

Praat-Based Analysis Of Phonological Patterns In Pitch, Intensity And Duration Of Students' News Reading At SMAN 1 Semaka

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Abstract

The aim of this research is to measure the pitch, intensity and duration of news reading by SMAN 1 SEMAKA students who take part in the English language club. In this study, we used PRAAT software to measure and analyze pitch, intensity, and duration. This research uses qualitative methods and analytical data collection tools to identify, with a sample size of 10 students with 50 news stories, so that each student reads 5 news stories. This analysis shows the results of measuring the pitch, intensity, and duration of each student at SMAN 1 SEMAKA, so this research also shows different measurement results of each individual student in reading the news which is measured by the length of each sentence.

Keywords: PRAAT, news reading, pitch, intensity, duration

INTRODUCTION

News reading is the process of delivering news to an audience, usually via television, radio, or online platforms. This activity is carried out by a news reader or news anchor whose role is to present the news in a clear, interesting and impartial manner. The aim of news reading is to convey the latest and relevant news to the public which covers various topics such as political, economic, social, cultural and entertainment news. according to an article by Leppänen, Tuulonen, and Sirén-Heikel (2020) explaining how automated journalism, or the use of algorithms to generate news, is

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becoming increasingly common. This technology produces news content based on data input without human intervention, with the aim of producing unbiased and factual reporting.

PRAAT is software for analyzing, synthesizing and manipulating language. PRAAT allows users to perform various types of phonetic analysis of speech, according to phoneticians Paul Boersma and David Wienink of the University of Amsterdam, who developed the software. This analysis includes pitch, intensity, duration, formants, spectrum, and many other aspects related to speech acoustics. PRAAT is designed to provide greater flexibility and control in audio analysis, supporting a variety of audio file formats and offering a variety of tools for visualizing and editing audio data (Boersma & Weenink, 2023).

Pitch refers to the pitch of the sound produced by the vibration frequency of the vocal cords when producing a sound. According to Ladefoged and Johnson (2011), pitch plays an important role in distinguishing different sounds and expressing speech intonation. Pitch measurements enable analysis of speech intonation patterns. This is important for understanding the meaning of sentences and emotional expressions (Ladefoged & Johnson, 2011).

Intensity refers to the strength or amplitude of the sound produced by a sound source. According to Cruttenden (2008), intensity is related to the level of acoustic energy emitted by a sound and can be measured in decibels. Measuring voice strength is important not only for assessing the clarity and emphasis of speech, but also for understanding the dynamics of oral communication (Cruttenden, 2008).

Duration is the time it takes to pronounce a sound or syllable in a language. According to Abercrombie (1967), duration contributes to the understanding of the rhythm and tempo of a language and influences sentence structure and intonation patterns. Duration analysis helps identify differences in speech sounds and measures the temporal processes of speech production (Abercrombie, 1967).

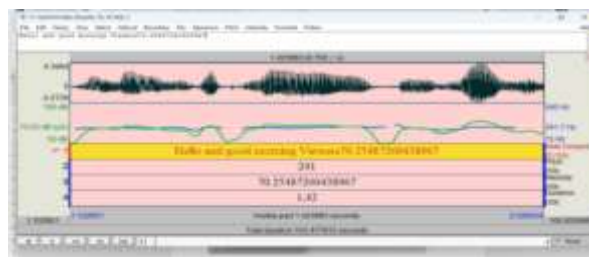


Figure 1. Analyze each sentence using PRAAT Software by calculating pitch, intensity and duration

PRAAT analysis can contribute to understanding sentence intonation through detailed pitch measurements. Strength can also refer to the clarity and emphasis of each sentence. The length helps identify the tempo and rhythmic pattern of the audio. By using PRAAT, this research is able to provide accurate and detailed data about the acoustic properties of each sentence, which is important for further understanding in the field of phonetics and linguistics.



Figure 2 Analysis of using PRAAT

Boersma, P. and Weenink, D. (2021), in analyzing message tones used PRAAT explains that this research refers to the use of PRAAT software for detailed analysis of the acoustic characteristics of Did message tones. PRAAT is computer software widely used in audio research to record, edit, and analyze audio data. PRAAT allows researchers to perform audio spectral analysis to examine frequency distribution and measure the pitch (fundamental frequency), intensity (loudness), and duration. This analysis provides researchers with detailed insight into the acoustic characteristics of news speech, including intonation patterns, clarity, and intonation when reading news.

