

NEURO-LINGUISTIC PROGRAMMING-BASED COUNSELING ASSESSMENT APPLICATION DESIGN

Prabowo Budi Utomo^{1*}, Rafika Akhsani², Muchammad Saiful Muluk³, Moch. Kholil⁴

¹Prodi Administrasi Server dan Jaringan Komputer, AKN Putra Sang Fajar Blitar, Indonesia

Jl. Dr. Sutomo no. 19 Bendogerit – Sanawetan, Kota Blitar

^{1*}prabowo86@akb.ac.id

^{2,3,4}Prodi Penyuntingan Audio Video, AKN Putra Sang Fajar Blitar, Indonesia

Jl. Dr. Sutomo no. 19 Bendogerit – Sanawetan, Kota Blitar

²achsany@akb.ac.id, ³muluk.saiful@akb.ac.id, ⁴moch.kholil@akb.ac.id

Article history:

Received 15 September 2024

Revised 28 October 2024

Accepted 20 November 2024

Available online 9 December 2024

Keywords:

Assessment,
Counseling,
Modalities and sub modalities,
Neuro-Linguistic
Programming,
Guidance Counseling.

Abstract

The non-optimal use of technology in counseling assessment makes the problem identification less accurate. Counseling assessment applications that are able to identify problems precisely are a necessity for counselors / counseling guidance teachers. The use of Google API speech to text allows the development of web applications that produce text outputs from voice input that can facilitate the process of diagnosing modalities and sub modalities of counselees / students. The method used in system development is Prototype which has advantages in faster development time. Combined with the Neuro-Linguistic Programming method, it will increase the accuracy of the diagnosis of modalities and sub modalities of counselees/students. The developed application has been tested functionally with a value of 65.63% which is included in the interpretation of 'Feasible', so it can be stated that the developed counseling assessment application is in accordance with user needs and feasible to use.



This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. ©2021 by author.

I. INTRODUCTION

A counselor must be able to analyze problems properly, effectively, unhurriedly while still going through the right assessment process [1], where the assessment process is important to be carried out carefully according to existing rules, because errors in problem identification during assessment will lead to failed treatment or trigger consequences of treatment that are detrimental to the counselee or source [2]. Several procedures can be carried out during the assessment process such as interviews, forms with online applications, mental status checks to screening mechanisms where the manager of the assessment procedure determines the quality of the treatment provided. However, all of these processes require a lot of time so it is not efficient and effective when the counselee wants to get diagnostic results as soon as possible, so some

^{1*}Corresponding Author

ISSN 2621-4474 (online) 2621-4458 (print) © 2023 The Authors. Published by UNUSA

This is an open access article and licensed under a Creative Commons Attribution-Share Alike 4.0 International License

DOI: <https://doi.org/10.33086/atcsj.v6i2.5404>.

kind of media is needed to support the assessment process. In an effort to minimize errors in problem identification during assessment, it is necessary for technology to be able to support the stages carried out during assessment and be able to manage and process the data obtained, but until now there have not been many technologies that have this capability.

The use of technology-based assessments has been carried out by several parties as well, such as those conducted by Bayu Selo Aji, et al, who utilize online form applications from googleform and jotform in supporting the implementation of guidance and counseling assessments [3]. Besides online form applications, technology in assessment also utilizes Computer Based Test (CBT), especially in certain types of tests such as those conducted by Wayan Eka, et al [4], even in an effort to support the counseling process, especially in the administrative process, many IT-based applications have been made as done by Jadianan Parhusip, et al [5]. Most of the use of technology for assessment is in the world of education, this is done to support guidance and counseling activities which have a very important role in the process of forming students' personalities as well as to solve student problems. In addition, currently there are many API-based technologies that support the implementation of guidance and counseling assessments, as developed by Ni Kadek Eva Anggareni, et al. who utilize Google Speech API services to get and identify children's voices in order to find out the problems being experienced [6]. The use of these various technologies indirectly facilitates the work of guidance and counseling assessment, but the absence of counseling techniques implemented with them makes the use of this technology not optimal for identifying problems during the assessment process.

Given the importance of problem identification, designing a systemic data-based comprehensive counseling program requires systemic assessment, which is aimed at identifying larger needs [7]. In an effort to design a comprehensive counseling program, one of the commonly used techniques is Neuro Linguistic Programming (NLP). Neuro Linguistic Programming is simply described as a methodology that models human experience and communication. In NLP there is a system of individual modalities and sub-modalities that can be installed, reinstalled, uninstalled, edited, and modified according to the planned goals. Modality is a person's representation system related to the way a person interacts with the outside world through the five senses in receiving, storing, sorting, and using information. While sub modalities are the encoding of sensory information absorbed visually (V), auditory (A), kinaesthetic (K), olfactory (O) and gustatory (G). Everyone has all modalities, but can be categorized based on the tendency of their submodalities, with the known tendency of the modality and sub-modality of the client which will then make it easier for the counselor (counseling teacher) to explore, find the core of the problem, and direct the client / client in finding solutions to their problems or developing their potential for the better.

Not optimal use of technology in counseling assessment makes the lack of accuracy in problem identification carried out, by using the Google API speech to text, it is possible to develop web applications using scripts to produce text output with voice input. By using this technology, the problem of counseling teachers in terms of diagnosing counselees that require a long time will be resolved. The ability of the Google API speech to text in converting from voice to text makes it easier in the process of diagnosing the counselee, by utilizing the conversion owned by the text data obtained is then analyzed according to the use of verbs to determine the modality of the counselee, so that it can be concluded that the criteria for modality and sub modality of the counselee. The results of this conclusion can be used by the counselor in carrying out further handling of the counseling process to the counselee. This mechanism is offered as a solution to the problem of optimizing the use of technology in counseling assessment, so that it is expected to be able to increase the effectiveness of time and be a solution to fix some problems such as communication interventions during the assessment process, as well as being a well-documented track

record of counseling. It is hoped that with this NLP-based counseling assessment application, more precise problems can be obtained so that it can provide more effective and efficient treatment and follow-up.

