THE VALIDITY AND RELIABILITY TESTING OF PUBLIC SPEAKING SKILLS QUESTIONNAIRE FOR IT STUDENTS USING SPSS

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ABSTRACT

This study aims to measure the level of relevance of public speaking knowledege among IT students in North Sumatra. The validity test was conducted to determine whether the instruments or questions in the questionnaire truly measure what they are intended to measure. The reliability test evaluates the extent to which the questionnaire can be trusted and relied upon. The research method aims to prepare a standardized questionnaire ready for use in studying students' satisfaction with online lectures. The sample for this study consisted of 512 students who completed a Google Form. The validity test results for 77 questions indicated that 60 questions were valud with a correlation value greater than 0.25, while 17 questions were deemed invalid due to a correlation value below 0.25. The reliability test shows the Cronbach's Alpha value > 0.60, so the instrument tested can be declared reliable or consistent.

Keywords: public speaking skills, IT students, north sumatra, soft skills development, validity and reliability testing.

1. INRODUCTION

Public speaking is a crucial skill in the modern era that not only supports effective communication but also fosters essential soft skills such as self-confidence, adaptability, and leadership [1]. One important aspect often overlooked by university students is the development of soft skills, which include the ability to build relationships with others (interpersonal skills) and to manage oneself (intrapersonal skills). These skills can be further developed to support optimal performance [2]. The ability to deliver messages orally to an audience oin the form of presentations, speeches, lectures, discussions, or other public events is commonly referred to as public speaking. Its purposes include providing information, motivationg, entertaining, or inspiring, while involving body language, voice intonation, as well as the skills to mantain attention and build connections with the audience [3]. For university students, this skill is highly crucial as it enhances the ability to convey ideas systematically, strengthens self-confidence, and trains critical thinking skills when engaging with an audience [4].

Several studies have shown that public speaking plays a significant role in the character development of university students, particularly in building self-confidence, which has a direct impact on improving their ability to speak in public [5]. In fact, speaking anxiety often becomes a major barrier that causes students to lose confidence and struggle to express their ideas clearly [6]. Public speaking training activities have also been proven to enhance rhetorical skills, foster empathy, structure arguments logically, and sharpen students' social skills [7].

In practice, students are required to be able to respond to unexpected questions and handle audience criticism positively, which serves as an important foundation for self-development [8]. Other studies indicate that interactive strategies such as live audience feedback make students more adaptive, responsive, and better prepared to accept criticism from the audience [9]. This is further supported by research showing that students with public speaking skills are better able to overcome nervouseness and use it as a means to expand their networking opportunities.

Moreover, for students in the field of Computer Science, the integration of public speaking training into capstone courses has been proven to increase self-confidence, strengthen the ability to construct arguments, and train the delivery of technical content clearly to audiences with diverse backgrounds [10]. This emphasizes that public speaking is highly important in thr domain, which requires the ability to explain technical concepts in a simple yet persuasive manner.

However, many students still struggle to master public speaking skills due to limited experience, low self-confidence, and a lack of mastery of effective speaking techniques [11]. This condition indicates a gap in the

development of students' soft skills, particularly in the field od Information Technology (IT) IT students often place greater emphasis on mastering technical hard skills, whereas success in the professional world is also strongly influenced by the ability to convey ideas and solutions to others who may not share the same technical background.

Therefore, it is necessary to conduct research on the role of public speaking in the development of soft skills among IT students in North Sumatra. This focus has rarely been addressed in previous studies, thus it is expected to provide a new contribution in broadening the understanding that mastering public speaking is not only relevant in the field of communication but also highly important for IT students in facing academic and professional challenges in the digital era.

