**Examining Candidates’ Beliefs about Advancing AI technologies:**

**The Case of Google’s NotebookLM**

The emergence of large language technologies in late 2022 is generating extensive discussion about AI’s potential effects on teaching and learning (e.g., Alexandrowicz, 2024; Bauer, Grieff, Graesser, Scheiter & Sailor, 2025; Bowen & Watson, 2024). Proponents argue that AI can advance instructional practices, improve student outcomes, and generally enhance academic life (e.g., Cohen et al., 2023; Khan Academy, 2023; Trust, Whalen, & Mouza, 2023). Conversely, skeptics express concerns that AI may hinder students’ learning, restrict the development of critical thinking (Brooks, 2025; Kim, Kelly, Colon, Spence, & Linn, 2024; Rankin, 2025) and exert long-term negative effects on classroom pedagogy (Alexandrowicz, 2024). Additionally, there is widespread apprehension regarding AI’s potential to compromise students’ intellectual honesty and academic integrity (Harrer, 2023; Keegin, 2023).

AI is becoming a powerful presence in everyday life that is unlikely to diminish in influence. Consequently, teacher education programs must prepare their candidates to use the AI technologies equipping them with the knowledge and skills to integrate these tools into their instructional practices. Programs such as Magicschool.ai, Brisk, and Khanmingo, among others, facilitate the integration of AI into teaching practices and students’ learning activities.

Specifically, two years ago, Google introduced NotebookLM, designed for educators and students (Franzen, 2025). This tool permits the upload of up to 50 sources per notebook (folders) and provides quick-access functions that nearly instantly generate study guides, summaries, and FAQ documents without the need for users to compose detailed prompts. A notable feature of NotebookLM is its capability to produce audio recordings (i.e., podcasts) featuring professional-sounding narrators discussing the notebook’s contents. NotebookLM is intended to serve as a digital assistant that helps teachers and students organize, summarize, identify key concepts and understand the files uploaded to it. Furthermore, the tool restricts its analyses exclusively to the files uploaded within each notebook, rather than sourcing information externally from the internet

This study examined their perspectives on using NotebookLM as a resource in their own teaching practices.**Theoretical Framework**

Teachers' beliefs about classroom pedagogy influence their planning, interactions and assessments of student learning(Bruner, 1996; Dewey, 1933). In a review of research about the effects of teacher beliefs on classroom instruction, Pajares (1992) found that teachers’ beliefs tend to be highly stable, resistant to change and function as powerful filters for new information and experiences.

Teachers’ beliefs often originate from their personal experiences as students in K-12 classrooms and are difficult to recognize or change (Bruner, 1996; Zeichner & Tabachnick, 1981). These beliefs encompass attributions that explain why some children learn while others do not (e.g., Dweck, 2000). Studies on self-efficacy show that teachers and students who believe in their ability to successfully complete learning tasks are much more likely to achieve success than those who lack the same confidence (Bandura, 1997; Pajares, 1996). Such research illustrates the powerful impact that teacher beliefs can have on students’ learning (Rosenthal & Jacobsen, 1968). Research about reflective teaching practices (Cochran-Smith & Lytle, 2009; Schön, 1983; Zeichner & Liston, 1996) is also related to teacher beliefsHelping teacher candidates develop reflective practices that challenge their pre-existing beliefs offers important opportunities for reform and improvement of classroom pedagogy

**Teacher Beliefs and Technology Integration**

Teachers’ beliefs about teaching and learning can have profound effects as to whether technology is integrated into their lessons. Teachers who believe technology can support their work and student learning are more likely to use it than those who view technology as extraneous to good teaching. Ertmer, Ottenbreit-Leftwich, Sadik, Sendura (2013) explain that external and internal factors influencing teachers’ beliefs about the use technology in their classroom lessons. External factors consist of hardware, access and training with new technologies. Internal factors pertain to teachers’ overall beliefs as to whether technology would actually enhance their teaching and the learning of their students which may be the best predictors as to whether teachers would integrate technology in their teaching. Earlier, Ertner (2005) found that teachers hold traditional, teacher-centered beliefs about instruction and tend to view technology primarily as a means for content delivery rather than as a tool for student-centered learning, collaboration, or critical thinking.