II. METHODS

Efforts to utilize technology in the field of guidance and counseling have become one of the important studies that have been observed recently, many variations and types of technology have been used but have not been optimally utilized, one of which is due to the rarity of counseling techniques implemented in applications or information systems in the field of guidance and counseling. In this research, several stages are carried out in an effort to achieve the expected research results which include several activities such as collecting counseling data derived from student assessments, extracting features and analyzing counseling data and the follow-up recommendation process, as shown in Figure 1 below.

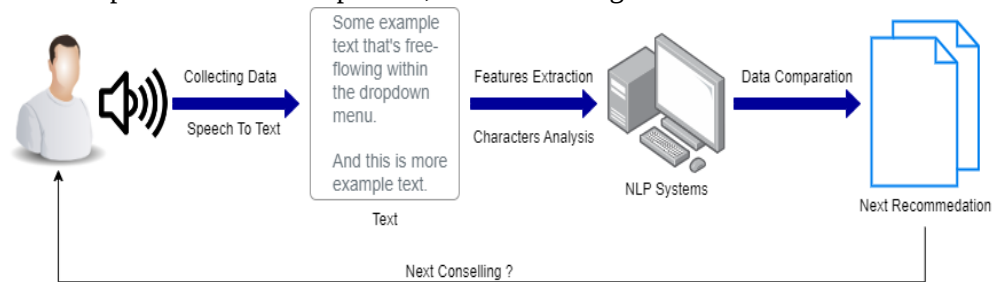


Figure 1. NLP Application Development Model

The use of the Prototype development model as a life cycle used during application development is intended to provide better fulfillment of needs with faster development time, so that it is expected to obtain the expected quality even with limited time [8].

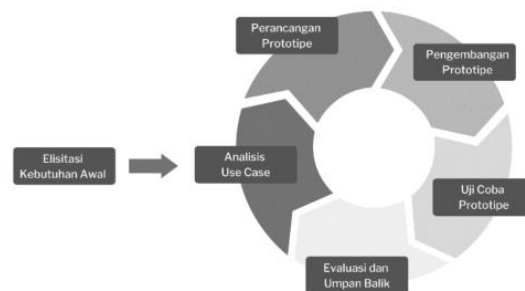


Figure 2. Prototype Model Development Phase [9]

A. Data collection

The data collection mechanism is the beginning of the stages carried out during this research, data collection is carried out by utilizing speech-based assessment sessions conducted between counselors and counselees / students, using speech to text technology to obtain student speech-based text data. The text data obtained will then be extracted features that can be used in the further analysis process.

Speech recognition is a technology that aims to translate human speech or voice into text according to the language used, in general, the mechanism of speech recognition is realized in several forms of technology such as automatic speech recognition and machine translation. [10]. Along with the development of deep learning, speech recognition technology has begun to be widely used in various fields by utilizing several systems such as commercial APIs that are very good at recognizing Google API speech to text or Naver's Clova Speech, or using open systems such as Kaldi which are freely available but still maintain the security of their data. There are also many who use conventional speech recognition

technologies such as Gaussian mixture models or hidden Markov models in translating human speech or voice into text. [11].

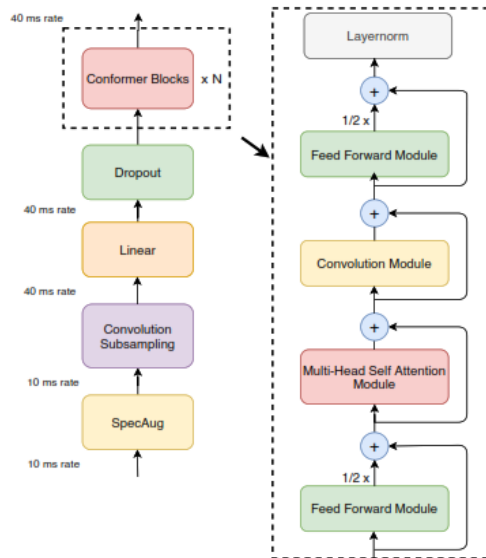


Figure 3. Speech to Text (STT) Models using Conformer.

As one of the technologies in speech recognition, the Google speech to text API is a Web API that uses Google's speech recognition technology with speech recognition models from 120 languages and dialects. This Web API requires a link connected to the internet so that it allows input in real-time but cannot change the model used nor can it know the training data and structure of the recognition model [12]. In recent years, Google has continuously improved the accuracy of speech recognition by utilizing deep learning technology, reducing detection errors to 8 percent in 2015 [13]. Based on this capability, this research utilizes Google API speech to text technology to obtain text data sourced from student speech during the assessment process.

Feature extraction is performed on the convention result text from speech during the assessment. Extraction is done by breaking the sentence into words by referring to the root word, this extraction mechanism is done to find the value of each feature or word obtained [14]. The extraction results obtained will be grouped based on the use of verbs to determine the type of modality and sub modality of students, the NLP algorithm is very instrumental in the process of analyzing the features of the extraction results to obtain the type of modality and sub modality of students, where the type of modality and sub modality obtained can be used by the counselor in conducting further handling of the further counseling process.

B. Neuro-Linguistik Programming

According to the Encyclopedia of Systemic NLP and NLP New Coding NLP is defined as patterns or programming created from the relationship between the brain (neuro), language (linguistic) and body state. Based on this, it can be concluded that NLP is a mind programming (human brain) that utilizes language as a medium, both verbal and nonverbal so that it can produce thoughts or behavior, in this case verbal and nonverbal language have the same position as a source of information that affects behavior.

In this study, the use of NLP is applied in the learning model, especially in analyzing the use of learning modality words. In learning, the teacher will convey a variety of diction, especially regarding the modalities/learning styles of students. There are three main learning styles that are used as text data classification in this study, namely [15]:

- a. **Auditory**, where this type has the power to stimulate brain waves using sound capturing information, so that they are able to learn by relying on hearing to understand and remember. In this type, the material will be easily understood by students if it is delivered using words with auditory categories such as hearing, faint, noisy, explaining, etc.
- b. **Visual**, where this type has the power to stimulate brain waves using captured image information (visual capturing), so that it is able to learn by emphasizing visual acuity. That way students will easily absorb material if it is delivered using words that are visual categories such as seeing, reading, looking, staring, etc.
- c. **Kinesthetic**, where this type has the power to stimulate brain waves using movement and feeling. In this type, students will easily understand the material if it is conveyed through words that are kinesthetic such as moving, thinking, surviving, doing activities, etc.

