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Web-based language learning and speaking anxiety

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ABSTRACT

Foreign Language Speaking Anxiety (FLSA) is known to negatively affect the performance of foreign language learners. Among the four language skills, speaking is the most anxiety-provoking skill. We investigated the presence of FLSA in Indonesian vocational high school students and we tested whether web-based language learning might help to reduce speaking anxiety, in particular when the facility in question is equipped with Automatic Speech Recognition (ASR). A mixed methods research was employed to investigate FLSA in 573 vocational high school students. A subset of them ($n = 167$) was selected to participate in two ASR-based web-experiments using www.iloveindonesia.my.id and NovoLearning. We additionally interviewed 11 of the students who participated in these web-experiments and five English teachers. The results showed that students indicated a moderate-to-serious level of FLSA, that they evaluated the learning websites positively, and believed that web-based language learning could alleviate their speaking anxiety. The interviews revealed that students felt less anxious when speaking in front of the ASR-based websites compared to speaking to peers or people. In order to evaluate the real effectiveness of ASR-based learning websites, future studies should investigate actual improvement of learners' speaking skills over a longer period of time.

KEYWORDS

Automatic speech recognition; foreign language speaking anxiety; web-based language learning

Introduction

Foreign Language Speaking Anxiety (FLSA) is a multifaceted psychological phenomenon that many learners experience when learning a Foreign Language (FL). This phenomenon had been shown to affect

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language learning and to be a negative predictor of language achievement (Horwitz, Horwitz, & Cope, 1986; Teimouri, Goetze, & Plonsky, 2019). High levels of FLSA can hinder learners from speaking the target language properly and correctly. Horwitz et al. (1986) and Price (1991) argued that speaking, among other language skills, is the most anxiety provoking factor. Abrar et al. (2018) and Mukminin et al. (2015) concluded that this form of anxiety affects Indonesian EFL learners in oral communication and/or in-class speaking performances. This observation is in line with data attesting generally low levels of English proficiency in Indonesia (EF English Proficiency Index, Education First, 2018). Reducing FLSA is one of the ways to help increase English proficiency in Indonesia, but unfortunately, there have not been many studies on how to cope with this phenomenon effectively, especially not for EFL learners at secondary level education in Indonesia.

Modern approaches to language learning (including EFL learning) have begun utilizing technology to create successful learning events that could reduce FLSA, for instance by exploiting the affordances of Computer-Assisted Language Learning (CALL) (Bibauw, Fran¸Cois, & Desmet, 2015; Hirata, 2018; Peeters, 2018; Peeters & Ludwig, 2017). The rapidly growing interest in CALL in recent years shows that CALL is considered to be an effective and promising approach in today's and tomorrow's language teaching and learning. Considering the potential of CALL, many educational institutions have been eager to blend their traditional language courses into CALL to properly accommodate the needs of today's learners.

Additionally, CALL technologies for speaking have been recently developed with the aim of honing EFL learners' speaking skills. Ataiefar and Sadighi (2017) believe that learners' oral communication skills can be improved by reducing their anxiety levels through technology such as *Voice Thread* which facilitates speaking practice. Furthermore, some studies such as Chiu, Liou, and Yeh (2007), De Vries, Cucchiarini, Bodnar, Strik, and van Hout (2015), and Daniels and Iwago (2017) showed that CALL technologies equipped with Automatic Speech Recognition (ASR) help increase learners' speaking skills. Technology in the form of learning websites also offers many benefits that can be used by learners in order to improve their English language skills (Hwang et al., 2016). However, not many learning websites offer speaking practice nor are they developed based on ASR which ideally should be utilized to allow learners to practice speaking interactively. In addition, there has been little research on the benefits of ASR-based English learning websites and their potential in lowering the level of FLSA.

Considering (1) the position of English as one of the compulsory subjects in the secondary school curriculum in Indonesia, (2) the increasingly

high demand for English speaking skills in the current global era, especially of vocational high school graduates in Indonesia, and (3) the importance of research on EFL learning technology in coping with FLSA, we decided to investigate the potential of web-based English language learning to reduce speaking anxiety in secondary school students in Indonesia.

Research questions

This study seeks to answer the following research questions:

1. What level of Foreign Language Speaking Anxiety (FLSA) do vocational high school students in Indonesia experience in the traditional classroom?
2. What is the students' evaluation of their experience in using two speech-enabled websites (www.iloveindonesia.my.id. and NovoLearning) to practice their speaking?
3. What is the effect of web-based language learning on students' FLSA?

State of the art

The position and challenge of English as a foreign language (EFL) in Indonesia

Indonesia is one of the largest archipelagic countries in the world which is well-known for its huge population and cultural and linguistic diversity. According to the Indonesia 2010 Census by Central Bureau of Statistics, the country has more than 237 million inhabitants (Central Bureau of Statistics (BPS) the Republic of Indonesia, 2018). Moreover, with its 1.128 ethnic groups, many different languages are used to communicate in the local communities. A total of 719 different languages were identified, of which 12 are extinct now (Eberhard, Simons, & Fennig, 2019).

The Law of the Republic of Indonesia (Number 20 Year 2003 concerning Article 37 Paragraph 1 on the National Education System) recognizes English as the most important international language in global relations (Department of National Education, 2003), and the curriculum for secondary education must provide an advanced learning skill program for English (Regional Representative Council of the Republic of Indonesia, 2013).

English is now one of the three core academic areas, but students are not always provided with adequate learning facilities to enhance English language skills (OECD/Asian Development Bank, 2015). This circumstance may result in vocational high school graduates' lack of adequate English language skills.

Foreign language speaking anxiety

Anxiety is a psychological condition induced by an arousal of the autonomic nervous system, and this state is unmistakably indicated by nervousness, tension, worry, and/or fear of doing particular things (Horwitz et al., 1986; Scovel, 1991). Horwitz et al. (1986) and Horwitz (2017) argued for the existence of a specific anxiety called Foreign Language Anxiety (FLA) or Foreign Language Classroom Anxiety (FLCA). Research results confirm that this specific anxiety impairs learners' language achievement (MacIntyre, 2017; Teimouri et al., 2019; Yan & Horwitz, 2008). FLCA is usually measured using a questionnaire called Foreign Language Classroom Anxiety Scale (FLCAS), which was first developed by Horwitz et al. (1986), and has been widely used by many scholars since then. Furthermore, scholars have also been interested in modifying the questionnaire in order to specifically examine different language skills with regard to anxiety, such as FL listening anxiety, FL speaking anxiety, FL reading anxiety, and FL writing anxiety.

In FL learning, this form of anxiety mostly appears when it comes to speaking. Speaking anxiety in FL learners commonly occurs when learners are tasked to do activities in front of the class or during on-the-spot or impromptu performance (Price, 1991). Furthermore, Price (1991) and MacIntyre (2017) explained that two of the major reasons why learners experience speaking anxiety are their concern about producing pronunciation errors and their fear of potential humiliation by their peers because of such errors.

In Indonesia, some studies have investigated learners' anxiety in EFL speaking classes. Padmadewi (1998) discovered that many students feel nervous during speaking activities, and this condition is caused by pressure from the speaking tasks that urge them to present individually and spontaneously within an allocated time. Tutyandari (2005) further explained that some students are likely to keep silent due to lack of confidence, limited knowledge on the topics given, as well as lack of an obvious teacher-student relationship. As today's learners are very familiar with technology and the internet, Abrar et al. (2018) urged the support of media and/or technology in facilitating Indonesian students in EFL learning thus fostering their speaking skills.

Web-based language learning and automatic speech recognition

Recently, CALL has gained popularity as most of today's learners, Generation Z, iGeneration or Net Generation, "… [w]ere born in the early 2000s or later and therefore do not know anything other than life with the full spread of the internet and the gadgets and technologies that support its use" (González-Lloret & Ortega, 2014, 2).

Web-based Language Learning (WBLL) is now gaining attention within CALL (Blake, 2011), websites can be useful for FL learning (Son, 2007, 2008; Taylor & Gitsaki, 2003) and learners have positive perceptions of e-learning websites (Ngampornchai & Adams, 2016; Tan, 2013). Pino (2008) also claimed that instructions on websites for FL learning can alleviate learners' anxiety level and thus enable them to accomplish the given task at their own pace.

