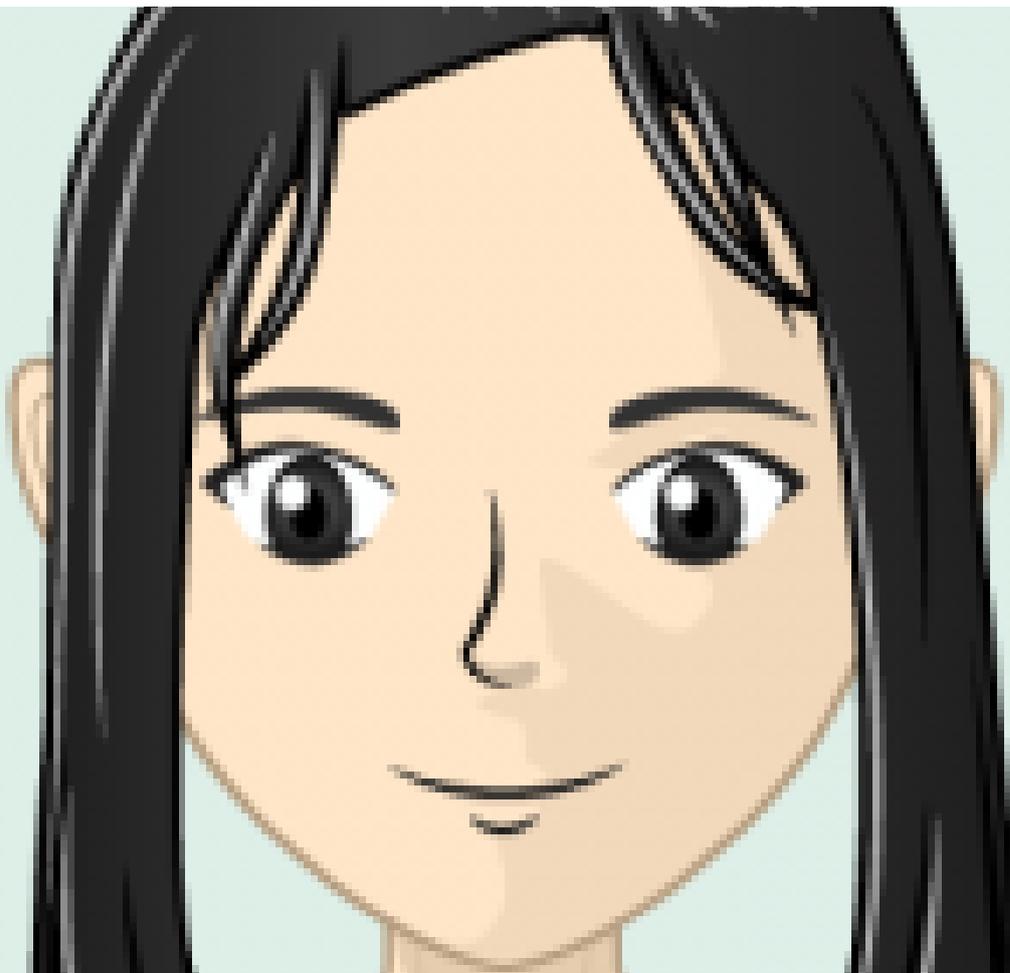# Meet Beau: a reflection chatbot

Kirste den Hollander, Joitske Hulsebosch and Steven van Luipen

Meet Beau the confessional chatbot

The applications of chatbots in the world of learning and development are far less explored than in the example of customer care. For us, this sparked our curiosity: could a chatbot support a professional reflection process? To examine this question we developed Beau the confessional chatbot. In this article we will explain what chatbots are, our experiences with Beau and how you might take your first steps into the world of chatbots.

A chatbot is a programmed conversation partner that is able to recognise your answers and generate responses. You may have encountered chatbots on the websites of various companies, for example at Amazon's customer service, but more often you find them on messaging apps such as Facebook Messenger, Skype and Slack. Over the past years chatbots are on the rise. On Facebook Messenger alone, the number of chatbots has increased tenfold in two years, to 300,000 in May 2018 (Venturebeat, 2018).

