Teachers' Perspectives on Transatlantic AI Implementation in K-12 and University Classrooms

Jennifer Smith(✉)

Illinois State University, Normal, IL 61790, USA
jsmit54@illinois.edu

Abstract. Artificial intelligence is not new to education, but recent advancements, such as the creation of Chat GPT have placed AI into the educational spotlight. The primary aim of this paper is to provide a case study of the experiences of teachers engaged in transatlantic collaboration with the aim of incorporating AI in their classrooms. Using semi-structured interviews, I found that teachers sought transatlantic collaboration for projects such as AI implementation in order to share their experiences as well as learn from the experiences of others. The teachers incorporated a variety of AI tools into their practice to develop lesson plans, assess students, and teach students how to use AI. The collaboration was a source of inspiration and support for teachers, even though their contexts varied in terms of both the content and age levels of students.

Keywords: Artificial Intelligence · Transatlantic · Collaboration

1 Introduction

Artificial intelligence (AI) has held a space in education for the past few decades. As the incorporation of computers and personal computing devices has become almost ubiquitous in the classroom, AI has also occupied these classroom spaces in the form of a variety of online interactives and even in programs that may be easy to overlook, such as spellcheck. Recent technological advancements and innovations, such as the creation of Chat GPT, have brought new changes to education and have placed AI into the educational spotlight.

Considering these advancements, educators have been faced with the challenge of learning how to navigate these new forms of AI, first as learners themselves and second as educators. Educator training on the topic of AI varies greatly from school to school both in the United States and abroad. Educator attitudes toward AI are also varied, with some teachers fully embracing it while others are more wary [1]. For educators who are willing and able to implement AI into their classrooms, having the opportunity to collaborate with and learn from other educators who are also strategically implementing AI presents a unique opportunity for support and growth. The Transatlantic Educator Dialogue (TED) Fellowship through the European Union Center at the University of Illinois Urbana-Champaign is an example of a program designed to facilitate transnational

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collaborative experiences for educators. As the use of AI in classrooms has increased, the participants in the 2023–2024 TED Fellows program have collaborated to better understand its implications for their classrooms.

The purpose of this qualitative study is to examine the ways in which teachers navigate transatlantic collaboration to implement AI in their classrooms. Furthermore, this study explores AI's ability to empower both teachers and students to meaningfully interact across continents, grade levels, and content areas. The research questions guiding this study are:

1. What techniques do teachers use to implement AI in their classrooms?
2. How does transatlantic collaboration impact teachers' use of AI in the classroom?

2 Literature Review

2.1 Brief History of AI in the Classroom

Artificial Intelligence has been defined and described in several different ways. For the purposes of this study, I employ the definition provided by Popenici and Kerr, "computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction, and the use of data for complex processing tasks" [2, p. 2]. Mechanical devices which required students to select the correct answer from multiple choices before they could move to the next question, or "teaching machines" were developed by Sidney Pressey, and these precursors to AI were used in education in the 1920s [3]. While these mechanical devices had been in use of a couple of decades, the term "artificial intelligence" is credited to have first been used in publication by McCarthy, Minsky, Rochester, and Shannon in 1955 in a research proposal aimed at exploring ways to write programs for machines to help them use language and solve problems [4]. Around the same time, Newell and Simon created a computer program, Logic Theorist, designed to prove mathematical theorems [5]. Working with James Moore, Newell created Merlin, an automated tutoring system, though it did not achieve the level of success Newell had desired [6]. While Merlin was not considered a success at the time, Intelligent Tutoring Systems began impacting education in the 1960s and 1970s [7]. By the 1980s, AI in education had become an established research field [8]. As the technology driving computers advanced, so did the incorporation of AI. Naturally then, as computers became more widely available in K-12 classrooms, the incorporation of AI followed suit, providing teachers with greater opportunities to incorporate AI into their classrooms.

2.2 Uses of AI in the Classroom

Early forms of AI were developed by cognitive scientists who used AI in classrooms both as learning aids and to study human cognition [6]. Current research on AI in the classroom includes systematic reviews regarding its implementation in the classroom. For instance, one study identified planning, implementation, and assessment as critical areas where teachers utilized AI [1]. A systematic literature review yielded similar results, identifying three central themes of AI use in education including "connecting to pedagogies (e.g.,

gaming, personalization), administration (e.g., diagnostic tools), and subject content" [9]. Implementing AI in the classroom can be an intimidating process for teachers. As such, researchers recommended that teachers be provided with time, expertise, funds, and resources to help them better understand and explore the applications of AI in education [10].

