# New Learning Scenarios with Chatbots

## Conversational Learning with Jix: from Digital Tutors to Serious Interactive Fiction Games

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**Abstract**—Conversational user interfaces, aka chatbots, offer new ways of interaction that can be used not only for task-led applications, but also for learning itself. Conversational learning offers a variety of new and extensive options to support individuals through the learning process and to push the boundaries of classroom-based learning. This document shows three application scenarios that have been realized with time4you's conversational learning software Jix. After having read this text, you will have a better idea of what conversational learning is, how it can be used in learning and development, and what is critical for its success.

## 1 Background

### 1.1 What Is Conversational Learning, and Why Does it Matter?

Artificial intelligence is one of the key technologies of the 21st Century. In marketing and service, but also in training and development, AI-supported digital assistants and chatbots take on a variety of tasks. They book and register and send reminders, they help answer questions, they assist in solving organizational issues. They function as personal assistants, points of contact, or virtual supporters and tutors, providing a continuous and individually accessible service, 365 days a year, 24 hours a day, worldwide, thus supporting learners as well as those organizing learning programs.

But chatbots can do more than that. Imagine e.g. a chat that goes beyond mere information by involving the user in a conversation about a special topic. This kind of interaction with a chatbot to learn something and pursue further training establishes a dialogical learning process that we call Conversational Learning.

Conversational Learning offers a variety of new and extensive options to support individuals through the learning process and to push the boundaries of classroom-based training. But Conversational Learning will only be accepted and lead to suc-

cessful learning when the digital assistants interact adequately and involve their human learning partners in a purposeful and at the same time lively dialogue. To achieve this, both a sophisticated technology and an intelligent conversational design are necessary.

## 1.2    Jix: An AI Solution for Conversational Learning Applications

Jix is an AI solution by time4you GmbH [1] designed specifically for developing and running Conversational Learning applications [2]. Jix combines an intelligent bot with a straightforward and clear script language, Liza script.

Liza script is easy to learn, yet very elegant and powerful, making it possible to create subject-specific chatbots and virtual assistants based on media didactics and actual organizational needs, regardless of use case, industry, or subject-matter. There is only a very short training period because Liza script is so simple, easy to understand, and manageable, providing an authoring tool that is quick and easy to use, even without a background in IT-development. At the same time, pedagogical applications are made easy with the many options provided by Jix for designing outputs (buttons, menus) and for integrating different media (audio, image, video, links on websites and applications). The range of possible applications stretches from a pure dialog system with artificial avatars as virtual points of contact all the way to escape room scenarios as serious games.

Thus, Jix is a very useful tool for media didactics professionals and learning content designers, enabling authors to easily create very effective learnbots in a short period of time, without having to engage external developers, programmers or agencies. Production costs and timeframes both drop, as e-learning authors can create a basic learnbot in a few person days (5-10) and then keep adding to it bit by bit during operation.

