Effectiveness of SFL-Apps in Improving Students' Public Speaking and Confidence: A Psycho-Emotional Perspective

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***Abstract*—Public speaking is an important skill that is often hindered by students' lack of confidence and anxiety. Technological innovations such as Smart Flexible Language Mobile Apps (SFL-Apps) offer a solution to overcome these barriers by providing an interactive platform that supports the improvement of students' public speaking skills and self-confidence. This study aims to determine the effectiveness of SFL-Apps in improving students' public speaking skills and self-confidence from the perspective of psycho-emotional factors. The research method uses a quantitative approach with the type of experimental method. This research was conducted with a sample size of 100 students. Data was collected through pre-test and post-test as well as questionnaires to measure the level of public speaking skills and self-confidence before and after the use of SFL-Apps. The results showed a significant increase in students' public speaking skills and self-confidence after using SFL-Apps. This improvement was identified to be related to the psycho-emotional aspects that were reinforced by the interactive and adaptive features of the SFL-Apps. The findings indicate that SFL-Apps is effective not only in improving public speaking competence but also in strengthening students' self-confidence through a technology-based approach that is responsive to their psycho-emotional needs. This study recommends the use of SFL-Apps as an additional learning tool in the curriculum to develop students' communication skills and self-confidence.**

***Keywords*—public speaking skill, self condifidience, psycho-emotional, Smart Flexible Language Mobile Apps (SFL-Apps)**

I. Introduction

Public speaking skill is a skill that needs to be possessed by a student [1]. It enables students to articulate their thoughts and knowledge clearly, improve interpersonal skills to influence and inform others, and increase self-confidence. This confidence can complement these skills by empowering students to present their ideas assertively [2]. In Education, students with higher self-confidence and public speaking ability tend to participate more actively in discussions, are more willing to take risks and try new things which can lead to improved academic performance, as well as making them better prepared for leadership roles that inspire others.

In the current era of globalization, public speaking skills and self-confidence are important things that are the basis for student readiness. The McKinsey Global Institute report in 2022 shows that around 75% of jobs require good communication skills, including public speaking. So that students who have these skills will be better prepared to face intense competition in the world of work, adapt to technological changes, and collaborate effectively with other people [3]. Another research shows that students who have self-confidence can have an influence in increasing public speaking activities [4]. Apart from that, public speaking and self-confidence also influence the development of children's expressive language in the process of children's growth and development [5]. Children's ability to express thoughts, feelings, and ideas using expressive language plays a key role in facilitating communication with others [6]. With good communication skills, children can build strong social relationships and expand their circle of interaction. Apart from that, expressive language is also a tool in the child's learning process. By understanding the world around them and being able to express themselves clearly, children can learn more effectively and be actively involved in various learning activities at school such as reading, writing and participating in discussions.

Common problems relating to public speaking skills and confidence among students are often rooted in anxiety, lack of practice, and inadequate feedback. Many students often experience a fear of public speaking, which can inhibit their willingness to participate in speaking opportunities [7]. At the high school level, these issues can be exacerbated by students facing additional challenges such as limited access to resources, lack of educators trained in communication skills, or cultural factors that inhibit open expression [8]. These local issues require targeted interventions to ensure that the benefits of public speaking and confidence-building programmes reach all students, regardless of their background.

Students with low levels of public speaking skills and self-confidence can face several negative impacts. Data collected from Zauderer at Cross River Therapy [9] shows that as many as 85% of people throughout the world experience anxiety or fear when speaking in public. Academically, students who are not proficient in public speaking may have difficulty conveying their ideas effectively in presentations, class discussions, and oral exams, which can impact their academic assessments [10]. Socially, a lack of courage in speaking and limitations in effective communication can hinder students' ability to establish social relationships, collaborate in groups, and make them more vulnerable to intimidation or bullying [11]. Meanwhile, according to Kantrapolska, 30% of people around the world

in 2024 will feel insecure about their abilities. In the future, students who lack self-confidence may not dare to take the initiative in looking for a job or leading a team, face difficulties in job interviews, and experience obstacles in career advancement due to a lack of public speaking skills that are important in the world of work.

Low public speaking skills and self-confidence in students can have a negative impact on their academic achievement, social life and future careers [12]. Innovation is needed by developing smart flexible language mobile applications (SFL-Apps) which can be an alternative solution to help students improve their public speaking skills and self-confidence. This app provides a platform for students to practice speaking in a private, low-stakes environment. With features such as learning modules, interactive features, real-time feedback, and customizable scenarios, SFL-Apps can provide benefits to students, such as the flexibility offered allowing students to learn anytime and anywhere, the personalization provided by these applications enabling students to learn in a way that suits their individual needs and learning styles. Interactivity is also one of the advantages of SFL-Apps, where students can interact directly with learning materials and also with classmates, creating a more dynamic and collaborative learning environment. These apps can also incorporate gamification features to motivate students and track improvement over time, making the learning experience more engaging and effective. Thus, SFL-Apps not only provides a flexible and personalized learning platform, but also motivates students to achieve their optimal learning potential.

