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The Effect of Top-Down and Bottom-Up Strategies on Students' Listening Skill

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Abstrak

Tujuan dari penelitian ini adalah untuk menentukan apakah strategi Top-Down dan Bottom-Up berpengaruh signifikan terhadap keterampilan mendengarkan siswa. Penelitian ini dilakukan dengan penelitian eksperimental kuantitatif. Populasi penelitian ini adalah mahasiswa semester III HKBP Nommensen Universitas Pematangsiantar. Sampel penelitian ini adalah dua kelas yang dipilih secara random sampling. Ada 60 siswa. Kelas I sebanyak 30 siswa sebagai kelompok eksperimen yang diajar dengan menggunakan Strategi Top-Down dan Bottom-Up dan kelas II sebanyak 30 siswa sebagai kelompok kontrol yang diajar tanpa menggunakan Strategi Top-Down dan Bottom-Up. Instrumen untuk mengumpulkan data adalah tes. Untuk memperoleh reliabilitas tes digunakan rumus Kuder Richardson (KR21). Hasil penelitian menunjukkan bahwa ada pengaruh yang signifikan dari penggunaan Strategi Top-Down dan Bottom-Up terhadap kemampuan mendengarkan siswa.

Kata Kunci: strategi Top-Down dan Bottom-Up, keterampilan mendengarkan, pendidikan bahasa Inggris

Abstract

The purpose of this study was to determine whether the Top-Down and Bottom-Up strategies had a significant effect on students' listening skills. This research was conducted with quantitative experimental research. The population of this research is the third-semester students of HKBP Nommensen, Pematangsiantar University. The samples of this study were two classes which were selected by random sampling. There are 60 students. Class I as many as 30 students as the experimental group who were taught using the Top-Down and Bottom-Up Strategy and class II as many as 30 students as the control group who were taught without using the Top-Down and Bottom-Up Strategy. The instrument for collecting data is a test. To obtain the reliability of the test used the Kuder Richardson formula (KR21). The results showed that there was a significant effect of using Top-Down and Bottom-Up Strategies on students' listening skills.

Keywords: top-down and bottom-up strategies, listening skill, English education

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INTRODUCTION

Whether communicating at school, at work, or in the community, listening is an important factor in a foreign language learner's competence in language performance. According to Grosjean, (2020); Conklin et al., (2020) Listening is the first language children learn. It provides the basis for all elements of language and the development of awareness and plays a lifelong role in the performance of learning and communication, which is essential for successful participation in life (Newman & Newman, 2017).

There are four skills in English as a second or foreign language in English teaching and learning, namely; listening, reading, speaking, and writing (Mahmud, 2014). Listening skills (speaking language comprehension), reading skills (writing language comprehension) and production skills, speaking skills (speaking language production), and writing skills (writing language production) Sukma et al., (2017); Purba, (2018). The authors emphasize listening skills because listening, as an acquired skill, is more important for developing students' abilities and language practice. Listening is an important skill in the English language. We always want to know what other people are saying and listening to. Listening is not about passively paying attention to what is being said, and we need to actively gain meaning from words (Canpolat et al., 2015). There are four skills we should master in the language learning process.

In fact, in the process of learning, teachers will face many problems, especially the four skills of language, which has become a big problem for English teachers. English teachers should teach language effectively and should practice language skills patiently. Teachers can influence students' listening skills in several ways through Top-Down and Bottom-Up strategies that support the learning process. Especially in listening, when students are interacting or studying a subject, they often do not listen carefully, they may be confused, think about other things, or think about what they are going to say next, respond to others in a focused manner, and put It's on the speaker.

