

Do you Learn "Waste": The Effect of Humorous Text on Learning Outcomes in Intelligent Tutoring

Xinjie Xie¹ and Xiangen Hu^{1,2}

¹ *Central China Normal University, China, xinjiexie@foxmail.com*

² *The University of Memphis, USA*

INTRODUCTION

The COVID-19 outbreak is a huge challenge to the education system. As a way of coping, online remote learning is more popular in the world. In such a special period, students with different learning stages and abilities are also faced with different mental health status and psychological needs (Daniel, 2020), the asynchronous learning model is more suitable for the situation. Intelligent tutor systems (ITSs), like AutoTutor, are a more personalized one-to-one online learning platform based on AI development, and text is one of the important learning materials of ITS. Some evidence suggests that humor is beneficial to both traditional classroom and online learning, as well as that humorous text is more appealing to individuals. The results of this experiment will reveal the different effects of learning materials of humorous and non-humorous text on students' critical thinking learning.

BACKGROUND

The text is an important part in the AutoTutor, which is not as elegant as the textbook written by professional writers, but is prepared by the psychologist according to the needs of teaching and research (Graesser et al., 2007). In traditional classrooms, humor makes students feel more interested and ensures higher participation and learning results (Miller et al., 2017). A meta-analytical study demonstrated that humor promoted classroom learning (Martin et al., 2006). However, according to the research based on cultural differences, orientals, like Chinese, have less positive attitude towards humor than westerners, especially aggressive humor (Jiang et al., 2019). The results of two recent experiments showed that students who received humorous examples performed worse in post-test responses than those who received serious examples (Bolkan et al., 2018), which contradicted previous studies. In addition, excessive humor also leads to higher cognitive load, and inappropriate humor also has negative effects on learning, such as demeaning others and violence (Savage et al., 2017). When humor elements are integrated into learning materials, such as textual humor, the cognitive and emotional involvement of students is significantly increased, thus improving the learning effect of students (Erdoğdu & Cak ırođlu, 2021). This is an example of online learning, and this study will talk about the effect of text humor on learning outcomes in AutoTutor.

RELEVANT THEORIES

Theories of humor

Generally speaking, research on humor is based on three main theories. The first is incongruity theory, which focus on the cognitive aspect of humor. It holds that a surprise or contradiction is a necessary condition for humor. The second is arousal-relief theory, which emphasizes emotional arousal. It believes that humor relieves pressure and tension and makes students feel relaxed. Finally, there is superiority theory, which emphasizes a desire for superiority, acquired through, for example, denigration. (Martin et al., 2006, Baleghizadeh, 2019).

The Instructional Humor Processing Theory (IHPT)

The Instructional Humor Processing Theory (IHPT) is a new Theory emerging in recent years, which suggests that at first, students must recognize the inconsistencies in teachers' information in order to sense Humor. Once a dissonance is recognized, it must be resolved or explained. If incongruity is not addressed, students will not perceive humor and are likely to be distracted or confused by teacher's message. If the student resolves the incongruity, he or she may think the information is humorous and may lead to laughter. The nature of humorous information and its interpretation determine whether humor is conducive to learning (Erdoğdu & Cak ırođlu, 2021).

YOUR RESEARCH METHODS AND WORK

Previous studies have only looked at humor in traditional classrooms and online learning platforms in general. Humorous text has been considered to promote learning (Baleghizadeh, 2019), but has not been applied to humorous text research related to ITS teaching. This study hopes to explore the difference of learning materials between humorous and non-humorous texts, which relation with the confirmation of the theme and compilation of learning materials. Critical thinking is one of the important qualities of college students, and it is also one of the teaching subjects of AutoTutor. This study intends to prepare teaching texts related to critical thinking, which is divided into humorous texts and non-humorous texts. Critical thinking content from the website: Rhetological Fallacies – A list of Logical Fallacies & Rhetorical Devices with examples — Information is Beautiful.

Therefore, two pre-experimental questionnaires should be designed. The first questionnaire aims at understanding what information we provide are known by undergraduates and what is unknown. At the same time, it can also understand the current situation of critical thinking ability of Chinese college students. The second questionnaire is to evaluate whether the text we wrote is humor or not, so as to divide the content of our text into humor and non-humor.

After the questionnaire was collected, the formal experiment began. Participants were divided into two groups for critical thinking learning, which was conducted in AutoTutor. In the experiment, pre-test is adopted to evaluate the learning effect. The pre-test is to understand the level before learning, and then enter the learning stage. After the learning, the post-test is carried out to evaluate the learning effect.

REAL WORLD APPLICATIONS

The design and results of this study will have several real world applications. First, based on the data collected in our pretesting, we know the level of critical thinking of Chinese undergraduate. According to the changes in the critical level of college students of different genders, ages and grades, we can draw some conclusions and thus understand whether there is a loophole in our higher education. In addition, there may be differences in critical thinking among students from different schools, places of origin and economic conditions, which is conducive to our personalized education. Different education methods can be

adopted for different students.

Secondly, the writing of critical learning materials and course writing enrich the AutoTutor course. The research material for this experiment is about Rhetological Fallacies, which is closer to life. Compared with the learning materials of other courses, this content has a wider range of applications. Learning this kind of knowledge is not only conducive to the improvement of critical thinking, but also conducive to the improvement of college students' media literacy, and at the same time, they will have more excellent independent living ability.

Finally, our experiment is to explore the effects of text humor on learning. There are contradictions in previous studies, but generally it is believed that humor is beneficial to students' learning. Humor to promote learning mainly lies in creating a good learning atmosphere, improve learning interest, attract students' attention and so on. AutoTutor uses text to present learning content, and teaching agent dialogues to teaching. There is no real person involved in the whole process, which requires higher learning consciousness. Humor may play a bigger role than traditional learning or online learning in general. There is still a lack of research on text humor in ITS teaching. This study will fill the gap in this aspect and provide some ideas for future teaching design.

Future Directions

Future research can design and study a broader group of students, such as the influence of humorous text in intelligent tutoring system on the attention and interest of primary and middle school students. Humor is not necessarily appropriate for serious content and difficult learning tasks, which involves cognitive load and other issues that can be explored in future research. Similarly, different cultural backgrounds have different ways of looking at humor. Black humor is used less in China, but may appear more in the United States. With the development of diversity in the world and the increasing inclusiveness between different cultures, it is also worth discussing whether the humor accepted by young people in different countries has changed. It is appropriate or inappropriate for some humor to be spoken by a human, but whether it is spoken by a robot has different meanings were the need to study in the development of intelligent tutoring system.

In addition, it is necessary to collect requirements before the research begins, so that we can continue to study the paradigm of the collection process, such as the form, number, and expression of the questions. AutoTutor's content creation is important, but also a conundrum. In order to design a meaningful course, it is necessary to understand the needs of students and teach them English.

Finally, this study uses the text humor which is easier to write and modify. There are other teaching materials in AutoTutor, such as conversations, images, videos, etc. These parts are necessary in the overall design of the course, but too much content can create unnecessary distractions, which can be discussed in later studies. In short, the right level of humor will benefit the learning effect of the whole system.

SUMMARY

This study will benefit ITS, especially the design of the AutoTutor teaching materials. In the process of writing text, some humorous elements can be added for stimulating students' learning motivation. Of course, in learning that requires a higher cognitive load, humor may impair learning, and too much humor is unnecessary. Appropriate humor includes both content and

quantity. The course of critical thinking is a hot topic of platform research. This experiment provides examples of application to help students improve their critical thinking and media literacy.

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