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CHAT2 LEARN

Chatbot technologies for digital entrepreneurship and education and adult learners

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Project n. 2020-1-CY01-KA204-065974

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 the topic

PREPARED BY

ASSET BASILICATA

Good practices template

Good practice definition

A "**good practice**" can be defined as follows:

A good practice is not only a practice that is good, but a practice that has been proven to work well and produce good results, and is therefore recommended as a model. It is a successful experience, which has been tested and validated, in a broad sense, which has been repeated and deserves to be shared so that a greater number of people can adopt it

Good practice criteria

The following set of criteria will help us to understand whether a practice is a "good practice":

- **Effective and successful:**

  A "good practice" has proven its strategic relevance as the most effective way in achieving a specific objective; it has been successfully adopted and has a positive impact on individuals and/or communities

- **Technically feasible:**

  Technical feasibility is the basis of a "good practice". It is easy to learn and to implement

- **Replicable and adaptable:**

  A "good practice" should have the potential for replication and should therefore be adaptable to similar objectives in varying situations

- **Environmentally, economically and socially sustainable:**

  A "good practice" meets current needs without compromising the environment and/or the social cohesion of the territories

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Ms Lindquist: the free algebra tutor for word problems *(What is the name that best describes good practice?)*	
2000 *(When was the good practice documented/published/carried out?)*	**Carnegie Mellon University** *(Who – person/organization – wrote/carried out the good practice?)*
ASSET *(who collected the practice)*	

Element	***Guiding question***
Type of practice	*Research project of the "Center for Interdisciplinary Research on Constructive Learning Environment" (CIRCLE) of the University Carnegie Mellon (USA)*
Publisher (optional)	*website: https://www.cs.cmu.edu/~neil/my_papers/postFinal-AAAI+cog-typo.html*
Target audience	*"Are you a **math teacher** like me?* *I taught middle school algebra for three years and found that one of the hardest things for my **students** to do was to write algebra expressions for word problems... I found that I could help students to solve these problems if I asked them the right questions. But, of course, I could never tutor all of my students at the same time. I built this computer program so that all students could get some intelligent help!"* *(From the presentation of the website)*
Objective/Aim	*Ms Lindquist is a "3rd generation tutoring system" (or ITS - Intelligent Tutoring Systems) that is meant to engage in a dialogue with students to allow students to construct their own knowledge of the domain.* *The task domain Ms Lindquist works on is symbolization, which is the task of writing an algebraic expression given the real-world problem context. Symbolization is fundamental because if students can not translate problems into a mathematical algebraic model, they will not be able to apply algebra to solve real-world problems.*

Location/Geographical coverage	*USA*
Description	*Miss Lindquist is an ITS that not only can model-trace the student's actions but can be more human-like in carrying on a running conversation, complete with probing questions, worked examples, positive and negative feedback, follow-up questions in embedded sub-dialogues, and requests for an explanation as to why something is correct.*
Methodological approach	*The project behind the birth of Ms Lindquist starts from a deep awareness of the difficulties of mathematics students to write problems described verbally in the form of algebraic expressions (e.g.: how to calculate the amount of time it takes for a "m" mile bike ride at a speed of "s" miles per hour and a stop of "b" hour break).* *The preliminary study conducted by the University's School of Computer Sciences (and described in the cited paper) is scientifically accurate.* *One of the aspects that are most appreciated is the ability to face the problem from a multidisciplinary point of view as it constantly takes into account the real learning processes, tutor-student interactions, etc. to build an effective tutorial model.*
Finance	*The Spencer Foundation; The National Science Foundation*
Constraints (optional)	*Ms Lindquist offers no explicit instructions but allows students to learn through practice: it was found that students using this system solve fewer problems but learn just as well, and sometimes even better than those who don't use the bot; in addition, the use of the system has demonstrated that a conversational method helps students to keep motivation and attention high (Heffernan, 2003)*
Outcomes	*Academic papers and reviews* *A website (https://www.cs.cmu.edu/~neil/) not updated nor well-running*
Replicability and/or up-scaling	*2* *The best practice is protected by patents.*

Conclusion (optional)	
Opinion (optional)	*Express your opinion on a scale from 1 (=min) to 5 (=max) about:* ● *Usability: NA (it is not possible to test the chatbot listed in the website)* ● *Relevance (the degree to which the problem addressed by the good practice is experienced as significant) : 5* ● *Granularity (the degree to which the good practice is detailed): 5* ● *Integration (the degree to which the good practice can be integrated into the Chat2learn project): 4*
Further considerations	