2.3 Transatlantic Collaboration in Education

Collaboration between teachers can be a driving force in professional growth and can take on a variety of forms. The effectiveness of professional learning communities housed in the same school or district has been widely studied. While some teachers may prefer face-to-face learning environments, a variety of online tools can be used to facilitate communities of practice in the online environment [11]. Communities of practice (CoPs) are an example of the type of groups educators may choose to work in to explore new pedagogies as they allow for ongoing interactions regarding a topic that the group members are passionate about pursuing [12].

These communities may be especially valuable when they include teachers from different backgrounds and cultures, such as those that can be found in transatlantic collaborations. Transatlantic collaboration provides a unique opportunity to gain insights from differing perspectives and can come with its own set of unique challenges as group members navigate cultural and contextual differences. These challenges can be navigated through various acts of translation as participants establish shared understandings, build relationships, and decenter personal, cultural, and institutional assumptions [13].

3 Methodology

Qualitative methods in the form of a case study were utilized in this study to gain insight into the ways that teachers engage in transatlantic collaboration, because qualitative methodologies produce data that lead to deeper understandings of social phenomena [14, 15]. Utilizing qualitative methods requires the researcher to play an integral role in both data collection and analysis, so it is important to delineate the researcher's positionality [16]. As such, constructivism is the theoretical perspective through which I approached this study [17]. It is also important to note that prior to conducting this study, I was a participant in the TED program. After a year of participating in the program, I stepped into the facilitator role for the TED Alumni program. I am currently the facilitator for the TED Fellows program. I am also an American educator in the public school system in the United States.

3.1 Participants

For this case study, exploring the ways in which transatlantic collaboration between teachers can facilitate the implementation of AI in the classroom, it was important to identify a sample of participants with experience in collaborating with teachers in transatlantic contexts. For this purpose, I sought study participants who are TED Fellows. The European Union Center housed at the University of Illinois Urbana-Champaign

sponsors TED, a program aimed to foster collaborative efforts between educators in the United States and Europe by providing an online space for them to come together synchronously for shared exploration and examination of a variety of educational topics, such as global collaboration, supporting diverse learning needs, parental involvement, and technology in the classroom. Educators who successfully participate in the program are invited to continue their collaborations in subsequent years as TED Fellows. TED Fellows provides alumni of the TED program with an opportunity to collaborate on global projects, discuss salient education-related topics with an international group of colleagues, and expand their professional network. Fellows of the TED program meet as a cohort synchronously via Zoom once a month to plan and conduct a variety of ongoing projects, as such TED Fellows have significant experience in planning and conducting transatlantic collaborations.

The participants in this study include five educators who are active members of the TED Fellows program. The countries represented by the participants include Italy, Greece, Poland, Portugal, and the United States. The participants are all educators working with students at different age levels and content areas. One educator teaches English as a foreign language to students ages 4–12. A second educator instructs 10–12-year-old students in social studies. A third educator teaches math and science to students who are between the ages of 11 and 14. The fourth educator teaches psychology to 17 and 18-year-olds. Finally, one participant is a university instructor who teaches courses on the culture and history of English-speaking countries to students between the ages of 17 and 23.

3.2 Procedures

To conduct this case study, I recruited volunteer participants from the TED Fellows program via email. Volunteers were provided with detailed information about their participation in the study and completed consent forms. After obtaining consent, I reached out to each of the participants individually to schedule a semi-structured interview. The interviews were conducted via Zoom, as the study participants were not in the same state or country as the researcher. The interview questions invited participants to describe the ways in which they implement AI in their classroom contexts, the manner in which they collaborate with other educators to implement AI, the challenges they have encountered in transatlantic collaboration, and recommendations they have for other educators who are interested in implementing AI in collaborative contexts. The interviews took an average of twenty minutes, were conducted in English, and were recorded. After the interviews were conducted, the recordings were transcribed for coding.

3.3 Data Analysis

Initial coding was completed by hand for the first cycle analysis of each of the five interviews [18]. This initial coding was conducted on a line-by-line basis of the interview transcripts. These codes emphasized the key aspects of the interview in terms of the types of AI the educators noted interacting with, the ways they described interacting with AI in their classrooms, and the ways in which they collaborated with other educators.

In vivo coding was also used in the first cycle of coding to retain the voices of the participants [18]. Since the interviews were conducted in English, which is not the primary language for all the participants, there may have been instances in which it was challenging to select terms that fully conveyed the intended ideas. Once the first round of coding was complete, pattern coding was used during the second cycle of coding to build toward identifying themes in the data [18]. Pattern coding revealed key similarities among all the interviews, which led to the identification of themes that could be used to answer the research question regarding the techniques teachers used to incorporate AI into their classrooms as well as yielding insights into the research question about transatlantic collaboration.