Chomsky, N. and Halle, M. (1968), in *The Sound Pattern of English*, described phonology as the study of sound systems in language. They introduced the concept of a “phoneme” as the smallest unit of sound that can differentiate meaning, and discussed the phonological rules that determine how the phoneme is represented in different contexts (Chomsky & Halle, 1968). John Goldsmith (1976) introduced automatic segmental phonology. In his book *Autosegmental and Metrical Phonology* (1990), he argued that phonology should take hierarchical structure into account and not rely on various phonetic features such as pitch or vowel length. These characteristics operate at different levels and are not always linear (Goldsmith, 1990).

Wiretapped news readings are often used in forensic analysis and refer to the recording of news readings without the speaker's knowledge (Orletti & Mariotini, 2017). Additionally, users

often record their voice data through common communications services, allowing them to exchange voice messages via computers and smartphones. In this study, we used PRAAT software to analyze audio data, perform spectral analysis, and measure sound duration.

Research shows that phonology plays an important role in the acquisition of reading and writing skills, and phonological decoding is especially important in the early stages of reading comprehension. Research shows that experienced readers use phonological codes to aid word recognition during silent reading. This process is evident in both monolingual and bilingual contexts, highlighting the importance of phonological awareness in reading comprehension (Adams, 1990; Goswami & Bryant, 1990; Koda, 2005).

METHODOLOGY

This research uses a qualitative descriptive approach to examine and explain data based on the insights obtained by researchers. In this approach, data is analyzed and interpreted in the context of existing theory to explain its content. Furthermore, an experimental approach in the field of phonology is used to measure language accurately using instruments that can visualize linguistic elements (Hayward, 2013; Sugayono, 2003; Ladd, 2008). Therefore, the survey method is the main research method in this research.

According to Asmussen and Creswell (1995), qualitative methods are approaches to collecting, analyzing and interpreting data that aim to understand social phenomena in their natural context. This approach does not focus on quantitative or statistical measurements, but on a deep understanding of the experiences, views and perceptions of those involved in the research. Qualitative methods include approaches such as case studies, phenomenology, grounded theory, and ethnography, which allow researchers to examine the complexity and social context of the phenomena they study.

This sample consists of students from SMAN 1 SEMAKA who take English extracurricular activities with an emphasis on news reading. Using purposive sampling techniques, audio recordings of students reading the news were collected in a quiet, controlled environment to ensure clarity. Ten students were selected and each student read two news articles, resulting in a total of 50 audio samples.

Cheliah and de Reuse (2011: 7) define linguistic fieldwork as the study of language structure using primary data collected through direct interaction with native speakers. This fieldwork requires direct collaboration with native speakers who act as informants or consultants.



Therefore, purposive sampling techniques are used to select locations, participants, and materials that contribute to a deeper understanding of the research question or phenomenon.

Cheliah and de Reuse (2011), Purposive sampling is a sample selection technique in research in the field of language which is consciously carried out based on certain considerations. This method is used to select locations, participants and materials that are considered most relevant and useful in the context of the research being conducted. Purposive sampling allows researchers to focus their data collection on informants who have specific knowledge and experience relevant to the research question, thereby providing a more in-depth and representative view of the linguistic phenomenon being studied.

RESULT AND DISCUSSION

PRAAT is used to measure pitch, intensity and duration analysis for each student at SMAN 1 SEMAKA. The resulting data showed significant differences in the number and length of sentences in each story, reflecting differences in students' reading preferences. The aim of this study was to investigate phonological patterns and pronunciation variations, and to understand general trends and individual differences in intonation, vocal strength, and reading duration. After the data is collected, the next step is to analyze the results statistically to determine the minimum, average and maximum values for each parameter measured. This provides a way for students to understand how to apply reading comprehension techniques and assess their ability to read messages with correct intonation and clear pronunciation.

