

# Attracting Future Female Computer Scientists: Hands-On AI Workshops for Girls as a Pathway to Higher Education

FRANZISKA PAUKNER, University of Bamberg, Germany

CAROLINE E. OEHLHORN, University of Bamberg, Germany

UTE SCHMID, University of Bamberg, Germany

CCS Concepts: • **Social and professional topics** → **Women**.

Additional Key Words and Phrases: gender, computer science, artificial intelligence, self-efficacy

## ACM Reference Format:

Franziska Paukner, Caroline E. Oehlhorn, and Ute Schmid. 2025. Attracting Future Female Computer Scientists: Hands-On AI Workshops for Girls as a Pathway to Higher Education. 1, 1 (June 2025), 2 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>

The field of Artificial Intelligence (AI) is rapidly gaining public attention with its everyday applications, not only to economic institutions but also for private individuals. Increased interest can be observed among young people in particular: a German survey showed a significant rise in interest in new technologies in this area among young people aged 12 to 19. 83% stated that they were familiar with the Chat GPT application and also knew its significance; among the girls surveyed, 79% stated this and 51% of them had already used Chat GPT at least once[7]. In order to meet this rapidly growing demand and ensure (further) development in the AI landscape, more specialists with a sound education in Computer Science (CS) are needed to design and train good models in the future. This need contrasts with the only moderate increase in the number of Computer Science students, particularly the stagnating growth of proportion of women studying CS in Europe is usually ranging between 10% and 20%[3]. With regard to the development of unbiased and fair models and training with qualitative data, women are needed more than ever in the field of CS[6].

In order to meet this challenge, the increasing interest of female secondary school students in AI topics should be utilized and transferred into an interest in studying CS. In order to achieve this, we are designing hands-on workshops for female students aged 17 and over, which focus on the topic of AI and teach in-depth learning content to enhance AI Literacy. To bridge the gap between existing informal interests and academic study in CS, we develop workshop formats lasting several days. These workshops aim to promote a foundational and critical understanding of artificial intelligence and the concepts behind (AI Literacy). Thereby, we focus on the integration of theoretical knowledge with practical, hands-on experiences and the application of these contents to real-world problems.

Our research model (1) draws on Ajzen's theory of planned behavior (TPB)[1][5], explaining behavioral intentions by the influence of subjective norm, attitude, and perceived behavioral control. Subjective norm refers to the individual

---

Authors' Contact Information: Franziska Paukner, [franziska.paukner@uni-bamberg.de](mailto:franziska.paukner@uni-bamberg.de), University of Bamberg, Bamberg, Germany; Caroline E. Oehlhorn, [caroline.oehlhorn@uni-bamberg.de](mailto:caroline.oehlhorn@uni-bamberg.de), University of Bamberg, Bamberg, Germany; Ute Schmid, [ute.schmid@uni-bamberg.de](mailto:ute.schmid@uni-bamberg.de), University of Bamberg, Bamberg, Germany.

---

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from [permissions@acm.org](mailto:permissions@acm.org).

© 2025 Copyright held by the owner/author(s). Publication rights licensed to ACM.

Manuscript submitted to ACM

Manuscript submitted to ACM

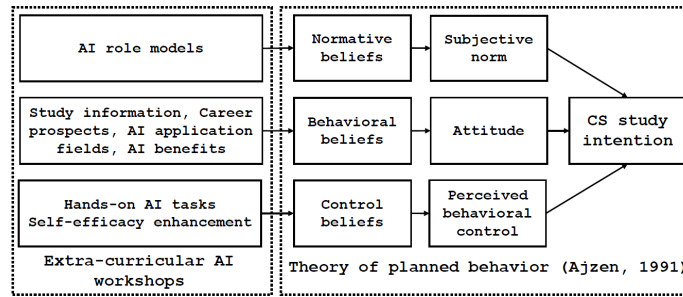


Fig. 1. : Research model underlying the workshop design based on the theory of planned behavior (TPB)[1]

perception of how relevant gatekeepers, such as parents, teachers, or friends, assess their own suitability with CS studies. Attitude refers to the own perception that studying CS will have positive effects on individual outcomes and self-development. Perceived behavioral control refers to the individual evaluation of the difficulty or ease of studying CS. Based on the TPB model, we designed our extra-curricular AI workshops to address all three aspects: During the workshops, we introduce biographies of various women who are well-known AI developers as well as female AI researchers. Furthermore, current female CS bachelor students are invited in person to the workshops to report about their studies, experiences, and goals. We assume that the presentation of these role models has a positive effect on the formation of normative beliefs, leading to a higher subjective norm and increasing the intention to study CS[4]. In addition, our workshops provide relevant information on studying CS and career prospects and present many different areas of AI for the common good[2] from application areas of healthcare, environmental sustainability, and education. We assume that such information strengthens behavioral beliefs in order to develop positive attitudes towards studying CS. The core of our workshop program is in depth-presentation of AI concepts and methods illustrated via the named application areas and tasks are instructed and carried out hands-on. The practical experience, which is accompanied by explicit positive feedback, contributes to the development of a high level of self-efficacy. This strengthens control beliefs, which in turn have a positive influence on perceived behavior control and the intention to study CS.

The series of workshops starts in summer 2025 and will be offered for a duration of two years to different groups of about 15 girls each. The assumed positive effects of our program will be evaluated using pre-post-questionnaires measuring belief updates following the TPB framework.

## References

- [1] Icek Ajzen. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50, 2 (1991), 179–211.
- [2] Bettina Berendt. 2019. AI for the Common Good?! Pitfalls, challenges, and ethics pen-testing. *Paladyn, Journal of Behavioral Robotics* 10, 1 (2019), 44–65.
- [3] Tiziana Catarci, Barbara Polidori, Daniel Raffini, and Paola Velardi. 2023. A Greed(y) Training Strategy to Attract High School Girls to Undertake Studies in ICT. In *Universal Access in Human-Computer Interaction*, Margherita Antona and Constantine Stephanidis (Eds.). Springer Nature Switzerland, Cham, 223–233.
- [4] Nilanjana Dasgupta. 2015. Role Models and Peers as Social Vaccine to Enhance Women’s Self Concept in STEM. *ASCB Nesletter August* 8, 7 (Aug. 2015), 8–12. <https://www.ascb.org/wp-content/uploads/2015/12/August-NL-2015.pdf>
- [5] Bettina Finzel, Hannah Deininger, and Ute Schmid. 2018. From beliefs to intention: mentoring as an approach to motivate female high school students to enrol in computer science studies. In *Proceedings of the 4th Conference on Gender & IT - GenderIT '18*. ACM Press, Heilbronn, Germany, 251–260. doi:10.1145/3196839.3196879
- [6] Eduard Fosch-Villaronga and Adam Poulsen. 2022. Diversity and inclusion in artificial intelligence. *Law and artificial intelligence: Regulating AI and applying AI in legal practice* (2022), 109–134.
- [7] Medienpädagogischer Forschungsverband Südwest mpfs. 2024. JIM-Studie 2024. <https://mpfs.de/studie/jim-studie-2024/>. Accessed: 2025-05-16.