## 2    Use Cases

### 2.1    Kim: A Digital Tutor on AI

Kim is designed as a learnbot, a digital tutor, giving a basic introduction to AI for novices. Kim acts as a direct interlocutor for the user, giving short, concise learning sequences about basic concepts of AI, examples of application, the history, and even offering a short quiz. Kim is like the fellow from next door that is enthusiastic about AI, an informed fan rather than a sophisticated expert. The user keeps maximum autonomy in how deep he or she wants to dive into the content, as Kim regularly asks back whether to continue or to switch topic. At the same time, Kim encourages the user to learn more, by offering additional information and short side glances on diverse topics, and by asking thought-provoking questions. Kim also offers a rich media experience, incorporating graphics and videos into the dialogue.
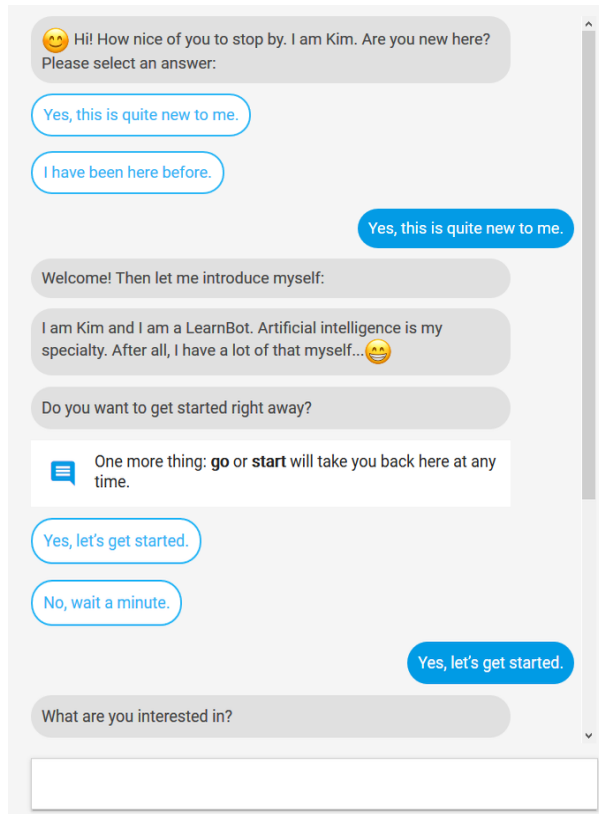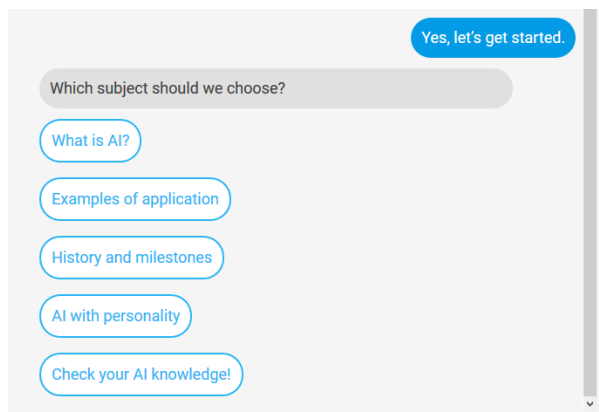
**Fig. 1.** Learnbot Kim: Onboarding



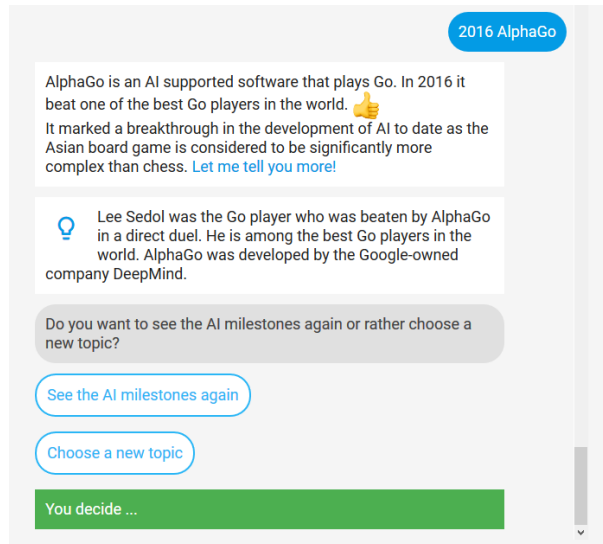**Fig. 2.** Learnbot Kim: Topic Selection

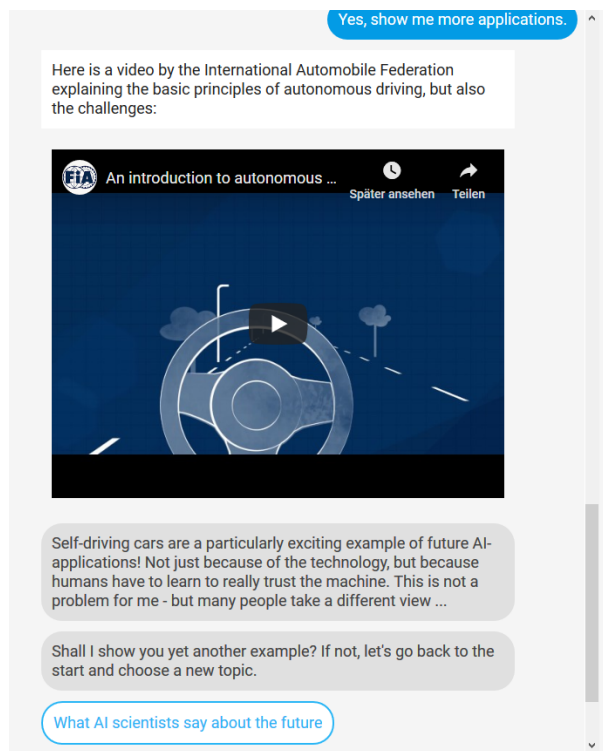**Fig. 3.** Learnbot Kim: Example of a Learning Sequence