Sung, An and Thomas (2024) examined teachers’ beliefs and self-efficacy toward technology use during the pandemic. Theydiscovered that teachers’ beliefs about technology integration were malleable and improved when they received technical support. They argued that technological support could serve as a crucial catalyst for improving teacher beliefs and the integration of technology in their teaching.

In a recent study about teacher beliefs and AI, researchers (Prestridge, Fry & Kim, 2025) report that secondary teachers beliefs about AI technologies could be categorized according to five different roles: (1) Serve as an educational supplement; (2) Enrich their teaching by encouraging higher-order thinking; (3) Transformative in the way students learn and change the curriculum; (4) Administrative by helping with teaching resources; (5) Subversive in that AI diminishes student learning by leading to plagiarism, reduction in critical thinking and diminishment of a teacher’s role as subject leader. These researchers found that teachers with limited AI classroom experience were more likely to believe AI use could be negative and interfere with learning, whereas more experience embraced its transformational potential in classroom pedagogy.

**Purpose and Inquiries**

We investigated teacher candidates’ beliefs about using Google’s NotebookLM in their teaching. Our research inquiry questions were:

1. What were the teachers’ initial responses to NotebookLM?
2. Would they use it in their teaching and would they recommend it to their students?
3. What instructional themes and patterns emerged in their responses to this AI technology?

**Method**

This was a teacher inquiry project (Fitchman & Yandoll-Hoppey, 2020) investigating teachers’ beliefs about the application of one of the new AI education tools in their teaching. Google’s NotebookLM served as the focus of this inquiry. The study occurred during the spring and summer 2025 semesters at our university, which is located in a large urban center.

*Participants*

Forty-two teacher candidates (N=42) who were matriculated in MST graduate programs in childhood, adolescent, literacy, visual arts or special education programs participated in the study. With but a few outliers, the candidates were in their early 20s and many of them recently graduated from our university’s undergraduate program.

***Data Collection***

The research tasks required the teacher candidates to demonstrate their understanding of several of the features of NotebookLM by doing the following: (1) Creating a notebook (electronic folder) containing two pdf files and one url to a video link (e.g., YouTube); (2) Generating a study guide and a briefing document (summary) that synthesized the information in the three sources and include an audio overview (podcast) that discussed the ideas in the three texts. Afterward the candidates composed a reflection about the use of this AI tool in their teaching. Specific directions to the candidates are displayed in Figure 1.

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Insert Figure 1 here.

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**Data Analysis**

A frequency count of the number of teachers who indicated that they would use this AI tool was first tallied. Second, their written responses were then transformed onto a Likert scale to indicate the extent to which they felt positivity or negativity about the technology. A score of 1 indicated strong negative reaction; a score of 2 suggested hesitation, scores of 3 were largely positive, and 4s consisted of superlative terms such as "excellent," "blown away," and "amazed.”

A qualitative analysis of teachers’ responses consisted of examining theme for recurring patterns and themes (Miles, Huberman, & Saldaña, 2020). Two teacher researchers independently examined the teachers’ responses. An open-coding, inductive method (Cresswell & Miller, 2010) was used in which the researchers independently analyzed the written responses until patterns and categories could be identified. Afterward, the researchers compared their analyses by engaging in peer debriefings until they obtained 100% agreement in the identified patterns and themes. This process of first independently analyzing the data and then sharing analyses with one another contributed to the trustworthiness of the interpretations reported here.

**Results**

Frequency rankings indicated that nearly 86% (N=36) of the teacher candidates’ responses scored this AI positively or extremely positive for classroom learning, with frequency scores of 3 and 4 on the ranking scale. Of these positive rankings, 44% (N=16/36) were highly positive and indicated that they would continue to use the technology in their own teaching. A small number (N=6 or 14%) indicated they either did not plan to use this AI tool (N=3), or they had reservations interfering with its use in their classroom teaching (N=3).

