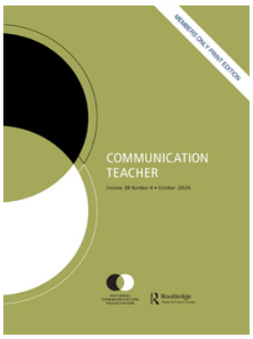

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Artificial intelligence as a feedback provider in practicing public speaking

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ABSTRACT

Traditionally, feedback is regarded as crucial in the context of learning and teaching public speaking. In the current course, we analyzed the feedback provided to students by an artificial intelligence (AI) coach and students' learning experiences in developing public-speaking skills via this tool. The MySpeaker Rhetorich speech coach application served as a platform for practicing public speaking within the course. Students found AI-powered feedback to be advantageous and less biased than feedback from their peers. However, although the AI coach offers benefits, it is not without challenges, and currently, solely relying on it as a teaching tool appears inadequate.

***Course*:** *Voluntary AI-powered public-speaking course.*

***Objectives*:** *Participants are able to prepare and deliver a speech and gain basic knowledge and understanding about speech composition and delivery. Participants learn to assess their public-speaking skills by receiving feedback from AI and peers and apply their knowledge on public speaking by providing feedback to others.*

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Introduction and rationale

The study of communication has its roots in public speaking, focusing on personal training and feedback. Research has explored effective feedback methods, and recent advancements include using artificial intelligence (AI) for public-speaking practice. Personalized learning benefits students (Chen et al., 2021), but time constraints in higher education often hinder its implementation. AI and technology aim to increase flexibility and efficiency in education (Araya & Marber, 2023), although many educators are still learning how to use AI effectively.

AI provides feedback in various forms, such as academic writing support, speech evaluation, and language learning. AI-powered speech coaches offer personalized and often immediate feedback on aspects such as filler words, pacing, and eye contact. In the studied course, the MySpeaker Rhetorich platform and AI coach were used to practice public speaking and receive feedback as an experiment to explore how this

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platform could be used in future courses. The course involved an introductory lecture followed by independent student work and peer feedback.

According to earlier studies, feedback is crucial in communication training and should be explicit, contextual, adequately timed, and of suitable intensity (van Ginkel et al., 2015). Both peer and teacher feedback are essential for developing public-speaking skills (Finn & Garner, 2011). Overall, the feedback should engage the receiver, lead to elaboration of the advice, and generate action (Ladyshewsky, 2013). Motivational feedback can sustain students' interest in learning public speaking (Saidalvi & Samad, 2019).

The effectiveness of feedback in public speaking depends on who gives it and how it is delivered. Teachers' verbal and nonverbal communication styles, including face-threat mitigation and immediacy, play a crucial role in feedback interpretation (e.g. Witt & Kerssen-Griep, 2011). Skill levels in teaching and feedback provision vary (e.g. Baker & Baker, 2023), and online feedback presents unique challenges compared to face-to-face interactions (Clark-Gordon et al., 2018). Combining peer and tutor feedback enhances presentation performance and fosters a student-centered learning environment (van Ginkel et al., 2015). Peer feedback is beneficial both online and in person (Nicolini & Cole, 2019).

New technologies are increasingly used to provide feedback in public-speaking courses. Studies show that students respond well to technology-based speaking coaches, which can positively impact learning (Chollet et al., 2022). However, AI struggles with nuances and abstract concepts, making it challenging to provide effective feedback (Chen et al., 2023). Many AI feedback tools focus on paralanguage, but holistic evaluations would be more beneficial. Innovations in AI, such as deep learning and natural language processing, are improving AI's ability to mimic human communication (e.g. Jadhav et al., 2023) and provide better feedback.

Myspeaker Rhetorich as a learning platform for a public-speaking course

MySpeaker Rhetorich is a commercial, AI-powered public speech coach and learning platform that provides feedback, study materials, and exercises aimed at developing effective public-speaking skills (MySpeaker, n.d.). The platform currently functions in six languages: English, Finnish, French, German, Spanish, and Swedish.

Here, MySpeaker Rhetorich was used for a voluntary public-speaking course (3 ECTS) at a university in Finland. The course was conducted in Finnish on a self-study basis, where the students received feedback from their peers and the platform's AI coach. The public-speaking course was held in 2023 and lasted for eight weeks. During the course, the students were required to follow the two-hour introductory lecture and complete the initial survey; record and upload a 3- to-10-minute speech on the platform; familiarize themselves with the platform's learning materials; provide peer feedback to at least 20 speakers; and answer the final questionnaire by reflecting on their learning, feedback, and evaluation of the platform.

Based on the students' videos, the AI coach first assessed voice (pitch, volume and pace variability, pace, fluidity), appearance (facial expressions), content (choice of words: complexity and filler words), and relevance, which refers here to speech personality, based on the "Big Five" personality traits (extraversion, agreeableness, conscientiousness,

emotional stability, and openness to experience; see, e.g., Goldberg, 1993). The AI coach also conducted a "Big Six" analysis of speaker impression, which is the company's own grading that is focused on traits linked to public-speaking skills. In this analysis, the AI coach gives one- to five-star ratings and one sentence of written feedback on credibility, likeability, authenticity, presence, persuasiveness, and storytelling. There were more elements tied to speaker impression (e.g. tone of voice, articulation, gestures, and surroundings), but considering the AI was still in development when conducting the study, all these elements were not yet assessed.