**Fig. 4.** Learnbot Kim: Learning Bite with Embedded YouTube Video

## 2.2 Pit in the Warehouse: an Interactive Fiction Game on Materials Management

"Pit in the Warehouse" combines conversational learning with an interactive fiction approach and an escape room scenario, thus realizing a new concept of a serious game. Pit, the user's interlocutor, has suddenly found himself in a strange, unfamiliar town that turns out to be Hamburg during the early days of the 20th century. In order to get back to the present and continue his coffee break with his friends, Pit needs to perform an inbound goods receiving process in accordance with materials management standards. In this scenario, the roles of the user and the chatbot are inverted: it's the chatbot who asks the user for help, not the other way round.
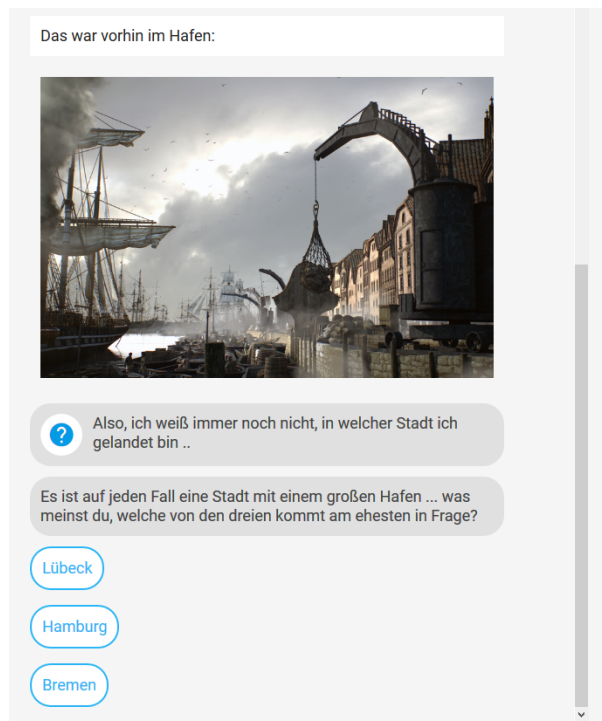


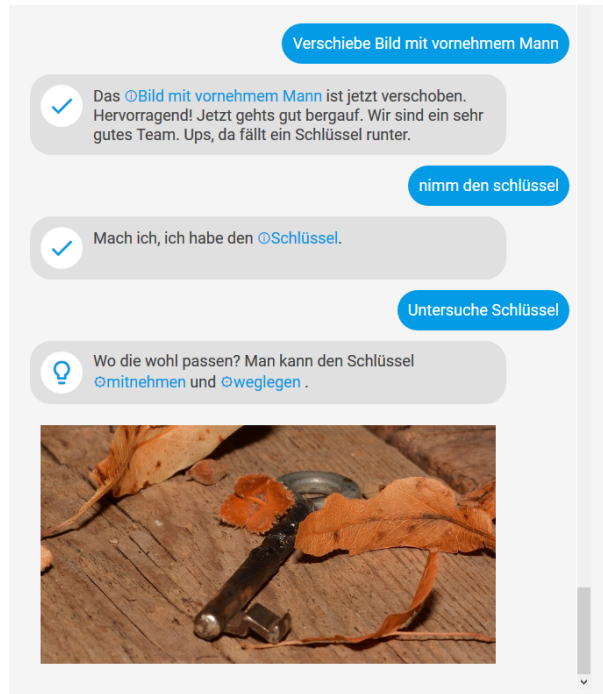**Fig. 5.** Introductory Sequence of "Pit in the Warehouse"

