What we believe

Use of an approach in CS1, that helps students to understand the problem and to develop a structured solution, is fundamental.

What we propose

Problem analysis, identify three components:
- Problem concepts
- Top concept
- Application interaction

Solution formalization:
- Final description of all problem concepts

What we conclude

This approach in CS1 courses allow students to increase their ability to solve problems, reduces the problem of “blank page”. With this approach, the approval rates increased by 25% in lab class with 30 students (average).

A Structured Approach to Problem Solving in CS1

Identify concepts:
1. Build a sentence
2. List nouns
3. Enumerate concepts
4. Characterize concepts
5. Identify top concept

Solution formalization must be guided by the top concept functionalities.

Process begins by modeling the top concept (Farm), that is described by attributes and functionalities.

When modeling the actions functionality with natural language, new concepts and new attributes and functionalities on existing concepts are introduced incrementally, guided by the need to perform the requirements associated with this functionality.