Themes emerging in their written responses indicated that the following: A recurring theme was that the teacher candidates believed the multimodal component of the technology would be especially engaging and particularly useful for emergent bilingual students and for students with reading difficulties. Teachers valued how the AI analyzed PDf files and videos with summaries and study guides. They felt the technology would save them time in lesson preparation. This was particularly so with the tool’s ability to summarize and construct questions about videos that were posted into the notebook. Teacher candidates enjoyed the ‘Briefing Documents” and ability of the technology to analyze texts and compose podcasts, which they perceived as note onkly as time savers but also as ways to reach students who benefited from multimodal presentations.

Teachers identified multiple benefits with NotebookLM, and these included the following: Teachers were impressed with the high quality and professional sounding podcasts. They appreciated the multimodal forms that the technology produced. They thought the technology would be helpful for emergent language learners and for students with reading difficulties. The podcast features were highlighted through many of the teachers’ responses. Some wrote that this AI tool would be especially helpful for adolescent preparing to attend college.

Those who scored the AI tool negatively (N=6) expressed concern as to whether students would learn less when using the technology because the AI tool completed so much of the work for them. This related to concepts related to classroom pedagogy where effort was required for comprehension and analysis, but the teacher candidates believed the AI tool completed too much of the work for the students. Other negative responses concerned whether students were mature to use the technology in classroom learning. Issues of academic integrity also appeared in the negative responses about this AI tool. There were responses indicating that the study guides were too complicated for adolescent learners.

Not surprisingly, the teachers’ responses suggested that they would use this technology to support existing classroom pedagogy. There were no responses suggesting that the technology would change classroom pedagogy, although one of the teachers expressed anxiety about this possibility. Otherwise, the integration of the technology in the work as teachers would be largely the same as when the technology were not used. Figure 1 provides a visual overview of the key ideas in the candidates’ responses.

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Insert Figure 2 here.

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**Discussion and Significance**

The vast majority of the teacher candidates in this study, all of whom were early-career educators, were eager to learn about this AI technology and consider using it into their teaching. Their eagerness to use it may be related to their generational characteristics: As young adults who grew up with technology, these teachers could be considered “digital natives” that Prensky (2001) had described two decades ago. Platforms such as Facebook, YouTube, and Instagram have been integral parts of the teachers’ lives, and AI technologies may represent a natural next step in their adoption of digital technologies in their teaching careers.

Another factor that may explain the teachers’ enthusiasm for the technology is their experience as undergraduate students during the COVID-19 pandemic. Many of them were forced to leave campus and adapt to online learning during the virus. As a result, they needed to rely heavily on technology to complete their education. This prior experience with technology likely made the emergence of AI technologies less intimidating or disruptive to their thoughts about teaching. Additionally, as new teachers, they had not yet established instructional routines that experienced teachers have done because they were still developing their methods and strategies for classroom teaching, and, as a result, the introduction of AI did not disrupt their established teaching practices.

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**Figure 1:** *Directions for Task Completion - NotebookLM*

After logging into NotebookLM do the following: (Your current Google account will allow you to login):

1. Create a “notebook” with two PDFs and a video link, and then direct NOtebookLM to generate three items: (1) a "Study Guide," (2) a "Briefing Document" and (3) an "Audio Overview" (Deep Dive Conversation).

1. Critique what NotebookLM produced in 125-150 words. Your critique should share your thoughts about NotebookLM, e.g., Explain whether you like it and whether you will use it in your teaching and discuss whether you will encourage your students to use NotebookLM in their studies.

**Figure 2**: *Patterns in the Candidates’ Responses to the AI Tool*

**Benefits for Teachers:**

Its key strengths include being document-based, which keeps content focused and

grounded in specific sources; Provides teachers with more time for preparing lessons that require higher level thinking; Enrich lesson plans; Provide multimodal learning for students; Analysis of videos;

**Benefits for Students:**

Support multilingual students; Provides structure and organization of resources

uploaded to the notebooks; Summarizes dense readings and generate discussion

questions quickly; Organizes sources and generates easy-to-understand summaries and

questions; Video analysis with synopsis of key points

**Concerns:**

Might misrepresent ideas in the sources; Less applicable for students with special needs; Reduce critical thinking; Might change classroom pedagogy; Students must learn strategies for cross-checking of content; Quality of resources uploaded to it; Students might become overly reliant on the AI tool; Concerns about academic integrity; Study guides and audio files too lengthy for some students; completes too much of the work for student