The selection of SFL-Apps as a solution was based on several main factors. Like SFL-Apps stands out in its flexibility and ease of use thanks to its customizable architecture and extensive library and tool support. This allows developers to quickly build mobile applications with various features and complexity without any difficulty. Additionally, SFL-Apps' high performance ensures applications built on the platform run smoothly and efficiently across a wide range of mobile devices, while support for multiple platforms expands user reach. In terms of security and scalability, this application has advanced security features and can be scaled to support use by millions of users and devices [13]. Additionally, the use of technology can often be more engaging for students, encouraging them to practice more often and with greater enthusiasm [14]. SFL-Apps can potentially reduce the anxiety associated with public speaking by providing a safe, private space to practice before moving on to a more public forum.

Psycho-emotional factors that act as moderating variables can influence the relationship between the use of SFL-Apps and the improvement of public speaking skills and self-confidence in students. Psycho-emotional factors can include anxiety which is a feeling of worry or fear, can significantly affect one's performance when speaking in public. Stress is also a factor that can interfere with focus and concentration, which in turn can affect one's ability in public speaking [15]. On the other hand, motivation plays a key role in encouraging individuals to achieve their goals, including in improving public speaking skills and self-confidence [16]. In addition, self-efficacy, which is the belief in an individual's ability to achieve goals, is also an important factor in overcoming challenges that may arise in public speaking [17].

Psycho-emotional factors have an impact on public speaking skills and the level of self-confidence. Excessive anxiety and fear can prevent a person from speaking fluently and clearly, which is often characterized by symptoms such as nervousness, tremors, and a trembling voice [18]. Apart from that, stress can also interfere with focus and concentration, so that a person easily forgets the contents of the presentation and misses key words [19]. Lack of self-confidence is also an important factor that can make someone hesitant and unsure of their ability to speak in public, resulting in presentations that are less convincing and unattractive [20]. On the other hand, fear of negative evaluation, past negative experiences, and excessive perfectionism can also contribute to decreased self-confidence and increased nervousness when speaking in public [21].

If a student has low psycho-emotional factors, they may experience greater fear of public speaking, which may hinder their ability to practice and improve their skills [22]. They may also exhibit lower levels of self-confidence, which may lead to avoidance behaviour. An intermediate level of psycho-emotional factors might correlate with an average response to public speaking situations, where students can manage their anxiety to some degree and participate but may not excel without additional support or practice [23]. On the other hand, a student with high psycho-emotional factors typically displays resilience and confidence, effectively copes with the stress of public speaking, and is more likely to embrace opportunities for public speaking [24]. Rapid and noticeable improvement in public speaking ability can be achieved by maintaining positive emotions and self-perception.

Previous research has explored barriers to public speaking skills, such as shyness, anxiety, and lack of confidence [25] Traditional strategies such as role-play and live simulation have been shown to be effective in improving students' speaking skills [26], however, they are often limited by time and classroom space. In contrast, technology-based tools, such as simulation applications and video-based platforms, provide greater flexibility. Research Chen [27] showed that technology applications allow students to practice independently, get automatic feedback, and overcome their fears in a more controlled environment, compared to traditional methods that tend to increase student anxiety. The comparison of effectiveness between traditional methods and technology has also been researched extensively. Benlaghrissi & Ouahidi [28] found that students who used technology-based applications showed more significant improvements in speaking skills and self-confidence compared to students who only used conventional face-to-face methods. In addition, Gruber & Kaplan-Rakowski [29] noted that technology helps students practice more intensively, as they can repeat the exercises at any time without direct pressure from the audience. Thus, technologies such as SFL-Apps can be a more effective alternative to overcome psycho-emotional barriers, while complementing traditional approaches to improving students' public speaking skills.

The novelty of the study lies in the utilization of SFL-Apps

as a technology-based tool to improve students' public speaking skills and self-confidence, by incorporating psycho-emotional factors as moderators. This approach provides a new contribution as not many studies have explored the integration of technology and psycho-emotional factors simultaneously. Empirically, research conducted by Chau *et al.* [30] examined the variables of psychological factors, and speaking skills. While this study examines the variables of public speaking skills and self-confidence which are also moderated by psycho-emotional factors. Methodologically research Khawa & Rizkiyah [26] used a qualitative method with a CAR research design, while the research of Chau *et al.* [30] used a qualitative method with a CAR research design. Chau *et al.* [30] using quantitative methods with data collection methods using questionnaires with data analysis using SPSS. In this study using quantitative methods with experimental research types. In addition, this study was conducted at Diponegoro High School, Tumpang Subdistrict, providing a new context of Indonesian students which is different from research in other countries, such as Chau *et al*. [30] in Vietnam or Rosmayanti *et al*. [31] in Makassar.

