

Research Article

Audio Factors in Online Courses

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Abstract.

Although the pandemic has been declared over, online learning is still an alternative that is chosen if onsite learning experiences problems. Online learning actors, both lecturers, and students, often encounter interference, especially with voice problems. The problem is, what are the criteria for voice interference and what are the recommendations for overcoming it? Data collection was done using participatory observation, interviews and questionnaires, and literature study. Analysis using matrix analysis. As a result, if there is a disturbance, participants prioritize the audio factor rather than video, and there are still many participants who do not know how to set the sound on the device they are using. The research findings that audio has an important role in online lectures and if there is a network disruption, participants prefer to turn off the camera rather than the sound. There are still very few participants who adjust audio settings on communication devices. The results of this study can be utilized for the continuation of online lectures.

Keywords: online lectures, audio, sound settings

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1. Introduction

Online lectures have been spurred by the pandemic, and even though it has ended, online lectures are still an option if there are obstacles to onsite lectures. The use of website-based online facilities such as Google Classroom and LMS created by each University. In addition, texting-based message facilities such as WhatsApp, Line, and others are also utilized. In online lectures, lecturers and students carry out learning activities from their respective homes, for which they are required to be able to operate gadgets with the software needed for lectures. They began to enter the realm of distance-based education by relying on Internet technology [1]. Several online platforms are starting to be widely used. Starting from learning platforms such as LMS, Google Classroom, MS Teams, Spadadikti, and others, to online platforms such as Zoom, Google Meet, MS Teams Meet, WeBex, and others [2]. There are often several problems experienced by users in using this software, especially the audio aspect which is



facilitated by a microphone as a sound catcher and a loudspeaker as a speaker. The sound aspect is more crucial than the image aspect (face video & screen sharing). However, in online learning, many have not paid attention to the communication function of graphic elements [3]. In online lectures if there are problems with sound, or until the sound is inaudible, then the lecture will not run effectively even though the image features are running well. Conversely, if only the sound aspect works well, the lecture can at least be done audibly or participants only exchange voice data. This opinion is supported by the data that 9 out of 10 lecture participants stated that they prefer the sound to run well than the image. When they are in an unstable or weak internet condition and have to disable one of the features, the image feature is turned off so that the lecture communication continues to run smoothly. Adequate online learning platforms are needed, including the readiness of internet infrastructure and students' technical skills, because if not, it will reduce their confidence and enthusiasm to take part in online learning [4]. The research object is worth investigating and urgent to improve the quality of online learning. The formulation of this research problem is how to solve audio problems in online lectures, the purpose of the research is to inventory problems and find solutions.

2. Research Method

Participatory Action Research is an action-oriented research activity in which ordinary people address common needs that arise in their daily lives and, in the process, generate knowledge [5]. Observations and notes were taken with variables based on what was seen and heard. Data on sound quality and the findings of problems in the sound aspect, the collection of recording data based on each variable is described in a matrix. The questionnaire was conducted by making structured questions according to the research study, distributed proportionally to online lecture participants using Google Form facilities with a total of 192 respondents within two months. The questionnaire data also captured several other variables such as user experience, devices used for online lectures, experience with sound settings, internet factors, electricity, and factors of places and conditions used for online lectures. Interviews were conducted with resource persons selected by purposive sampling based on the criterion of having background knowledge related to the research topic and experience using online lecture tools. To analyze the data obtained, a comparison matrix technique was used. The matrix

consists of columns and rows, giving rise to two different dimensions, very useful for comparing a set of data and drawing conclusions [6].

3. Results and Discussion

From the results of observations plus interviews with lecturers, in conducting online lectures, most of them use Zoom and Google Meet online platform software as an option. However, other lecturers use the video call feature on texting platforms such as Line and WhatsApp. There are some differences in the Graphical User Interface or GUI of the two online facilities on Zoom and Google Meet. The GUI includes panels, settings, and visual displays related to user operations. Zoom gives users a choice when they want to share the screen playing video, namely the choice of optimizing motion or optimizing image quality, while Google Meet uses automatic detection of internet network strength. Observations are made by directly following online lectures or sit-ins, there are several notes on observation measurements in each recording category.

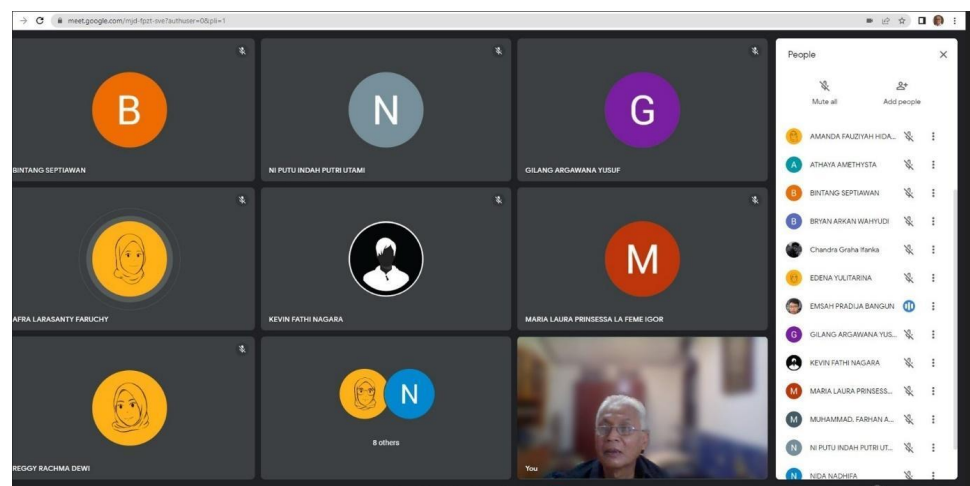


Figure 1: Screenshot of online lectures.

