NEPC
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Newsletter

What Is Responsible Innovation and How Might It Improve AI-Enabled Edtech?

Over the past 50 years, much of the research and development around edtech has focused on two goals: personalizing learning and efficiency. Many programs that incorporate artificial intelligence (AI) take a similar approach. They focus on breaking down a complex subject into smaller bites and then custom tailoring the tasks and feedback students encounter based on the way they respond to each exercise, with the ultimate goal of using individualization to help students learn the material by reaching the correct answer in a time-efficient manner. When such tools are developed, end users such as students or teachers have a role that is typically limited to tasks such as testing the product to identify and work out software glitches.

In doing so, "many of these systems seek to reduce the amount of uncertainty, frustration, and productive struggle—human responses that can be valuable in the process of learning that have no place in these systems that focus on efficiency," according to a recent essay in the peer-reviewed journal *Educational Researcher*. The essay is authored by NEPC Fellows William Penuel of the University of Colorado Boulder

and Thomas Philip of the University of California at Berkeley, as well as Michael Chang of Boston University, and Tamara Sumner and Sidney D'Mello of the University of Colorado Boulder.

As these authors explain, that efficient approach is concerning:

> Far from authentic personalization—which includes and supports a diversity of goals—students are all expected to reach the same end learning target, albeit at different paces. As learning gets restricted to individual interaction with a device, there is an absence of dialogue and joint meaning-making with classrooms.

In an effort to address these and other challenges with much of the AI-enabled edtech currently available in the marketplace, the researchers propose an alternative. They call it "responsible innovation." They write that this type of innovation has four main dimensions:

- Asking questions about what is known, likely, plausible and possible in design;
- Engaging users and other stakeholders;
- Ensuring these users and stakeholders are involved throughout the process; and
- Being willing to change directions based on stakeholder feedback, values, and shifting circumstances.

To illustrate this concept, the researchers describe their approach in working with youth of color in a series of virtual and face-to-face Learning Futures Workshops, developing a tool they ultimately called CoBi (a "community builder").

The concept was generated by the end users—students. As their vision changed, so too did the focus of the tool. For example, students initially struggled to be visionary by thinking beyond their own personal experiences. As a result, they initially suggested designing a tool to help keep everyone on task during groupwork. However, it soon became clear that, although they were fine with using AI to surveil peers, they strongly opposed the idea of AI being used to keep *them* on task.

Over time, the students instead decided to create a program that could help groups develop guidelines for working together in ways that are conducive to learning. Based on users' experiences, the interdisciplinary design team formalized a routine for creating community rules around groupwork. They also used professional development workshops to help teachers align the use of their app to the content-area standards their states require students to meet.

The researchers stress that they do see a role for more traditional AI-enabled edtech that helps students learn skills for accessing advanced content. However, they urge developers to take a more comprehensive approach that considers other important educational goals.

"With investments in AI in education increasing and teachers grappling with how to evaluate and use AI tools, now is a particularly important time to deliberate about the purposes for using them and for considering how to design them," the researchers conclude. "In a fast-moving world of development, it is easy to ignore questions about purpose and leave out youth and educators as partners in design."

NEPC Resources on Digital Technologies and Artificial Intelligence in Education

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