Public speaking skills are considered important but often students have difficulty in developing them. Self-confidence is a key factor in this regard, where a lack of self-confidence can hinder students' academic achievement and social development. SFL-Apps is an innovative mobile application that is expected to help students practice public speaking through features such as interactive learning materials, public speaking simulations, and feedback from tutors and friends. However, research on the effectiveness of SFL-Apps is still relatively low. Therefore, the purpose of this study is to determine the effectiveness of SFL-Apps in improving students' public speaking skills and self-confidence from the perspective of psycho-emotional factors.

II. Literature Review

A. Public Speaking Skill

Public speaking skills are very important in the world of education. In education, public speaking training is essential for building students' confidence and communication skills, assisting in critical thinking and effective classroom discussions [32]. Public speaking skills include the ability to convey information effectively in various contexts, such as persuading an audience [33]. These skills are essential for individuals in education, career and leadership roles [34]. The dimensions of public speaking skills include aspects such as speech content, delivery, body language, and nonverbal cues. Several studies have shown that public speaking skills can be improved through techniques such as video-recorded feedback, real-time recognition of the affective state of speech features, and leadership skills training [35]. In addition, the use of technology, such as video blogs and Instagram, has been explored to improve public speaking skills [36]. Research conducted by Angelini & García-Carbonell [37] showed that classroom-based simulation can improve students' self-confidence and speaking fluency. Meanwhile, Lapitan *et al*. [38] revealed that blended learning method with technology integration such as Zoom and Google Meet can improve students' speaking skills in a virtual environment. However, these studies have not discussed how a mobile application can support public speaking learning through adaptive and interactive features. Table 1 below shows the dimensions and indicators of public speaking skills.

Table 1. Dimensions and indicators public speaking skills

Dimensions	Indicator
Knowledge	1. Understand Language Structure 2. Know effective delivery techniques 3. Able to choose interesting topic
Skills	1. Smoothness speaking, pronunciation 2. Accuracy in Using Language 3. Use effective of Body Language
Attitude	1. Enthusiastic 2. Confident 3. Respond well to the question

B. Self Confidence

Self confidence refers to an individual's belief in their abilities, skills, and potential to complete tasks and navigate various situations [39]. Self confidence is a psychological condition that influences a person's thoughts, emotions and behavior [40]. Apart from that, self-confidence is a person's view of what they can and can do. People with high self-confidence know their strengths and weaknesses, set realistic expectations, communicate assertively, and can handle criticism effectively [41]. Çetin *et al*. [42] looked at the relationship between self-efficacy, emotional intelligence and self-confidence. These three factors can show the relationship between the three and how they influence self-confidence. There are several internal and external factors that can influence self confidence. Internal factors that influence such as self-esteem, self-awareness, thought patterns, past experiences and support from a network of friends and family [43]. Meanwhile, external influencing factors are the social environment, internalization, economic status, work environment and religious norms [44]. Study by Bubnys [45] found that self-reflection-based training can significantly improve students' self-confidence. In addition, Botelho *et al*. [46] revealed that the use of interactive learning videos helps students feel more confident because they can repeat the material as needed. This research extends the literature by examining how technology-based learning applications can improve student confidence through adaptive and psycho-emotional approaches. Table 2 below shows the dimensions and indicators of self confident.

Table 2. Dimensions and indicators self confident

Dimensions	Indicator
Cognitive	1. Belief in one's own abilities 2. Optimistic in facing challenges 3. Having realistic self-confidence
Affective	1. Feeling calm and comfortable when speaking in public 2. Able to control nervousness 3. Having a sense of pride in oneself
Behavior	1. Able to act independently 2. Dare to express opinions 3. Dare to take risks

C. Smart Flexible Language Application Mobile (SFL-Apps)

SFL-Apps is a mobile application designed to support language learning with a smart and flexible approach. SFL-Apps can customise learning materials according to the

user's ability level and individual needs, and is equipped with voice recognition technology to train pronunciation. The app offers various types of content, ranging from vocabulary, grammar, listening practice, to speaking and writing practice, in interactive formats such as games, quizzes and learning videos. With an adaptive algorithm, SFL-Apps assesses the user's progress and adjusts the difficulty level of the material automatically. In addition, the app can be accessed anytime and anywhere via mobile devices, allowing users to learn languages flexibly. Tables 3 and 4 below show the features and learning strategies of SFL-Apps, Fig. 1 and Fig. 2 show the initial display and menu of SFL-Apps.

