Quality of Schooling in Peru and Jamaica -- a USAID project

In Peru and Jamaica, 55% of students had textbooks but only 45% passed the reading comprehension test (figure 1). Education policymakers wanted to identify policies that had most impact on improving student reading score. At first they wanted to observe the likely impact of changes to resources—say, providing textbooks to all students, or improving school facilities. But using our Policymakers' Workbench, they soon engaged in a dialogue on policies that focused on changes to instructional practices rather than changes to resources alone. Our tool enabled them to examine the combination of interventions that would work best for their specific situation.

Figure 1: The initial state of affairs[1]

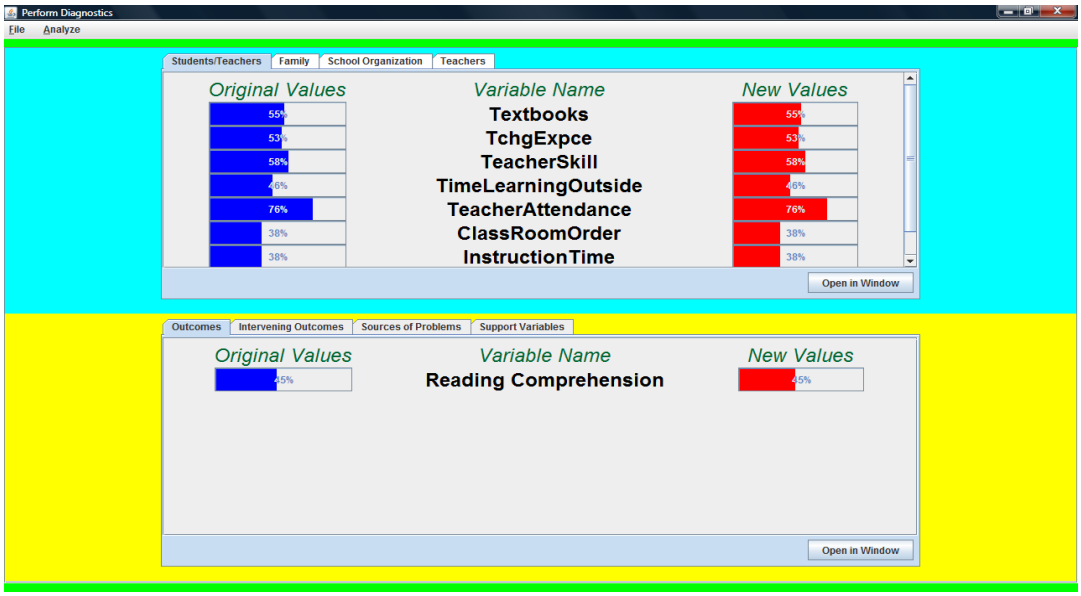


Figure 2 shows just a few of many possible scenarios based on interventions and combinations to improve reading scores: provide textbooks to every student, have skilled teachers teach the first two grades, and involve families to increase learning outside school. As seen in this example, additional spending on inputs such as textbooks may not have much impact if the teachers are not skilled or trained in their use.

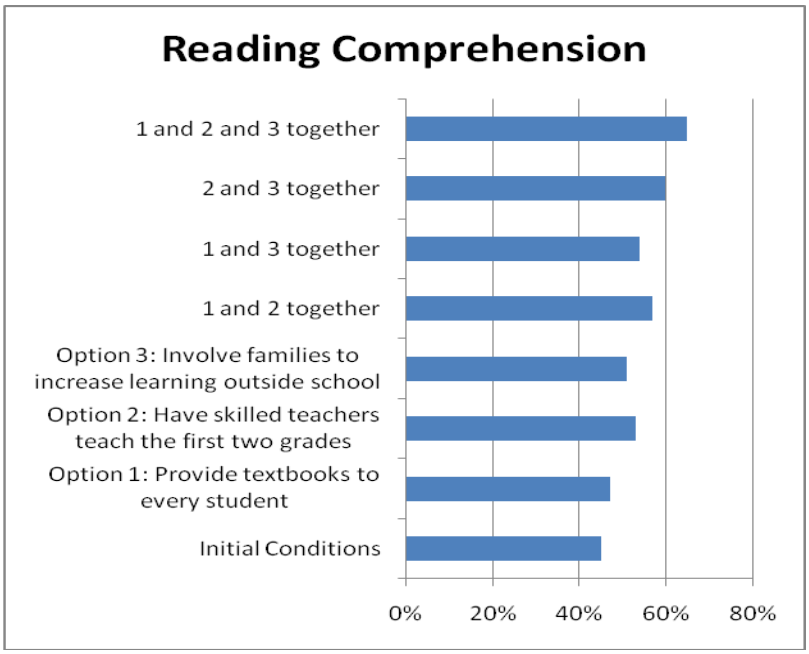
There are no generalities; only situations

Every country has its own unique situation. Our Policymakers' Workbench helps to understand the complex interrelationships among many factors specific to that situation. Once the tool is calibrated with data for the country, policymakers can use it to foster a dialogue on policies and their effectiveness. It helps them:

[1] For the sake of confidentiality, the data shown here is for a typical developing country rather than Peru or Jamaica.