Why did the author choose this title? Because the authors wanted to know whether the Top-Down and Bottom-Up strategies would affect students' listening abilities. Therefore, the Bottom-Up strategy is based on text-based linguistic aspects (eg, sound, vocabulary, grammar), and is the process of decoding the sound from the smallest unit into the full text (eg, listening to specific details, identifying) words.) and identify word order patterns Kulsum, (2018); Jayhan, (2020). That is to say, the learner-based Top-Down strategy focuses on the listener's thinking process, uses the voice input to create the speaker's original intention, and uses the context as a clue to interpret key ideas, make predictions, and summarize intentions Leonard, (2019); Furuya, (2021); Lee Jia Yi et al., (2020); (Salazar Granda, 2020). Top-Down and Bottom-Up strategies are called interactive strategies that focus on both language and audience. Using Top-Down and Bottom-Up strategies can help make the learning process interesting and make students happy. Here the author offers Top-Down and Bottom-Up strategies to support the teaching process. Authors give students listening tests to find out their cognitive problems.

METHOD

This study was conducted by conducting an experimental quantitative study using a pre-test and post-test design Skinner, (2020); Hodge, (2020). This design has been implemented to investigate the effect of implementing Top-Down and Bottom-Up Strategies on students' ability to listen. To collect the data, two groups of students were involved. They were experimental and control groups. Strategies, while control groups were the group that is though without top-down and bottom-up strategies or were using conventional methods.

To collect data, the authors chose two categories. They are the experimental class and the management class. The experimental class uses Top-Down and Bottom-Up strategies, while the management class is taught using traditional methods.

Table 1
Research Design

Pre-test	Treatment	Post-test
Experimen class	Top-Down and Bottom-Up	Experimental class
Control class	Without Top-Down and Bottom-Up	Control class

According to Sugiyono, (2018), a population is all the individuals or units of interest; typically, there is no available data for almost all individuals in a population. This research was conducted on third-semester students of the University of HKBP Nommensen Pematangsiantar as the population, consists of six classes.

According to Robinson, (2014), Sample is the largest body of people in the population, and usually contains data about the people in the sample. Researchers use unusual samples to collect data.

According to Singh & Masuku, (2014), simple random sampling is a sample chosen in such a manner that each possible sample of the size has the same chance of being selected. From the six classes at the University of HKBP Nommensen Pematangsiantar, the writers took only two classes as the sample of this research. The number of the sample is 30 students were chosen from Group E, and Group F. They were divided into two groups; the experimental (Group E) and the control group (Group F) the experimental group was taught by giving the treatment by Top-Down and Bottom-Up strategies, and the control group was taught by using the conventional method.

The authors used the Top-Down and Bottom-Up techniques as tools for data collection. The author asks students to write 20 sentences on a division test according to the teacher's instructions. The author then asks students to fill in the missing words on the paper according to the teacher's instructions. Teachers have a special rule for instructing students to write down their answers on the instructional and listening music test. The teacher will always control the students.

The authors conducted an experimental group and a control group. The experimental group was treated with Top-Down and Bottom-Up strategies, while the control group was not treated. The research process consists of three parts: pre-test, treatment, and post-test.

The experimental group and the control group were evaluated before treatment. The pre-test is performed to obtain the homogeneous sample and the average score for each group. In this study, teachers gave students a test of obedience. The experimental and control groups were coerced using the same subject but different methods. In the experimental group, students were forced to Use Top-Down and Bottom-Up cues, while in the control group, students listened to the notes without Top-Down And Bottom-Up. After treatment, both classes were tested later. Designed to monitor the difference in initial scores between test and control groups. Also, understand the top-down and bottom-up results on student listening skills.

The accuracy and the reliability of the test are very important in the search. The goal is to see both the accuracy of the sentences and the appeal of the text. It is important to know if a test exists and can be trusted or not added to the model. In this section, the research will define accuracy and reliability.