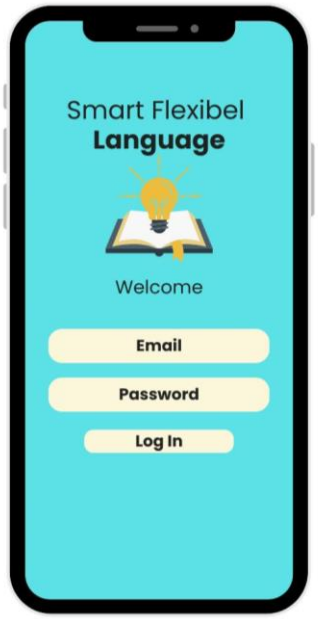

Fig. 1. Initial view of SFL-Apps.

Fig. 2. SFL-Apps menu display.

Table 3. SFL-Apps features

Feature	Description
Multilingual support	This feature can be used for desired language selection.
Smart translation	It is used with AI technology to translate text with high accuracy between different languages.
Personalized learning journey	This feature is used to customize to the user's needs, including recommendation of learning materials based on the user's ability level and preferences.
Adaptive assessment	Assessments that are customized to the user's learning progress.
Collaboration tools	Collaboration tools for users to interact and learn together, such as discussion forums and shared learning settings.
Interactive content	Interactive content such as learning videos, simulations and educational games to enhance the learning experience.
Accessibility features	Accessibility features such as text to speech, high contrast, and customised navigation.

Table 4. SFL-Apps learning strategy

Learning Strategy	Description
Learning based application	Using SFL-Apps as the main platform for delivering material, practice, and evaluation.
Learning game based	Integrate game elements in SFL-Apps to increase student engagement and motivation.
Learning video based	Including learning videos in SFL-Apps to support visual understanding of concepts.
Collaboration student	Encourage collaboration between students through discussion and joint project features within SFL-Apps.
Learning based project	Implement learning projects that utilize SFL-Apps features.
Evaluation automatic	Utilize the automatic scoring feature on SFL-Apps to provide fast feedback.
Learning differentiation	Customize learning content in SFL-Apps according to individual student needs and abilities.
Learning based application	Using SFL-Apps as the main platform for delivering material, practice, and evaluation.

D. Psycho-Emotional Factor

Table 5. SFL-Apps learning strategy

Dimension	Indicator
Anxiety	1. Physical symptoms (dizziness, palpitations, cold sweat) 2. Difficulty concentrating 3. Negative thoughts (fear of failure, criticism)
Confidence	1. Confidence in one's abilities 2. The ability to appear calm 3. Feel comfortable in front of an audience
Motivation	1. The desire to convey a message 2. Enthusiasm for a topic 3. Desire to connect with the audience
Skills and interpersonal	1. Empathy 2. Listening ability 3. Positive nonverbal communication

Public speaking is an important skill that can significantly impact a person's academic and professional success. This involves the ability to communicate ideas clearly, persuasively, and confidently in front of an audience [47]. For students, mastering public speaking can increase self-confidence, improve communication skills, and contribute to overall personal development. Psycho-emotional factors play an important role in public speaking abilities [48]. These factors can affect a person's anxiety levels, self-confidence, and ability to communicate effectively. Excessive anxiety can interfere with concentration and cause speech to stutter, while low self-confidence can make them appear nervous and unsure of what is being said [49]. Fear of failure often prevents someone from speaking in public altogether [50]. However, high motivation can help them overcome anxiety and appear confident [51]. Apart from that, good interpersonal skills are also very important because they can help build good relationships with the audience, strengthening the ability to

convey messages clearly and effectively [52].

Pratama [53] showed that speaking anxiety can be reduced through breathing and visualization techniques. Racine *et al*. [54] highlighted the importance of social support in overcoming fear of public speaking. This research goes a step further by examining how adaptive technology can help students manage their speaking anxiety and increase their confidence. Table 5 below shows the dimensions and indicators of psycho-emotional factors.

III. Materials and Methods

A. Participants

This study was conducted on students at Diponegoro High School, Tumpang District, Malang Regency, which is located at Jl. Tunggul Ametung No.18. The population in this study were all Diponegoro High School students in the 2024/2025 school year, with a total of 583 students. The sample of this study was taken using purposive sampling technique, by selecting students from classes X, XI, and XII. The sample selection was carried out to cover various levels of education, so as to provide a more comprehensive picture of the effectiveness of the SFL-Apps application. From the population, 100 students were determined as respondents who fit the research criteria. The sample size was considered sufficient for the study based on several reasons. First, Agustianti *et al*. [55] sample size in experimental research is recommended to be between 30-100 participants to ensure representative results and enable valid statistical analysis. Second, this number includes students from grades X, XI, and XII who have a variety of backgrounds and different skill levels, so that the data obtained reflects the diversity of the population.