Additionally, ASR technology offers many benefits for language learners. De Vries et al. (2015) found that technology equipped with ASR successfully provides speaking practice for learners. The learners improved their proficiency on the target feature after the ASR-based treatment. Daniels and Iwago (2017) compared two cloud-based speech recognition engines, Apple's Siri and Google Speech Recognition (GSR), and found that GSR was more accurate at transcribing L2 learners' speech and was easier to use than Siri. Chiu et al. (2007) explained that web-based oral activities enhanced by ASR are helpful for EFL college learners, and that learners are positively oriented towards instruction supported with speech recognition. Hence, ASR-based websites may afford considerable benefits as a language learning tool for learners.

Moreover, ASR-based language learning activities seem to be able to facilitate (a) learner autonomy and (b) learning enjoyment, which, in turn, may help reduce language anxiety (Dewaele, 2017; Horwitz, 2017). This calls for substantial efforts to integrate ASR-based activities into the learning process.

Methodology

We employed a mixed methods research, starting from administering the pre-questionnaire on FLSA to conducting in-depth interviews with a selection of students and teachers. The data we gained from the research are a combination of quantitative and qualitative data, that we analyzed using SPSS and narrative inquiry.

The general rationale behind the choice for a mixed methods research are: (1) ensuring that all findings are comprehensive and well depicted (O'Cathain, Murphy, & Nicholl, 2007), and (2) ensuring that the voices of representative students in question (anxious learners versus non-anxious learners) are equally heard.

Procedure and participants

To explain how the research was conducted, how many participants took part in each part of the study, and how they were selected, Table 1 provides pertinent information.

Table 1. The order of data acquisition and the participants and their selection.

Order	Steps and Instruments	Participants	How the participants were selected
1	Administering the pre-questionnaire on Foreign Language Speaking Anxiety (FLSA)	573 students from 18 Tenth Grade classes (539 boys and 34 girls aged between 14 and 18 years); there are far more boys than girls in the study because the study programs that the school provides are mostly chosen by boys.	All students from tenth grade were included.
2	Conducting the two web experiments[a]	167 students from six classes; the details are as follows: Mechanical Engineering 1 (29 students), Mechanical Engineering 2 (34 students), Nautical Studies 1 (20 students), Nautical Studies 2 (20 students), Mechatronics Engineering 1 (32 students), and Mechatronics Engineering 2 (32 students).	The participants were selected based on the following considerations: (1) the authors selected the first two classes from three representative departments, e.g. Mechanical Engineering Class 1 and 2 (of six classes), (2) the possible schedule from each class and teachers' recommendations, and (3) the distribution of gender and the English teachers (the selected classes were taught by three different teachers).
3	Administering the post-questionnaire on FLSA		
4	Administering the UEQ (User Experience Questionnaire)		
5	Conducting in-depth interviews with a selection of teachers and students	Five English teachers (three men and two women) and 11 students.	The 11 students were selected based on: (1) their level of foreign language classroom (speaking) anxiety and (2) the author's note-taking from the in-class observations during the web-experiments. Prior to the interviews, they were all asked whether they wanted to participate voluntarily. All the teachers (five out of six) were included, except for one English teacher who was very busy due to his duties as vice principal.

[a]The participants were divided over two conditions. The three classes in the first condition (Mechanical Engineering 1, Nautical Studies 2, and Mechatronics Engineering (1) were instructed to try www.iloveindonesia.my.id. first and NovoLearning afterwards, whilst the three classes in the second condition (Mechanical Engineering 2, Nautical Studies 1, and Mechatronics Engineering (2) performed in the opposite order, NovoLearning first and www.iloveindonesia.my.id. afterwards. The experiments were held in two sessions conducted within a period of one to three weeks, each session lasting 90 min.

Instrument

Three instruments were used in this study, namely (1) the (pre- and post-) questionnaire on FLSA, (2) the User Experience Questionnaire or UEQ, and (3) the interview guidelines, including the list of questions and the clues/prompts.

1. The questionnaire on Foreign Language Classroom (Speaking) Anxiety from Horwitz et al. (1986) and modified by Öztürk and Gürbüz (2014) was employed. There were 33 questions with a five-point scale (from *strongly agree* to *strongly disagree*) on Foreign Language Classroom Anxiety (FLCA); 18 of these questions, based on Öztürk and Gürbüz (2014), focused on FLSA. Although this study focused on 18 question items on FLSA, the 15 remaining items were used to investigate other aspects of FLCA. The questionnaire was translated into *Bahasa Indonesia* by the first author, and back-translated by a proficient bilingual Indonesian-English speaker. Shortly after, it was re-checked with the original version for verification before it was administered to the participants. The FLSA questionnaire was preceded by questions to get information on (a) the background of the participants, (b) general FL learning experience, (c) general FL experience with computers and frequency of online activity, (d) general technology-based activities or experiences, and (e) availability of technology or supporting environment to access online materials.
2. The UEQ consisting of 26 items with a seven-point scale was developed by Schrepp (2018, newest version) and is currently available in more than 20 languages, including *Bahasa Indonesia*. The questionnaire provides "… [p]airs of contrasting attributes that may apply to the product" (Schrepp, 2018). For example, between attributes of *interesting* and *not interesting*, the participants were asked to select from one to seven. The scores for each attribute were code-reversed (if applicable) and then were accumulated. Higher total scores represent better or more positive quality of the assessed product. This questionnaire was given to the participants after each session.
3. The interview session was divided into two parts, namely (1) on FLSA, and (2) on students' and teachers' experience in using the learning websites to practice speaking. For the first part, ten key questions for students and six key questions for teachers on FLSA as formulated by Tanveer (2007) were employed. For the second part, the first author asked open-ended questions about web-based language learning in connection with speaking anxiety and triggered discussions about its Strengths, Weaknesses, Opportunities, and Threats (SWOT). The results of the interviews were transcribed and subsequently analyzed in a qualitative way.

Table 2. Features of www.iloveindonesia.my.id and NovoLearning.

Aspect	www.iloveindonesia.my.id	NovoLearning
Web registration and login system		
Email required	-	v
Login (username and password)	v	v
Automatic Speech Recognition		
Native-speaker sample audio	-	v
Web-speech API sample audio	v	-
I-Hear	v	v
I-Pronounce	v	v
I-Speak (part 1)	v	v
I-Speak (part 2)	v	v
Interaction among users		
Oral interaction among users	-	-
Text-based interaction among users	v	-
Feedback		
General feedback on 'true/false' response	v	v
Specific feedback on phonetics	-	v
User interface		
Website homepage video	v	-
User profile	v	v
Progress report (display)	-	v
User of the week	v	-
Button to record users' voices	-	v
Button to replay/repeat users' voices	-	v
Web instruction	v	v
Additional features		
Posting texts to users' wall (I-Post)	v	-
Chatting (text-based) to other users (I-Chat)	v	-
Writing a diary (I-Share)	v	-
Tracking system	v	v
Creating tailor-made courses	v	v

Website materials

A website called www.iloveindonesia.my.id was designed by the first author (Bashori, 2018) and established with the help of his colleagues from Orion Technology, Indonesia. The name "*I Love Indonesia*" was given in consideration of the 18 educational values of the nation's culture and characters upheld by the Ministry of Education and Culture since 2010: *nationalism* or *a sense of belonging to Indonesia*.

The examples of speaking tasks in the website were created using Web Speech API by the first author and his partners from Insight Oetama Technology. There were four main exercises for the students to perform on the website, namely I-Hear (receptive skill), I-Pronounce (productive skill), I-Speak (part 1 and 2 – productive skill), I-Do (part 1 and 2 – receptive skill), and three supplementary exercises, namely I-Chat (productive skill), I-Post (productive skill), and I-Share (productive skill).

To ensure that the results of the study would not be too dependent on one specific website, a second web-based application program was employed, a product developed by NovoLearning (https://www.novolearning.com/), a spin-off company from the Faculty of Arts at Radboud University Nijmegen, the Netherlands. This product is equipped with Automatic Speech Recognition (ASR) technology developed at

NovoLearning and was selected for the experiment due to its considerable benefits in improving speaking skills (Research Report, NovoLearning, 2019). The intended speaking exercises were designed by the first author with the technical support from NovoLearning staff. The name *I Love Indonesia* used in the previous learning website was also adopted in this exercise, as the first author aimed to create the same speaking exercises, but on two different platforms to observe how the students experience the use of these two web-based programs. Table 2 shows the various features of the two websites.

Results

The results are presented in three separate sections, each one addressing one of the three research questions.