After the first assessment, the students familiarized themselves with the platform's study materials, which included videos, texts, and exercises on different elements of public speaking. The students were required to provide peer feedback by giving other students one- to five-star ratings on the "Big Six" mentioned earlier. The students could also provide open feedback on these aspects, but this was not required.

Analysis

We aimed to understand students' perception of their learning, feedback received, and experiences using MySpeaker Rhetorich platform for public-speaking practice. The course attendees answered two questionnaires: one before starting the course and one at the end. In the first questionnaire, the students expressed their attitudes toward the course and public speaking by answering questions regarding their public-speaking skills, motivation and expectations for the course, attitudes and feelings (appreciation, anxiety) toward public speaking, and interest in using AI during the course. In the second questionnaire, the students assessed the course experience and the platform, their learning, the feedback received during the course, and how they would utilize the feedback. In total, 31 students completed both questionnaires.

Debriefing

Overall perceptions of the course and learning

The students perceived the course as an interesting and positive experience. Most estimated that their public-speaking skills had developed during the course, with a total of 64.5% of the participants agreeing, 12.9% strongly agreeing, and only 3.2% disagreeing with the claim. When evaluating their learning, 41.9% of the students reported learning many new things about public speaking, 54.9% stated learning something new, and only one stated learning almost nothing new. Some students mentioned learning new aspects of public speaking that they never considered before.

> Above all, I understand how complicated and multidimensional the genre of public speaking is. Before, it would not have occurred to me that, for example, lighting would matter as much when giving a presentation. Now, I realize how an important role, for example, visuality, has in the comprehensibility of the speech. (R28)

For many students, an important reason for attending the course was their interest in AI, with 61.3% reporting being exceptionally interested in the usage of AI. At the same time, some were skeptical about its functionality, especially since the platform was still in development, but were positively surprised.

> The experience was positive overall. Before the course, I was looking forward to AI's comments, but I was perhaps slightly skeptical about how well it could assess speech in reality. My doubts, however, were groundless, and AI was good at measuring the different areas of speech. (R16)

The students also appreciated the opportunity to attend the course online without restrictions of time and place. Practicing public speaking online was considered important, but it was often noted that public speaking is different online and in face-to-face settings. Many stated that practicing online with an AI coach could be a good starting point if one feels insecure about speaking to a live audience but also found that this kind of online course by itself is not sufficient.

Perceptions of feedback

Most students reported that feedback from AI and especially from peers was helpful in their development as public speakers. A total of 90.3% of students felt that peer feedback was helpful for their learning (see Table 1). All students reported intentions to utilize the received feedback. Many mentioned specific public-speaking situations in which they would practice their skills and take the feedback into consideration (e.g. job interviews, teaching situations, or public-speaking events).

Feedback from the AI coach

According to the students, AI feedback led them to reflect on their performance and targets for development. Most students seemed satisfied with AI feedback because it felt neutral and unbiased and thus was easy to receive. Although AI feedback on single features was surprising to some, most students reported that the feedback met their expectations, which was thought to enhance the credibility of AI.

> It was interesting to obtain the results from the machine because they did not involve any personal history or chemistry. The feedback from the machine was easy and neutral to receive. The numbers roused interest, and they gave new kinds of pointers on development areas. (R24)

Feedback from AI largely focused on paralinguistic features. Many students received feedback on speaking too fast or too slow. Some received feedback concerning the pitch of their voices, which evoked confusion. For example, one student wondered why AI provides feedback on pitch because it reinforces gender stereotypes. Additionally, some would have wanted more detailed information on the basis of AI feedback. The weak point was thought to be the AI's inability to consider the subject, context, or target audience of the speech.

Table 1 Perceived Helpfulness of Different Forms of Feedback

	Strongly Disagree	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Feedback received from AI helped me develop as a public speaker	3.2%	6.5	9.7	61.3	19.4
Feedback from other students helped me develop as a public speaker	–	6.5	6.5	32.3	54.8
I felt that peer feedback was helpful for my learning	–	6.5	3.2	41.9	48.4

Peer feedback

Peer feedback was also mostly regarded as satisfactory and meeting expectations. However, peer feedback aroused more conflicting reactions than AI feedback. First, some students viewed peer feedback negatively because they received too little, vague, or negligent feedback. In contrast, some were very satisfied with the peer feedback because it was positive, encouraging, and detailed. Some found the positivity surprising, and a few students considered the feedback too positive, as they interpreted positivity as overcautiousness and avoidance of criticism:

> Other students were very positive, but they gave quite bad scores despite positivity. Few dared to give criticism. (R9)

Second, some students felt unsure which feedback to trust after receiving inconsistent and conflicting feedback. In contrast to feedback from AI, peer feedback was considered biased, value laden, and dependent on the person:

> One of the most important things I learned about performing and giving feedback was that it was eventually dependent on the person giving it. The feedback given to the same person often differed greatly from each other, and a particular feature could be both criticized and praised. (R26)

Nevertheless, peer feedback was an important source of written feedback that offered more in-depth notions than AI's grading. Many students reported learning from watching diverse speeches and giving feedback to others. This gave an opportunity to practice their feedback-providing skills and compare their own assessments with those of AI. Finally, a few students mentioned peer feedback as creating an encouraging atmosphere during the online course.