B. Design of the Study

This study used a quantitative approach with an experimental method to measure the effectiveness of mobile applications (SFL-Apps). The research design used was a pre-test post-test control group design, where students were divided into two groups: experimental and control. The experimental group was given an intervention using the SFL-Apps application, while the control group did not receive the treatment. Before the treatment, a pre-test was conducted to measure students' initial abilities, and after the intervention, a post-test was conducted to evaluate the changes that occurred. This design refers to the theory of Campbell and Stanley [56] which states that the pre-test post-test control group design can objectively compare the impact of the intervention on both groups, thus ensuring the internal validity of the research results. Table 6 below shows the research design.

Table 6. Research design

Group	Pre-test	Treatment	Post-test
Control	O_1		O_2
Eksperiment	O_3	X	O_4

Notes:
O_1: Pre-Test group class control
O_3: Pre-Test group class experiment
O_2: Post Test group class control
O_4: Post Test group class experiment
X: Smart Flexible Language Mobile App (SFL Apps)

C. Instruments: Procedures and Validation

The instruments will be separate into 2 parts, data collection and data analysis. The data collection technique in this research used a questionnaire distributed to all respondents. As well as a series of test instruments used to measure the extent to which SFL-Apps can improve SFL-Apps. Before this test instrument is used, it needs to be tested with: 1) validity test, namely to find out whether the instrument is valid or not, and 2) reliability test, namely to find out whether the instrument is reliable or not.

Respondents from the experimental group used the Smart Flexible Language Mobile app (SFL-Apps) for 4 weeks. During this period, the app was used regularly every week according to the prescribed research instructions. The experimental group was given time to practice their public speaking skills and improve their confidence by utilizing the features in the app. After the 4-week period, a post-test was conducted to evaluate the impact of using the app on students' public speaking skills and self-confidence, which was then compared with the pre-test results before the treatment.

The data analysis in this research uses descriptive analysis to describe or describe the characteristics of data derived from a sample (using mean and gain) and statistical analysis using 1) Normality test using Kolmogorov-Smirnov, 2) Homogeneity test using Levine statistics, 3) Hypothesis testing uses Two-Way Analysis of Variance (ANOVA). The test in this research uses the SPSS program.

IV. Result

A. Validity Test

1) Public speaking skill

Table 7. Public speaking skill validity test results

Dimensions	Parameter	R Table	R Count	Note
Knowledge	Y1.1	0.194	0.883	Valid
	Y1.2	0.194	0.854	Valid
	Y1.3	0.194	0.779	Valid
Skills	Y1.4	0.194	0.612	Valid
	Y1.5	0.194	0.645	Valid
	Y1.6	0.194	0.771	Valid
Attitude	Y1.7	0.194	0.725	Valid
	Y1.8	0.194	0.637	Valid
	Y1.9	0.194	0.812	Valid

Based on Table 7, indicators in the questionnaire can be said to be valid if the calculated r value is greater than r table. If the validity value of each answer obtained when giving a list of questions is greater than 0.3 then the question item can be said to be valid. Based on the results of data processing in the table, it can be seen that the dimensions and indicators of public speaking skills in students in this study are declared valid because they have a value greater than 0.3.

2) Self confidence

Based on Table 8, indicators in the questionnaire can be said to be valid if the calculated r value is greater than r table. If the validity value of each answer obtained when giving a list of questions is greater than 0.3, the question item can be said to be valid. Based on the results of data processing in the table, it can be seen that the dimensions and indicators of self-confidence in students in this study are declared valid because they have a value greater than 0.3.

Table 8. Self confidence validity test results

Dimensions	Parameter	R Table	R Count	Note
Cognitive	Y1.1	0.194	0.729	Valid
	Y1.2	0.194	0.634	Valid
	Y1.3	0.194	0.687	Valid
Affective	Y1.4	0.194	0.741	Valid
	Y1.5	0.194	0.632	Valid
	Y1.6	0.194	0.783	Valid
Behavior	Y1.7	0.194	0.725	Valid
	Y1.8	0.194	0.692	Valid
	Y1.9	0.194	0.637	Valid

3) Psycho-emotional factor

Table 9. Psycho-emotional factor validity test results

Dimensions	Parameter	R Table	R Count	Note
Worry	Y1.1	0.194	0.832	Valid
	Y1.2	0.194	0.854	Valid
	Y1.3	0.194	0.758	Valid
Confidence	Y1.4	0.194	0.725	Valid
	Y1.5	0.194	0.721	Valid
	Y1.6	0.194	0.767	Valid
Motivation	Y1.7	0.194	0.788	Valid
	Y1.8	0.194	0.771	Valid
	Y1.9	0.194	0.638	Valid
Interpersonal Skills	Y1.10	0.194	0.698	Valid
	Y1.11	0.194	0.821	Valid
	Y1.12	0.194	0.864	Valid

Based on Table 9, Indicators in the questionnaire can be said to be valid if the calculated r value is greater than r table. If the validity value of each answer obtained when giving a list of questions is greater than 0.3, the question item can be said to be valid. Based on the results of data processing in the table, it can be seen that the dimensions and indicators on psycho-emotional factors in students in this study are declared valid because they have a value greater than 0.3.