They are booming because we spend a lot of time online and we like conversations. Most people rather have a friendly chatbot that helps to book a ticket then search and get lost on a website ourselves. At the same time, it is often a cost-saving measure for companies. Chatbots have many different goals. For example, by talking to a chatbot you can learn a different language, work on better health or follow the news. Would you like to try a bot? On the website thereisabotforthat.com you will find a large number of chatbots.

Chatbots for reflection

Currently, there are few chatbots that support the reflection process. One of the few examples can be found in the work of Jamie Good (2018) who has experimented with a reflection chatbot for conferences: the Takeaways Chatbot. The Takeaways chatbot helps you to keep track of your insights gained during a conference. However, no research has been done on the effect or benefits of using this chatbot.

We therefore started looking for experiences with chatbots for psychological support or therapy. The common feature of chatbots for therapy and reflection seems to be that they both focus on gaining new insights about your own behaviour by asking questions without judging. One of the oldest examples of therapy bots is Eliza (masswerk.at/elizabot/), developed in the sixties.

She is programmed as a Rogerian therapist, empathic and without judgment. Eliza asks probing questions to help you deepen your thinking process. It is not an advanced chatbot, but Eliza is successful because people appreciate that she listens and asks probing questions (Boutin, 2017).

There are more chatbots based on the principles of cognitive behavioural therapy. An example of such a chatbot is Woebot (woebot.io), developed for people who show signs of depression. Woebot uses daily check-ins and supports the users to turn negative thoughts into more positive ones. Research shows that this works to reduce depressive feelings of the users (Fitzpatrick, Darcy, & Vierhile, 2017).
Tess is another psychological chatbot based on cognitive behavioural therapy.

A conversation with Woebot

Tess remembers previous sessions and can recognize emotions through artificial intelligence (AI). The first reactions in a survey are positive. However, Tess is deployed in between sessions with psychologists. It is therefore not a replacement for the psychologist (Gionet, 2018).

The experiment: the birth of Beau the bot

We were curious about the possibility of using a chatbot to support reflection. We already had a face-to-face reflection methodology: the confession box, a proven methodology to accelerate the learning process of mistakes through a series of reflective questions (den Hollander & Verdonschot, 2016).

The confessor is a person who asks questions about dealing with errors on the basis of a set of cards with statements. In the methodology, the person confessing and the facilitator sit back to back in order not to distract attention from the conversation. There is even a real confession box to conduct this conversation analogous to a religious confessional process.

Box 1 Chatbots and artificial intelligence (AI)

There are chatbots with and without artificial intelligence, referred to as AI or non-AI bots. Computer systems with artificial intelligence (AI) can perform tasks that normally require human intelligence. For example, chatbots can use AI to recognize emotions in a conversation. An AI chatbot learns and improves by having many conversations.

Knowing the face-to-face methodology of the confession box, we wondered whether we could bring this confession methodology online with a chatbot. The advantage could be that the chatbot has no opinion and therefore does not judge or advise. Furthermore, it costs much less guidance time of a confessor – actually none at all. Another advantage is that the chatbot can converse with many people at the same time. Therefore, we decided to investigate this by building a chatbot with this methodology as a basis. If this were to work, as a professional you could confess whenever you liked.

You could reflect about things that will typically work out differently in the work than expected and learn from it, without needing a coach or facilitator.


The face-to-fade confessional box

The design process

At the start of the experiment we had a number of assumptions that we wanted to investigate:

• We expected people to share errors less easily in an online conversation than in a face-to-face setting with a facilitator, because a chatbot would be unfamiliar and it would therefore weird to share thoughts with a chatbot
• We thought it might discourage people from completing their online confession if the chatbot does not respond smartly and empathically. In other words, the conversation of the chatbot should be as similar as possible to that of a conversation with a person. Hence we thought the bot needed to be AI-driven.
• We expected that doubts about the confidentiality of conversations with a chatbot could lead to less openness amongst the testers, due to questions such as Where are the digital conversations stored? Who has access to the conversations?

