Towards the Understanding of Gestures and Vocalization Coordination in Teaching Context

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OVERVIEW

- Teachers' gestures have impact on student comprehension and student learning.
- It is recommend that teachers employ open rather than closed or ambivalent poses in the classroom.
- Closed hand gestures are often interpreted as defensiveness and avoidance by the speaker/teacher of the listener.

Figure 1. Reference example of closed poses (gestures) .

- We have designed a real-time nonverbal feedback application to assist participant teachers in TeachLivE rehearsal sessions.
- The post-questionnaire information indicated that all participants were more mindful of their body gestures while teaching after they had participated in the study.

STUDY DESIGN

- **Participants:**
  - College of Education Students- TESOL Undergraduate Program
  - Registered for Classroom Management and Strategies Class in Summer 2015
  - Have seen TeachLivE environment prior to participating in the study
  - N=30 (24 F, 6 M), Multiple session experiment (7-min long each session)
  - Taught the technology teaching plan (fixed)

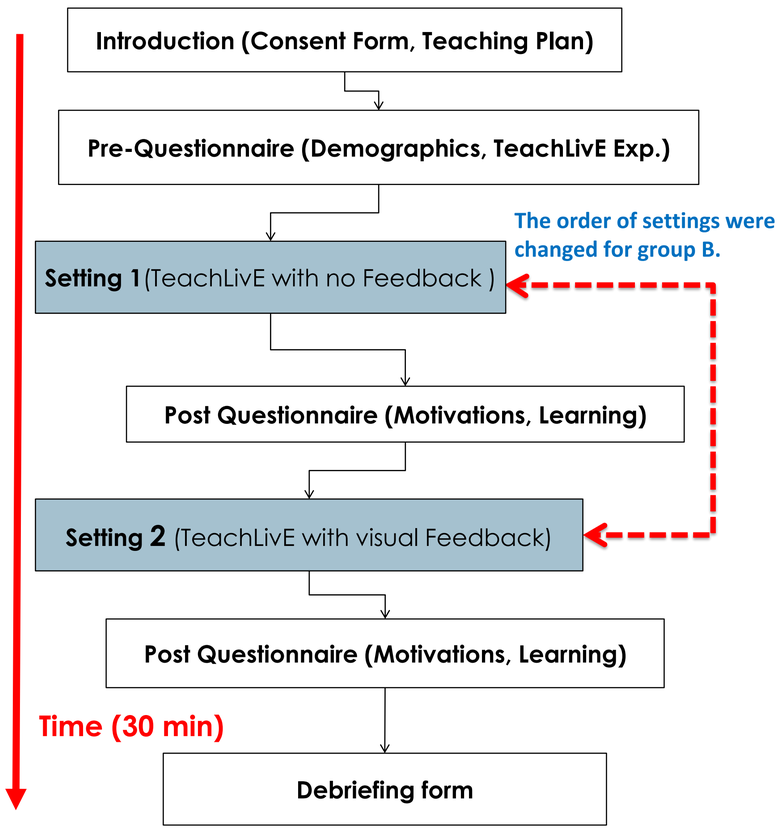

Figure 2. Overview of the case study. Participants were assigned to have either setting 1 or 2 as their first teaching sessions, so they were divided into two groups based on this assignment.

STUDY SETTING

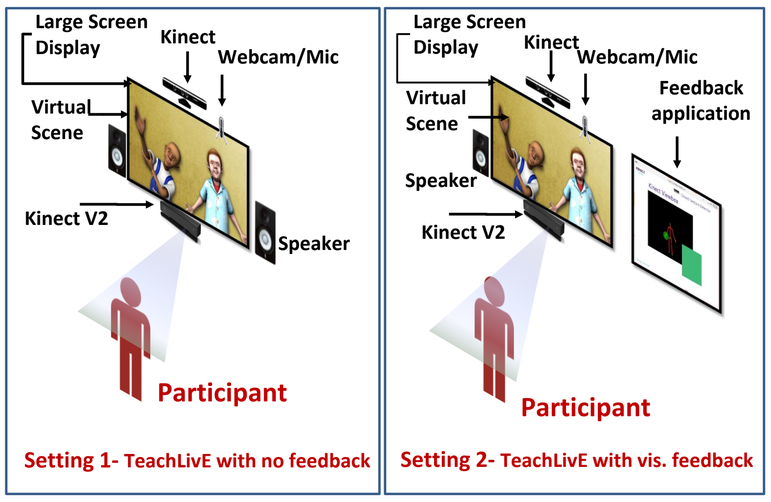

Figure 3. Case study settings and the proposed feedback application.

Groups	Session 1	Session 2
Group A (n=15)	Setting1	Setting2
Group B (n=15)	Setting2	Setting1

Table 1. Two groups of participants in the study.