B. Normality Test

Table 10. Normality test results

Variable	Kolmogorov -Smirnov	Sig.	Information
(PSS)-Smart Flexible Language	0.947	0.521	Normal
(PSS-SC)-Smart Flexible Language	0.728	0.771	Normal
(PSS)-Anxiety	0.836	0.671	Normal
(PSS)-Trust	0.664	0.879	Normal
(PSS)-Motivation	0.896	0.671	Normal
(PSS)-Skill	0.624	0.842	Normal
(PSC-SC)-Anxiety	0.821	0.671	Normal
(PSC-SC)-Trust	0.643	0.874	Normal
(PSC-SC)-Motivation	0.772	0.816	Normal
(PSC-SC)-Skills	0.651	0.836	Normal

Based on Table 10, the normality test data is said to be normally distributed if it has no significant difference or is standardised compared to the standard normal. If using statistical tests, for example using the Kolmogorov Smirnov test, variables are said to be normally distributed if the significance value is greater than or equal to 0.5. Based on the results of data processing in this study, the data in this study are normal because all data tested have a value greater than 0.5.

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D. Homogeneity Test

Based on Table 12, the homogeneity test is obtained if the significance value (P) is equal to or greater (≥) than 0.05, then the variance of two or more groups of data being measured is homogeneous. Meanwhile, if the significance value (P) is smaller (<) than 0.05, then the variance of two or more groups of data being measured is not homogeneous. Based on the results of data processing, it is known that this research is homogeneous because all data has a value greater than 0.05.

Table 12. Homogeneity test results

Variable	Levene Statistics	Sig.	Information
(PSS)*(PSS-SC) Smart Flexible Language	7.824	0.637	Homogeneous
(PSS)*(PSS-SC) Anxiety	6.469	0.621	Homogeneous
(PSS)*(PSS-SC) Trust	7.283	0.693	Homogeneous
(PSS)*(PSS-SC) Motivation	6.791	0.681	Homogeneous
(PSS)*(PSS-SC) Skills	7.637	0.639	Homogeneous
(PSS)*(PSS-SC) Smart Flexible Language	7.824	0.637	Homogeneous

E. Test between Two Subjects

Based on Table 13, testing criteria is a form of decision making in accepting or rejecting the null hypothesis (Ho) by comparing the α value of the distribution table (critical value) with the statistical test value, according to the form of testing. Based on data processing, it can be seen that all the tests in this study were accepted.

Table 13. Two subject test result

Group	N	Pre-test		Post-test		Acquire	
		Means	stdev	Means	stdev	Means	stdev
Control (PSS)	50	42.67	5.8	78.16	7.37	35.49	3.42

Experiment (PSS-SC)	50	48.72	6.47	80.94	7.86	32.22	4.57
Group Control							
Worry	27	48.57	6.47	71.92	6.78	23.35	3.39
Trust	23	47.21	5.78	72.66	6.82	25.45	3.42
Motivation	26	46.89	5.63	78.92	6.92	32.03	4.53
Skills	24	47.34	5.21	76.87	6.72	29.53	3.21
Group Experiments							
Worry	24	44.45	5.62	84.25	7.62	39.80	3.98
Trust	26	45.26	6.24	81.74	7.09	36.48	3.71
Motivation	26	44.29	5.41	83.31	7.54	39.02	4.07
Skills	24	45.89	6.67	84.56	7.72	38.67	3.86

F. Two Way ANOVA Test

Table 14. Two ways ANOVA test results

Dependent Variable: Post Test	**Means**	**F**	**sig.**
Confidence			
Control (PSS)	35.49	5.45	0,000
Experiment (PSS-SC)	32.22		
Psychological Factors			
Worry	23.35	3,276	0.001
Trust	25.45		
Motivation	32.03		
Skills	29.53		
Confidence * Psychological Factors			
PSS* Anxiety	23.35	4.45	0.021
PSS* Trust	25.45		
PSS* Motivation	32.03		
Skills *	29.53		
PSS-SC* Anxiety	39.80		
PSS-SC* Trust	36.48		
PSS-SC Motivation *	39.02		
PSS-SC Skills *	38.67		

* Significant results ($p < 0.05$)

Based on Table 14, the two way ANOVA test is used to test the comparative hypothesis of the average of k samples, if each sample only consists of one category. Meanwhile, two way ANOVA is used to test the comparative hypothesis of the average of k samples when the researcher carries out categorization. Based on the results of data processing, it is known that self-confidence has an F value above 3.15, namely 5.45, so it is significant. Meanwhile, the psychological factor obtained an F value above 3.15, namely 3.276, so it was declared significant. Meanwhile, self-confidence and psychological factors are declared significant because the F value is above 3.15, namely 4.45.