Examples of words commonly used in learning based on modality can be seen in table 1 below.

Table 1. Vocabulary Examples of Modalities using Bahasa Indonesia.[16]

VISUAL	AUDITORI	KINESTETIK
Fokus	Mendengar	Memanas
Menonton	Menjawab	Menangkap
Memandang	Mengobrol	Mencium
Membayangkan	Mengumumkan	Mendapatkan
Memperhatikan	Menyatakan	Menggosok
Menggambarkan	Menanyakan	Menghirup
Memindai	Menghubungi	Mengusap
Memata-matai	Mengemukakan	Menjelajahi
Mencerahkan	Menangis	Merasakan
Warna	Mendiskusikan	Nyaman
Melihat	Mengumumkan	Menggerakkan

C. Follow-up

The use of text data indirectly requires alignment and adjustment in data processing until the expected results are obtained. This alignment and adjustment process goes through several stages that need to be observed because the processing results become recommendations for follow-up to the counseling assessment carried out. The stages carried out during the data processing process are [17]:

- a. **Diagnosis Session**, is a process carried out to analyze the problems faced by students, the stage is carried out by utilizing speech to text technology which is analyzed using NLP techniques as reviewed above.
- b. **Prognosis Session**, is a procedure to prepare a counseling session plan to determine the goals to be achieved in each counseling session and the goals in general. There are several outcome-based questions prepared in this session to intervene students to explain the goals to be achieved.
- c. **Treatment Session**, this stage is carried out to obtain the final results of the counseling session by utilizing various existing counseling techniques, where each technique chosen is given guidelines or stages of use.
- d. **Evaluation Session**, this stage is carried out to determine the results of the previous stages, in this evaluation stage, student self-reflection is carried out so that it can be seen whether there have been positive changes to students. In addition, follow-up notes and the date of the follow-up session are also given, if any. These stages are shown in figure 4 below.

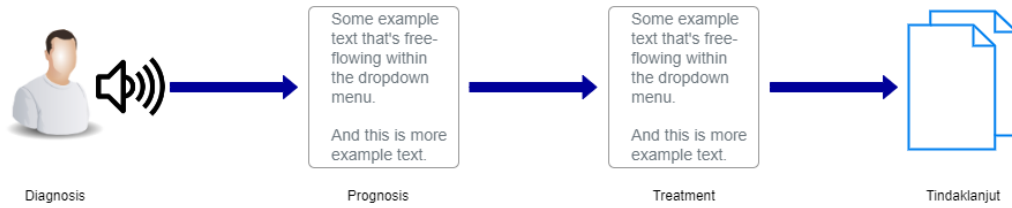


Figure 4. Follow-up Session

D. Testing

Testing is carried out to determine the extent to which the application is able to meet the needs and desires of users. This needs to be done to find out whether the functional application has been able to run as expected and whether the application has been able to meet the needs of the user, as well as to capture input from users regarding functional deficiencies or additions that can be used in further updates. BlackBox testing is used in this test by considering the background of users who are mostly counseling teachers in schools.

The blackbox testing process focuses on knowing the functionality of the features contained in the application that has been made including the expected appearances, some of the questions used in the test as shown in Table 2 below.

Table 2. Example of blackbox testing questions

Questions	Linkert Scale
Does the application dashboard display the required information?	1 - 5
Can the 'counseling data' menu be used properly?	1 - 5
Can the 'Diagnosis page' in the counseling menu be used properly?	1 - 5
Can the 'Prognosis page' in the counseling menu be used properly?	1 - 5
Can the 'Treatment page' in the counseling menu be used properly?	1 - 5
Can the 'Evaluation page' in the counseling menu be used properly?	1 - 5

The use of a Likert scale as an answer to the question aims to measure how much the user agrees with the statement being asked, this is in accordance with the main principle of the Likert scale in determining the location of a person's position on a continuum of attitudes towards objects, ranging from very negative to very positive. [18]. In the scale we use there are five choices that describe formats such as: Strongly Disagree, Disagree, Disagree, Agree, Strongly Agree with values as shown in table 3 below.

Table 3. Answer Score

Answer	Score
Strongly Disagree (STS)	1
Disagree (TS)	2
Somewhat Disagree (KS)	3
Agree (S)	4
Strongly Agree (SS)	5

In an effort to measure the answers given by respondents, it is necessary to prepare a formula that can be used to calculate them. Based on research conducted by Matlubul Khairi [19], obtained a calculation mechanism as follows:

1. To calculate the answer score given by the respondent, the following formula 1 is used:

$$\text{answer score} = \text{number of respondents} \times \text{score value} \quad (1)$$

2. To obtain the ideal answer score, the following formula 2 is used:

$$\text{ideal answer score} = \text{number of questions} \times \text{number of respondents} \times \text{high score} \quad (2)$$

The calculation results obtained are then used to determine the feasibility of the application that has been made, using the following formula to obtain the percentage of application feasibility.

$$\text{percentage of eligibility} = \frac{\text{answer score}}{\text{ideal answer score}} \times 100\% \quad (3)$$

Classification of application feasibility is divided into four categories based on the percentage value obtained. The division of the percentage range in determining the application feasibility category is shown in Table 4 below [20].

Table 4. Application Feasibility criteria

Feasibility Percentase	Inteprestation
76% - 100%	Very Feasible
51% - 75%	Feasible
26% - 50%	Enough
0% - 25%	Less Feasible

III. RESULTS AND DISCUSSION

In the development of NLP-based counseling assessment applications, there are two types of users, namely administrators and counselors / counseling teachers. Each user has a different role in the application, so it is necessary to define the role of each user.