- Identify previously unrecognized or unmeasured factors affecting performance.
- Run through a series of policy simulations, develop a better understanding of the interconnections among the various alternatives, and determine which set of interventions is most likely to produce better outcomes.
- Assess alternative interventions, their probable impact on learning outcomes, and their relative cost.
- Identify factors associated with failure in a particular school or set of schools.

Figure 2: Increase in reading test score per different intervention



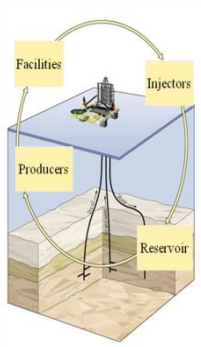
Risk Assessment in Banking—a project for an international organization

To assess the risk of money laundering in a country, we have been developing an expert-based model that specifies the complex relationships among the following sets of variables:

- The country (governance, culture, regulations, law enforcement)
- The industries/sectors within the country (insurance, banking, casinos)
- The money launderers (local and international proceeds from various crimes)
- The geopolitical environment.

The model uses a probabilistic approach to assess vulnerabilities, threats, and risks. The risk assessment tool based on this model allows decisionmakers to understand sources of vulnerability in the banking sector and to iteratively observe and analyze the effects of various policy options.

Analyzer/Optimizer—a tool for an international oilfield services company



When production in an oilfield suddenly drops, it is normally due to a leak in the casing of a well, a problem at the surface facilities, or a layer that simply has run out of oil.[2] Analyzer/Optimizer performs a probabilistic diagnosis based on the information provided by technicians in the oilfield. Given this information, entered as answers to a series of questions, it computes the chance of the possible causes for the problem (figure 3). Next, for each of those possible situations, the tool would recommend alternative actions after generating a simulation of the situation. For example, figure 4 displays simulations of oil and water production levels over a 20-year period for the first situation. Analyzer/Optimizer was used for decision support and for training oilfield staff.

Figure 3: Problem diagnosis user interface

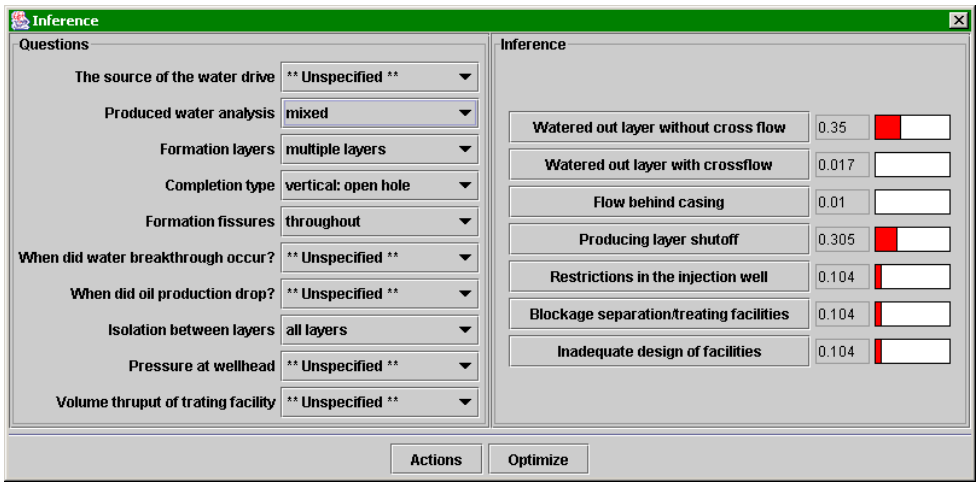
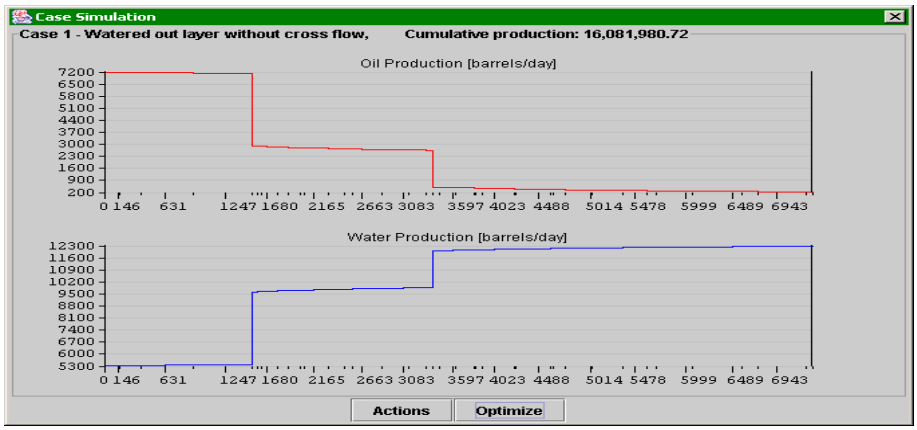


Figure 4: Simulations of oil and water production (no. of barrels/day)



[2] The oilfield drawing is courtesy of Oilfield Review, summer 2004.