In Figure 1. Screenshot of online lectures, only the lecturer turns on the camera [7]. First, it is the category of environmental factors, the second category is the standard setting factor, and the third category is the advanced setting factor on the settings interface in the software. The basis of observation measurement is determined from visual observation to determine the use of audio equipment for auditory observation. Observations were divided into two categories to observe software users' awareness of audio quality. The first category is environmental factors where online lectures are measured by three variables, namely high portion echo sound, low portion echo sound,

and other interference sounds other than the speaker's voice. The second category factors in the use of additional support equipment. Indicators related to the use of additional equipment are the sound of breathing into the microphone. Then the indicator about the microphone volume setting indicated that the sound was low, or distorted, or the sound was smaller or larger.

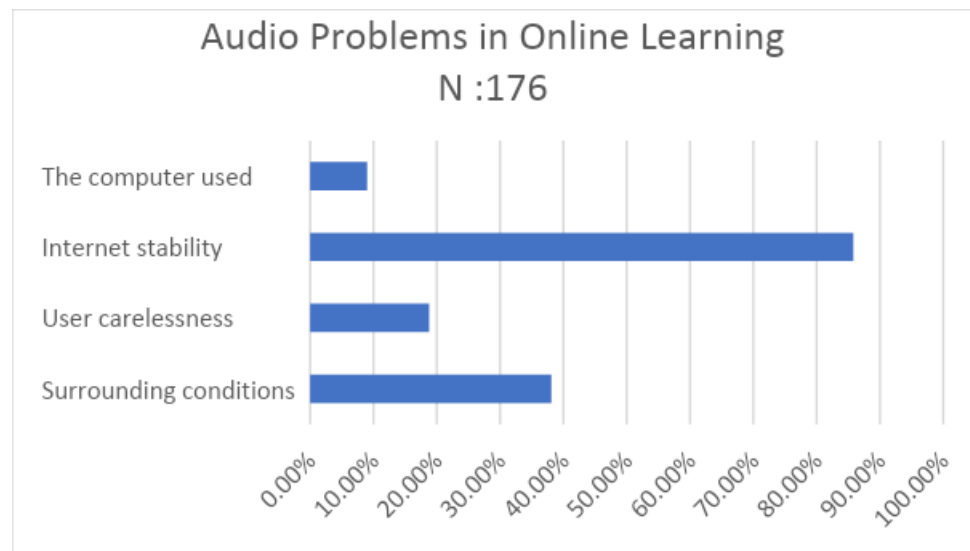


Figure 2: Questionnaire data about Audio Problems in Online Learning.

Another finding that affects the voice of online software users who are speaking is the stability of the internet network. Internet instability can cause the voice to stutter, regardless of who is having problems with the internet, occupying the largest portion. From the interviews with lecturers, it was found that lecturers prefer to open their cameras when giving online lectures because, with the visible figure of the lecturer, there will be student recognition of the lecturer's presence. Lingga chose to open the camera during online lectures because acknowledging the presence of lecturers is an important point. However, if the internet is in an unstable state, audio becomes the optimized medium. Therefore sound (both output and input) is the most important feature in lectures. Idhar made a voice recording of himself explaining lecture material for his students to listen to. Idhar chose to use Google Meet as an online learning medium because it has a simpler interface and integration with other Google tools. Idhar found students who chose to close their cameras while attending lectures. These findings, students take online lectures as media listeners. This is caused by a combination of mutually supportive factors, namely technical factors and psychological factors. Gema Rullyana, who teaches several courses related to information and digital learning. Several factors cause students to choose not to open the microphone and camera

while attending lectures, due to technical facilities. Audio is the most important feature in terms of the main technical anticipation when the internet network has problems. However, if the condition of the internet network becomes unstable, then the lecturer prefers to turn off the camera so that the voice continues. In addition, it was also stated by the lecturers that almost all students turned off their cameras when attending online lectures. The results of the questionnaire to 188 people showed that 89.2% used laptop computer devices when attending online face-to-face lectures, and the rest used tablets or mobile phones. Of that number, 46.3% had problems with the sound. The most common problem was intermittent sound due to internet interference. 85% agreed that the most important thing in online lectures is audio.