The first step towards building the chatbot was to familiarize ourselves with the confession box methodology. We all experienced the face-to-face confession and translated this conversation into a flow in a flowchart. From the conversation flow we made a chatbot with Flow XO (flowxo.com) and connected the bot to Facebook Messenger, Slack and the web. We had this tested by a small group of people. To our surprise, the testers were pretty positive about the flow and its impact. This was contradictory to our second assumption that we would need an AI-driven bot to make it useful.
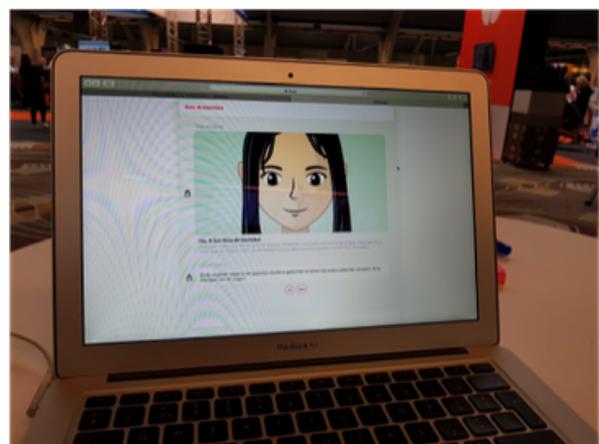
Beau the online chatbot

Box 2: Who are our testers?

By far the largest part of the test group are people who work as a consultant, trainer or coach in the field of learning and development, either self-employed or in an organization. About half of the latter group occupies a leading position. In this test group, 80% have experience with peer assists or other reflection methods. About a quarter of them have experience with online ways of reflecting. Only 32% of the people in the test group use chatbots.

Does Beau work?

We decided to build a second version of our bot based on the feedback from the testers and an analysis of the first conversations. The testers' advice was to strengthen the personal touch. We gave our chatbot the name Beau and a stronger identity. Furthermore, we decided to have Beau ask the name of the confessor in half of the cases and use it in the conversation, in the other case people would remain anonymous. In the second test round, 150 conversations were conducted with Beau and 51 questionnaires were completed.

On average, Beau's users rate their experience with a 6.2 out of 10.
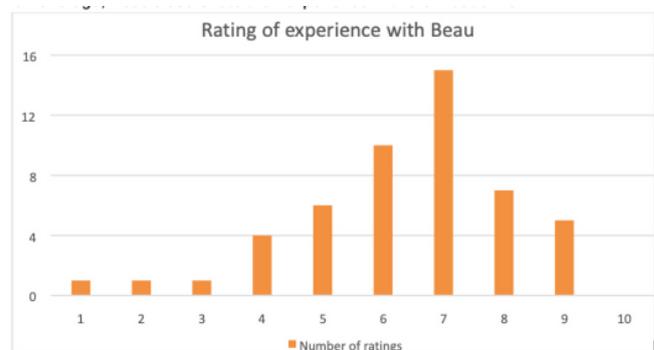

Figure 1: The appreciation for the conversation with Beau the confessional chatbot (between 0-10)