1. Role of School Admin

School Admins play a more role in managing applications in the school environment, which is shown in several ways, namely:

- Manage counselor / counseling teacher data such as adding counseling teacher data, changing counseling teacher data, and deleting counseling teacher data.
- Managing school identity data such as school name, NPSN, school address
- Manage collective reports of counseling results
- Obtaining statistics on counseling assessments that have been conducted.

2. Role of counselor/Counseling teacher

Counselors, in this case counseling teachers, perform several roles, especially in the implementation of counseling assessments, which are shown in several ways, namely:

- Can carry out counseling assessment activities according to the selected counselees
- Can enter data on counselees or students participating in counseling
- Review or evaluate the results of counseling that has been done
- Choose counseling techniques that are appropriate for the counselee
- Providing and printing reports on counseling results
- Provide follow-up recommendations on counseling results

A. Application Modeling

By knowing the role of each user and the needs of counseling assessment in accordance with the NLP method, it can be obtained a counseling assessment application system design using several system designers such as Flowchart, UML and ERD as drawn in Figure 5 below.

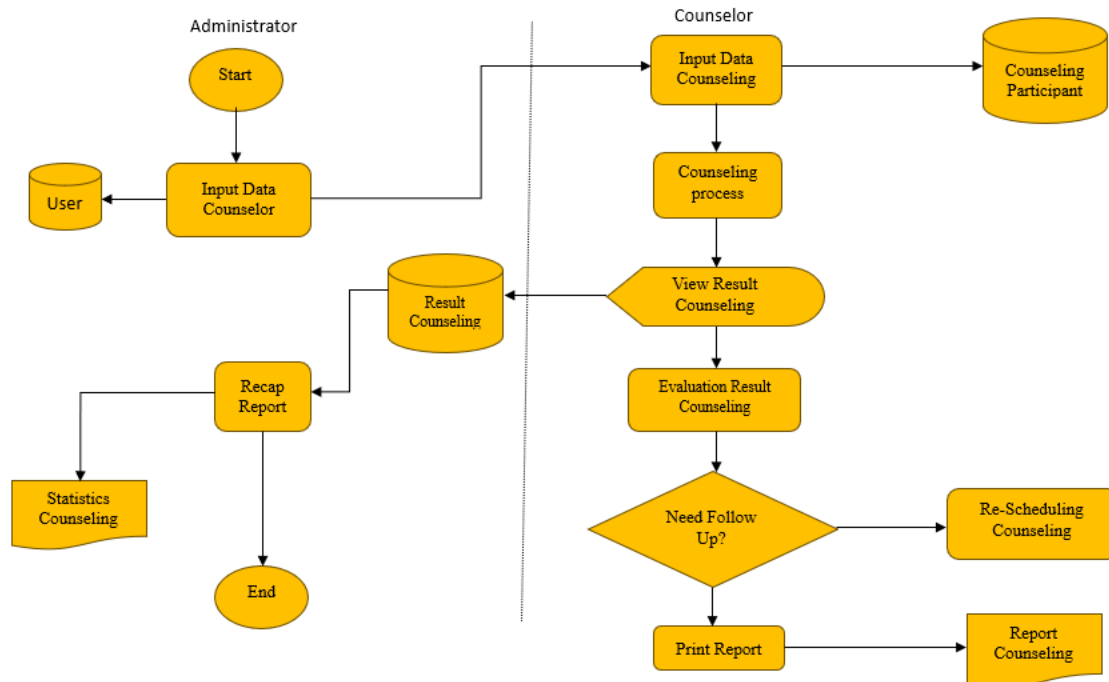


Figure 5. Flowchart of Counseling Assessment Application

As shown in Figure 5 above, the administrator will first input the counselor / counseling teacher data, then the counselor / counseling teacher will enter the counselee data or counseling participant data. Then the counselor will start the counseling session by using Google API speech to text to detect the modality and sub modality of the counselee. After the session ends, the counselor / counseling teacher will evaluate the results of the counseling that has been obtained, to consider the need for further sessions or not, besides that the counselor / counseling teacher will print a report on the results of counseling as proof that a counseling session has been conducted.

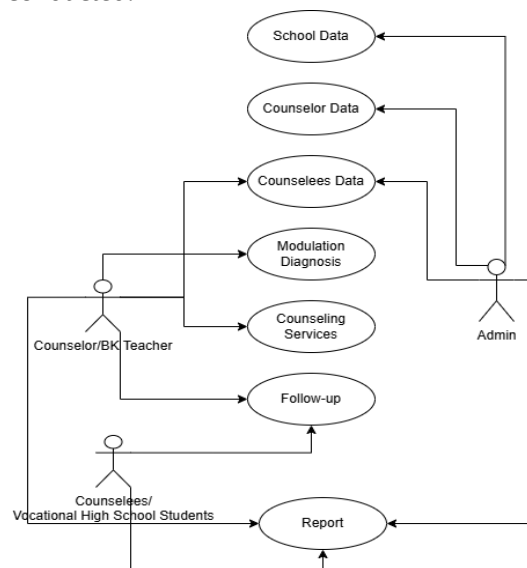


Figure 6. Use Case Diagram of Counseling Assessment Application

Figure 6 shows how each actor has their respective roles according to the needs and functional system. Figure 6 also shows the interaction relationship between the system and actors where in some functional systems such as student data and reports that can be accessed by several actors. Flowchart and Use case diagrams also directly require a database entity that is used to store data, where the database entity is arranged in a table with the structure shown in Figure 7 below.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐ 1	id	bigint(20)		UNSIGNED	No	None		AUTO_INCREMENT
☐ 2	kata	varchar(255)	utf8mb4_unicode_ci		No	None		
☐ 3	status	varchar(255)	utf8mb4_unicode_ci		No	None		
☐ 4	created_at	timestamp			Yes	NULL		
☐ 5	updated_at	timestamp			Yes	NULL		

Figure 7. Table Structure

The table shown in Figure 7 above is intended to store data on words that are classified into modality and sub-modality groups. The use of the "status" field in the table is a marker that the stored word is included in a particular modality caterogy, such as status 1 for the Visual modality group, status 2 for the Auditory modality group and status 3 for the Kinesthetic modality group, this grouping is the basis for the process of diagnosing student modulation and sub modulation during the counseling process. Some examples of these word classifications are shown in figure 8 below.

