

KEY NOTE SPEECH

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The Multiple Facets of Developing Intelligent Tutoring Systems

Abstract

The last three decades have witnessed substantial advances in the development of educational technologies, among them Intelligent Tutoring Systems, including the orchestration of learning interactions, augmenting human capacity, and revealing learning processes. ITSs typically support learning and instruction by leveraging and integrating student, domain, and pedagogical models (e.g., predictive AI algorithms with feedback). While many ITSs have demonstrated success in matching or exceeding human tutoring outcomes, there are nonetheless relatively few ITSs implemented at scale, and many ITSs have been stripped of their intelligence in order to take them to scale. One reason for the dearth of large-scale adoption can be attributed to an incompatibility between educational practice (e.g., covering curricula within the context of a time-limited classroom) and intelligent tutoring (e.g., adapting curricula and pacing to the needs of individual learners). This misalignment might be viewed as a fatal flaw in the conceptualization of ITSs.

However, from a different angle, the development of ITSs offers contributions well beyond the end product - beyond an educational platform to support learning and instruction. This talk will describe how the multiple facets of ITS development have contributed to educational practice, the design of educational learning environments, and our understanding of learning processes. Dr. McNamara describes the contributions of two ITSs, iSTART and Writing Pal, in terms of five facets of educational technologies: interface design, pedagogy, learner engagement, feedback, and feasibility. She will also discuss the need to consider the future of ITS, and more generally digital learning platforms, including the need for large-scale R&D infrastructures that link DLPs and enable research at scale within authentic learning environments.