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CHAT2 LEARN

Chatbot technologies for digital entrepreneurship and education and adult learners

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IO1: Developing a chatbot learning environment in the field of digital entrepreneurship

1.1. Collecting best practices and tools on Technology Enhanced Learning and creation of a resource library on topic

PREPARED BY

ASSET BASILICATA

Title Jill Watson	
Date/Period 2016 -	**Authors** IBM & Prof. Ashok Goel from Georgia Tech University
Partner Nikanor Ltd, Bulgaria	

Element	*Guiding question*
Type of practice	*Technical application for a chatbot assistant used in University education*
Publisher (optional)	*Desktop research; Sources:* • a Professor Built an AI Teaching Assistant for His Courses — and It Could Shape the Future of Education (businessinsider.com) • Donald Clark Plan B: Search results for Bot teacher that impressed and fooled everyone • A professor built an IBM Watson AI bot to make teaching easier. Will it replace him someday? — Quartz (qz.com)
Target audience	*The chatbot assistant had two main target audiences:* • *Students, who received prompt and objective answers to their questions.* • *University tutors, whose workload of answering multiple basic questions decreased and they could focus on teaching or replying more complicated questions.*
Objective/Aim	*The objective was to decrease tutors' workload of answering repetitive students' questions and to allow them to focus on teaching or on more complicated questions. The other objective was to provide students with easy access to information and to support them in the learning process.*

Location/Geographical coverage	*The USA and worldwide*
Description	*The presented chatbot practice was developed by computer science prof. Ashok Goel as a result of his own negative experience – tutors' workload on answering repetitive student questions and at the same time – worry that online students might lose their interest over the course because of tutors' inability to reply to numerous simple questions.* *He created '**Jill Watson**' chatbot with a purpose to assist his students in physical but also online classes with routine but necessary questions, which had firm, objective solutions. Such types of questions were queries about proper file formats, data usage, the schedule of office hours, etc.* *The chatbot was mistakenly named of IBM's legendary CEO Tom Watson's wife, whose name was actually Jeanette.* *'**Jill Watson**' was constructed using Bluemix (IBM's app development environment for Watson and other software). The chatbot lives in Piazza, the online Q&A platform used by Georgia Tech, which is a utilitarian message board, set up like Microsoft Outlook (questions and topics are in the left-hand column, each of which opens to a threaded conversation on the right).* *In the spring semester of 2016, **Jill** was launched, but students were not told that they would communicate with a machine. For the autumn semester, the chatbot operated under a pseudonym, as were most of the other teaching assistants, so students could not Google and figure out who the robot was.* *At the end of the semester, prof. Goel revealed **Jill**'s identity.*
Methodological approach	*At the beginning, **Jill** made many mistakes and provided wrong and even bizarre answers.* *To train the chatbot, the developing team uploaded four semesters' worth data - 40,000 questions and answers, and other chat data from Piazza platform, so to improve **Jill**'s replies. In addition, prof. Goel used his own teaching experience.* *Developers also created a mirror version of the live Piazza forum for **Jill** so that they could observe her responses and flag her errors, to help her learn.*

	*Slowly, the bugs were ironed out. This was done by including not only previous questions and answers in **Jill**'s memory, but also the context of her interactions with students. This way, her answers became 97 % accurate and she was ready to meet the real users - students.*
Finance	*It is not clarified. As this was a university-developed chatbot, most probably internal or project-based finances were used.*
Constraints (optional)	*Positives: When **Jill**'s identity was revealed, the students were far from being upset. They were just as pleased as the instructors.* *One of the reasons why students liked the chatbot was because they knew it delivered better information, often better expressed and (importantly) faster than human tutors.* *Another reason was that real tutors, who might often find themselves frustrated by student queries, sometimes got slightly annoyed and tetchy, as opposed to **Jill**, who came in with personal but always polite advice.* *Students praised that **Jill** never got angry, annoyed, tired and irritable. They found her useful - as the person who would remind them of dues dates and things they really needed to know, then and there, not days later. She would also ask stimulating questions during the course.* ***Jill** was described as an "outstanding TA" albeit "somewhat serious".* *Negatives: Initially some students were suspicious and checked LinkedIn and Facebook, where they found a real Jill Watson, who was puzzled by the attention.*
Outcomes	*Prof. Goel envisioned **Jill Watson** as the basis of a start-up and considers AI as both a promising and lucrative tool in the education field.*
Replicability and/or up-scaling	*Possibilities for up-scaling might be assessed as 5 /according to the scale from 1 (= min) to 5 (= max)/* *The following semester, the developing team created two new bots as AI assistants (Ian & Stacey). Stacey was more conversational. This time the students were on the look out for bots, but only 50% identified Stacey and only 16% identified Ian as AI. The next semester there were four AI assistants and the*

	whole team (including humans) used pseudonyms to avoid detection.
Conclusion (optional)	*Developers shared that creating an AI TA was "almost like raising a child." One of the students called **Jill** "incredibly cool."*
Opinion (optional)	*On the scale from 1 (=min) to 5 (=max) about:* ● ***Usability – 5*** *– **Jill** was assessed as very cooperative and useful AI teaching assistant.* ● ***Relevance*** *– 5 – The presented good practice addresses a very important problem faced by many teachers and tutors.* ● ***Integration – 5*** *- The chatbot can easily be up-graded and integrated with other functions and for new target groups.*
Further considerations	*None*