id	kata	status	created_at	updated_at	id	kata	status	created_at	updated_at	id	kata	status	created_at	updated_at
2	ngelihat	1	2023-06-12 08:14:44	2023-06-12 08:14:44	310	berkokok	2	2023-06-12 08:14:45	2023-06-12 08:14:45	409	ringan	3	2023-06-12 08:14:45	2023-06-12 08:14:45
3	lihat	1	2023-06-12 08:14:44	2023-06-12 08:14:44	311	auman	2	2023-06-12 08:14:45	2023-06-12 08:14:45	410	sakit	3	2023-06-12 08:14:45	2023-06-12 08:14:45
4	memperlihatkan	1	2023-06-12 08:14:44	2023-06-12 08:14:44	312	mengaum	2	2023-06-12 08:14:45	2023-06-12 08:14:45	411	menyakilkan	3	2023-06-12 08:14:45	2023-06-12 08:14:45
5	dilihat	1	2023-06-12 08:14:44	2023-06-12 08:14:44	313	desis	2	2023-06-12 08:14:45	2023-06-12 08:14:45	412	disakiti	3	2023-06-12 08:14:45	2023-06-12 08:14:45
6	terlihat	1	2023-06-12 08:14:44	2023-06-12 08:14:44	314	mendesis	2	2023-06-12 08:14:45	2023-06-12 08:14:45	413	gerak	3	2023-06-12 08:14:45	2023-06-12 08:14:45
7	menatap	1	2023-06-12 08:14:44	2023-06-12 08:14:44	315	desisan	2	2023-06-12 08:14:45	2023-06-12 08:14:45	414	bergerak	3	2023-06-12 08:14:45	2023-06-12 08:14:45
8	tatapan mata	1	2023-06-12 08:14:44	2023-06-12 08:14:44	316	erikan	2	2023-06-12 08:14:45	2023-06-12 08:14:45	415	menggerakkan	3	2023-06-12 08:14:45	2023-06-12 08:14:45
9	tatap	1	2023-06-12 08:14:44	2023-06-12 08:14:44	317	mengerik	2	2023-06-12 08:14:45	2023-06-12 08:14:45	416	ditekan	3	2023-06-12 08:14:45	2023-06-12 08:14:45
10	ditatap	1	2023-06-12 08:14:44	2023-06-12 08:14:44	318	suit	2	2023-06-12 08:14:45	2023-06-12 08:14:45	417	menekan	3	2023-06-12 08:14:45	2023-06-12 08:14:45
11	intip	1	2023-06-12 08:14:44	2023-06-12 08:14:44	319	suitan	2	2023-06-12 08:14:45	2023-06-12 08:14:45	418	lari	3	2023-06-12 08:14:45	2023-06-12 08:14:45
12	mengintip	1	2023-06-12 08:14:44	2023-06-12 08:14:44	320	letup	2	2023-06-12 08:14:45	2023-06-12 08:14:45	419	berlari	3	2023-06-12 08:14:45	2023-06-12 08:14:45
13	diintip	1	2023-06-12 08:14:44	2023-06-12 08:14:44	321	letupan	2	2023-06-12 08:14:45	2023-06-12 08:14:45	420	lewat	3	2023-06-12 08:14:45	2023-06-12 08:14:45
14	mengintipkan	1	2023-06-12 08:14:44	2023-06-12 08:14:44	322	meletup	2	2023-06-12 08:14:45	2023-06-12 08:14:45	421	melewati	3	2023-06-12 08:14:45	2023-06-12 08:14:45
15	terintip	1	2023-06-12 08:14:44	2023-06-12 08:14:44	323	menyani	2	2023-06-12 08:14:45	2023-06-12 08:14:45	422	dilewati	3	2023-06-12 08:14:45	2023-06-12 08:14:45
16	dicermati	1	2023-06-12 08:14:44	2023-06-12 08:14:44	324	nyanyian	2	2023-06-12 08:14:45	2023-06-12 08:14:45	423	langkah	3	2023-06-12 08:14:45	2023-06-12 08:14:45
17	cermat	1	2023-06-12 08:14:44	2023-06-12 08:14:44	325	menyanyikan	2	2023-06-12 08:14:45	2023-06-12 08:14:45	424	melangkah	3	2023-06-12 08:14:45	2023-06-12 08:14:45

Figure 8. Example of word classification in the table

B. Construction

After going through the process of planning and modeling the system, in the next stage, the translation of the modeling results into an NLP-based counseling assessment application follows the system development. By utilizing the NodeJs programming language as a back end combined with a Laravel-based API in accessing the database, a website-based NLP-based counseling assessment application is developed with the hope that the application can be accessed anywhere and anytime as long as it is connected to the internet.



Figure 9. Application Login Page

In Figure 9 shows the login page, the login page is intended for counselors in this case the Counseling Guidance teacher, admin and students with the same display. Counselors can login using the email and password provided by the school admin, while students login using the student identification number.

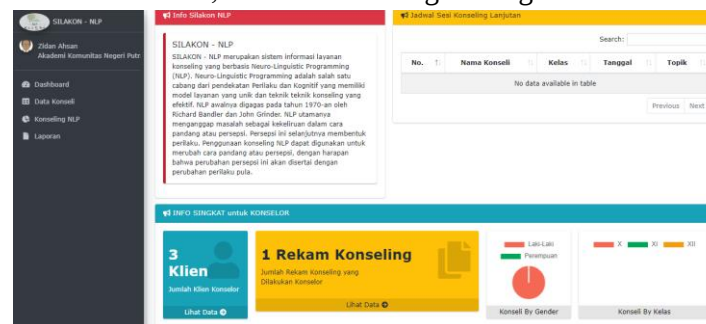


Figure 10. Application Dashboard

In the dashboard page as shown in Figure 10, several data are displayed such as the number of assessments that have been carried out, the number of students including the advanced assessment schedule. This page also shows a graph of the performance of counseling assessments that have been carried out.

