

## Evidence of Impact

# Intel® Teach Thinking with Technology Course

## Formative Evaluation Results

One of the big challenges in teaching higher-order thinking skills is enabling students to visualize and articulate their own thinking processes.

Intel® Education has developed three Web-based [thinking tools](#)—*Visual Ranking Tool*, *Seeing Reason Tool*, and *Showing Evidence Tool*—to enable teachers to make thinking skills visible for students in their classrooms.

These tools are provided as free, online workspaces for teachers to create projects in which students can build and save visual representations of their thinking processes. Strategies for classroom use and student project ideas are included online with the tools.

In the [Intel® Teach Thinking with Technology Course](#), teachers learn how to use the thinking tools to promote higher-order thinking in a project-based classroom. Teachers create unit plans using the tools that focus on their own content areas and curriculum needs. In a 40-hour workshop, Master Teachers receive intensive training in the tools and additional preparation. After completing the workshop, Master Teachers provide instruction to Participant Teachers in 24-hour to 40-hour workshops, which can focus on one or more of the tools as needed in a particular school or district.

## Formative Evaluation Results

The Thinking with Technology Course was introduced in June 2005. Evaluation research on the course so far has focused on formative questions, or questions designed to identify ways in which the course can be improved.

Through surveys, informal interviews, course observations, and classroom observations, [EDC/CCT](#) has produced several key recommendations, which have been incorporated in the latest version of the course. For example, the formative research showed that a need existed for more deeply articulating the connection between the tools and the thinking skills they support. Therefore, the course has been revised to include additional detail on this subject.

|                              | Allows students to:  |
|------------------------------|--|
| <b>Visual Ranking Tool</b>   | Order and prioritize items in a list, and analyze and evaluate the criteria for decisions                    |
| <b>Seeing Reason Tool</b>    | Map cause-and-effect relationships and analyze complex systems   |
| <b>Showing Evidence Tool</b> | Hypothesize and support claims with evidence, and then analyze and evaluate the criteria for decision making |

## Perceptions of the Thinking Tools

The formative research has also begun to answer questions about how successful the course is in promoting the use of the tools in the classroom to support thinking skills used in a project-based context. The research reflects that participants have very positive perceptions of the online tools. This finding suggests that teachers would likely incorporate the tools into the classroom because the teachers have high opinions of the tools' value.

## Perceptions of the Training

Participants report that not only do they value the tools, but they also feel prepared to use them as a result of the course. For example, 80 percent of the Master Teachers reported in a follow-up survey that the right amount of time was dedicated to learning how to use the tools. Furthermore, a large majority of the teachers who reported using the tools with their students disagreed (53 percent) or strongly disagreed (34 percent) that they would need more training in order to use the tools effectively in the classroom. In addition, large majorities reported that their trainers were adequately or very prepared to guide them through the tasks of using the tools and creating unit plans.

| Tasks   | Master Teachers     |               | Participant Teachers |               |
|---|---------------------|---------------|----------------------|---------------|
|   | Adequately Prepared | Very Prepared | Adequately Prepared  | Very Prepared |
| Creating a practice ranking list and project idea using the Visual Ranking Tool | 10%                 | 87%           | 14%                  | 84%           |
| Creating a practice map and project idea using the Seeing Reason Tool           | 12%                 | 85%           | 20%                  | 76%           |
| Creating a practice case and project idea using the Showing Evidence Tool       | 15%                 | 81%           | 23%                  | 73%           |
| Creating a unit plan that integrates one or more of the thinking tools          | 20%                 | 75%           | 17%                  | 78%           |

### Participants report that trainers are prepared to develop skills related to tool use

Surveys of Master Teachers (n=787) and Participant Teachers (n=164) reveal that participants have a very high perception of the training quality.

Large majorities reported that their trainers were either very or adequately prepared to teach the course.

## Use of the Thinking Tools in Unit Plans

Participants leave the course focused on using the tools in classroom projects. In questions associated with the unit plans that participants develop during the course, the teachers report that they are most interested in using the tools to make student thinking visible and to promote comparison and discussion of student ideas.

| Tasks  | Percent Yes |
|--|-------------|
| Provide students the opportunity to visualize their thinking process through using the tools | 73.7%       |
| Promote discussion in the classroom  | 61.9%       |
| Encourage collaborative work among students  | 66.5%       |

### Top three objectives that Master Teachers sought to address in developing their unit plans

Master Teachers (n=194) were asked to identify their objectives in creating their unit plans.

**Note:** The teachers were able to select more than one objective, so the responses total to more than 100 percent.

## Use of the Thinking Tools in the Classroom

In a follow-up survey of Master Teachers, just over half (52.6 percent) of the teachers reported that they had used the online tools in their classroom following the training course, particularly the *Visual Ranking Tool*. Of those who reported using the tools, 43 percent said that they had used the *Visual Ranking Tool*, 19 percent had used the *Seeing Reason Tool*, and another 19 percent had used the *Showing Evidence Tool*.

While a substantial number (38 percent) of participants reported that gaining access to computers and Internet connections was a barrier for tool use in their classroom, most indicated that the tools were easy to use for both themselves and their students. Very few participants felt that they needed more technical (7 percent) or administrative (8 percent) support to use the tools in the classroom. Also, 82 percent said that their students had adequate computer or Internet skills to effectively use the tools.

## Further Reading

McMillan Culp, K., Pasnik, S., Wexler, D., & Meade, T. (2005). *Formative evaluation of the Intel® Teach Thinking with Technology Course: 2005 report*. New York: EDC/CCT.