Foreign language speaking anxiety of vocational high school students in Indonesia

Learners' background information

All the participants were Tenth Graders, ranging in age from 14 to 18 years. There were 539 boys (94%) and 34 girls (6%) from seven different majors or study programs from 18 classes or groups. Most participants possessed their own personal email addresses, but some admitted to having forgotten their addresses. Table A1 in the appendix provides detailed information on participants' general FL learning experience, general FL experience with computers and frequency of online activity, general technology-based activities or experiences, and availability of technology or supporting environment to access online materials.

The data in Table A1 show that (1) most of the students had learnt English for approximately 5–10 years, and the majority rated their English skills as *moderate* (score range 6–8); *self-rating of English skills* here means that the students evaluated themselves on how good or bad their English skills were according to the given categories, namely *low* (score range 1–5), *moderate* (6–8), and *high* (9–10), (2) the students rarely used English in their daily lives (not including at school), (3) 'English teachers at school' was the primary factor that reinforced students' interest in learning EFL; one interesting aspect was that almost 20% of the participants felt that being able to speak English was an appealing personal characteristic, (4) many students had experience in learning English using computers and/or by online media, but only a few of them were confident enough to engage in conversation with foreigners, whether in person or online, (5) the majority of students routinely

engaged in online activities, (6) students were very familiar with Google, blog/website, YouTube, and social media, and (7) supporting technology or environment to access online materials was available.

Analyses of the data on background information suggest that (1) although the students had some experience in EFL learning and were supported by technology or environment, they were still not active when it came to speaking (in person or by computer/online) and (2) implementing technology-based language learning, in this case web-based language learning, in Indonesia was feasible in practice.

Measuring foreign language speaking anxiety (pre-questionnaire)

Foreign Language Classroom Anxiety (FLCA) was measured through 33 statements with a five-point Likert scale range presented in the pre-questionnaire. Foreign Language Speaking Anxiety (FLSA), the focus of this study, was tested by 18 items in the FLCA questionnaire. The reliability of these items was high (Cronbach's Alpha value = 0.802). We computed the FLSA of students by averaging over the 18 items involved ($M = 3.30$; $SD = 0.413$) – a higher (means) score indicates more anxiety. This result shows that most of the participants had a relatively high FLSA. Most mean scores are above 3.00 and extreme scores can be found more frequently between 4.00 and 5.00. The average of 3.30 is considered *anxious*.

The mean scores of FLSA are higher than the average of the remaining 15 items of the FLCA questionnaire (mean score 2.99). The difference is statistically significant (F (1, 572) = 470.07, $p < 0.001$, $\eta p^2 = 0.451$). FLSA is higher than the combination of other forms of FLCA anxiety, e.g., test anxiety.

The three most anxiety-provoking (classroom) situations turned out to be: (1) when the students did not understand what the teacher was saying in English (item 4 with mean score at 3.64), (2) when the students did not understand what the teacher was correcting (item 8; 3.52), and (3) when the English teacher asked questions which the students had not prepared in advance (item 18; 3.65). These high outcomes show the relevance of *communication apprehension*. Horwitz et al. (1986) defined communication apprehension as "… [a] type of shyness characterized by fear of or anxiety about communication with people (p. 127)".

Interviews on foreign language speaking anxiety with students and teachers

The interviews revealed important information on three major aspects, namely (1) how Foreign Language Speaking Anxiety (FLSA) affects students, (2) what kind of activities are anxiety-provoking for the students,

and (3) how the students should cope with FLSA. A selection of students' responses plainly illustrates their speaking anxiety.

> *"I usually produce cold sweats while speaking English.*
>
> *English pronunciation is difficult."* (Participant 14646)
>
> *"I feel nervous and stammer.*
>
> *Speaking English in front of many people makes me anxious."* (Participant 14804)
>
> *"My heart is a little bit more palpitating.*
>
> *I want to finish speaking quickly."* (Participant 15148)
>
> *"I feel anxious because I am afraid of making mistakes.*
>
> *My friends laugh at me when I make mistakes."* (Participant 14639)
>
> *"Since SMK (vocational high school), English has been quite troublesome.*
>
> *Evaluation makes me panicked."* (Participant 14847)
>
> *"What makes students dislike school subjects is not the school subjects themselves, but the teachers.*
>
> *My friend told me that he was teased by his friends about having* Javanese tongue*, who couldn't speak English when asked to."* (Participant 14843)

All the interviewed students reported that they experienced psychophysiological symptoms generally associated with anxiety, such as perspiring, stammering, nervousness, trembling, and many others. Students also said that speaking activities in almost all kinds of forms were anxiety-provoking as they required complex skills, such as using proper vocabulary, pronunciation, and grammar, but also being clear and expressive, and showing confidence. Furthermore, students expressed that learners of English should maintain a strong motivation to learn the language, so that whenever they feel anxious and encounter difficulties, they will never give up and continue learning without feeling burdened or pressured.

All English teachers reported that FLSA had a negative impact on students' speaking performance. Teachers said that students performed poorly when they felt anxious as stated by Teacher S: *"The more anxious students are, the poorer their speaking performance will be."* While Teacher E mentioned some main factors that triggered students' FLSA as she said: *"Lack of vocabulary, lack of confidence, and afraid of being laughed at are the major factors that cause students' anxiety while speaking English."* This might result in low or unsatisfactory scores. In order to be able to reduce FLSA, teachers suggested that they should create fun learning activities and provide a supportive environment for students. Teachers are further expected to be good role models or persons who show positive attitudes or personality traits which allow students to feel

more comfortable. The two tables in Appendix B provide a recap of the interviews on FLSA.

Explanatory factors of foreign language speaking anxiety

We investigated the relationship between FLSA and seven background variables or explanatory factors: age, duration of English learning, self-rating of English skills, frequency of English use in daily life (not including at school), gender, major or study program, and frequency of online activities. Only self-rating of English skills and frequency of English use in daily life appeared to be significantly related with FLSA.

Self-rating of English skills here means that the students evaluated themselves on how good or bad their English skills were according to the given categories, namely *low* (score range 1–5), *moderate* (6–8), and *high* (9–10). The FLSA mean scores decrease from 3.44 (SD = .40), to 3.29 (.39), and 2.77 (.56). The ANOVA gives a significant effect between the three groups (F (2, 570) = 18.89, $p < 0.001$, ηp^2 = .062). Posthoc analyses (Tukey HSD) return significant differences between the *low* and *high* groups, and between the *moderate* and *high* groups.

Frequency of English use in daily life refers to how often the students use English for daily communication, not including at school, as indicated on a four-point scale (*never*, *seldom* (less than three days in a week), *often* (more than three days in a week), and *every day*). The FLSA mean scores decrease from 3.39 (SD = .39), to 3.30 (.41), 3.16 (.41), and 3.13 (.41). The ANOVA gives a significant effect between the four groups (F (3, 569) = 6.80, $p < 0.001$, ηp^2 = .035). Posthoc analyses (Tukey HSD) return significant difference between the *often* and *never* groups. The *seldom* and *every day* groups did not differ significantly from any of the other groups.

The effects of web-based language learning on learners' foreign language speaking anxiety

Measuring foreign language speaking anxiety (post-questionnaire)

18 question items were analyzed to investigate whether or not the web-experiments affected speaking anxiety in the participants. Internal consistency measured through Cronbach's Alpha showed a value of 0.82, which was higher than that in the pre-questionnaire. Next, the overall mean score of the post-questionnaire (3.24) was found to be slightly lower than that in the pre-questionnaire (3.27). A bar chart below illustrates how both experimental groups scored FLSA before and after using the websites. Since both groups were asked to try two websites in a

planned order, however, their FLSA was only tested after they experienced using one website (Group A used ILI; Group B used NOVO).

To investigate the difference between the results of pre and post questionnaires on FLSA, the Paired Samples t-test was used. There was no significant difference in the learners' FLSA scores before using the websites ($M = 3.27$, $SD = .409$) and after using the websites ($M = 3.24$, $SD = .410$); ($t(166) = 1.21$; $p > .05$). The absence of an effect applied to both experimental groups.

Interviews on the effects of web-based language learning on learners' foreign language speaking anxiety

The interviews conducted with 11 students who participated in both web-experiments revealed that all the participants felt less anxious when speaking to the machines (computers or websites) compared to when speaking to peers or people as stated by Participant 14677: "*Speaking to people makes me more anxious. I feel less shy speaking to the computer (website).*"

When speaking to peers or people (in English), mispronunciation of words may occur and may cause the interlocutor to misunderstand what is being said. Moreover, the language errors produced by the speaker may result in derision or any other form of humiliation by the interlocutor as explained by several participants (14804, 14806, 15148, and 15165):

> "*If words are mispronounced, the other person will not understand.*"
>
> "*I feel anxious when speaking to people because they might laugh at my mistakes. But if I speak to the machine (computer), it can correct the mistakes.*"
>
> "*The machine (websites or computers) neither bullies, nor laughs at (the mistakes).*"

A number of the responses which had been translated and rephrased from *Bahasa Indonesia* are presented in Appendix C. Overall, based on the gathered responses, it seems that the students generally felt that web-based language learning could make them less anxious in speaking (English).