4 Results

4.1 Use of AI in the Classroom

Each of the participants in the study utilized AI in their classrooms for a variety of purposes, though to varying degrees. When asked to describe the types of AI they used in their classrooms, three of the five educators listed specific AI programs by name. One theme that emerged in examining the way teachers were incorporating AI into their classrooms was that the AI was used to complete administrative type tasks. For instance, three of the five educators commented that they utilized generative AI to create lesson plans and to develop and implement student assessments. These uses included the use of AI in making modifications to existing curricular materials as well as the creation of entirely new materials. The participants utilized AI to create and deliver online versions of assessment for students in addition to generating assignment prompts. One participant taught students how to utilize AI as a source of feedback for written assignments.

The other theme that emerged when examining the ways in which the participants incorporated AI into the classroom was through explicit instruction on how the AI was trained. For instance, two of the participants described using AI programs to explain how the AI provided information requested by users. One of those educators specifically worked with students to train an AI program how to identify specific body movements as they related to sports.

4.2 Techniques for Incorporating AI into the Classroom

Surprisingly, when asked to describe the types of techniques they used to incorporate AI into the classroom, only two of the five participants responded directly to the question. One participant explained that they use "active learning" in their student-centered classroom and that they employ a "large range of tools and strategies" when implementing any idea into their classroom. The other participant noted that when implementing AI, they did not do "anything special or different from other content that we teach."

While not in response to the question about implementation, all of the participants noted that they explained some of the downsides of AI to their students when implementing it into the classroom. Primarily these downsides included the potential lack of reliability of generative AI, prompting the participants to note that they also taught students how to verify the information received via AI. While they did not explicitly state

this need for teaching students how to verify AI-generated information as a technique for implementing AI in the classroom, based on my second cycle coding, I included it as such.

4.3 Identity and AI

As I reviewed the coded data, another theme that emerged related to teacher identity and, more broadly, human identity in juxtaposition to AI. One participant noted that some of the teachers they worked with outside of the TED Fellows program were afraid of AI because they thought it would be used to replace them. This notion of identity was also brought up by another participant who noted that when they teach students about the uses of AI, they have discussions about the ways that students should be thinking critically about their use of AI in terms of how they can set themselves apart from others in a world where everyone can use AI. For example, the participant explained that they ask students to think about the characteristics that make them unique in a way that would encourage an employer to hire them.

A sense of identity and self-awareness was also present when the participants discussed their implementation of AI. When asked about their implementation of AI, one participant noted, "maybe I'm not an expert, but I'm good enough." Another participant noted that they are "from a country of navigators" when detailing the importance of confidence when facing challenges when using AI in transatlantic collaborations. A third participant noted that they felt as though they were still in the early stages of implementing AI and were "dabbling" in its use.

4.4 Conditions for Collaboration

Another theme that emerged from the data was the conditions necessary in order for collaboration to occur. The interviews revealed that the participants in the study faced challenges in identifying collaborative partners in their buildings and districts. For instance, when asked about how they collaborated with others to implement AI in their classrooms, none of the participants identified working collaboratively with peers in their building as a source of inspiration or assistance.

One of the participants serves as a teacher trainer in addition to working with students. This participant noted that many of the teachers they work with are afraid of using AI and that there are not many teachers who are open to implementing it. Another participant noted that their institution did not hold meetings about A, and they were not aware of anyone in the institution who was consciously utilizing AI as an educational tool. Similarly, another participant noted that fewer than half of their colleagues are implementing AI, while another noted that their colleagues viewed AI as more of a problem than an opportunity. The participant from the United States recalled an in-service training from a previous school year during which the teachers were shown how to utilize AI in the form of a lesson plan generator but noted that they were not actively collaborating with anyone in their district to utilize AI.

While there may have been challenges in collaborating with local peers on AI implementation, the participants noted that TED Fellows had provided them with the opportunity to engage in supportive collaboration with others centered on the implementation of

AI. When speaking about their collaboration with other fellows, participants noted that their fellow colleagues were, "eager to learn and experiment with AI tools" and "have the same concerns" for implementing AI. This demonstrates that while the participants in TED Fellows had concerns regarding implementing AI, they were not afraid to try using it in their classrooms. One participant found more acceptance in the TED group because "we shared a common goal." Another participant noted that having the opportunity to collaborate with other educators regarding AI, "taught me as seeing different approaches and also seeing well, the difficulties, but also the opportunities that are available." This exchange of ideas was valuable to the fellows as one remarked that, "even though we teach like very different ages, some of them teach primary school, I teach college, but still, you know, a lot of the tools that we use actually can be adopted, adjusted", noting that the collaboration served as "a well of inspiration" for them.

The collaboration that took place within the TED Fellows program was not without its challenges. One challenge identified by the participants was the need for a leader. This participant noted that within a collaborative group it was important for someone to step up and take charge. Another major challenge that participants faced was time. Educators participating in transatlantic collaboration need to be cognizant of the time zone differences, which can make synchronous collaboration difficult, especially during the school day. Participants noted that, at times, culture and language could pose challenges during collaboration, primarily in minor misunderstandings or miscommunications. Asking for clarity and providing examples during collaboration were methods the participants used to navigate some of these challenges.

