



Conversations with Characters in Stories for Literacy

Blaž Erzar, Luka Salvatore Pecoraro, and Jakob Adam Šircelj

Abstract

In this project, we present the motivation for building models for conversations with literary characters. By combining the existing persona bot approaches with large language models, we propose solutions to encourage curiosity and improve question-asking in pupils. We present the existing literature explaining the state of reading curricula and LLMs, enabling role-playing conversation.

Keywords

persona bot, role-playing, literature, education

Advisors: Slavko Žitnik

Introduction

Studies suggest that we are dealing with a literacy crisis [1]. It is especially prevalent in pre-teens. Curiosity is the fundamental driver of learning. One of the best ways to learn is to locate one's knowledge gaps and ask questions, which hopefully lead to answers that fill those gaps.

It turns out there are different tiers of questions and the ability to formulate meaningful questions is both a rare trait in kids and a skill, which can be improved. There are **surface-level** questions, e.g., *Who was the main character?*, **convergent-thinking** questions, e.g., *Why was the main character doing that in the beginning?*, and **divergent-thinking** questions, e.g., *What would have happened if something else happened before ending instead?*. The latter is the best in stimulating critical thinking because the answers for them cannot be explicitly found in the text. They were also very scarce in 5th graders, as found out in a study by Alaimi *et al.* [2]. Studies have also shown that interactive learning by asking divergent questions leads to a 20% increase in the exams and make the absorbed knowledge more permanent than linear learning in traditional educational systems. Potential reasons for that might be the inability to identify one's knowledge gaps, fear of shame from asking a stupid question or suboptimal learning environment.

A way of tackling this problem was proposed in [2]. The idea was to create personaBots: LLM-based agents, which would interact with kids. After the kids were done reading some literary work, they would be able to ask their character of choice questions. This would, hopefully, stimulate their curiosity, to improve their question-asking ability, learning rate and critical thinking. They would be fine-tuned to their

respective character counterparts from that particular literary work.

Related work

Some studies already suggest that worse literacy might do with the quality of reading comprehension curriculums, as shown in [3]. A better approach may be guided reading with digital pedagogical agents embedded in digital books, as proposed in [1]. This approach is similar to using LLMs.

There already exist educational tools based on AI, which assist teachers in creating lessons, e.g., Khanmigo. Based on prompts it suggests lecture topics, plans, or even tutors pupils on solving them. But, it does not focus on literacy. On the other hand, character.ai is a tool for creating LLMs, whose answers resemble those of fictional, historic or other characters. We can chat with these models, but they are not pedagogical tools. For use with children, not all words should be permitted and they should encourage curiosity and asking interesting questions. Both of these tools are closed-source, so we do not know exactly how they work.

Our focus will be on the work done in the field of role-playing, and personality modelling using LLMs. The concept of using LLMs for role-playing is described in detail by Shanan *et al.* in [4]. In the last few years, there were also many attempts to customize large language models, to role-play as fictional characters [5, 6, 7, 8, 9]. One of the most notable ones is ChatHaruhi [5], where researchers proposed a new approach for modelling fictional characters from Chinese and English literary, TV and anime characters. Authors Wang and others proposed RoleLLM, a framework to benchmark, elicit, and enhance role-playing abilities in LLMs, along with

providing large datasets for [8].

By combining the role-playing capabilities of personaBots from character.ai, and the pedagogical focus of Khanmigo, we aim to build engaging personaBots based on fictional characters from literary works. The fictional personality will make our models more interesting to talk to than Khamingo, along with being more aligned for pedagogical purposes by encouraging question-asking and curiosity in users and having certain safeguards in place to prevent inappropriate responses.

References

- [1] Thijs M. J. Nielen, Glenn G. Smith, Maria T. Sikkema-de Jong, Jack Drobisz, Bill van Horne, and Adriana G. Bus. Digital guidance for susceptible readers: Effects on fifth graders' reading motivation and incidental vocabulary learning. 56(1):48–73. Publisher: SAGE Publications Inc.
- [2] Mehdi Alaimi, Edith Law, Kevin Daniel Pantasdo, Pierre-Yves Oudeyer, and Helene Sauzeon. Pedagogical agents for fostering question-asking skills in children. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pages 1–13.
- [3] Suzanne T. M. Bogaerds-Hazenberg, Jacqueline Evers-Vermeul, and Huub van den Bergh. What textbooks offer and what teachers teach: an analysis of the dutch reading comprehension curriculum. 35(7):1497–1523.
- [4] Murray Shanahan, Kyle McDonell, and Laria Reynolds. Role-play with large language models.
- [5] Cheng Li, Ziang Leng, Chenxi Yan, Junyi Shen, Hao Wang, Weishi MI, Yaying Fei, Xiaoyang Feng, Song Yan, HaoSheng Wang, Linkang Zhan, Yaokai Jia, Pingyu Wu, and Haozhen Sun. ChatHaruhi: Reviving anime character in reality via large language model.
- [6] Xintao Wang, Yunze Xiao, Jen-tse Huang, Siyu Yuan, Rui Xu, Haoran Guo, Quan Tu, Yaying Fei, Ziang Leng, Wei Wang, Jiangjie Chen, Cheng Li, and Yanghua Xiao. In-Character: Evaluating personality fidelity in role-playing agents through psychological interviews.
- [7] Yunfan Shao, Linyang Li, Junqi Dai, and Xipeng Qiu. Character-LLM: A trainable agent for role-playing.
- [8] Zekun Moore Wang, Zhongyuan Peng, Haoran Que, Jiaheng Liu, Wangchunshu Zhou, Yuhao Wu, Hongcheng Guo, Ruitong Gan, Zehao Ni, Man Zhang, Zhaoxiang Zhang, Wanli Ouyang, Ke Xu, Wenhao Chen, Jie Fu, and Junran Peng. RoleLLM: Benchmarking, eliciting, and enhancing role-playing abilities of large language models.
- [9] Nuo Chen, Yan Wang, Haiyun Jiang, Deng Cai, Yuhao Li, Ziyang Chen, Longyue Wang, and Jia Li. Large language models meet harry potter: A bilingual dataset for aligning dialogue agents with characters.