Moreover, to obtain other perspectives, five English teachers were also interviewed with regards to web-based language learning and speaking anxiety. All of them agreed that the learning websites had many affordances, including playing a role in reducing learners' speaking anxiety as stated by Teacher S:

> "*Web-based language learning (ILI and NOVO) can be a solution to overcome anxiety, but (it) depends on the teacher, how (he/she) delivers the (learning) materials and techniques.*"

Teacher E further emphasized that:

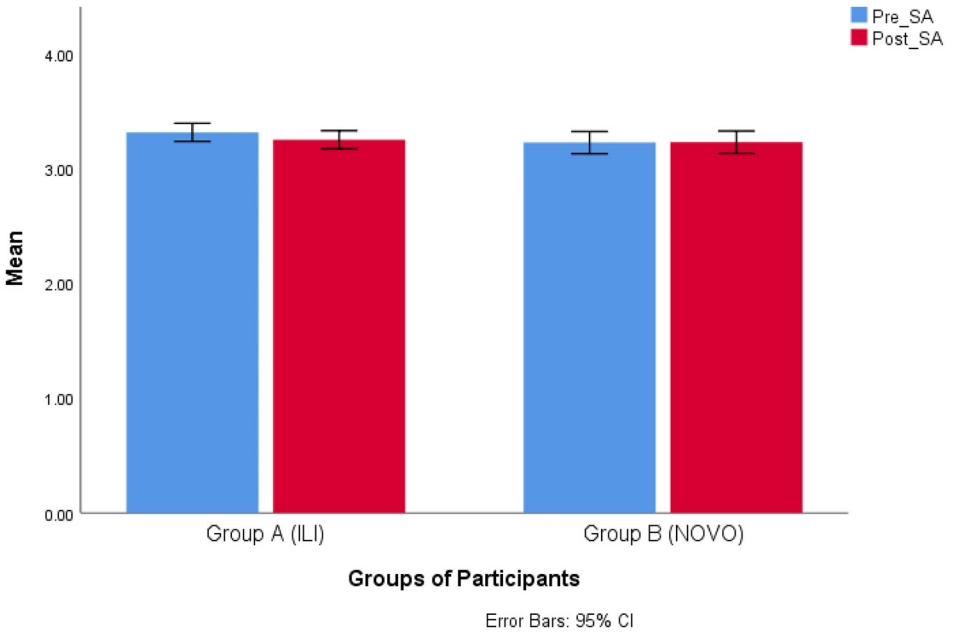


Figure 1. Bar chart of the Pre and Post FLSA Scores and Order of Web-experiments. (Group A - ILI first and Group B - NOVO first).

> *"For students, speaking English face-to-face with peers will automatically make them feel more anxious, whereas this sort of application will not require face-to-face personal interaction and so they will have more confidence."*

However, the teachers also provided some other insights. Teacher S stated that the machine (computers or websites) could also make students anxious and apprehensive about evaluation, for example, when students had already spoken correctly, but the websites identified errors or considered the utterance wrong or false. Teacher J mentioned that making the students familiar with the system was important. It is assumed that people usually get nervous when faced with something new. He said: *"Anxiety is still there, but in the beginning. If the students are used to it, it won't be a problem and would be good for the students."* For the complete report, see Appendix C.

Learners' evaluation of learning websites to practice speaking

The user experience questionnaire

Figures 2–5 display the examples of typical web-based activities to be performed by the students using www.iloveindonesia.my.id (ILI) and NovoLearning (NOVO). The three main activities are equipped with ASR, namely *i-Pronounce*, *i-Speak* (1 and 2).

Students evaluated both websites by filling in the UEQ questionnaire. The reliability of this evaluation scale turned out to be high (Cronbach's

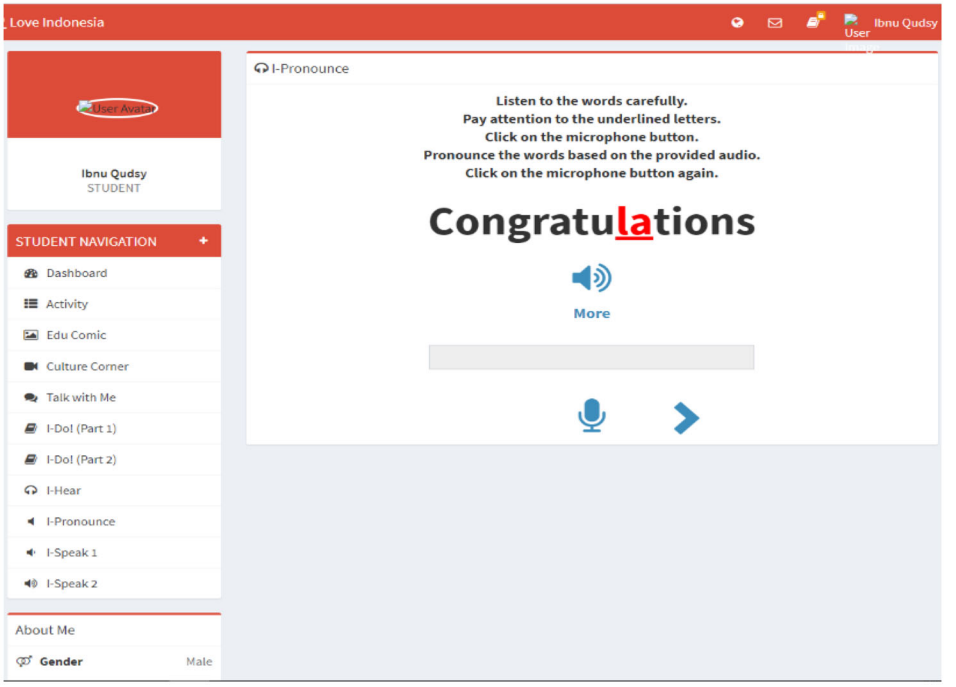


Figure 2. Example of *i-Pronounce* in www.iloveindonesia.my.id.

Alpha for the 26 six evaluative adjectives was .918). The mean scores of all items were all positive. Mean scores varied between 4.40 and 6.03 for ILI, and between 4.83 and 6.32 for NOVO, indicating that the students were positive about the two websites.

For ILI, the three highest scoring items are: (1) *inferior/valuable* (with a mean score of 6.03), (2) *bad/good* (5.93), and (3) *demotivating/motivating* (5.92). For NOVO, the three highest scoring items are: (1) *bad/good* (with a mean score of 6.32), (2) *inferior/valuable* (6.26), and (3) *demotivating/motivating* (6.16). The high scores for *demotivating/motivating* for both websites are encouraging in relation to FLSA. With a maximum scale of seven, both learning websites obtained positive evaluative scores, with the mean scores even above five: ILI (5.47) and NOVO (5.77).

The mean scores in the four conditions are given in Figure 6, with their error bars.