2. RESEARCH METHODS

This study employs a quantitive approach with a correlational descriptive research design. This approach was selected to examine the connections between public speaking abilities and the development of vaious soft skills, such as effective communication skills and self-confidence, networking, argument skills, adaptability, handling criticism, teamworkd and leadership among IT students in North Sumatra. The correlatonal design enables researchers to explore the relationships between variables without altering the existing conditions.
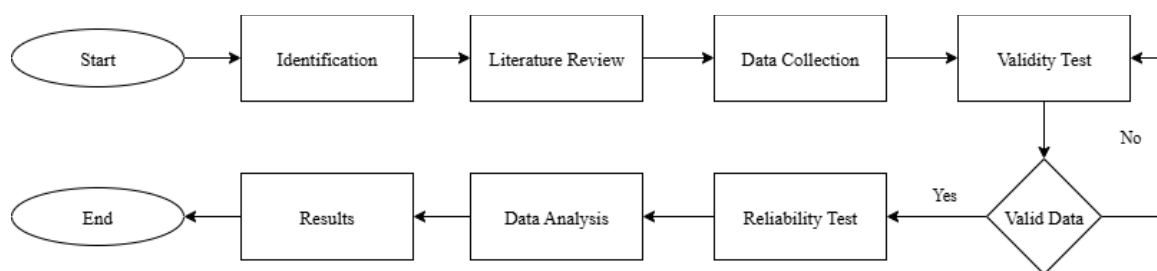

Figure 1. Research flow diagram

This study was conducted through the following stages :

1. Identification of Research Variables
    The researcher identified variable X (public speaking) as the independent variable, and variable Y (effective communication and self-confidence, networking, argument skills, adaptability, handling criticism, teamwork, and leadership) as the dependent variables. These variables were measured using research instruments relevant to the study's concept.
2. Research Instrument
    The research instrument was a questionnaire developed based on public speaking theory and its relevance to the soft skills being analyzed. The questionnaire consisted of several question sections using a 5-point Likert scale, where respondents were asked to evaluate their skills on the measured aspects.

The research popultion consisted of students from Politeknik Negeri Medan (Polmed), Universitas Negeri Medan (Unimed), Unicersitas Sumatera Utara (USU), Universitas Islam Sumatera Utara (UISU), and several other universities, with a total of 512 students. The research sample was taken using an accidental sampling technique, thereby utilizing the entire population as the research sample. Data collection was carried out using a Google Fprm-based questionnaire developed by the researcher based on existing theories. The questionnaire included respondent identity information as proof of willingness to participate, as well as 77 questions using a Likert scale to measure the relevance level of public speaking knowledge among IT students in North Sumatra. The Likert scale was employed to assess an individual's attitudes, opinions, and perceptions regarding frequently occurring phenomena.

Validity testing refers to the accuracy or precision of an instrument in measurement. The instrument validity test was conducted using Pearson's Product Moment analysis with the assistance of SPSS version 26. The questionnaire was considered valid if the correlation value of each item exceeded 0.25 [12].

Reliability testing is used to measure whether the collected research data is reliable or not. The reliability test conducted using Cronbach's Alpha to ensure instrument consistency, where the instrument is considered reliable if Cronbach's Alpha value exceeds 0.60 [13].
The Cronbach's Alpha values are as follows:
If alpha > 0.90   : Excellent reliability
If alpha 0.70- 0.90 : high reliability
If alpha 0.50- 0.70 : moderate reliability
If alpha < 0.50   : low reliability

Through this approach, the study is expected to provide an accurate picture of the relationship between public speaking and the development of soft skill in IT students, thereby serving as a foundation for practical solutions to enhance students' abilities in this area.

3. RESULT AND DISCUSSION

The study was conducted using a qestionnaire consisting of 77 questions to measure the relationship between public speaking skills and the development of soft skills in students. The analysis process began with a validity test using SPSS version 26 with the Pearson Product Moment technique. The validity test is used to assess the accuracy of a measurement tool in measuring what it is supposed to measure [14].

Based on the validity test results, out of the 77 questions, 60 questions were found to be valid, while 17 questions did not meet the validity criteria because their correlation values were bellow 0.25. The invalid questions were P1, P5, P6, P13, P14, P15, P18, P22, P27, P28, P39, P49, P50, P51, P61, P62, and P73. Thes items were excluded to ensure that the analysis results remained accurate and relevant.