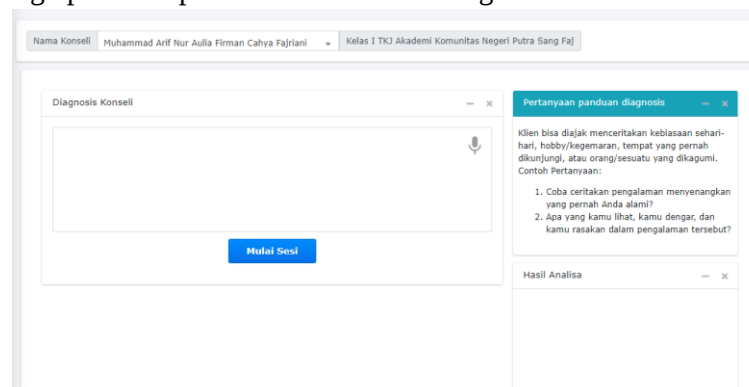


Figure 11. Student Diagnosis Page

After entering student data, at the next stage the counselor can diagnose the type of modality and sub modality of the student, by utilizing Google API speech to text technology to obtain text data sourced from student speech during the assessment process which will be extracted features in it by breaking the sentence into words that refer to the base word owned. The extraction results obtained will be grouped based on the use of verbs to determine the type of modality and sub modality of students, the NLP algorithm is very instrumental in the process of analyzing the features of the extraction results to obtain the type of modality and sub modality of students.

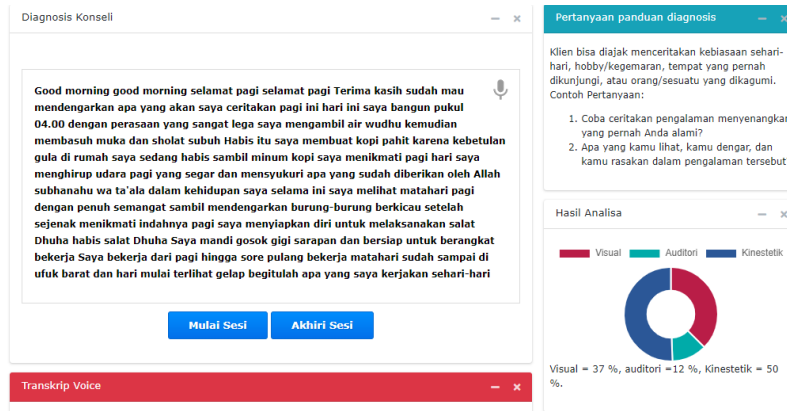


Figure 12. Diagnosis Results of Student Modalities and Sub Modalities

The dominant modality value indirectly becomes the modality type of the counselee / student, knowing the modality type owned by the counselee / student can determine the next assessment stage. In the 'prognosis' stage, based on the modality type, the general goals and objectives of the counseling session can be determined, for example if the modality type is 'kinesthetic', the general goals and objectives of the session are more likely to conduct a visual assessment or depiction of activities. With the general goals and objectives of the session known, then the 'counselee treatment' can begin using the appropriate counseling techniques, where through this session it is hoped that the problems of the counselee / student can be better known using the available counseling techniques.

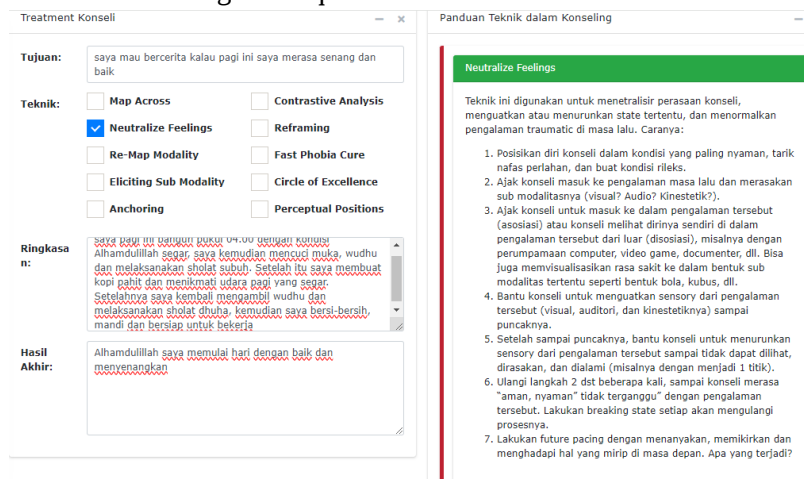


Figure 13. Counselee treatment session

The results obtained during the 'counselee treatment' session become the final results in the 'evaluation & reflection' session, the data in the 'evaluation & reflection' session is also used in the 'follow-up' session, where in the 'follow-up' session it will be determined whether the assessment will be continued again and when the follow-up session is scheduled, but if the assessment process is deemed sufficient, it can be ended immediately. All results obtained in each assessment session that has been carried out will be summarized in the form of a report as shown in figure 14 below.

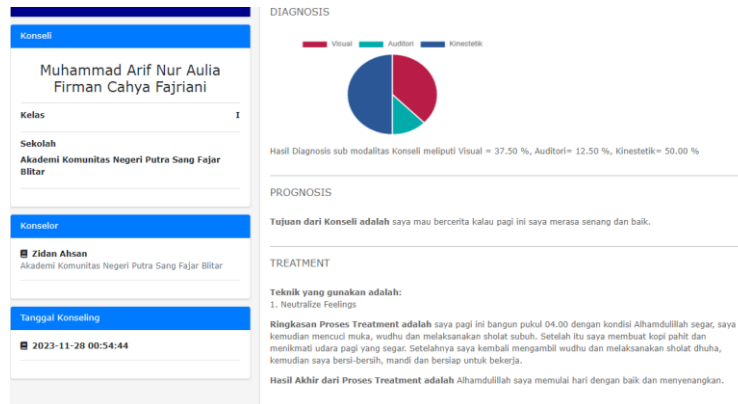


Figure 14. Assessment process report

C. System Testing

The testing stage is carried out to determine the user's perception of the counseling assessment application developed whether it is in accordance with the user's needs or not. Questions aimed at testing the system can be seen in table 2 above which uses a linkert scale of 1-5 [21] as the measuring method. In addition to being used to determine user perceptions, testing was also carried out to determine the level of user satisfaction with the application developed, involving around 32 counseling guidance teachers who are members of MGBK in Blitar district, the results of system testing are obtained as shown in table 5 below.