To investigate the difference between the results of UEQ on ILI and NOVO and the order of web-experiments, Repeated Measures ANOVA was used to test both effects. The order variable distinguishes whether the web-experiment in question was administered first or second. All three possible effects turned out to be significant in the ANOVA. There was a significant main effect of the website ($F(1, 165) = 7.495$, $p = .000$, $\eta p^2 = .165$) and a significant effect of the order of web-experiments on

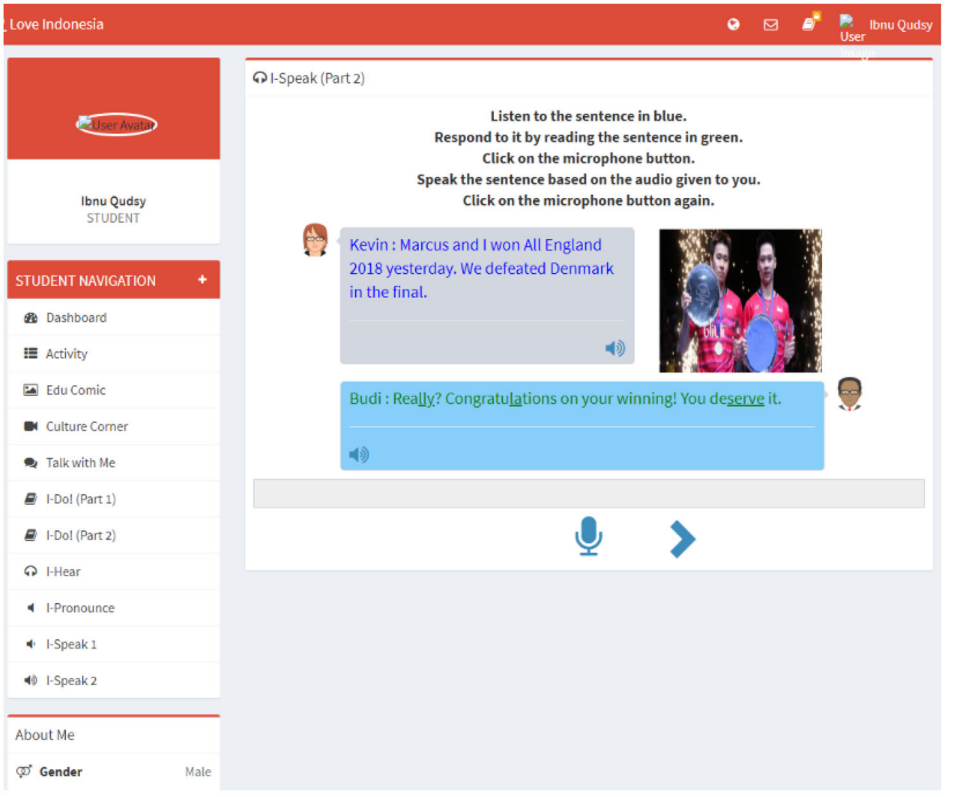


Figure 3. Example of *i-Speak* in www.iloveindonesia.my.id.

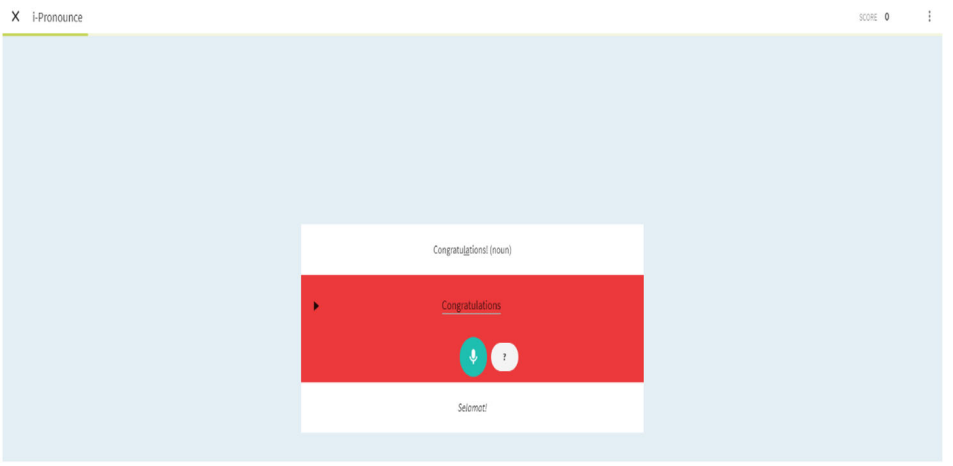


Figure 4. Example of *i-Pronounce* in NovoLearning.

the UEQ scores (F (1, 165) = 8.49, p = .004, ηp^2 = .049). In addition, their interaction was significant (F(1, 165) = 6.599, p = .011, ηp^2 = .038). This interaction effect means that the participants who had ILI as their first web-experiment scored higher on their second web-experiment

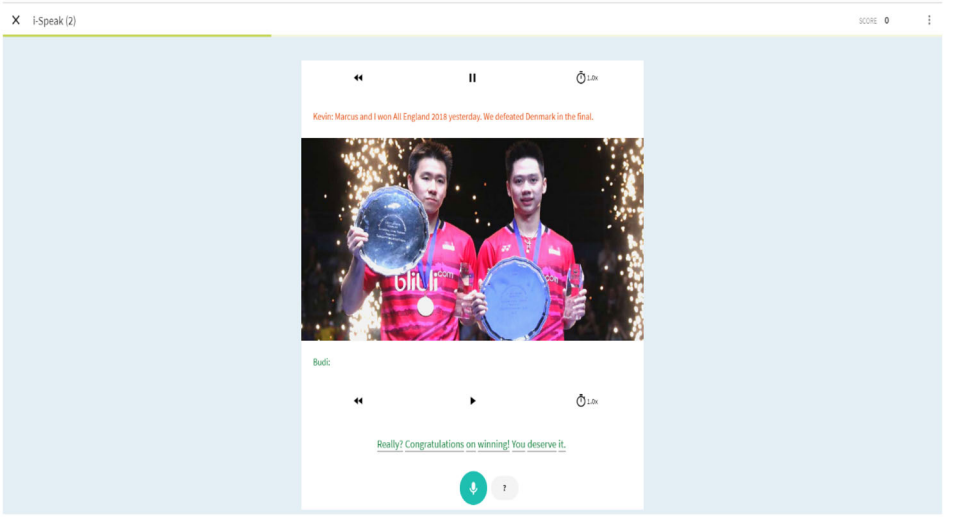


Figure 5. Example of *i-Speak* in NovoLearning.

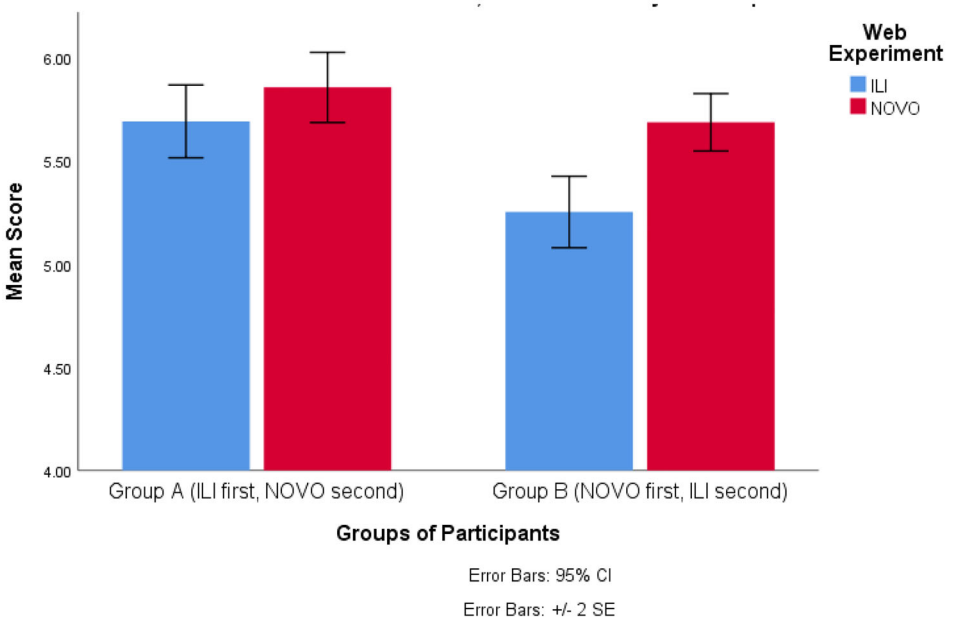


Figure 6. Bar chart of the mean scores on User Experience Questionnaire (UEQ) and the two orders of the web-experiments.

(NOVO), whereas the participants who had NOVO as their first web-experiment scored lower on their second web-experiment (ILI). This interaction effect is visible in Figure 6. This figure also makes clear that there was no difference in UE at the first web-experiment between ILI and NOVO. Evaluating ILI after having done NOVO first (5.69) had a negative effect for ILI (5.25), although ILI was still evaluated positively.

Interviews on the evaluation of web-based language learning

To obtain more information on the students' evaluation of web-based language learning, the students (and the teachers) were interviewed. The questions were open-ended and included the following aspects: (1) strengths and weaknesses of the websites, and (2) opportunities and threats in future implementation, including suggestions for improvement.

All the students reported that web-based oral activities enhanced by ASR benefited them, for example, in increasing their vocabulary and improving their pronunciation as stated by Participant 15119:

> *"Speaking to/on the websites benefits me in increasing my vocabulary and improving my pronunciation."*

These activities also provided more time on task (speaking) for the students because speaking activity was limited and only minimal in the classroom setting. Overall, the websites are interesting, fun, understandable, and can support classroom learning activities very well. However, the students pointed out some errors on the website and/or supporting tools, e.g., during login stage in ILI and faulty headphone.

