Supporting the Scaling of Innovations: Guiding Teacher Adaptation of Materials by Making Implicit StructuresExplicit

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There is a tension between curriculum developers' need to maintain the integrity of innovations and teachers' need for local adaptation. On one hand, reformers need to make sure that teachers' practices in classrooms are compatible with the essential ideas in curriculum materials in order to evaluate the influence of reform. On the other hand, teachers frequently adapt curriculum materials according to local needs not anticipated by curriculum designers. Without understanding the intentions behind the curriculum materials, there is a danger that the essence of the reform can be lost in the adaptation. Therefore, teachers need access to the implicit design rationale of curriculum materials to help make wise adaptation decisions (Spillane, Reiser, & Reimer, 2002). It is insufficient to merely provide an overview of the reform ideas behind curricula. Teachers need to see the detailed relationships between reform ideas and each curriculum component. Our hope is that by showing teachers the way that individual curricular components relate to standards, we will help teachers make enactment choices that preserve the essence of the innovation.

We propose the SPA as a tool to help teachers identify the implicit structures in curriculum materials. SPA is an element of Knowledge Networks On the Web (KNOW; Fishman, 2003), an online teacher learning environment for science teachers enacting curriculum materials developed by the Center for Learning Technologies in Urban Schools (LeTUS; Blumenfeld, Fishman, Krajcik, Marx, & Soloway, 2000). There are two major modules in SPA: a mapping tool, which helps teachers establish connections between academic standards and curriculum components, and a modeling tool, which lets teachers add and remove components and/or standards in curriculum materials and observe resulting changes in linked standards and/or components.. In addition, the mapping tool demonstrates the interconnections and dependencies among curriculum components. Teachers use these modules as planning supports when they enact LeTUS curriculum materials.

There are at least four potential learning opportunities for teachers using the SPA: (1) identifying the relationship between standards and curriculum components; (2) recognizing the connection among curriculum components; (3) modifying a given teaching plan to meet the change in a set of standards; and (4) changing a set of standards according to a modification in a teaching plan. Through KNOW, teachers can compare and discuss their results with those of peer teachers, experienced teachers or curriculum designers. Differences between teachers' choices can create conflicts in teachers' understandings of the essence of curriculum materials and provide opportunities for conceptual change. The negotiation process provides teachers opportunities to form a consensus on their collective understanding of the curriculum. In the process of comparison and discussion, curriculum designers also receive teachers' feedback on their interpretation(s) of the essence of the reform ideas in the curriculum materials. Teachers in LeTUS will begin using SPA as part of professional development workshops in Spring, 2004. We will explore the role of SPA in helping teachers understand the relationships between standards and curriculum components, their decision making processes in adaptation, and in their learning from each other.

References

Blumenfeld, P., Fishman, B. J., Krajcik, J., Marx, R. W., & Soloway, E. (2000). Creating usable innovations in systemic reform: scaling up technology-embedded project-based science in urban schools. Educational Psychologist, 35(3), 149-164.

Fishman, B. (2003). Linking on-line video and curriculum to leverage community knowledge. In J. Brophy (Ed.), Advances in research on teaching: Using video in teacher education (Vol. 10, pp. 201-234). New York: Elsevier.

Spillane, J. P., Reiser, B. J., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. Review of Educational Research, 72(3), 387-431.