The graph shows a large variations in the overall experience with Beau amongst the testers. Ten testers are so enthusiastic about their conversation with Beau that they rate their experiences with an 8 or 9 (21%).
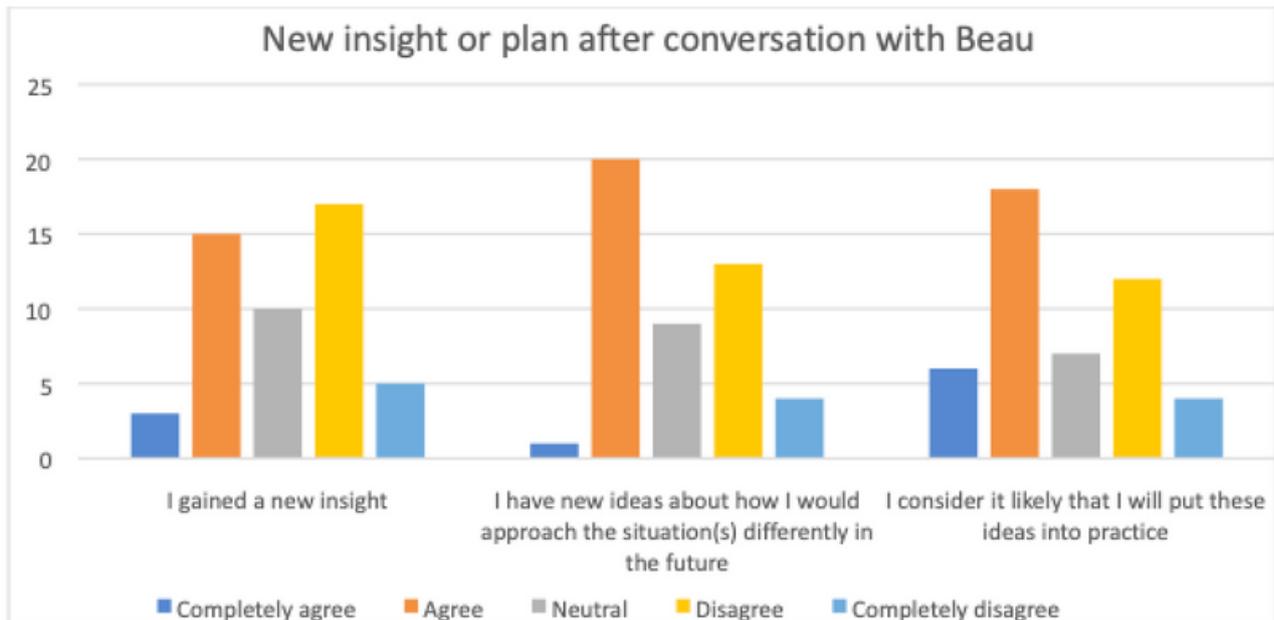
Figure 2: The extent to which people have a developed a new insight or plan after the conversation with Beau

The enthusiastic group typically says things like: "Beau asks appropriate in-depth questions and that is why you go along" and "I quickly get new insights in a simple and easy way." About half of them enjoy the conversation and rate their experience with a 6 or 7 (52%). A quarter of the testers (23%) are negative to very negative about their experience. Negative experiences seem to be mainly related to the fact that Beau does not respond to the answers, but follows a rather rigid conversation flow: "I was disappointed that the bot does not really respond to my reaction",

"I felt that I was not really listened to" and "The questions do not always fit well with the answers that have already been given".

Remarkable is that everybody seems to appreciate the tone and language used by Beau, including the testers who are not enthusiastic about their experience. Of the testers 65% thought the tone was pleasant, 21% found the tone very pleasant and the rest were neutral. They provided statements such as: "I liked the tone of voice, clear and positive language" and "I love the tone of voice".

Beau helped gain insights

Besides the appreciation, we were of course also curious about the effect of the chatbot: whether people have gained new insights through the conversation with Beau. About half of the testers indicate that they have new ideas about how they would approach the situation differently in the future. Moreover, these testers consider it very likely that they will also put these ideas into practice (see figure 2).

We assumed that people in conversation with an online chatbot would be less open about their mistakes. To examine this we asked the testers which factors stimulated or hindered the openness of their answers in the reflection process. Surprisingly, having a conversation with a chatbot instead of a person of flesh and blood was not a problem for the majority of the testers (46%) or just fine (32%).

The fact that you type text instead of talk to a coach was even judged as a positive factor: 92% was positive or neutral about this. Someone explained: "Typing is fine because it gives me the time to reflect". 22% of the testers were annoyed by the fact that they had to type and missed a real in person conversation.