When asked which one of the two speech-enabled websites they liked (and how they experienced using both the websites), eight students preferred NOVO to ILI. One of the students mentioned that: *"NOVO is more interesting and easy to learn."* Another positive aspect of NOVO that another student mentioned was: *"There is a percentage (score) displayed on the website."* While three students chose ILI over NOVO. One of them stated that: *"ILI is more interesting and (the features are) more complex."*

All the English teachers reported that technology-based language learning offered advantages to today's learners. They also mentioned that integrating the web-based programs with the school's learning materials was possible. The programs could help English teachers in giving clearer or more standardized examples (related to speaking skills). However, the teachers pointed out that the programs could only be run in a classroom supported by computers or laptops and internet connection. They also believed that students could feel more pressure if the website contained only practice and more practice (too monotonous). Furthermore, if the teacher did not encourage the students to use the website outside schooltime, the students might not use it, perhaps due to laziness.

The table of SWOT (Strengths, Weaknesses, Opportunities, and Threats) that summarizes the results of the interviews can be found in Appendix D. The results of the interviews show that, despite some weaknesses and threats that may hinder web-based language learning, a lot more strengths and opportunities were indicated by the students and teachers. These strengths and opportunities show that the use of websites

for language learning is feasible especially in the classroom context and can be useful for both students and teachers.

Discussion

This study was aimed at investigating (1) Foreign Language Speaking Anxiety (FLSA) of EFL learners in Indonesia, (2) learners' evaluation of using the learning websites to practice speaking, and (3) the effects of web-based language learning on learners' FLSA. The results of the questionnaire on FLSA administered to 573 high school students show that, on average, they seem to be anxious learners. They become anxious when the learning process focuses more on speaking skills or speaking performance. This result is also supported by the comparison between the mean scores of FLSA and Foreign Language Classroom Anxiety (FLCA). The students apparently have a higher level of FLSA than FLCA, which implies that they feel less anxious when speaking is not the main or central learning activity in the classroom context. This conclusion is confirmed by the information obtained in the interviews. When speaking activities are given or included in the learning process, the students usually feel nervous, perspire, stammer, palpitate, and/or perform unusual body movements, such as head-scratching, leg-shaking, and many others. The results of the questionnaire show that two student variables – their self-ratings of English skills and their frequency of English use in daily life (not including at school) – are significantly related to speaking anxiety. Lower skills and lesser use give a higher level of anxiety. These results are congruent with those of other studies related to FLSA in EFL learners in Indonesia, such as Abrar et al. (2018), Mukminin et al. (2015), Padmadewi (1998), Sirait (2015), and Tutyandari (2005). However, none of these studies specifically discuss the use of technology for EFL learning in Indonesia, especially for speaking practice.

The present study seeks to find a prospective solution for English education in Indonesia in the form of Web-Based Language Learning (WBLL). The benefits of WBLL have been confirmed by some studies such as Ngampornchai and Adams (2016), Pino (2008), Son (2007, 2008), Tan (2013), and Taylor and Gitsaki (2003). However, these studies did not provide much information on the use of Automatic Speech Recognition (ASR) on websites for FL learning. Therefore, an ASR-based website named www.iloveindonesia.my.id (ILI) was designed and developed as part of the experiments conducted at a vocational high school in Indonesia. Another web-based system, NovoLearning (NOVO), was included in the study to ensure that the outcomes would not be website

specific. Both learning websites, ILI and NOVO, contained the same learning topic, namely *congratulating others*, and also offered four main exercises (*I-Hear, I-Pronounce, I-Speak 1,* and *I-Speak 2*), but in different formats. The results show that on average the students evaluated ILI and NOVO very positively. The three most valued qualities of the websites, according to the User Experience Questionnaire administered to 167 participating students in two web-experiments, are that they are *valuable*, *good*, and *motivating*.

To gain more insight into whether the order of web-experiments affected the UEQ scores, the students were divided over two conditions, namely (1) the students who tried out ILI first, then NOVO (or Group A), and (2) the students who experienced NOVO first, then ILI (or Group B). The statistical analyses show that in their first web-experiments (Group A trying out ILI, Group B performing NOVO), on average both groups had the same (rounded) mean score at 5.69, which means that they evaluated both learning websites (ILI and NOVO) positively. However, when they switched to another system (Group A trying out NOVO, Group B performing ILI), the results showed a significant difference. Group A, who first tried out ILI, evaluated NOVO more positively, but Group B, who first performed NOVO, evaluated ILI more negatively, although both mean scores still indicate a positive evaluation. We argued that the reasons for this outcome are the occurrence of technical errors and the difference in user-friendliness of the websites. The students found that, compared with ILI, NOVO showed fewer technical errors and perhaps was more user-friendly or easier to navigate for the students. For example, (1) when using NOVO, the students did not need to register because the usernames and passwords were available or provided by the facilitator. ILI required (manual) registration first by the students in the beginning, which took some time during the web-experiment. In addition, errors occurred in ILI during the log-in process (some users' accounts got switched to other fellow users' accounts) as confirmed by some students, and (2) when responding to speaking tasks on NOVO, the students only had to click the microphone button once and the system would respond immediately. Regarding speaking tasks, ILI required the students to click the microphone button, give the voice response, wait for around three seconds, and then re-click the button. This might have caused confusion and nervousness in the students.

In the interviews with eleven students and five English teachers, all participants stated that they could benefit from the websites in terms of (1) improving speaking skills (pronunciation and vocabulary), (2) reducing speaking anxiety, and (3) enhancing knowledge (culture) about Indonesia. The third point was addressed because the government,

through the Ministry of Education and Culture, urges that learning, including EFL learning, should help students enrich their knowledge with local wisdom or culture, so that their nationalism or a sense of belonging to the nation will continue to grow and be well-instilled. For this reason, the websites are in fact supportive of the government's spirit.

Above all, these interviews revealed that in implementing web-based language learning in Indonesia, at least five points should be taken into consideration, (1) quality of the websites, (2) supporting school's infrastructures or environment (computer availability, internet connection, headphones, etc.), (3) current curriculum or syllabus of English language subject, (4) appropriate learning methods which encompass or blend technology into traditional education, and (5) the role of the teacher as a learning facilitator.

Concerning one of the benefits the websites can offer, –lowering speaking anxiety, the results of pre- and post- questionnaires on FLSA demonstrate that there is no change in the students' speaking anxiety level after using the websites. The difference between the two results was not significant. This might be due to the short duration of the web-experiments, some technical errors on the websites, which appeared during the experiments and an imbalance in participants between boys ($n = 154$) and girls ($n = 13$). The latter might have affected the overall results because some studies argue that girls have more positive attitudes towards technology than boys (Khaddage & Knezek, 2013; Taleb & Sohrabi, 2012), and girls also experience both more positive and more mild negative emotions in the FL classroom (Dewaele, MacIntyre, Boudreau, & Dewaele, 2016).

Although the results of the questionnaires did not show a significant difference, the interview data present a positive perspective. The participants stated that, in terms of speaking practice, the ASR-based websites (ILI and NOVO) are more beneficial and less anxiety-provoking compared to speaking to people, in- or outside the classroom. The teachers explained at the same time that speaking to ASR-based websites may create anxiety instead if (1) the school is not supported by suitable infrastructure or environment, (2) the students are not familiar with the system, and (3) the English teachers do not play their roles well as a learning facilitator. These are issues that should be taken into consideration in future research and applications of ASR-based websites in language learning. These seem to have the potential of effectively helping students reduce their Foreign Language Speaking Anxiety, but further research is required and appropriate measures need be taken to avoid the disadvantages mentioned by the teachers.

Conclusions

This study provides valuable information on learners' Foreign Language Speaking Anxiety (FLSA) in Indonesia and on how two Automatic Speech Recognition (ASR)-based learning websites, www.iloveindonesia.my.id and NovoLearning, were evaluated and had effects on FLSA. On average, learners indicated a moderate-to-serious level of FLSA. Both anxious and non-anxious learners evaluated the learning websites positively and seemed to embrace web-based language learning for their speaking practice. When interviewed, learners also seemed to believe that their speaking anxiety can be reduced by means of language learning websites, although statistical analyses showed that there was no significant difference in level of anxiety before and after learners used the two ASR-based websites.