The data are defined with a tool that measures what is needed to be measured (Hayashi Jr et al., 2019). There are three types of metals: construction, content, and standard metals. The type of data used in this study is the content validity data and it deals with the extent to which the tests measure the topic content and the teaching results. The accuracy of a measuring instrument is a measure of the accuracy of measurement (Raykov & Marcoulides, 2017). To obtain the reliability of the test, the researcher used kuder-richardson 21 formula KR^{21} as the following:

$$KR^{21} = \frac{K}{K-1} \left(1 - \frac{M(K-M)}{K \cdot S}\right)$$

According to Jiang (2018), one of the statistical statistics used to compare the results of measurements from two variables is a coefficient.

This study applied the quantitative data, the pre-test and post-test scoring procedures of the experimental and control groups to compare the average of them and analyze the data using test formulas as follows:

$$t = \frac{Mx - My}{\sqrt{\left(\frac{Dx^2 + Dy^2}{(Nx + Ny - 2)}\right) \left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

Some of the parameters used to analyze the data are:

1. Experimental and control group to calculate the score of pretest and posttest
2. Conduct experimental and control group scoring data tables.
3. Practice in experimental and control scores and post chem in square tables.
4. Comparing qualities
5. Draw conclusions and answer duodenum

RESULT AND DISCUSSION

Conclusions were reached after initial evaluation and recent evaluation of the experimental and control groups. In this study, the modules were divided into two groups: the experimental group and the control group. The experimental group was a group that was trained to use Top-Down and Bottom-Up methods, while the control group was trained without using Top-Down and Bottom-Up methods. The first test was performed on both groups. Treatment with High Lower and Lower Up Strategies was given to the experimental group only. Both teams were given preliminary tests to determine the difference in their scores.

Both groups were given the same tests, pre-test and post-test. The test number was 20 items, which was recommended for 60 students (30 students in the control group and 30 students in the experimental groups) from the students of the third semester of HKBP University Nommensen Pematangsiantar. Scores were obtained by giving a listening test to students to determine their competence. It was calculated using the listening tests of both the experimental group and the control group. This test is designed to detect significant differences between teaching using Top-Down and Low Up Strategies and without Top-Down and Low Up Strategies Listening skills for students. Description of the first test group and the post-test group were combined using the test form.

Table 2
The Result of the Pre-test and Post-test of Experimental Group

No	Initial Name	Pre-test	Post-test
1	AR	65	80
2	ADP	75	85
3	AS	60	75
4	ASS	65	80
5	APS	70	80
6	ADAD	65	80
7	DW	65	80
8	FS	70	85
9	GCBBS	65	85
10	HYH	75	85
11	HM	65	80
12	IFD	60	85
13	JMS	65	85
14	KRS	60	80
15	MR	70	90
16	MTG	60	80

17	MJES	65	75
18	MIN	65	80
19	MMA	55	75
20	MNJH	70	80
21	MP	60	80
22	MRR	70	75
23	MT	65	85
24	NLM	65	80
25	NPS	65	75
26	RLRH	60	80
27	RUPSS	65	80
28	SH	70	85
29	WMWP	65	85
30	YA	60	80
TOTAL		1955	2430

The table above showed that the experimental group gets the different total scores of pre-test and post-test. The total score of the pre-test in the experimental class is 1955. After the writers knew the result of the pre-test is low, the writers applied the Top-Down and Bottom-Up Strategies to teach listening. Then, the experimental class was given a post-test with the same test. The total score of the post-test is 2430. In the research, the writers can see the scores of the students is rising. It is caused by using Top-Down and Bottom-Up Strategies in teaching Listening.

In this research, the writers also gave the control group class a pre-test and a post-test. In the control class, the writer taught them without using Top-Down and Bottom-Up Strategies when the control class had been given the pre-test. After that, the control class was given a post-test by the teacher. The result of the pre-test and post-test can be seen in this table.

