed to explore the learning styles of non-native speakers of Hindi. The results of the descriptive statistics revealed that combination of sensing, intuitive, visual, verbal, active, reflective, sequential and global are the learning styles of non-native speakers of Hindi to learn. This finding supported by another research conducted by Omar. N. Et. al. (2015). The data were analysed through

descriptive statistics which is given in table6 and figure1.

The second objective of the study was to explore the effectiveness of instruction (i.e blended and traditional) on the fact schema of non-native speakers. The't'-test analysis revealed that Blended Instructional Stratergy (BIS) was effective on the fact-schema of the non-native speakers over Traditional Instructional stratergy (TIS). The findings were supported by the study conducted by Tirkey, N. et. al. (2018) and revealed that Blended Instructional stratergy is effective on the fact schema.

The third objective of the study was to explore effectiveness of blended and traditional instructional stratergy on the fact schema of non-native speakers, with the perceptual dimension of the learning styles. The findings revealed that on one hand Blended Instructional Stratergy (BIS) was effective on the fact schema of sensing and balance (combination of sensing and intuitive) learners and on the other hand it is not effective on the fact schema of intuitive learners. Studied conducted by Kumar, D. (2021), Dave, Y. J. (2016), Ohri, N. (2105) and Remani, V.N. (2018) found that Blended Instructional Stratergy is effective on the Hindi achievement of students.

The fourth objective of the study was to explore effectiveness of blended and traditional instructional stratergy on the fact schema of non-native speakers, with the inputdimension of the learning styles. The findings revealed that Blended Instructional Stratergy (BIS) is effective on the fact schema of non-native speakers with verbal and balance (combination of verbal and visual) learning style. Where as it is not effective on the fact schema of visual learners.

The fifth objective of the study was to explore effectiveness of blended and traditional instructional stratergy on the fact schema of non-native speakers, with the processingdimension of the learning styles. The findings revealed that Blended Instructional Stratergy (BIS) is effective on the fact schema of non-native speakers with active and reflective learners, but not effective on the balanced (combination of active and reflective) learning style.

The sixth objective of the study was to explore effectiveness of blended and traditional instructional stratergy on the fact schema of non-native speakers, with the understanding dimensionof the learning styles. The findings revealed that Blended Instructional Stratergy (BIS) is not effective on the fact schema of sequential learners, but it is effective on the global and balance (combination of sequential and global) learners.

From the above findings it may be concluded that the blended instructional strategy provided less opportunity to the students who love to learn by imagining and are less involved in group activities (intuitive). Blended instructional strategy is about engaging students in the teaching-learning process, but a teacher should also remember that there are learners who don't prefer to learn by doing group-activities. Hence proper opportunities and space should be provided to intuitive learners in class.

Similarly visual, balanced (active-reflective), and sequential learners are also not benefited not benefited.Therefore, it can be concluded that a famous and trending instructional strategy may not be beneficial for all students, having differing learning styles. Hence it is the responsibility of a teacher and educator to adopt appropriate blend of teaching styles, so as to assure thatclassroom instruction should be equally beneficial to all students.

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