This web-experiment is the first one in a series of web-experiments that we intend to conduct in Indonesia. In the upcoming web-experiments, we will investigate how ASR-based learning websites may have an impact on (a) the learners' enjoyment in the FL classroom and (b) the improvement in vocabulary knowledge and speaking skills, such as pronunciation. Moreover, further studies on the use of ASR-based learning websites should also include a longer period of time for web-experiments and in-depth evaluation of the websites.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix A

Table A1. Background information of the participants

Variables	Categories	*N*	%
General FL learning experience	Less than 5 years	43	7%
	5–10 years	424	74%
	More than 10 years	106	18.5%
Self-rating of English skills	Low (score range 1–5)	76	13.3%
	Moderate (score range 6–8)	481	83.9%
	High (score range 9–10)	16	2.8%
Frequency of English use[1]	Every day	24	4.2%
	Often (> 3 days a week)	74	12.9%
	Seldom (< 3 days a week)	352	61.4%
	Never	123	21.5%
Students' Encouragers[2]	English teachers at school	325	56.7%
	English offline/online games	237	41.4%
	Social media	170	29.7%
	Parents' support	136	23.7%
	Classmates or peers	116	20.2%
	Wanting to travel abroad	116	20.2%
	English speaking looks cooler[3]	113	19.7%
CALL or OLL[4]	Yes	479	83.6%
	No	94	16.4%
Chatting with foreigners[5]	Yes	127	22.2%
	No	446	77.8%
Frequency of online activity	Every day	341	59.5%
	Often (> 3 times a week)	107	18.7%
	Seldom (< 3 times a week)	102	17.8%
	Never	23	4%
Google, Website, YouTube[6]	Google	562	98.1%
	Blogs/Websites	481	83.9%
	YouTube	542	94.6%
Users of social media[7]	WhatsApp	561	98%
	Facebook	471	82.2%
	Instagram	459	80.1%
	Line	110	19.2%
Supporting technology[8]	Smartphone	554	96.7%
	Computer/laptop[9]	143	24.9%
	Computer/laptop[10]	4	0.7%
	Internet cafés	115	20.1%

[1]frequency of English use in daily life (not including at school).
[2]what/who encourages the students to learn English; for this part, the participants were allowed to choose multiple answers.
[3]being able to speak English looks cooler.
[4]Computer-Assisted Language Learning/Online Language Learning; learning English by computer and/or online
[5]Chatting with foreigners by computer and/or online.
[6]Having accessed Google (as a search engine), blogs/websites and/or YouTube.
[7]For this part, the participants were allowed to choose multiple answers.
[8]Availability of technology or supporting environment to access online materials; for this part, the participants were allowed to choose multiple answers.
[9]Having computers or laptops.
[10]Using school computers and/or borrowing a computer/laptop.

Appendix B

Table B1. The list of interview questions for the students and a recap of their responses (highlights/keywords)

No	Questions for Learners	Responses (Highlights/Keywords)
1	How long have you been learning English and how do you feel about your experience of learning English?	• Since kindergarten, elementary school grade 1, elementary school grade 3, elementary school grade 4 • Positive, fun, useful, boring, difficult, troublesome, interesting, confusing, stressful
2	Please tell me what disturbs you the most about learning and speaking English and why?	Lack of vocabulary, nervous when required to speak, grammar, group task but only one person answering, giving presentation in the class, speaking in front of many people, difficulty in producing correct pronunciation, applying grammar rules, looking up words, uncomfortable/noisy learning environment, too many people, hand phone, thinking about words to say
3	Do you think learning and speaking English as a foreign language is very difficult? What kind of difficulties or problems do you feel when speaking English?	• Quite difficult, not difficult, not too difficult, a little bit difficult, difficult • Vocabulary, grammar, pronunciation, translation, confidence, habit
4	What kinds of situations cause stress or anxiety for you?	When speaking or giving presentation in English in class or in front of many people, when asked to do interviews with English teachers, when observed by many people, in front of females, test or evaluation, assignments piling up, having been explained by the teacher but still do not understand
5	What happens to you when you are in a stressful situation while speaking English and what do you do in these kinds of situations?	• Get nervous, want to finish quickly, forget, mind goes blank, stammer, produce cold sweat, heart racing • Be brave, just do it (follow the process), think positively, try to enjoy, try to calm down, take a deep breath, focus on what (we) will deliver, just think that nobody is watching, look at the back of the room
6	What do you think are the reasons of this nervousness or anxiety?	Lack of knowledge in or mastery of English, afraid of making mistakes, being in front of many people, lack of self-esteem, psychology, personality traits, not used to (habit)
7	In which kind of situations do you not feel anxiety or feel less anxiety while speaking English?	Discussion with peers, playful situations, when well-prepared, outdoor learning, relaxed conversation, relaxed partner, calm situation, being with close friends who will not laugh when I make mistakes, with favorite teachers,
8	Are you afraid of making errors while speaking English and how do you think people will react if you make mistakes?	• Yes (afraid), very afraid, not afraid • Laughing, giving the correct pronunciation or correcting, commenting, booing, mocking (as Javanese tongue), whispering to others
9	How do you think your language teacher plays a role in creating or reducing the feeling of anxiety in the classroom?	• If the teacher makes jokes (has good sense of humor), provides games, fun, kind-hearted, not too serious, motivating, not pressuring, controls in-class situation, friendly, relaxed, patient, does not (always) give (heavy) punishment, forgiving • If the teacher gives tasks, does not give clear explanation, stern, annoying, monotonous, does not smile (often), is frequently angry, does not have a good sense of humor, likes to shout
10	What would you like to suggest in order to reduce language anxiety in the learners?	Learn vocabulary and pronunciation more, train for mental toughness (for public speaking), keep learning, never be afraid of making mistakes, use smartphones to learn English, be relaxed and no need to rush, be well-prepared in advance, don't force yourself to study, learn anywhere (including through smartphones), provide time for games, be brave in trying, look for something new to learn, never be afraid of getting mocked or laughed at, never give up, believe that everyone can do it, play games, listen to music, use computers/laptops, watch movies without subtitles, have support from others (peers, parents, teachers)

Table B2. The list of interview questions for the teachers and a recap of their responses (highlights/keywords).

No	Questions for Teachers	Responses (Highlights/Keywords)
1	How do you view the role of language anxiety for ESL/EFL learners in learning and particularly speaking English language?	Students tend to be introverted, wait to be asked rather than volunteer to answer, afraid of making mistakes, the more anxious the students are, the harder they express themselves including in speaking, some students do not want to show up perhaps due to cultural factors, such as avoidance to be considered as know-it-all if they are able to perform well (in-class), anxiety causes the students to feel too scared to speak or perform oral-based activities, it is difficult for the students to explain (when asked to elaborate answers), speaking anxiety does not have much effect on the academic skills of the students, but it really affects speaking performance, most students are afraid of speaking in English because they are shy and are worried about being laughed at, the students feel anxious because they have not found the best way to express their ideas in English, anxiety can mean that the students have attention to learning, so that they will make attempts to improve their English skills.
2	What kinds of situations and language classroom activities have you found to be anxiety-provoking for the students?	When discussing the questions and randomly pointing out the students to answer, asking the students to read, many classmates, role-playing (if not scored, it is fine), performing without scripts, texts, or books, testing or evaluation activity, when asked to come to the front of the class, retelling, speak individually in front of friends, speaking practice, unsupportive environment.
3	What do you think are the causes of students' anxiety while speaking English?	Insufficient knowledge of English (including grammar, etc.), lack of vocabulary, learning situation, teacher's (negative) characters, no opportunity due to learning model applied by the teacher, learning topics in the curriculum are too restrictive and urged to be completed within an allocated time, environment (classes with diligent learners bring a great/positive aura, and vice versa), unable to practice speaking at home, coming late to class, getting teased by friends, afraid of making mistakes, lack of confidence, having mindset that they are the second class of educated persons, no prior knowledge on the topic, getting laughed at, being corrected by their peers.
4	Have you noticed any particular kinds of beliefs or perceptions about learning and speaking English in your students and do you think they play a role in causing language anxiety for the learners? Please explain.	Learning English is difficult (causes anxiety), some students think that they do not have to stand out, do not want to improve, some students perceive English as an important school subject but there are many other school subjects they have to think of (burdening them), English is only used in professional environment, English is only required for entrance exam, students do not think that English will elevate speakers' positions later in social life, mastering English (including speaking) is not as important as mastering other school subjects especially those related to their majors or study programs (in vocational high schools), mastering English is important because it will help the students when having job interviews with companies, the students think that Javanese people like them tend to have difficulties in speaking, no shortcut to learning English, it will be difficult to give suggestions to the students if they are apathetic, English is a different language (from *Bahasa Indonesia*) in which the writing and its pronunciation are not the same (making the students afraid to pronounce the words and afraid of being laughed at when making mistakes).
5	What signs of anxiety have you noticed in anxious learners during your experience of teaching English to ESL/EFL learners?	Perspiring, confusion, silence (for a moment or quite long), head scratching, pretending to look up, underestimating, concerned that they will be seen as a know-it-all, students take more time when asked to come in front of the class, stalling, needs time to start the first word (when in front of the class), body-movement, hand-moving, becomes pale when told to speak in front of the class, nervous, stammering, leg-shaking.
6	How do you think language anxiety can be successfully controlled in the learners?	Teachers play a pivotal role, fun learning, games, challenges, methods, media, learn vocabulary more, teacher's (positive) characters, avoid the word 'test' (e.g. camouflage), encouragement in order to enhance self-confidence, video-playing, creating conducive environment for learning, warning the students not to tease their friends, habit.