The following table summarizes the results of the validity test :

Table 1. Pearson Correlation Value

Item	Pearson Correlation	Sig.(2-tailed)	Ket	Item	Pearson Correlation	Sig.(2-tailed)	Ket	Item	Pearson Correlation	Sig.(2-tailed)	Ket
P1	-0,018	0,680	Invalid	P26	$.380^{**}$	0	Valid	P52	$.399^{**}$	0	Valid
P2	$.273^{**}$	0	Valid	P27	$.151^{**}$	0,001	Invalid	P53	$.475^{**}$	0	Valid
P3	$.377^{**}$	0	Valid	P28	$.106^{*}$	0,016	Invalid	P54	$.389^{**}$	0	Valid
P4	$.470^{**}$	0	Valid	P29	$.381^{**}$	0	Valid	P55	$.447^{**}$	0	Valid
P5	$.234^{**}$	0	Invalid	P30	$.491^{**}$	0	Valid	P56	$.466^{**}$	0	Valid
P6	$.125^{**}$	0	Invalid	P31	$.478^{**}$	0	Valid	P57	$.434^{**}$	0	Valid
P7	$.399^{**}$	0	Valid	P32	$.388^{**}$	0	Valid	P58	$.430^{**}$	0	Valid
P8	$.472^{**}$	0	Valid	P33	$.470^{**}$	0	Valid	P59	$.336^{**}$	0	Valid
P9	$.504^{**}$	0	Valid	P34	$.398^{**}$	0	Valid	P60	$.409^{**}$	0	Valid
P10	$.494^{**}$	0	Valid	P35	$.305^{**}$	0	Valid	P61	$.230^{**}$	0	Invalid
P11	$.395^{**}$	0	Valid	P36	$.348^{**}$	0	Valid	P62	$.220^{**}$	0	Invalid
P12	$.501^{**}$	0	Valid	P37	$.346^{**}$	0	Valid	P63	$.468^{**}$	0	Valid
P13	$.140^{**}$	0,001	Invalid	P38	$.316^{**}$	0	Valid	P64	$.419^{**}$	0	Valid
P14	0,069	0,118	Invalid	P39	$.233^{**}$	0	Invalid	P65	$.496^{**}$	0	Valid
P15	$.125^{**}$	0,005	Invalid	P40	$.373^{**}$	0	Valid	P66	$.433^{**}$	0	Valid
P16	$.401^{**}$	0	Valid	P41	$.439^{**}$	0	Valid	P67	$.503^{**}$	0	Valid
P17	$.475^{**}$	0	Valid	P42	$.466^{**}$	0	Valid	P68	$.338^{**}$	0	Valid
P18	0,028	0,533	Invalid	P43	$.405^{**}$	0	Valid	P69	$.374^{**}$	0	Valid

P19	.475**	0	Valid	P44	.437**	0	Valid	P70	.405**	0	Valid
P20	.331**	0	Valid	P45	.328**	0	Valid	P71	.375**	0	Valid
P21	.429**	0	Valid	P46	.405**	0	Valid	P72	.420**	0	Valid
P22	.160**	0	Invalid	P47	.365**	0	Valid	P73	.232**	0	Invalid
P23	.279**	0	Valid	P48	.457**	0	Valid	P74	.252**	0	Valid
P24	.319**	0	Valid	P49	.151**	0,001	Invalid	P75	.411**	0	Valid
P25	.351**	0	Valid	P50	.133**	0,003	Invalid	P76	.394**	0	Valid
				P51	.161**	0	Invalid	P77	.474**	0	Valid

Next, reliability testing was conducted using the Cronbach's Alpha method to assess the consistency of the instrument [15]. The reliability test results showed a Cronbach's Alpha balue of 0.907, which exceeds the minimum threshold of 0.60. Based on the results, the instrument used is considered reliable and consistent is measuring the identified variable.