**Fig. 6.** "Pit in the Warehouse": Unraveling the Mystery, Step by Step

### 2.3    Who Wants to Be a Forklift Operator?: A Quiz Game Scenario

This use case adapts the concept of the popular quiz show "Who Wants to Be a Millionaire?", supplying it with questions from the official forklift license examinations. Of course, no real money can be won, but as the user reaches higher levels, questions become more difficult to answer. A fun and easy way to practice for your next forklift exam!
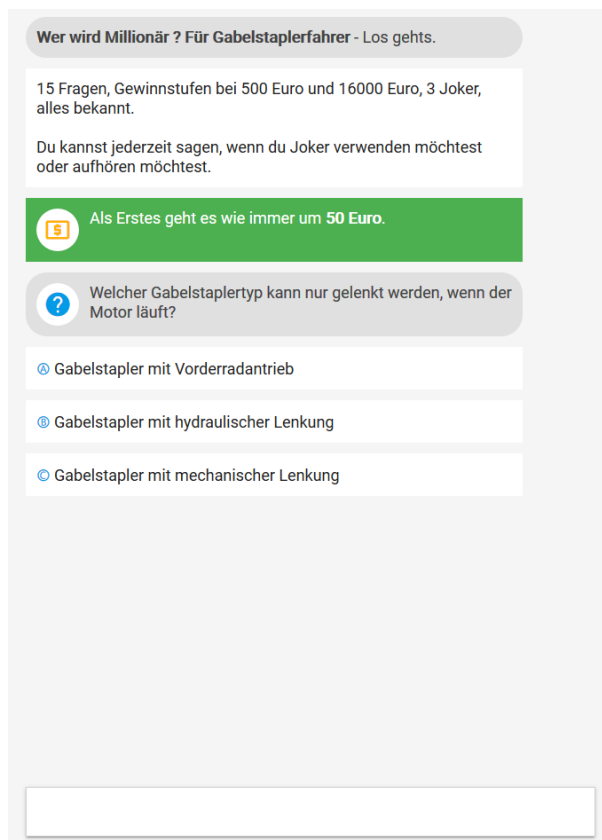
**Fig. 7.** "Who Wants to Be a Forklift Operator": Intro and Quiz Question

## 3    Lessons Learned

In order to offer a good learning experience, learnbots have to meet different requirements: they have to be adequate interlocutors, i.e. knowledgeable, likeable, and helpful; the content must be interesting, relevant, and presented in a didactical well-organized and concise way; usability must be easy and obvious, and the user experience as smooth and natural as possible. Of course, it is not easy to meet all these requirements simultaneously, and more often than not good results can only be achieved by making compromises regarding one aspect or another.

Having a clear idea of the specific application, the goals, and the target audience therefore is an important prerequisite for every Conversational Learning project. A good design process therefore is vital for the quality of the later chatbot, to make sure not too much compromise is made on the wrong side.

A creative approach to crafting the dialogue helps to avoid typical chatbot pitfalls. Kim, for example, does not attempt to remember whether the user is visiting for the first time or not, but asks straight away (as a human with a bad memory would proba-

bly do, too) – "have we met already?", to then give a short introduction, if necessary, or proceed directly to the content.

The chatbot's personality also has a huge impact on the user experience. If a chatbot claiming to be an expert or offering "ask me anything" fails to answer (or even understand) a question, users are likely to be frustrated. In contrast, Kim's users have reported to find it absolutely acceptable when Kim answers "sorry, I can't tell you anything about that", as Kim from the beginning makes clear that he/she knows a bit, but not everything.

To start with a structured dialog, offering distinct options how to proceed after each dialogue step, has been proven helpful, too. Dialog flows quickly reach a very high level of complexity, and the structured approach makes it possible to handle this complexity. Greater flexibility, understanding of free user inputs, and additional dialogue paths can (and should!) be added by and by.

This approach is perfectly supported by Jix, as the script can be expanded easily and at any time. When you realize that too many users run into the same dead end of the dialog, you can easily insert additional rules and sequences without having to redesign and reconstruct the whole chatbot.

## 4 Conclusion

AI-driven conversational interfaces open up a variety of new applications for learning and development. With Jix, very different and complex scenarios can be easily implemented. The examples shown here are only a few of many possible use cases combining dialogue, interaction and creative storytelling to create compelling new learning experiences. We are confident that in the future we will see more and more chatbots in digital learning, acting not only as virtual assistants, but also as tutors and learning buddies, establishing alternatives and supplements to "classical" training formats.

## 5 Acknowledgement

We thank all our clients and participants in workshops and webinars that have shared their questions, thoughts and experiences with us. We have learned just as much from them as they learned from us!

## 6 References

[1] www.time4you.de
[2] www.jix.ai

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