Table 1 News Reading 1

No	Name	Title	Long Duration	Many Sentences
1	Student 1	Indonesia	103 Second	29 Sentence
2	Student 2	Why is 2023 so hot	104 Second	30 Sentence
3	Student 3	Indonesia has seen improvements in education quality and youth employment	82 Second	21 Sentence
4	Student 4	Communication infrastructure firm	247 Second	33 Sentence



		Mitratel's revenue increases by 11.9% in Q3		
5	Student 5	Australia said on Monday it would accelerate plans to buy advanced sea mines to protect its maritime routes and ports from "potential aggressors"	61 Second	16 Sentence
6	Student 6	Authorities are struggling to put out forest and land fires that have been engulfing many parts of the country	71 Second	16 Sentence
7	Student 7	Indonesia concluded the 43rd ASEAN Summit in Jakarta on Thursday with a ceremonial handover of the bloc's chairmanship to Laos	80 Second	17 Sentence
8	Student 8	WORLD ASIA AND PACIFIC Ma'ruf Amin meets with Premiere Li on China visit Vice President Ma'ruf Amin (left) and Chinese Premier Li Qiang shake hands on Sept. 16, 2023 in Nanning	134 Second	14 Sentence
9	Student 9	With Defense Minister Prabowo Subianto's vision of a more military-capable Indonesia seemingly dovetailing with the United States'	98 Second	22 Sentence

10	Student 10	Corruption is a very dangerous social pathology (social disease) in Indonesia	110 Second	23 Sentence
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Table 2 News Reading 2

No	Name	Title	Long Duration	Many Sentences
1	Student 1	List of the best communication campuses in Indonesia ASIA the world qs world university ranking 2023	147 Second	28 Sentence
2	Student 2	Indonesian cuisine is on a list compiled by croatia-based online guide platform for traditional foods	125 Second	26 Sentence
3	Student 3	Amazon and apple on thursday reported earnings that topped market expectations	96 Second	23 Sentence
4	Student 4	IDX composite maintains momentum with 0.55%	107 Second	19 Sentence
5	Student 5	Indonesia gold 2045 created by young generation	56 Second	15 Sentence
6	Student 6	The long-delayed greater Jakarta light rail transit (LRT) project has finally come into operation	93 Second	24 Sentence
7	Student 7	The Jakarta high court on tuesday overturned a lower court's controversial order to delay the 2024 presidential and general elections by two years	127 Second	20 Sentence
8	Student 8	The celebration was also marked	296 Second	40 Sentence
9	Student 9	The government's plan to rename a street in Menteng	86 Second	21 Sentence



10	Student 10	Chaotic election spirit unfolds in Indonesia's democratic society prompting global concerns	110 Second	48 Sentence
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Table 3. News Reading 3

No	Name	News Reading 3	Long Duration	Many Sentences
1	Student 1	Bringing Israel to justice, South Africa's move to bring international charges against Israel for the alleged genocide of Palestinians	146 Second	24 Sentence
2	Student 2	Prabowo-Gibran ticket register 2024 candidacy	80 Second	21 Sentence
3	Student 3	Mason and apple on thursday repoted earnings their top market expectation	90 Second	19 Sentence
4	Student 4	US banks could face 20 percent hike to capital requirements- WSJ	80 Second	16 Sentence
5	Student 5	BI anticipates higher demand for cash ahead of year-end holidays and election	79 Second	16 Sentence
6	Student 6	A feminist French minister who posed for Playboy told the magazine	289 Second	50 Sentence
7	Student 7	Firefighters are still trying to put out a blaze that has been raging since last week through the Rawa Kucing landfill in Tangerang,Banten, which has caused temporary disruptions	75 Second	14 Sentence
8	Student 8	China accuses G7 of 'creating division' over trade criticism	305 Second	26 Sentence
9	Student 9	A last look at Asia's winners and losers in 2023	84 Second	18 Sentence



10	Student 10	Depression occurs with one characteristic	76 Second	15 Sentence
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Table 4 News Reading 4

No	Name	News Reading 4	Long Duration	Many Sentences
1	Student 1	Indonesia gold 2045 created by young generation	94 Second	22 Sentence
2	Student 2	How to guide ASEAN's digital generation in a post-pandemic world	61 Second	21 Sentence
3	Student 3	Presidential candidate Ganja Pranowo on Friday met with two public figures	138 Second	23 Sentence
4	Student 4	Publicly listed Bank KB Bukopin is seeking to raise trillions of rupiah in a rights issue	97 Second	16 Sentence
5	Student 5	QR payment growth in Indonesia outpaces BI target	74 Second	14 Sentence
6	Student 6	The government has inaugurated the Nusantara food estate in Central Sulawesi	189 Second	34 Sentence
7	Student 7	Capital city nusantara capital city construction infrastructurelt has been a while since we last covered Indonesia's	96 Second	19 Sentence
8	Student 8	Denmark's top art school head sacked over royal bust stunt	248 Second	29 Sentence
9	Student 9	2023: The year voters looked beyond election pomp	113 Second	20 Sentence
10	Student 10	As long as there is a paradigm among policy makers that	93 Second	18 Sentence



		corruption is a lubricant for development		
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Table 5 News Reading 5