Appendix C

A selection of informative responses by students and teachers on questions on the impact of web-based language learning on FLSA.

(a) Speaking to people requires appropriate facial expression and gestures as told by Participant 18.14847 and 18.14843:

"I feel more anxious speaking to people because speaking to people really needs appropriate expressions."

"Because when we speak to people, we meet face to face and have to make eye contact, and the atmosphere is certainly a lot different. Using the machine (websites) means that we are not speaking to it directly."

(b) People have different characters, thoughts, and disposition, as mentioned by Participant 18.14646, 18.14639, 18.15148, and 18.15165:

"I feel more anxious when speaking to people because people's characters are indeed different. Some like responding, some just let people keep talking."

"With the machine, we will immediately know when we make mistakes. When we speak to people and we make mistakes, they might think: Does this person (the speaker) really speak English?"

"I feel more anxious when speaking to people because people have thoughts, have their own disposition."

"The machine (websites or computers) does not know what we feel."

However, Participant 18.14675 mentioned that:

"Speaking to peers or people makes me more anxious, but (speaking to peers or people) also makes me more comfortable."

Teacher S stated that:

"The students may feel more anxious and concerned over whether they will be scored, look bad if they do not perform well. I agree if the websites are developed. The students like technology-related things. Interaction will not only be limited to teachers and fellow students, but also with the machine (computers or websites). Again, there are students who feel paranoid about being evaluated and worried that their performance on the websites will reflect in their school report card, etc. The teacher needs to motivate. It all depends on the situation (with regards to speaking to the machine or people). The machine (computers or websites) can also make students anxious and apprehensive about evaluation, for example, when students have already spoken correctly but the websites identify errors or consider it wrong or false. Speaking to people can be a direct social experiment. The students here feel more anxious when speaking to people. Speaking to the machine (computers or websites) is fine. Web-based language learning (ILI and NOVO) can be a solution to overcome anxiety, but (it) depends on the teacher, how (he/she) delivers the (learning) materials and techniques. The websites should not be used if the purpose is to eliminate the teacher's role."

Teacher J mentioned that making the students familiar with the system is important. It is assumed that people usually get nervous when faced with something new. He said:

> *"Anxiety is still there, but in the beginning. If the students are used to it, it won't be a problem and would be good for the students. This can be used to turn students' attention away from playing games. IT (Information Technology) is not far different from the student's world."*

Teacher F further described that:

> *"When the teacher speaks in front of the class, students sitting at the back sometimes fail to hear the teacher's words correctly. The audio samples on the websites are more standardized, not to mention that one equipment (computer with headphone) is for one student. Students tend to be more anxious when speaking to people. People have facial expressions. Other students can interfere with emotions, bully, show pity, etc. which can be really distressing."*

Another opinion was delivered by Teacher E.

> *"Using the second application (*www.iloveindonesia.my.id*) can reduce students' anxiety because they are already familiar with the features which are similar to those on many social media websites and applications. Maybe it can also be played with. Later, students may feel less anxious when applying their speaking skills in the classroom. For students, speaking English face-to-face with peers will automatically makes them feel more anxious, whereas this sort of application will not require face-to-face personal interaction and so they will have more confidence."*

Teacher T emphasized that web-based language learning will make students less apprehensive in speaking in English.

> *"I appreciate your effort in helping our students to speak English. The suggested means of learning through the websites is a good idea which applies a simple method. Learners won't be afraid to speak in English. Sometimes students are nervous when speaking to the machine (computers or websites). The teacher should motivate or give further explanation. NovoLearning is very simple for beginners. It will help the students who have anxiety build confidence and push forward the idea that learning English from the very basic is easy to start. For students, I tend to use* www.iloveindonesia.my.id *because it is more complete. There is also a feature that allows students to interact with other students indirectly, and this enables them to build their confidence gradually. There is also a feature called 'My Secret Diary', in which the students are able to privately reflect on their performance during the learning process, so only the subject learner and the teacher as the adviser are privy to what is written within."*

Appendix D

Table D1. The SWOT table of web-based language learning programs based on interview responses by students and teachers

Strengths	Weaknesses
a. Technology-based learning is favorable for today's learners and can be used to reduce anxiety.	a. The websites may increase students' anxiety due to their concern over whether they will perform well or not, whether they are being scored, and/or whether their performance on the websites will affect the school report card.
b. It enables the students to have more interaction (speaking) not only with teachers and fellow students, but also with the web-based programs.	b. Explaining the websites and making students familiar with the programs is time-consuming.
c. It is possible to integrate the web-based programs with the school's learning materials.	c. When using the websites, anxiety may appear when, for example, the students have already pronounced words and spoken correctly, but the systems identify the responses as wrong or false or unacceptable.
d. Usage of the web-based programs will enable the teachers to record or will provide ease in scoring.	d. The web-based programs should not replace the role and the presence of the teachers.
e. The websites containing local context learning materials increase knowledge on Indonesia and nationalism.	e. When the pictures and questions are not displayed at once, scrolling up and down may be slightly inconvenient.
f. One of the systems (NOVO) provides native-speaker sample audio.	f. The programs can only be run in a classroom supported by computers or laptops and internet connection.
g. Speaking to/on the websites benefits students in increasing their vocabulary and improving their pronunciation. Moreover, it provides more time on task (speaking) for the students because speaking activity is limited and only minimal in the classroom setting.	g. The students can feel more pressure if the website contains only practice and more practice (too monotonous).
h. The programs can help English teachers in giving clearer or more standardized examples (related to speaking skills) and controlling (supervising) the students.	If the teacher does not encourage the students to use the websites outside school-time, the students may not use it, perhaps due to laziness.
i. Speaking to/on the websites is less anxiety-provoking than speaking to peers or people; students do not feel shy speaking in front of the computers. In addition to that, when students speak to peers or people (in English), words may be mispronounced and may cause the interlocutor to have difficulty in understanding or even cause the interlocutor to bully or laugh at the mistakes made by the speakers. Moreover, speaking to people requires appropriate facial expression and gestures.	There are still some errors on the website and/or supporting tools, e.g. during login stage in ILI, faulty headphone, etc.
j. ILI may be more interesting for the students in a way that some features are similar to social media which are familiar to the students (features such as *wall* and *message*).	The page does not look attractive enough.
k. NOVO is very simple, easy to use, able to display the progress report clearly, and may help anxious students build their self-confidence.	Too much exposure to computer screens/monitors will affect health.
l. ILI is more complex and has more useful features.	

(*continued*)

Table D1. Continued.

Strengths	Weaknesses
m. The websites are interesting, fun, understandable, and can support classroom learning activities very well.	
n. The exercises, provided with pictures, are fun and also competitive as many students want to compete with each other.	
Opportunities	**Threats**
a. Technology-enhanced language learning is a good solution for future learning and overcoming (speaking) anxiety, especially in schools with supporting infrastructures.	a. Schools must have good infrastructure, including stable internet connection.
b. Following up the web-based programs will be favorable for the students if the programs are also improved in the form of android-based applications. IOS should be considered as well.	b. Some level of IT knowledge (programming language, etc.) is required in order to be able to properly develop the websites in the future (e.g. minimizing errors, etc.).
c. Blended learning can be supported by web-based language learning.	c. Besides English, there are many school subjects (related to the study programs) that the students have to focus on, especially in vocational high schools.
d. It may be more interesting and useful for the students to see animation, have more learning materials, and/or games for learning (English) on the websites, such as puzzles, etc.	