Reliability Statistics

Cronbach's Alpha	N of Items
.907	77

Figure 2. Reliability Statictics

The analysis results indicate that the questionnaire has a good level of validity and reliability, with 60 valid questions that can be used for the research. The reliability test, which yielded a Cronbach's Alpha value of 0.907, demonstrates that the instrument is consistent in measuring the relionship between public speaking skills and the development of soft skills in students.

Table 2. Item Total Statistics

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
p1	249.22	1320.324	-0.054	0.909
p2	248.96	1292.732	0.239	0.907
p3	249.02	1280.123	0.343	0.906
p4	248.75	1270.83	0.439	0.905
p5	249.19	1295.699	0.198	0.907
p6	249.22	1306.839	0.09	0.908
p7	249.02	1278.27	0.366	0.906
p8	248.84	1271.041	0.442	0.905
p9	248.72	1267.251	0.474	0.905
...	...	...	...	...
p66	248.89	1275.854	0.401	0.905
p67	248.78	1269.603	0.475	0.905
p68	249.04	1285.988	0.304	0.906
p69	248.99	1281.837	0.341	0.906
p70	249.04	1279.169	0.373	0.905
p71	248.93	1283.45	0.344	0.906
p72	248.91	1277.04	0.388	0.905

p73	249.04	1296.969	0.198	0.907
p74	249.11	1293.983	0.217	0.907
p75	248.91	1278.023	0.379	0.905
p76	249.12	1279.592	0.361	0.906
p77	248.89	1272.718	0.444	0.905

From the aspects measured, this study shows that public speaking skills have a significant relationship with the improvement of communication ability, self-confidence, adaptability, the ability to accept criticism, argument structuring, and teamwork among IT students. These findings reinforce previous studies that highlight the important role of public speaking in building students' self-confidence, which directly impacts their ability to speak in public. On the other hand, the results are also consistent with research emphasizing how public speaking training can enhance the ability to construct arguments and deliver technical content clearly, particularly for Computer Science students.

These findings provide strong evidence that public speaking is not merely an additional skill but a core competency highly relevant to the demands of the professional world, particularly in the IT field. Although IT students often place greate emphasis on technical hard skills, career success also heavily depends on the ability to communicate complex ideas and solutions to audience with diverse backgrounds. Therefore, this study carries important implications for higher education curricula.

It is recommended that public speaking training be more deeply integrated into the curricula of technology-based study programs, for instance through projects requiring oral presentations, discussion forums, or idea pitching simulations. This approach not only strengthens communication and leadership skills but also prepares students to face professional challenges in the digital era. Nevertheless, this study has a limitation, namely the use of accidental sampling within a spesific population. Therefore, future research could expand the scope of respondents so that the results may be more generalizable.

4. CONCLUSION

Public speaking skills have a significant impact on various soft skills that are relevant to IT students in North Sumatra. It has been proven to enhance communication skills, self-confidence, and the ability to construct better arguments. Additionally, public speaking plays a crucial role in networking, adaptability, teamwork, and leadership skills. This emphasizes that IT students not only need to master technical skills but also require essential soft skills, such as effective communication, to succeed in their future careers.

Based on the questionnaire trial conducted by the researcher with 512 respondents, including students as subjects, the validity and reliability test yielded the following results : In the validity test, 60 questions were considered valid due to their correlation values exceeding 0.25. In the reliability test, the Cronbach's Alpha value was > 0.60, with a result of 0.907, indicating that the set of set of questions is both valid and consistent.

The validity and reliability test results have proven that the instrument used to measure the relevance of public speaking knowlede among IT students in North Sumatra meets the required criteria.

For future research, the scope can be expanded by incorporating additional aspects that may influence public speaking skills, such as students' social and economic backgrounds, as well as their level of participation in organizational activities. Furthermore, research methods could me developed to include not only quantitative data analysis but also other forms of observation to achieve more comprehensive results on how public speaking influences personal development among students

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