V. Discussion

A. The Influence of SFL-Apps on Public Speaking Skills

Based on the results of research that has been conducted on students at Diponegoro High School in Tumpang District, it can be seen that students who use SFL-Apps experience significant improvement in their public speaking skills. Previous research by Sánchez *et al*. [57] which also applied self-regulation and self-assessment facilitated by a medium resulted in a significant improvement in students' speaking skills, as shown by the positive effect size and global speaking skills improvement. According to social learning theory, one can learn through observation and through the behaviour of others. In the context of public speaking, SFL-Apps provides sample speeches through a video and allows students to practice speaking in front of a virtual audience. This can help students to learn effective public speaking techniques and strategies.

In addition, the app provides real-time constructive feedback, which helps students understand their mistakes and provides guidance for improvement. This feedback covers various aspects of public speaking skills, such as tone of voice, body language, clarity of delivery, and argument structure. By receiving specific and targeted feedback, students can focus on specific areas that need improvement, making the learning process more effective and efficient [58]. SFL-Apps also allow students to record and review their own performances, providing opportunities for critical self-reflection. Through consistent practice and ongoing evaluation, students can identify their weaknesses and work to improve certain aspects of their speaking skills [59]. Thus, they can see their progress over time, which can increase motivation and commitment to continue practising.

SFL-Apps provides a variety of learning materials and public speaking techniques, such as how to organise speech content, audience engagement techniques, and strategies for dealing with questions or interruptions. These materials are designed to enrich students' knowledge of public speaking and give them the tools necessary to become effective speakers. By using this app, students not only learn to speak better, but also understand the theories and principles behind successful public speaking. With all the features and support offered by SFL-Apps, students can develop their public speaking skills thoroughly. The end result is increased confidence and better public speaking ability, which is not only beneficial in an academic context but also in their daily lives and future careers.

B. The Influence of SFL-Apps on Self Confidence

In addition to public speaking skills, students who use SFL-Apps also show a significant increase in self-confidence. This finding is in line with Lutviana and Mafulah [60] who said that social media platforms have played an important role in increasing students' self-confidence through collaborative learning and instant feedback mechanisms. Based on the Self-Efficacy theory developed by Albert Bandura, it is said that a person's confidence in his own ability to complete tasks effectively is influenced by motivation in facing a challenge. SFL-Apps integration can build a solid foundation in developing student self-confidence, providing additional encouragement for academic achievement and a more positive learning experience.

This improvement is largely due to the psycho-emotional factors reinforced by the app. SFL-Apps provide emotional support through motivational messages and consistent positive reinforcement. These messages are designed to inspire and motivate students, encouraging them to continue practising and improving their speaking skills [61]. As a result, students felt a positive impact on their self-confidence after receiving constructive feedback. The emotional support

provided by SFL-Apps plays an important role in building students' confidence. The app provides constant encouragement, helping students overcome the fear and anxiety they may feel when speaking in public [62]. The motivational messages that the app delivers encourage students to believe in their own abilities and provide confidence that they can succeed [63]. With each positive message, students increasingly feel that they are up to the challenge of speaking in front of an audience. This creates a positive cycle where the more they practice and receive positive feedback, the more confident they become.

The positive reinforcement provided by SFL-Apps also helps students to see their progress in concrete terms. The app provides specific feedback on aspects of speaking they did well, as well as areas that need improvement. Students can see their abilities improve over time, which provides a significant boost to their self-confidence. The ability to monitor and evaluate their own progress allows students to feel more in control and confident in their learning process [64]. This positive experience increases students' internal motivation to continue learning and developing. Additionally, SFL-Apps create a supportive and inclusive learning environment, where students feel safe to try and make mistakes. This app encourages students not to be afraid of failure, but rather to see every mistake as an opportunity to learn and grow. With this approach, students become braver to speak in public without feeling too pressured by the possibility of mistakes [65]. This supportive environment is essential for building self-confidence, as students feel that they are supported at every step of their learning journey. Ultimately, they can develop strong and sustainable self-confidence.