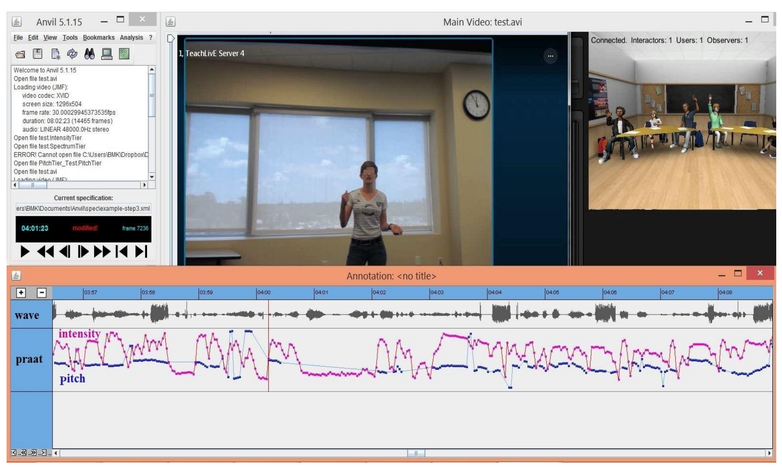

Figure 4 . TeachLivE video sessions (including the participant front view and virtual classroom scene) within the ANVIL annotation tool Three acoustic contours waveform, pitch (blue) and intensity (pink) are imported to the annotation project from PRAAT.

RESULTS - A

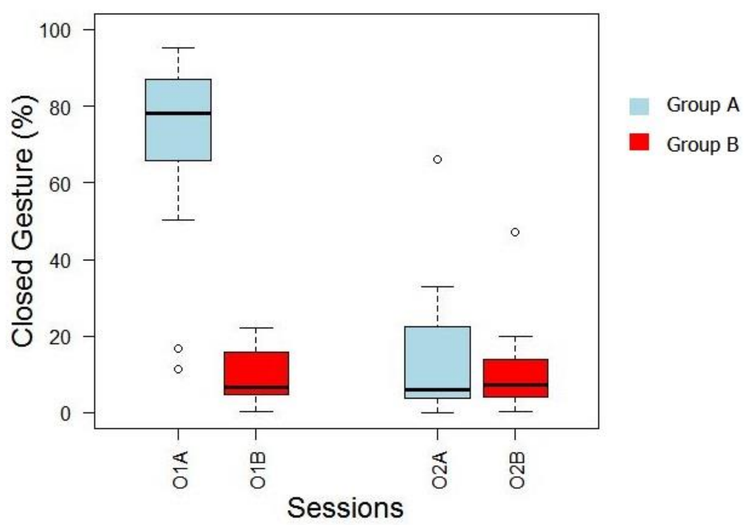

Figure 5. Medians and interquartile ranges of closed gesture exhibition (percentage) in two sessions among two groups, A and B.

- An employment of open gestures was observed in both of the sessions for the participants of group B (those who received body gesture feedback in their first session). Median rate is close to 6.7 % for group B.

RESULTS - B

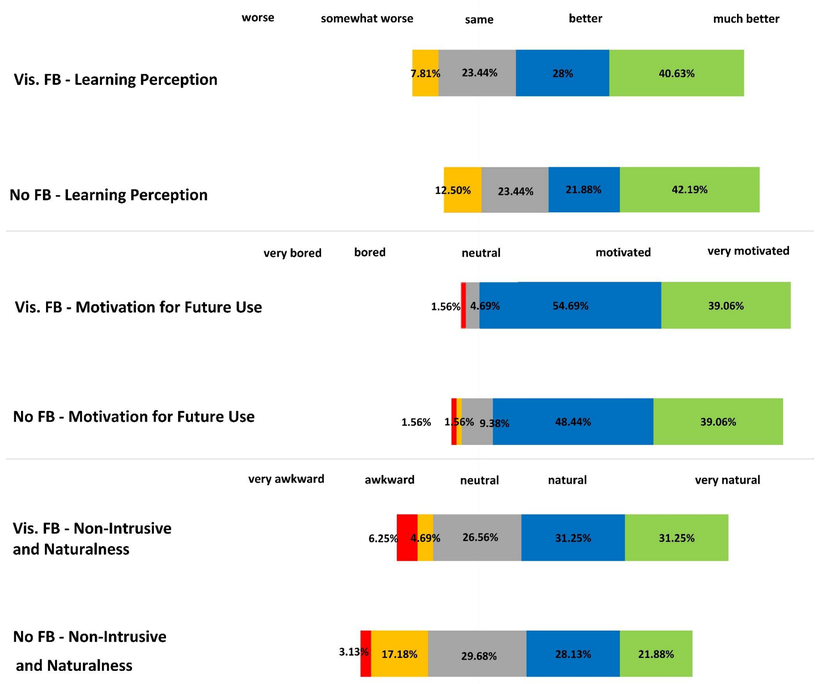

Table 2. The color coded table of the post-questionnaires data. The questions are divided into three categories, and are reported for two study settings.

CONCLUSIONS

- We proposed a novel rehearsal environment with a successful feedback application for nonverbal communication training.
- The results from the recorded skeleton data indicate the positive impact of informed body language and gesture in communication proficiency.
- The completed post-questionnaires indicate positive effect of the feedback application on participant's nonverbal communication thoughtfulness.
- This application could be applied to other social skill training software.

FUTURE DIRECTION

- Conducting a large-scale study
- Multimodal data analysis:
  - Audio, video analysis
  - Data fusion
  - Data sampling
- Exploring different methods of feedback provision:
  - Bug-in-the-ear
  - Haptic

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