Suggested lines of course development

The students' suggestions for development can be summarized in three categories:

(1) More practicing opportunities: The students wished for more versatile opportunities to practice different areas or situations of public speaking. For example, if the material included information about the speech rate, some exercises could follow that theme. They also wanted more interaction with each other. The lack of a "real audience" was mentioned several times, and the participants suggested giving speeches to other course members in synchronous online situations.
(2) Better feedback quality: The students found peer feedback to diverge in quality. At times, feedback was poor, contradictory to other peer or AI feedback, and sometimes even mean. They wished for more precise and directive instructions for the feedback and the possibility of providing feedback in an interactive situation where one could ask for clarification. Moreover, some wished for instructor feedback.
(3) Considering the linguistic and cultural context: The influence of American culture was recognized from the given examples, and several translation problems and mixed language were mentioned. The students suggested more variation to the materials, regarding, for example, native speakers and cultures, gender (e.g. in pictures), or appearance (e.g. clothing).

Appraisal

The experiences from the course are promising because practicing with an AI-powered coach enhanced students' motivation to enroll in the course. The students found the experience interesting and positive, and they considered that their public-speaking skills developed during the course. In general, the analysis shows that public-speaking skills can be learned in asynchronous and self-study courses.

The feedback provided by the AI coach was well received by the students. Notably, they perceived AI feedback as more neutral and unbiased than peer feedback. Earlier, perceptions of AI as a teaching partner heavily relied on students' impressions of its credibility (Edwards et al., 2018). Credibility is associated with machines being viewed as unbiased and error free.

Deficiencies in feedback from AI may be better understood than those from peer students, whose feedback is viewed more critically. However, there are limitations to AI feedback. It lacks context awareness and struggles to differentiate between various speech topics, evaluating all speakers and speeches uniformly. Traditionally, public-speaking textbooks have emphasized the importance of audience and context analysis as a starting point for speech planning. To compensate for this limitation, students benefit from evaluating others' speeches and providing feedback.

The students had ideas about how the quality of feedback could be developed. Sometimes, the feedback was poor and contradictory, or the students were willing to ask for clarification. Thus, it appears that the students would have needed an expert in public speaking—in this case, a teacher—to interpret and elaborate on the feedback with them, and this need has also been noted in earlier studies (Chen et al., 2023). Therefore, the combination of AI and peer student feedback processed together with a teacher could be the most effective and satisfying solution.

Although the use of an AI coach for public-speaking instruction has proven beneficial, it is crucial to critically evaluate the foundation of this feedback. The concept of an AI coach relies on rigid norms defining what is considered "good" or "not good." However, these norms may sometimes be biased or inappropriate in a specific context. For example, in this case, feedback related to voice pitch was criticized for being based on gender stereotypes. Similar limitations and risks have been observed in other educational applications (Wang et al., 2023). Furthermore, adopting such a narrow perspective on successful performance contradicts the idea that skillful communication can manifest in diverse forms. This normative approach does not align with the broader goal of developing public-speaking skills and communication competence (e.g. Hannawa & Spitzberg, 2015). Therefore, although an AI coach can serve as a valuable training tool for public-speaking skills, it should not be the sole method. Instead, it could be an initial step in the learning process, being complemented by other forms of practice and training.

In this case, the course in question was an online course where speeches were delivered alone and directly into a camera. Currently, both online and face-to-face public-speaking skills are needed, and there are results indicating that teaching public speaking online differs from doing so in person (Eklund & Isotalus, 2024). As a result, AI-powered speech coaches can play a role in developing public-speaking skills, albeit not comprehensively.

To summarize the analysis, attention should be paid to the following aspects:

- It is important to interpret AI feedback with a teacher's help, as students might struggle to understand the feedback and evaluation criteria. A teacher can provide practical advice on how to develop skills based on AI feedback.
- Teachers should familiarize themselves with AI's assessment criteria and feedback format. Reviewing teaching materials on the platform beforehand is also advisable.
- Practicing with an AI coach is most beneficial at the beginning of a course for assessing the starting level, with deeper learning guided by a teacher.

Conclusions

The current course was the first time that an AI-powered speech coach was used in a public-speaking course at our university. Thus, many things were learned that could be improved next time. However, the analysis demonstrated that the AI coach provides useful feedback, assisting students in honing their public-speaking skills. Nonetheless, it is evident that relying solely on such a coach is insufficient. A holistic approach that includes additional practice and diverse feedback alongside AI assistance is advisable.

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