Thus, the increased confidence experienced by students using the SFL-Apps was the result of a combination of emotional support, positive feedback and a supportive learning environment. These factors worked together to help students feel more confident in their abilities and more motivated to continue practising. This success demonstrates the importance of a holistic approach to skill development, where psycho-emotional aspects receive as much attention as technical ones. In this way, SFL-Apps not only helps students improve their speaking skills, but also builds a strong foundation of confidence that will benefit them in various aspects of life.

C. Interaction between SFL-Apps Use and Psycho-Emotional Factors

Based on the research results, it shows that there is a significant interaction between the use of SFL-Apps and psycho-emotional factors on increasing public speaking skills and self-confidence. These findings indicate that technology, especially the SFL-Apps application, has great potential in improving students' skills. However, its effectiveness is highly dependent on the psycho-emotional state of the student. Flow theory emphasizes that the most effective learning occurs when individuals are actively involved in the learning process. SFL-Apps can facilitate active learning by providing various public speaking activities and exercises. Students with higher levels of psycho-emotional factors showed more significant improvements in their skills and confidence when using the app [66]. This shows that psycho-emotional factors, such as emotional support, motivation, and psychological comfort, play an important role in technology-based learning. Previous findings by [67] explains that emotional intelligence and teaching media play an important role in improving speaking skills.

In addition, the results of this research underline the importance of a holistic approach in education that does not only focus on providing tools and technology, but also pays attention to students' emotional and psychological aspects. Students with better psycho-emotional support tend to be more open to the use of new technology and are able to utilize applications such as SFL-Apps more effectively. This is because they have higher self-confidence and fewer emotional obstacles that interfere with the learning process [68]. And the integration of psycho-emotional support in technology-based learning programs can improve learning outcomes, so it is important for educators to create a learning environment that supports students' emotional well-being [69].

This research also shows that the interaction between technology and psycho-emotional factors can be used as a strategy to improve specific skills such as public speaking. Reyes *et al*. [70] explain that students with better psycho-emotional conditions tend to show more significant improvements, educators can design programs that provide emotional support before and during the use of learning applications. This could be counseling sessions, personal development training, or activities that increase students' self-confidence. In this way, the use of technology not only becomes a learning tool, but also becomes part of a more comprehensive approach to developing students' public speaking skills [71]. The results of this study imply that there is a need to regularly assess students' psycho-emotional states to ensure that they receive the support they need. Educators can use assessment or observation tools to identify students who may need additional help. Thus, appropriate interventions can be provided to help students overcome the emotional barriers they may face [72]. This will allow them to focus more on learning and make better use of technology. Ultimately, this comprehensive approach will help create a more inclusive and effective learning environment.

This research shows that technology and students' psycho-emotional state support each other in learning, especially in the development of public speaking skills through applications such as SFL-Apps. Although effective in providing positive feedback and emotional support, barriers still arise, such as limited access to technology due to unsupportive devices or unstable internet connections. In addition, social anxiety and low self-confidence make some students feel uncomfortable speaking on camera or practicing independently, requiring additional assistance such as counseling. Therefore, educators and schools need to create a holistic approach by providing adequate emotional support, ensuring students' psychological well-being, and creating a conducive learning environment so that students can overcome barriers, learn confidently, and develop useful skills for the future.

VI. CONCLUSION

Based on the results of the research conducted, it can be

concluded that the use of SFL-Apps significantly improves students' public speaking skills and self-confidence. SFL-Apps provides a variety of features that support learning, including sample speech videos, real-time feedback, and consistent emotional support, which effectively help students improve their speaking techniques and build self-confidence. Consistent psycho-emotional support helps students improve their speaking techniques and build confidence, and the interaction between technology and psycho-emotional factors, such as motivation and psychological support, plays an important role in learning effectiveness. In addition, this study shows that a holistic approach that includes emotional support and technology can provide more optimal and sustainable learning outcomes.

This study recommends using SFL-Apps as an additional learning tool in the curriculum to develop students' communication skills and self-confidence. However, this study has some limitations that need to be noted. The study was conducted in one school so the results may not be generalizable to a wider educational context. The duration of the intervention using SFL-Apps was relatively short, so it is not possible to explain the long-term impact of its use on students' public speaking skills and self-confidence. In addition, this study has not elaborated in depth on other psychological factors, such as intrinsic motivation, which may also influence the results. For future research, it is recommended to explore more deeply the interaction in other psychological factors such as intrinsic motivation in supporting the improvement of public speaking skills and self-confidence. In addition, expanding the scope of participants and extending the duration of the study will provide a more comprehensive understanding of the effectiveness of SFL-Apps.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Asmayani conducted research. Loso Judijanto conducted the research. Virginia Rosa da Silva and Dwi Yani focused on data collection and data interpretation. Andi Subhan Amir and Aidillah Suja proofread and finalized the article. All authors have approved the final version.

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