No	Name	News Reading 5	Long Duration	Many Sentences
1	Student 1	Investigations into a number of cases of rampant corruption continue	292 Second	50 Sentence
2	Student 2	Kadin partners with local universities to improve vocational education	86 Second	20 Sentence
3	Student 3	Fijians living in the path of an embarrassing super cyclone were told to hunger John at home or flee to emergency sellers immediately on Wednesday	141 Second	20 Sentence
4	Student 4	BI UAE central bank cooperate on cross-border payments financial crime	84 Second	15 Sentence
5	Student 5	Jokowi plans to return to Surakarta after his term ends	81 Second	15 Sentence
6	Student 6	Finance leaders of the Group of Seven (G7) advanced economies set a year-end deadline for launching a new scheme to diversify global supply chains	327 Second	47 Sentence
7	Student 7	Defense Minister and Gerindra Party chair Prabowo Subianto threw his hat in the ring for the 2024 presidential election on Wednesday	95 Second	17 Sentence
8	Student 8	New year gets off to a weak start as traders eye rate cuts	370 Second	30 Sentence
9	Student 9	Can China get its economic miracle back on track in 2024	116 Second	21 Sentence



10	Student 10	As Indonesia enters the final stages of the presidential election campaign season and voters count down the days to the polls on February 14	110 Second	21 Sentence
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Pitch

Table 6 Calculation min pitch of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	162	221	213	209	227
2	Student 2	244	260	236	209	240
3	Student 3	247	250	253	253	257
4	Student 4	193	235	206	212	146
5	Student 5	264	209	210	222	230
6	Student 6	214	219	199	207	192
7	Student 7	192	202	190	197	206
8	Student 8	222	138	157	167	168
9	Student 9	224	212	227	188	228
10	Student 10	262	269	277	273	256

From the results of calculations and analysis of each news article that students read, minimum value data was obtained for several sentences analyzed. This data is calculated based on each news article, so each article will have different values and numbers. This analysis process involves thoroughly investigating various aspects of each story.

To determine the lowest value from the data obtained, the MIN formula is used. This formula is used to find the lowest value among all the numbers analyzed. Thus, from all pitch numbers, the minimum value can be clearly known. from analyzing each news pitch as a whole and by carrying out calculations systematically. This is to ensure that the results obtained are systematic and accurate.



Table 7 Calculation average pitch of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	219	255	243	231	227
2	Student 2	269	275	253	250	258
3	Student 3	288	285	274	281	279
4	Student 4	253	255	254	232	205
5	Student 5	281	244	230	247	246
6	Student 6	238	246	249	244	246
7	Student 7	215	213	228	221	219
8	Student 8	255	228	222	221	213
9	Student 9	246	250	251	218	250
10	Student 10	282	287	294	294	288

From the results of calculations that have been analyzed for each news item that students read, data on the average value of each story is obtained from several sentences analyzed. This data is calculated based on each news article, so each article will have different values and numbers. This analysis process involves thoroughly investigating various aspects of each story.

To get the average results from news that has been analyzed, the (AVERAGE) formula is used. The formula is used to find the average value of news data that has been analyzed. By using this formula, the overall pitch number with its average value will be known accurately using this formula. In this way, the overall calculation of each news item read by each student is carried out systematically using the (AVERAGE) formula to determine the appropriate results.

Table 8. Calculation max pitch of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	266	290	275	256	265
2	Student 2	365	294	272	268	275
3	Student 3	313	302	303	302	296
4	Student 4	297	275	273	263	259
5	Student 5	319	283	252	267	272



6	Student 6	268	300	310	278	301
7	Student 7	252	235	257	245	247
8	Student 8	285	279	251	256	234
9	Student 9	272	280	281	235	272
10	Student 10	301	303	325	323	315

From the results of pitch calculations that have been analyzed from each news item that students read, maximum number data is obtained. The maximum value data aims to find out the largest number of pitches that have been analyzed from each story and from several sentences. This data is calculated based on each news article, so each article will have a different value and maximum number. This analysis process uses software, namely praat and also news or article text sheets.

