

Chapter 3

Authentic Assessment in the Digital Age: A Brain-Based Framework with GenAI-Enabled Support – Dai Gu, Yueqing Zhong, and Bilgehan Ayik

Participatory Action Research

Ms. Alvarez, as mentioned in the teaching scenario, noticed that her Turkish student did not provide an authentic connection in his homework. She was surprised because she specifically picked tulips for him, the flower of his country's symbol. She gave him feedback in a one-on-one conversation and requested that he redo his assignment with more personal connections. He asked Ms. Alvarez if it was possible to change his assigned flower; he wanted to use poppy instead of a tulip. Ms. Alvarez was surprised and asked, "But I thought that you would prefer the tulip because it is the national flower of Türkiye", and he answered, "But, ma'am, I have never seen a real tulip. We had poppies in our backyard. Can I write about them?" Ms. Alvarez accepted this suggestion, and he submitted much better work.

Ms. Alvarez pondered her student's request. He could even lose a point because of her assignment design. Ms. Alvarez searched on the Internet to find out if tulips were really the national symbol of Türkiye. She noticed that although tulips were the symbols, they were not raised everywhere in Türkiye. Her student came from the southeastern region, and poppies were more common there. She understood that GenAI might provide some overgeneralized examples, although she wrote about her students' cultural and linguistic backgrounds. Was GenAI not reliable for preparing culturally and linguistically responsive assessments, then? Did it overlook the problems that she asked for support with? How much should she rely on GenAI while designing and implementing the formative assignments for all her students?

She decided to share her experience with her colleagues. They also shared some similar incidents. For example, a science teacher, Ms. Sheela, prepared a homework assignment that her students and their parents could collaboratively work on. It was supposed to lead to a productive family engagement event. Ms. Sheela got help from GenAI to design this assignment to make sure it is suitable for all of her students. Although the design worked well for most of the students, she noticed that some parents, especially her ML students' parents, could not join in the process as much as she expected. Once other teachers also shared their similar experiences, they asked, "How can we, as teachers, use GenAI more efficiently to design and implement truly culturally and linguistically responsive formative assessments?"

First, they decided to regularly meet to discuss this topic and created a common Google folder to jot down their meeting notes. Then, they searched online resources to learn more about what had been discovered on this topic before. They were sharing their findings, such as articles, news, podcasts, etc., in their Google Folder and communicating through an online group called "AI-brainers". After reviewing the resources, they wanted to see how teachers in other schools in their county approach this issue. They came up with an idea to reach out to those teachers to conduct interviews. Before that, they needed to receive ethical approval from their school district. They completed the required forms and got their approval in a short time.

Then, they conducted semi-structured interviews with the teachers focused on the following questions:

1. Are you familiar with GenAI tools?
2. Are you using GenAI tools for formative assessment purposes?
3. (If yes to Q2) How often do you use GenAI tools for formative assessment purposes?
4. (If yes to Q2) How do you use GenAI tools for formative assessment purposes?
5. (If yes to Q2) Have you noticed any changes in your students' class participations since you started to use GenAI, especially for your multilingual learner students (MLs)?
6. (If yes to Q2) Do you think GenAI-enhanced assessments helped your students' understanding of the content better? (If yes) How?
7. (If yes to Q2) Do you encounter any issues when you are using GenAI while designing or implementing formative assessments? (If yes) Please explain.
8. (If yes to Q2) What can you do better while you are using GenAI in your classroom?
9. Do you believe that GenAI can have biases? Why? Why not?
10. (If yes to Q9) Have you noticed these biases while you are using GenAI?
11. (If yes to Q9) How can you handle these biases, especially for MLs in your classrooms?

They recorded these interviews, transcribed them, and kept them in their common folder. After completing this process, they annotated the transcriptions and tried to see what common problems and solutions teachers were talking about regarding "How can teachers use GenAI more efficiently to design and implement truly culturally and linguistically responsive formative assessments?". They noticed similarities and differences and decided to invite some experts to their study. They created focus groups where teachers and experts could come together to discuss these findings. They again recorded the discussion and transcribed it.

In the end, they concluded that GenAI is a great technology to support designing formative assessments, but teachers should be aware of the embedded bias in GenAI tools. Teachers should spend more time to learn more about the students and their families and do not solely rely on GenAI's output, especially when it comes to cultural and linguistic diversity. Teachers then came together and prepared an action plan, which involves creating a district-wide resources folder that all district teachers could access and receiving workshops on the critical incorporation of GenAI into their classroom settings. Finally, they invited the administration office of the district and shared their findings.