4.5 Challenges to AI Implementation

During the interviews, the participants also identified a variety of challenges they faced when working to implement AI in their classrooms. Some of these challenges were structural in nature. For instance, one of the participants noted that some of the AI programs they wanted to use were blocked by the internet filters in their school district. A similar challenge identified by a different participant was that many AI programs require a login that is tied to an email address, which their students did not have because of their young ages. While none of the participants faced this challenge themselves, one participant noted that lack of access to technology could be a hinderance to utilizing AI in the classroom and one participant noted that their implementation was hindered by paywalls.

Reliability and bias were two additional AI challenges that the participants referenced. In their interviews, several participants noted concerns regarding the reliability of work created through AI. While they acknowledged the concern, it did not prevent them from pursuing the use of AI. Rather, the concern caused them to double check products created using AI and some participants mentioned that they taught their students how to verify the accuracy of AI generated materials as well. Regarding the challenge of bias in AI, one of the participants from Europe commented that bias was very strong in AI tools and that it was difficult for people from North America to see because AI is a tool that was generated based on North American culture.

5 Discussion

The first research question in this study is: What techniques do teachers use to implement AI in their classrooms? To answer this question, it is important to first review the ways that teachers are implementing AI in their classrooms. Similar to previous studies, the participants in this study primarily utilized AI for planning and assessment purposes [1] though one participant explicitly taught students how to use AI. The participants were excited to describe the ways they implemented AI, many times including the names of the programs they used and even sending URL links so I could access their projects. Atypical to previous work though is the fact that the participants used AI in a variety of content areas, rather than primarily in math [19].

When asked specifically to share information about the techniques they used to incorporate AI, the participants responded by explaining that they used student-centered approaches or that they utilized similar pedagogical methods for AI as they did for the other types of tools they used. One participant identified that they did stop to think about their purpose for using different types of AI programs, commenting on the importance for teachers to think critically about the utility of a program and its purpose rather than just trying new ideas just to try them. Another technique that the participants identified when discussing the implementation of AI was determining the reliability of the information generated by AI. Participants explained that they taught students how to use additional sources of information to confirm the information they received from AI. While not stated explicitly, the participants in this study also demonstrated a willingness to use AI in their classrooms, sometimes juxtaposing themselves with their colleagues who were afraid of AI. This willingness to implement new pedagogical tools is, in a way, also a technique for implementing AI as none of the participants claimed to be experts in using AI but instead, demonstrated a curiosity and desire to move forward with implementation ideas. Networking with other teachers to learn more about the ways in which they were using AI was another technique utilized by multiple participants in the study.

The second research question for this study is: How does transatlantic collaboration impact teachers' use of AI in the classroom? All of the participants in the study noted a lack of collaboration around AI with the colleagues in their buildings. While not all of the reasons for this lack of collaboration are clear, it was clear that there are several teachers who are not yet ready to work toward implementing AI in their classrooms. The data from this study demonstrates that the participants sought out collaboration with peers through the TED Fellows program and found the network to be a helpful way to learn about AI programs and the ways other teachers were implementing the programs in their classrooms. The willingness of the TED Fellows to share their ideas and work together toward a common goal of learning more about AI was beneficial to the study participants. The participants felt supported and understood by their transatlantic colleagues.

While this study yielded helpful perspectives on the implementation of AI in the classroom, it is also limited. One limitation of this study is its small sample size, which may not be representative of the general population of teachers. Additionally, the participants in the study both regularly use online tools in their classrooms and have extensive experiences in interacting with and collaborating with educators from different countries, which may not be characteristic of a general sample of educators.

6 Conclusion

As we become a more global society, the value of transatlantic collaboration should not be overlooked. Collaborating with peers across the Atlantic can provide teachers with new insights about pedagogy as well as nuanced cultural perspectives. This study illustrates the ways in which transatlantic collaboration can fill gaps in local collaboration and serve to help teachers grow their understanding and implementation of topics they are interested in. The educators in this study were eager to learn more about AI and to pursue its use in the classroom. As they incorporated AI into the classroom, they leveraged student-centered pedagogies in addition to explicitly teaching students about key features of the AI. For example, the educators explained the importance of verifying the accuracy of AI generated products, much as they emphasize the importance of verifying information found using internet searches.

This study was limited in scope and, as such, future research into the differences between local collaboration and transatlantic collaboration regarding the implementation of AI could provide insight into the collaborative aspects that best facilitate the implementation of new technologies. As AI advances, further research could explore both the commonalities in teachers who are working toward AI integration as well as the techniques they find most successful during implementation.

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