To be able to find out the maximum number for each news item that is read, use the formula (MAX). The (MAX) formula aims to get the maximum number of results from several sentences whose pitch has been searched for each news item. Each news item gets a different maximum number. And by using this formula, the overall pitch number with its maximum value will be known accurately using this formula systematically using the (MAX) formula.

Intensity

Table 8 Calculation min intensity of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	63	70	71	66	64
2	Student 2	64	63	67	61	66
3	Student 3	70	68	67	70	67
4	Student 4	63	65	59	60	66
5	Student 5	75	74	62	67	68
6	Student 6	77	77	71	73	73
7	Student 7	71	68	71	73	73
8	Student 8	59	54	61	56	50
9	Student 9	74	78	76	74	75
10	Student 10	70	71	74	71	75



Analysis of message strength among students at SMAN 1 Semaka shows different results for each message read. From the results of the student's voice pressure, a value is calculated that represents the intonation when reading the news, so that the volume of the student's sentences when speaking can be determined. This analysis provides a minimum score for each message read by 10 students.

Each student reads five messages. The minimum value obtained varies for each voice message. To obtain an accurate and reasonable minimum value, the (MIN) expression is used. And the final result of each news article is determined by the numbers obtained from calculations using this formula.

Table 9 . Calculation average intensity of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	66	73	74	69	68
2	Student 2	67	67	69	65	69
3	Student 3	72	70	68	71	69
4	Student 4	67	70	63	65	69
5	Student 5	76	76	65	68	70
6	Student 6	78	78	73	74	75
7	Student 7	73	73	76	76	75
8	Student 8	64	60	63	59	53
9	Student 9	75	79	77	75	77
10	Student 10	73	74	76	72	77

The results of the intensity analysis carried out on students at SMAN 1 Semaka now show different results for each news item they read. From the results, the student's voice pressure is calculated using the student's strength when reading the news, so that it can be seen how high and low the student's sentence volume is when pronouncing sentences from each news item. This analysis determines the average value of each news item, each news item is measured in sentences so that each sentence gets different intensity results. Some intensity values get high and low tones depending on each student adjusting the strength of their voice when reading the news text.

Each of the 10 students read five news texts where the results of the news analysis



obtained different numerical results. From the entire news text, each piece of news is analyzed so that the appropriate numerical results are obtained from the data that has been analyzed. and from the results analyzed to find the average value of each news item using the AVERAGE formula, the AVERAGE formula aims to produce an average value of all the data that has been analyzed for each news item so as to obtain systematic and accurate data results by using the AVERAGE formula then the results The average will be known from the intensity analysis.

Table 10. Calculation max intensity of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	70	77	77	75	72
2	Student 2	72	69	71	70	72
3	Student 3	75	73	72	73	73
4	Student 4	72	74	68	67	72
5	Student 5	79	78	68	71	72
6	Student 6	81	81	80	79	81
7	Student 7	79	78	80	80	79
8	Student 8	69	65	74	67	57
9	Student 9	76	78	77	74	79
10	Student 10	76	78	77	74	79

The results of intensity measurements and analysis that have been carried out on students at SMAN 1 Semaka now show different results for each news item they read. From the results, the student's voice pressure is calculated using the student's strength when reading the news, so that it can be seen how high and low the student's tone is when reading the news. Each sentence spoken by students has a different intensity. Intensity is measured to determine the strength of the reader's voice. From measuring intensity, we get different values according to the strength of the sentence when reading the news.

Each of the 10 students read five news texts where the results of the news analysis resulted in different numbers. From the entire news text, each piece of news is analyzed so that the appropriate numerical results are obtained from the data that has been analyzed. From the results analyzed to find the maximum value for each news item using the (MAX) formula, the (MAX)



formula aims to produce the maximum value from all the data that has been analyzed for each news item so as to obtain systematic and accurate data results using the (MAX) formula, then The results will show the maximum intensity number for each news item that has been analyzed and calculated using this formula.