Table 5. Questionnaire Results related to user perceptions of SILAKON-NLP

No	Question	Reespondence Answers					Σ	%
		STS	TS	KS	S	SS		
1	The developed application can help with daily work/activities.					28	140	100%
2	The capabilities of the application are in accordance with the expected functions for counseling services.			2	8	18	128	91%
3	The Dashboard menu in the application can display the required information.		1		9	18	128	91%
4	The Client Data menu can be used properly.		1		10	17	127	91%
5	The Diagnosis page can be used to determine the type of modality and sub-modality of the client.			1	11	16	127	91%
6	The Prognosis page can be used to determine the purpose of counseling.		2		11	15	123	88%
7	The Treatment page can be used to provide counseling services according to the chosen technique.			2	10	16	126	90%
8	The Evaluation page is able to present information obtained during the counseling process.			2	11	15	125	89%
9	The Follow-up page can be used to determine the schedule for continuing counseling.			2	10	16	126	90%

No	Question	Reespondence Answers					Σ	%
		STS	TS	KS	S	SS		
10	The Report menu displays the counseling implementation report.			2	12	14	124	89%
11	Other menus can be used according to their functions.			2	12	14	124	89%
12	The Counseling Assessment Application is easy to understand and use.		1	1	11	15	124	89%

Based on table 5 above, most respondents agreed and strongly agreed with the statements submitted in the questionnaire which indirectly showed that the developed counseling assessment application was easy to understand and use. Based on table 5, some data were also obtained such as 65.63% of respondents strongly agreed, 31.25%, and 3.13% of respondents disagreed as shown in figure 15.

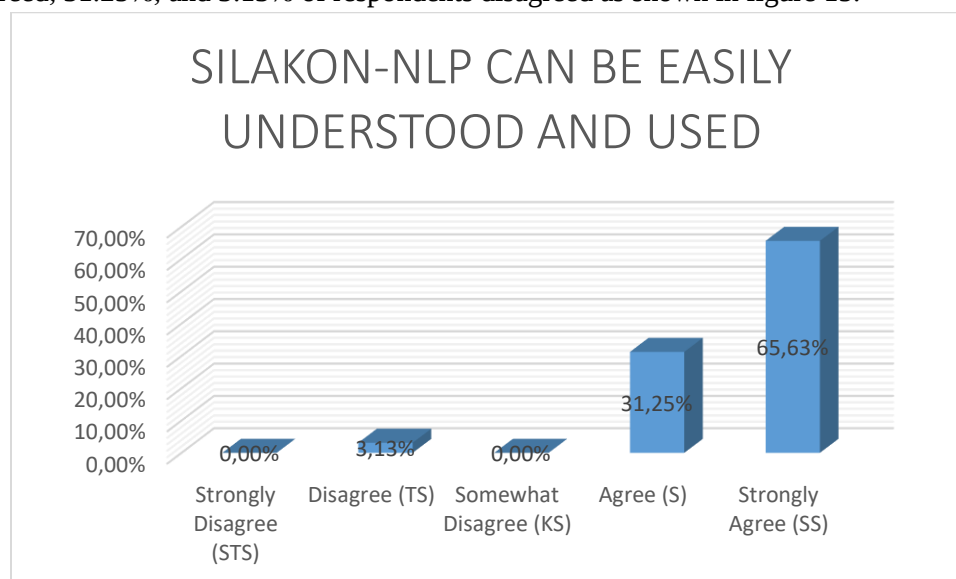


Figure 15. Graph of the percentage of respondents' answers per answer category

If only referring to the percentage of respondents who strongly agree in the classification of application feasibility according to the categories contained in table 4 above, it can be concluded that the percentage of 65.63% is included in the interpretation of '**Feasible**', so it can be stated that the counseling assessment application developed is in accordance with user needs and feasible to use.

IV. CONCLUSIONS AND RECOMMENDATIONS

The non-optimal use of technology in counseling assessment makes the lack of accuracy in problem identification carried out. The use of Google API speech to text allows the development of web applications that produce text outputs from voice input which can facilitate the process of diagnosing modalities and sub modalities of counselees/students. Through this research, a counseling assessment application has been developed that utilizes google API speech to text in obtaining the type of modality and sub modality of the counselee/student, the counselor/counseling teacher can obtain the type of modality and sub modality of the counselee/student from the voice input obtained when the counselee/student tells the story. By obtaining the type of modality and sub modality of the counselee/student, the counselor/coaching teacher can determine further assessment steps and more appropriate counseling evaluation. In further research, it is recommended to develop an android-based application and integrate it with the school information system.

V. ACKNOWLEDGMENTS

Many thanks to the MGBK SMK Blitar Regency team for being willing to collaborate in the development of this counseling assessment application. Many thanks also go to the team of developers and researchers who contributed during the application development and testing process.

