Stimulating task interest: human partners or chatbots?

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Abstract. The aim of this research project was to examine the impact of chatbots as conversation partners. First and second year Japanese university students (n=120) from a private university in Southwest Japan were randomly assigned to either conduct a speaking task with an Artificial Intelligence (AI) chatbot or human partner. Preliminary analysis of the data suggests that student interest in interacting with the chatbot conversation partners decreased across the experiment period, whilst interest in performing identical tasks with their peers (human partners) remained relatively stable. The findings suggest that educators and administrators should be cautious about relying entirely on AI conversation partners as a substitute to human partners if they wish to stimulate and maintain student interest levels in conversation tasks. Furthermore, teachers should carefully consider students' language proficiency and communicative ability before designing and implementing speaking tasks that involve the use of AI conversation partners. Using chatbots as an extension of human-human conversation activity practice and not a replacement is recommended in order to maintain student interest and engagement across a language program.

Keywords: CALL, chatbot, student engagement, student interest.

1. Introduction

This study is the first phase in the potential development and integration of using AI chatbots as conversation partners within a Japanese compulsory English language program. Through firstly identifying, understanding, and then exploiting

the benefits that chatbots offer students, educators and administrators may be better able to increase blended learning task-based opportunities for learners.

1.1.   Education and student interest

Research over recent decades has linked student interest levels to vital components of learning, for example: attention, persistence, recall, and the quality of students' learning outcomes (Hidi & Berndorff, 1998). Student interest has been shown to be connected to positive learning outcomes and, more importantly, also influence what learners choose to study in future years (Harackiewicz & Hulleman, 2010). Given the importance that interest plays in learning and its influence on positive academic and future outcomes, it is surprising that little research has been conducted on measuring student interest within the domain of language learning. Research into the development of interest has seen Hidi and Renninger (2006) propose a four-phase model of interest development. This model describes four phases in the development and strengthening of student interest. These phrases are *triggered situational interest*, *maintained situational interest*, *emerging individual interest*, and *well-developed individual interest*. It is important for both educators and administrators to be conscious of how student interest is triggered and maintained if we are to truly develop students' long-term interest in English.

1.2.   Language learning and chatbots

Today, more and more people are learning English through online technologies. With over 1.7 billion English language learners across the globe, only a small fraction of these learners have access to traditional language learning resources and formal classroom teaching (British Council, 2013). With the explosion of educational technology and the increased accessibility of mobile devices, education providers are actively seeking out ways to utilize chatbots as conversation partners. As Atwell (1999) noted, chatbots provide an opportunity for students to conduct conversational practice outside of the classroom. For an overview of the chatbot used in this study, Cleverbot.com, see Fryer and Carpenter (2006).

Chatbots – also known as 'conversational agents' – are software applications that simulate human speech for the purposes of replicating a conversation or interaction with a human conversation partner. There are two main ways chatbots are offered to language learners. Firstly, through computer applications and also via online apps that can be accessed on mobile devices. This independent learning opportunity has gained interest within computer assisted language learning based research (Goda et al., 2014).

2.   Method

This research project had three main focuses: (1) to examine the suitability of chatbots as conversation partners; (2) to compare the levels of students' interest in English language learning: chatbots versus human partners at task, course, and domain levels; and (3) to identify the merits/demerits of chatbots versus human conversation partners.

2.1.   Participants

Japanese university students (first year n=91 and second year n=29 students) from a private university in Southwest Japan were requested to complete a spoken conversation task with a chatbot or human partner. Participants were non-English majors and came from five of the university's seven faculties (Engineering, Management, International Studies, Fine Arts, and Economics), with a Common European Framework of Reference for languages (CEFR) basic user level ranging from A1 to B2. Students were allocated into three English levels following a placement test conducted by the university administration. All participants were studying within a coordinated compulsory English as a foreign language program consisting of two 15-week semesters per academic year with one 90-minute Listening and Speaking class per week.