The main factor that seemed to hinder the openness in conversations were privacy concerns. Answers are stored digitally and can be viewed by the developers. Users have to trust that others do not have access and their data are safe. 49% of the testers said it did affect their candour.

When we look at the different user experience of Beau between the people who were asked for and addressed by their name in comparison to the people who remained anonymous,

we see a striking difference in the level of appreciation. The user experience of the non-anonymous version is rated with a 6.6 whereas the anonymous version is rated with a 5.8. So personalizing is indeed important for a good experience.

Conclusions

Our overall conclusion of this experiment is positive. Most people are positive about the use of Beau, the tone and the language used in the conversation. But more importantly, half of them have gained a new insight through the conversation. Subsequently, our assumption that talking to a chatbot rather than a person of flesh would work for a meaningful reflection proved to be false. Talking to an automated chatbot instead of a person - typing instead of talking - seems to support the reflection process.

It gives people time to think and enables them to determine the right rhythm of the conversation. During the live confession the role of the confessor is mainly to ask questions. That position can be perfectly taken over a chatbot. Our main conclusion is hence that reflection processes can be supported by a chatbot.

A second conclusion is that is is not necessary to use artificial intelligence (AI) when building a reflection chatbot. A conversation via a script is already helpful to many people. Nevertheless, we think that AI could help address the main criticism of Beau, namely that she does not always respond well to the answers of the people who reflect. An AI-driven chatbot should be better able to respond to a wide variety of answer.

Last but not least, there are definitely privacy issues to be addressed.

Get started with chatbots

It is important that users know who has access to the logged conversations and how long data is saved. They must be able to trust that only a limited group of people has access and that data is (relatively) safe from hacking. On the other hand, during a live session, professionals also have to trust the confessor.

We see several possibilities to use chatbots for reflection. You can encourage people to do this individually on a regular basis. Alternatively, a team may decide to reflect individually and share their reflection on a regular basis. In that case, a neutral and trusted person could analyse the recorded conversations to find common threads. It is important to bear in mind, however, that a (small) group of people feel strong resistance to reflect with the help of a chatbot.

Do these results excite you and do you want to explore the possibilities of chatbots for your challenges? Chatbots are a relatively new phenomenon and our experience is that you first have to get a feel for this new media before you see the applications. We recommend the following steps if you want to get started

- Try a number of chatbots yourself, in order to get acquinted with chatbots and experience what they can do. Experiment with your team. Take a look, for example, at how Slackbot works on every Slack network. Once you know about chatbots you will start seeing them everywhere!
- Think about the purpose of your chatbot. How would the chatbot support people? In a brainstorm you can explore which chatbots would really add value to learning in the workplace.
- Organize a design workshop. During the workshop you can formulate successful conversations and design the personality of the chatbot. After this you can build a prototype and possibly hire an expert to develop it for you.

Important lessons

In our experiment we learned quite a lot about chatbots. Below a few of our most important lessons:

1.   The most important part of the design process is not the technical part (building the bot) but rather the language and logic of the conversation flow. Hence invest sufficiently on the conversation flow and improving the flow.

2.   A chatbot needs a personality, with a tone that appeals to users. It helps in the design process of a chatbot to start from face-to-face conversations. At Beau we were able to use the observation of the confessional conversation, which we later converted into the digital conversation flow.

3.   A chatbot is never finished. It makes sense to read (test) conversations, in order to improve illogical lines of communication and to remove problems in the conversation flow. Above all, the prematurely terminated conversations are interesting. Why did people drop out?

4.   A chatbot can be supported by artificial intelligence (AI). These bots are self-learning. We found out AI is not always necessary. AI is not the magical bullet that makes a bot perfect. AI-driven conversation also needs to be programmed. The basics of good bot design is: a good conversation flow which will be continuously improved based on the conversation logs.

Authors' information

• Kirste den Hollander, MSc, works as consultant and researcher at Kessels & Smit, The Learning Company in Utrecht. Kirste likes to look at organizations through the lens of the learning process and to think of new forms to make learning attractive.

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