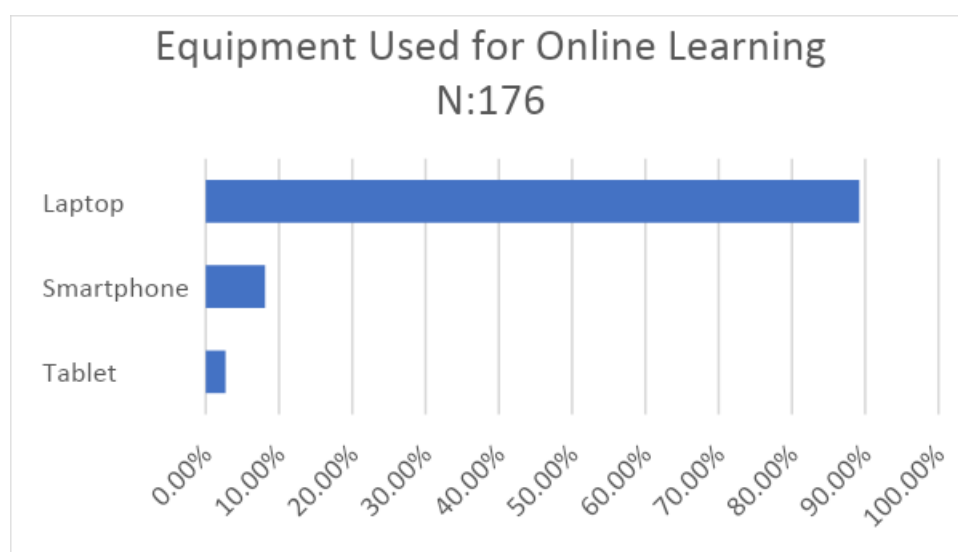


Figure 3: Questionnaire data about the choice of the online lecture platform.

There are a few indications of user incompetence when it comes to voice problems, namely when they find that the speaker's voice is inaudible and when someone tells them that as the speaker, their voice sounds small. This section was answered by 185 respondents. A total of 60.2% of listeners increase the volume on the laptop, the rest bring their ears closer to the speakers and use headphones, then 64.3% of speakers choose to bring their mouths closer to the microphone.

What affects the audio factor in online lectures, first from the network aspect, requires a stable internet network. Second, aspects of the environmental conditions of the learners, Sound of people in the room and the sound of the activities of neighbors who renovate houses and food vendors who use loudspeakers. Third, aspects of audio tuning on the device used and the use of additional equipment.

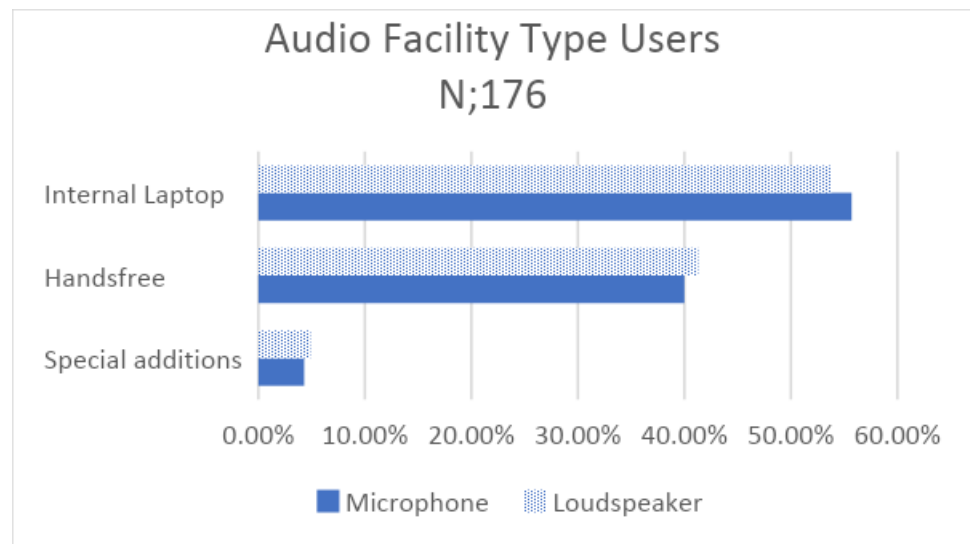


Figure 4: Questionnaire data about audio facilities used.

4. Conclusion

Some features are sometimes already available in technology, but not many of their functions are known by the users. Aside from the need to focus on prioritizing lecture objectives, few online platforms provide advanced voice settings, giving users the impression that online lecture platforms do not provide advanced voice settings. Users of online lecture facilities prefer to use practical audio solutions rather than relying on advanced settings features. For this reason, there are several recommendations to improve the sound quality of online lectures. First, making the conditions of the room where online face-to-face meetings are held more conducive to minimizing incoming sound leakage such as closing doors and windows and making the room less echoey. Second, using additional equipment such as condenser-type microphones for audio input hardware, as well as closed-type headphones for audio output hardware, and external audio interfaces to connect these devices to the computer. Third, perform advanced settings in the Windows and Macintosh operating systems. To ensure sound quality, use the “test mic” feature on the audio menu in the settings view.

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