2.2.   Procedure

Participants were randomly assigned the same English conversation task with a chatbot or human partner. The task-based conversation took students approximately 10 minutes. Following the task, students self-reported their perceptions of the experience, identifying three advantages and/or disadvantages of speaking with a chatbot or human partner. The final stage of the data collection was an online interest survey. The online measurement was used to capture students' level of interest throughout the course of research. For an overview of the development of the interest measurement, see Thompson et al. (2015). The experiment was conducted four times during one (15-week) academic semester.

2.3.   Instrumentation

Following completion of the speaking task, students noted three advantages and/ or disadvantages relating the conversation partner experience (chatbot or human). From the third class of the second semester and each time students completed the task-based conversation component (four times) of this study, students' interest in

the conversational task was measured. The survey items were: (Item 1) *this activity was personally meaningful*, (Item 2) *I enjoyed learning English in this activity*, (Item 3) *I liked using English in this activity*, (Item 4) *this activity was interesting*, and (Item 5) *it was fun to review English in this activity*. The items were measured on a six-point Likert scale.

3.   Preliminary findings

Preliminary analysis of the quantitative data collected in this study indicates interest levels in English and conversation tasks with a human partner did show a slight increase across the experiment (see Table 1, Table 2, and Table 3).

Table 1.   First year students: English interest

Week	Item Mean	Standard Deviation
3	3.85	1.29
15	4.38	1.10

Table 2.   Second year students: English interest

Week	Item Mean	Standard Deviation
3	3.53	1.27
15	4.09	1.20

Table 3.   First year students: human partner conversation activity interest

Week	Item Mean	Standard Deviation
5	4.37	1.00
12	4.61	1.15

However, there was a slight decline (see Table 4) performing the identical conversation task with a chatbot. This decline in interest may be linked to comments students noted in the qualitative data suggesting that students found the chatbot responses inappropriate and the interaction as being unnatural.

Table 4.   First year students: chatbot partner conversation activity interest

Week	Item Mean	Standard Deviation
7	4.18	1.11
12	3.84	1.08

These preliminary findings suggest that educators and administrators should be cautious about relying entirely on chatbot conversation partners as a substitute to

human partners if they wish to stimulate and maintain student interest in learning tasks and English more generally.

4.   Conclusion

The aim of this research project was to examine the suitability of chatbots as conversation partners and to compare the levels of students' interest in English language learning: chatbots versus human partners at task, course, and domain levels.

The preliminary findings from this study suggest that educators and administrators should be cautious about relying entirely on chatbot conversation partners as a substitute to human partners if they wish to stimulate and maintain student interest in learning tasks and English more generally. As with any study conducted within one university, the external validity of the results awaits further tests both nationally and internationally.

References

Atwell, E. (1999). *The language machine: the impact of speech and language technologies on English language teaching.* British Council.

British Council. (2013). *The English effect: the impact of English, what it's worth to the UK and why it matters to the world.* https://www.britishcouncil.org/sites/default/files/english-effect-report-v2.pdf

Fryer, L., & Carpenter, R. (2006). Emerging technologies. Language in action: from webquests to virtual realities. *Language Learning & Technology, 10*(3), 8-14.

Goda, Y., Yamada, M., Matsukawa, H., Hata, K., & Yasunami, S. (2014). Conversation with a chatbot before an online EFL group discussion and the effects on critical thinking. *Information and Systems in Education, 13*(1), 1-7. https://doi.org/10.12937/ejsise.13.1

Harackiewicz, J. M., & Hulleman, C. S. (2010). The importance of interest: the role of achievement goals and task values in promoting the development of interest. *Social and Personality Psychology Compass*, *4*(1), 42-52. https://doi.org/10.1111/j.1751-9004.2009.00207.x

Hidi, S., & Berndorff, D. (1998). Situational interest and learning. In L. Hoffmann, A. Krapp, K. A. Renninger & J. Baumert (Eds), *Interest and learning: proceedings of the Seeon conference on interest and gender* (pp. 74-90). IPN.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111-127. https://doi.org/10.1207/s15326985ep4102_4

Thompson, A., Ozono, S., Howarth, M., Williams, R. A., & Fryer, K. L. (2015). The development and validation of a measure of student interest in the English learning task. *Kyushu Sangyo University Language Education and Research Center Journal*, No. 10. Fukuoka.

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