Table 3
The Result of Pre-test and Post-test of the Control Group

No	Initial Name	Pre-test	Post-test
1	ARR	55	65
2	AY	60	70
3	AA	35	45
4	AYS	45	55
5	BW	70	75
6	CA	55	60
7	DA	45	60
8	DAL	60	70
9	DPA	60	70
10	FR	55	65
11	IFAS	55	65
12	IY	45	60
13	JAP	60	70
14	JA	55	60
15	MDSS	55	60
16	MDFL	60	75
17	MFS	30	40
18	MAS	35	50
19	MAK	60	75
20	MDT	30	40
21	MFR	55	65

22	OSI	45	55
23	PAAH	45	55
24	RP	55	65
25	RH	60	70
26	RSRP	55	60
27	SHP	60	75
28	SA	55	65
29	TBA	70	75
30	YP	70	75
TOTAL		1595	1890

From the table above, the writers got the total score of pre-test in a control class is 1595. Then, the total score of the post-test in the control class is 1895. In this research, the writers saw the score of the student is rising. It caused don't using Top-Down and Bottom-Up Strategies in teaching Listening.

The data obtained from tryouts are tested to determine the reliability of the test. To determine the reliability of the Kuder-Richardson test, formula 21 (KR 21) was used. The formula is used for experimental tests. It tastes on the uncontrollable team and the experimental team, but they have the same number formula:

$$KR21 = \frac{K}{K-1} \left(1 - \frac{M(K-M)}{KS^2} \right)$$

Table 4
The Reliability of the test (tryout)

No	Students' Initial Name	Score (X1)	X2
1	ASMM	17	289
2	AM	17	289
3	AP	12	144
4	AHM	10	100
5	BEN	14	196
6	CP	14	196
7	DAS	12	144
8	DP	12	144
9	DK	15	225
10	EAG	15	225
11	FR	16	256
12	GN	16	256
13	HJ	14	169
14	JSP	14	196
15	LBS	12	144
16	MSS	14	169
17	MAS	14	196
18	MIA	14	196
19	MS	12	144
20	MSH	14	196
21	MS	16	256
22	MYN	16	256
23	PJN	14	196
24	RAS	16	256
25	RA	16	256
26	RK	17	289
27	RPR	15	225

28	RR	14	196
29	RSRT	17	289
30	YAT	17	289
TOTAL		436	6436
MEAN		14,53	214.53

From the table above is the table reliability of the test (try out), it is obtained that the total score X1 is 436 and score X2 is 6436. And the mean score is 214.53.

The calculation of reliability of the test:

$$M = \frac{\sum X}{N}$$

$$= \frac{436}{30} = 14.53$$

$$K = 20$$

The standard deviation can be concluded as the following:

$$S^2 = \frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}$$

$$S^2 = \frac{6436 - \frac{436^2}{30}}{30}$$

$$S^2 = \frac{6436 - 6,336}{30}$$

$$S^2 = \frac{100}{30}$$

$$S^2 = 3.33$$

To test the Reliability:

$$r = \left(\frac{K}{K-1} \right) \left(1 - \frac{M(K-M)}{KS^2} \right)$$

$$r = \frac{20}{20-1} \left(1 - \frac{14,53(20-14,53)}{20(3,33)^2} \right)$$

$$r = \frac{20}{19} \left(1 - \frac{14,33(5,47)}{20(11,08)} \right)$$

$$r = 1.05 \left(1 - \frac{79,47}{221,6} \right)$$

$$r = 1.05 (1 - 0.35)$$

$$r = 1.05 (0.65)$$

$$r = 0.68$$

From the data above, the reliability was high based on Arikunto's statement that 0.61- 0.80 above is categorized as high and the test is reliable.