Duration

Table 11 Calculation min duration of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	0,42	0,96	1,07	1,00	1,42
2	Student 2	0,81	1,32	0,87	0,45	0,74
3	Student 3	0,50	0,61	1,32	1,66	1,69
4	Student 4	0,45	0,85	0,86	0,99	0,95
5	Student 5	0,62	1,62	1,62	1,54	0,62
6	Student 6	1,04	0,85	0,89	0,86	0,52
7	Student 7	0,70	1,00	1,10	0,63	0,77
8	Student 8	1,41	1,42	1,49	1,52	1,42
9	Student 9	0,66	0,66	0,93	0,43	0,99
10	Student 10	0,58	1,72	2,29	2,10	1,38

To measure duration, this is done by measuring each sentence with a different length of duration for each news item. To produce a duration value for each news item, it is analyzed by measuring each sentence of all the news items. Each news story has a different duration and number of sentences according to the news text being read.

The results of the duration measurement can be seen in the table 3.3.1 showing the total duration of each news item. The table above is the result of measuring the duration of the minimum number of each news item. To find the minimum value, you can use the formula (MIN), this formula aims to find the minimum value for each news item analyzed per sentence so as to get the minimum result or value for each news item.



Table 12 Calculation average duration of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	2,95	4,58	5,32	3,73	5,05
2	Student 2	3,05	4,25	3,28	3,06	3,74
3	Student 3	3,40	3,68	4,13	5,57	6,33
4	Student 4	6,42	4,76	4,04	5,30	4,70
5	Student 5	3,34	3,05	3,98	4,59	4,66
6	Student 6	4,04	3,18	5,09	4,82	6,15
7	Student 7	4,00	5,73	4,63	4,34	4,99
8	Student 8	8,77	6,64	11,04	7,77	11,49
9	Student 9	3,56	3,35	3,69	4,31	4,34
10	Student 10	3,67	5,02	4,42	4,39	4,65

To measure duration, this is done by measuring each sentence with a different length of duration for each news item. To produce a duration value for each news item, it is analyzed by measuring each sentence of all the news items. Each news story has a different duration and number of sentences according to the news text being read.

The results of this data look for the average value of each respective news item. The table above is the result of measuring duration with the average value of each news item. To find the average value of the data, use the formula (AVERAGE). This formula is used to find the average result of the duration value that has been analyzed or measured for each sentence, so as to get the appropriate results from these measurements.

From the results that have been analyzed using the formula (AVERAGE). This formula provides accurate and systematic results that can be used optimally to measure the average value of sentence measurements for students at SMAN 1 SEMAKA using this formula.

Table 13 Calculation max duration of student at SMAN 1 SEMAKA

No	Name	News Reading 1	News Reading 2	News Reading 3	News Reading 4	News Reading 5
1	Student 1	6,98	14,01	12,82	8,1	11,34
2	Student 2	5,63	8,35	5,86	6,65	6,85



3	Student 3	6,48	9,70	12,68	4,52	12,94
4	Student 4	21,88	11,13	8,33	15,82	11,5
5	Student 5	9,49	5,17	8,99	10,5	11,71
6	Student 6	6,94	6,70	15,44	10,91	17,85
7	Student 7	7,87	15,04	11,10	10,22	14,92
8	Student 8	38,13	17,64	29,37	21,24	23,04
9	Student 9	7,77	5,88	8,96	9,05	10,41
10	Student 10	7,46	9,69	8,77	11,66	11,02

The results of the duration measurements that are analyzed get a result value where the results are the results of the analysis of each sentence in the news. These results show the maximum value of the duration that has been analyzed. The maximum value is the value which is the highest number in each sentence. These sentences have different duration values according to the length of a sentence in each news item. It is necessary to measure by finding the maximum value for each news item.

To be able to calculate the maximum value of the duration of each sentence, it is calculated using the formula (MAX). The (MAX) formula aims to calculate the highest value accurately. The maximum value aims to get results to find out the data on the highest value of the duration which has been analyzed from all the sentences of each news story, so that the data on the highest value can be accurately known by using this formula which has been analyzed with a different number of durations for each the news.

CONCLUSION

By using PRAAT software this research to analyze pitch, intensity and duration. This research shows significant results for determining the appropriate voice patterns of SMAN 1 SEMAKA students based on the length of the sentences and the length of the duration of the news with different news titles. Pitch, intensity and duration analysis includes calculations by looking for the final values of pitch, intensity and duration by calculating the minimum, average and maximum values for each news item. Each news item has a different number of sentences depending on the length of the news. The results of the analysis carried out show that the final result of each news item read by each student has a phonological pitch, intensity and duration pattern that reflects the differences when reading the news. Using PRAAT as an analytical tool can



help researchers determine the phonological pattern of each student when reading the news and can also identify and measure the length and duration and number of sentences of each news item.

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