VI. REFERENCES

- [1] Asmita, Wenda, and Wahidah Fitriani. "Analisis konsep dasar assesmen bimbingan dan konseling dalam konteks pendidikan." *Jurnal Mahasiswa BK An-Nur: Berbeda, Bermakna, Mulia* 8, no. 2 (2022): 129-134.
- [2] Yondris, Yondris, and Wahidah Fitriani. "Assessment Awal Dalam Konseling: Literature Review." *Jurnal Pendidikan dan Konseling (JPDK)* 4, no. 4 (2022): 577-582.
- [3] Aji, Bayu Selo, Emilia Nurpitasari, Nuri Cholidah Hanum, Ahmat Ario Akbar, and Caraka Putra Bhakti. "Pengembangan asesmen berbasis teknologi untuk keberlangsungan BK ditengah pandemi Covid-19." In *Seminar Nasional Daring IIBKIN 2020*, pp. 98-103. 2020.
- [4] Paramartha, Wayan Eka, and I. Ketut Dharsana. "Pengembangan Asesmen Minat-Bakat Berbasis Computer Based Test." *Jurnal Bimbingan dan Konseling Indonesia* 6, no. 2 (2021): 199-206.
- [5] Parhusip, Jadianan, Ade Saputra, Caca Handika, and Indes Permatahati Parhusip. "Pengembangan Aplikasi Bimbingan Konseling pada SMK Negeri 1 Muara Teweh Menggunakan Metode Rapid Application Development (RAD)." *Jurnal Teknologi Informasi: Jurnal Keilmuan dan Aplikasi Bidang Teknik Informatika* 16, no. 1 (2022): 61-72.
- [6] Anggreni, Ni Kadek Eva, Fajar Astuti Hermawati, and I. G. A. A. Noviekayanti. "SISTEM PENGENALAN UCAPAN MANUSIA DENGAN MENGGUNAKAN GOOGLE API PADA SISTEM PAKAR KONSELING TRAUMA PADA ANAK DI MASA PANDEMI." In *Senakama: Prosiding Seminar Nasional Karya Ilmiah Mahasiswa*, vol. 1, no. 1, pp. 695-705. 2022.
- [7] Asmadin, Asmadin, and Silvianetri Silvianetri. 2022. "Need Asesmen Non Tes Bimbingan Dan Konseling Dalam Layanan Penempatan Dan Penyaluran Siswa". *Jurnal Pendidikan Dan Konseling (JPDK)* 4 (5):4654-60. <https://doi.org/10.31004/jpdk.v4i5.7277>.
- [8] Widiyanto, Wahyu. (2018). ANALISA METODOLOGI PENGEMBANGAN SISTEM DENGAN PERBANDINGAN MODEL PERANGKAT LUNAK SISTEM INFORMASI KEPEGAWAIAN MENGGUNAKAN WATERFALL DEVELOPMENT MODEL, MODEL PROTOTYPE, DAN MODEL RAPID APPLICATION DEVELOPMENT (RAD). 4. 2442-7942.
- [9] Perwitasari, Anggi, and M. Azhar Irwansyah. "Model Prototipe Dan Analisis Use Case Pada Rekayasa Kebutuhan Perangkat Lunak Pengajuan Dokumen Kependudukan." *JEPIN (Jurnal Edukasi dan Penelitian Informatika)* 7, no. 2 (2021): 175-180.
- [10] Dong, Qianqian, Mingxuan Wang, Hao Zhou, Shuang Xu, Bo Xu, and Lei Li. "Consecutive decoding for speech-to-text translation." In *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 35, no. 14, pp. 12738-12748. 2021.
- [11] Park, Chanjun, Jaehyung Seo, Seolhwa Lee, Chanhee Lee, Hyeonseok Moon, Sugyeong Eo, and Heui-Seok Lim. "BTS: Back TranScripton for speech-to-text post-processor using text-to-speech-to-text." In *Proceedings of the 8th Workshop on Asian Translation (WAT2021)*, pp. 106-116. 2021.
- [12] Kimura, Takashi, Takashi Nose, Shinji Hirooka, Yuya Chiba, and Akinori Ito. "Comparison of speech recognition performance between Kaldi and Google cloud speech API." In *Recent Advances in Intelligent Information Hiding and Multimedia Signal Processing: Proceeding of the Fourteenth International Conference on Intelligent Information Hiding and Multimedia Signal Processing, November, 26-28, 2018, Sendai, Japan, Volume 2* 14, pp. 109-115. Springer International Publishing, 2019.
- [13] Kępuska, Veton, and Gamal Bohouta. "Comparing speech recognition systems (Microsoft API, Google API and CMU Sphinx)." *Int. J. Eng. Res. Appl* 7, no. 03 (2017): 20-24.
- [14] Sabrila, Trifebi Shina, Veronica Retno Sari, and Agus Eko Minarno. "Analisis Sentimen Pada Tweet Tentang Penanganan Covid-19 Menggunakan Word Embedding Pada Algoritma Support Vector Machine Dan K-Nearest Neighbor." *Fountain of Informatics Journal* 6, no. 2 (2021): 69-75.

- [15] Amin, Nur Taqwa. "Keutamaan Teknik Pendekatan Neurolinguistic Programming Dalam Proses Pembelajaran (Sebuah Konsep Strategi Pembelajaran Bahasa Arab Bagi Mahasiswa Belajar Pemula)." *Nady Al-Adab: Jurnal Bahasa Arab* 13, no. 1 (2016): 61-74.
- [16] Wikanengsih, Wikanengsih. "Menerapkan neurolinguistic programming (NLP) dalam pembelajaran." *Semantik* 1, no. 1 (2012).
- [17] Aprilia, Diana, Kadek Suranata, and M. Pd Prof I. Ketut Dharsana. "Penerapan konseling kognitif dengan teknik pembuatan kontrak (contingency contracting) untuk meningkatkan konsentrasi belajar siswa kelas X TKR1 SMK Negeri 3 Singaraja." PhD diss., Ganesha University of Education, 2014.
- [18] Ukkas, Mohamad Irwan. "Implementasi skala likert pada metode perbandingan eksponensial untuk menentukan pilihan asuransi." *SESINDO* 9 2017 (2017).
- [19] Khairi, Matlubul. "Rancang Bangun Sistem Bimbingan Laporan Praktek Kerja Lapangan di SMKN 2 Kraksaan Berbasis Web." *Applied Technology and Computing Science Journal* 3, no. 2 (2020): 91-102.
- [20] Yulistina, Dina, and Baiq Desi Dwi Arianti. "E-Katalog Sebagai Sistem Informasi Pemasaran Kopi Sapit Berbasis Web." *EDUMATIC: Jurnal Pendidikan Informatika* 3, no. 2 (2019): 45-52.
- [21] Faiz, Muhammad Nur, Nur Wahyu Rahadi, and Nur Wachid Adi Prasetya. "Online Presence System Development Website-Based using Prototype Methods." *Applied Technology and Computing Science Journal* 4, no. 1 (2021): 1-9.