To know whether the use of Top-Down and Bottom-Up strategies have a significant effect on the students' listening skills or not, the result of the test was calculated by using the t-test formula. The calculation shows that:

$$t = \frac{Mx - My}{\sqrt{\left(\frac{Dx^2}{Nx} + \frac{Dy^2}{Ny} \right) \left(\frac{1}{Nx} + \frac{1}{Ny} \right)}}$$

The mean scores of experimental group:

$$Mx = \frac{\sum x}{N} = \frac{475}{30} = 15.83$$

The deviation square of the experimental group was calculated as follows.

$$Dx^2 = \sum x^2 - \frac{(\sum x)^2}{N}$$

$$Dx^2 = 8125 - \frac{(475)^2}{30}$$

$$Dx^2 = 8125 - \frac{225625}{30}$$

$$Dx^2 = 8125 - 7520.83$$

$$Dx^2 = 604.17$$

The mean scores of control group

$$My = \frac{\sum y}{N} = \frac{295}{30} = 9.83$$

The deviation square of the experimental group was calculated as follows.

$$Dy^2 = \sum y^2 - \frac{(\sum y)^2}{N}$$

$$Dy^2 = 3225 - \frac{(295)^2}{30}$$

$$Dy^2 = 3225 - \frac{87025}{30}$$

$$Dy^2 = 3225 - 2900.83$$

$$Dy^2 = 324.17$$

From the data above, it is obtained that:

$$Mx = 15.83$$

$$My = 9.83$$

$$Dx^2 = 604.17$$

$$Dy^2 = 324.17$$

$$Nx = 30$$

$$Ny = 30$$

Further, the writer applied that t-test formula as:

$$t = \frac{Mx - My}{\sqrt{\left(\frac{Dx^2 + Dy^2}{(Nx + Ny - 2)}\right) \left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

$$t = \frac{15,83 - 9,83}{\sqrt{\left(\frac{604,17 + 324,17}{(30 + 30 - 2)}\right) \left(\frac{1}{30} + \frac{1}{30}\right)}}$$

$$t = \frac{6}{\sqrt{\left(\frac{928,34}{(60)}\right) \left(\frac{2}{30}\right)}}$$

$$t = \frac{6}{\sqrt{(16,00) (0.066)}}$$

$$t = \frac{6}{\sqrt{(1,05)}}$$

$$t = \frac{6}{1.02}$$

$$t = 5.88$$

The calculation of t-table:

$$Df = Na + Nb - 2$$

$$= 30 + 30 - 2$$

$$= 58$$

$$P = 0.05$$

From the above calculation, the rated t-point shows 5.88 and t-Table 2. t- is larger than the observed t-table ($5.88 > 2$; $p = 0.05$). This means that the use of Top-Down and Low-Up greatly affects students' listening skills. The test hypothesis should be performed to determine whether the hypothesis is accepted or rejected.

H_a (Optional Assumption) $t_{\text{observation}} > t_{\text{table}}$ is accepted. Calculation of scores using the t-test for the 58 ($df = N_x + N_y$) degree of significant 0.05 level freedom is $t_{\text{observation}}$ 5.88 and t_{table} 2.

The result of the t-test calculation showed that t_{observe} is higher than the t_{tabel} or can be seen as follows:

$t_{\text{observation}} > t_{\text{tabel}} (\alpha = 0,05)$ with $df = 58$

$5.88 > 2 (\alpha = 0.05)$ with $df = 58$

It can be concluded that the use of high and low-level methods has a huge impact on the listening skills of the students. This means accepting one truth (H_a).

Based on the above calculation, the results of the research showed that the median score group (65.17) was higher than the median score control group (53.16). The difference was tested using the T-Test formula. The result of the calculation shows that the t-test value (5.88) is greater than the t-table value (2). It can be concluded that applying top-down and bottom-up strategies has a significant impact on students' listening ability. In other words, the alternative hypothesis (H_a) is accepted and the zero hypothesis (H_o) is rejected.

CONCLUSION

After much deliberation, the couple got the Top-Down and Bottom-Up Strategies into thinking the price was hard to pay attention to. There is a great deal of freedom in the decision-making process and the privilege of being a leader. It means that another point (H_a) of the 'mind' point of view is not helpful (H_o) is rejected. There is a great effect on the comics to talk about the pilgrimage on the temple at the HKBP meeting Nommensen Pematangsiantar listening.

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