SIETTE: Temporary student model

- A temporary student model is created and updated for each student that takes the test.
- The information contained in the temporary student model is used by the test generator to provide adaptive capabilities.
- Student´s knowledge is a random variable θ that can take 11 values (0,...,10).
- In absence of information, the probability is uniformly distributed between the 11 levels.
- Probabilities are updated with a bayesian procedure.

SIETTE: Test generator

Test generation algorithm consists of three procedures:

1. Question selection

Test developers can choose between:

* bayesian procedure (minimum posterior standard deviation),
* adaptive procedure (minimum distance between mean of ICC and mean of current student model),
* random procedure.

SIETTE also uses the weights for each topic to assure content balanced tests.

SIETTE: Test generator

2. Updating the temporary student model

Once the student has given his/her answer, SIETTE computes his/her new proficiency level and updates the student model.

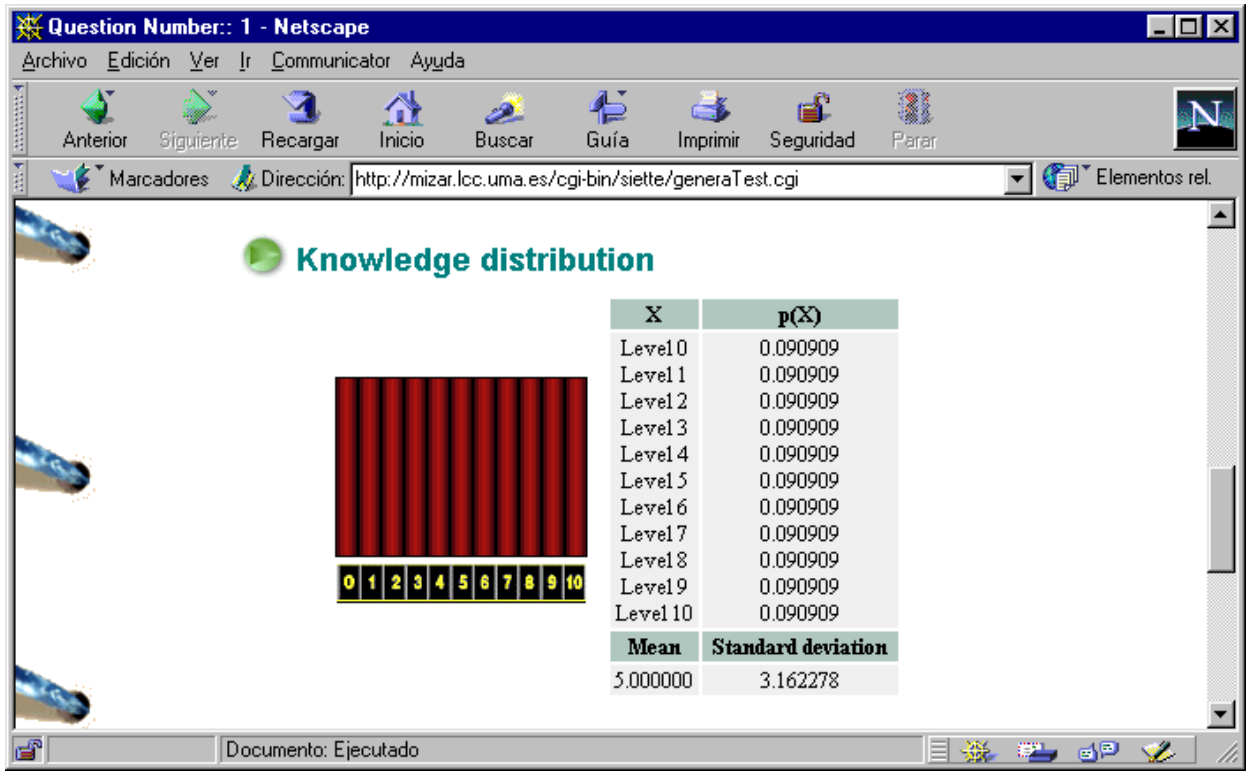
3. Termination criterion

Is selected by test developers, and can be any valid combination of the following cases:

- The standard deviation of student´s knowledge distribution is smaller than a fixed value
- The probability of having a knowledge greater than k is over a certain level.
- The system has already posed a maximum number of questions in a test.
- The system has posed at least the minimum number of questions of each topic

Example

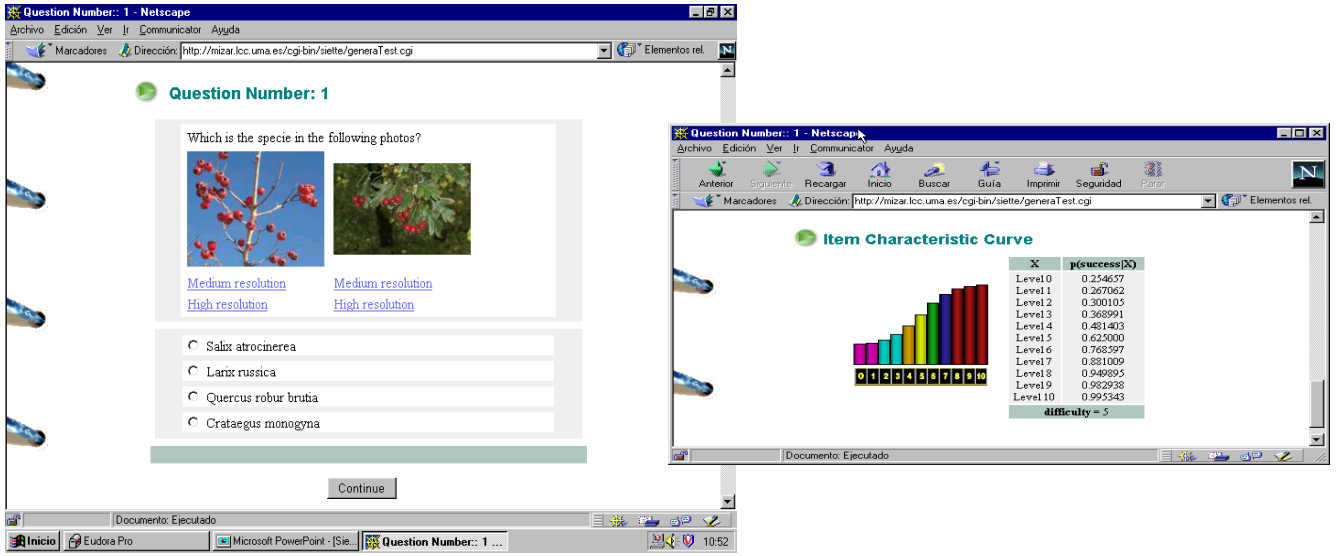
Initialization of the temporary student model:



X	p(X)
Level 0	0.090909
Level 1	0.090909
Level 2	0.090909
Level 3	0.090909
Level 4	0.090909
Level 5	0.090909
Level 6	0.090909
Level 7	0.090909
Level 8	0.090909
Level 9	0.090909
Level 10	0.090909
Mean	**Standard deviation**
5.000000	3.162278

Example

First question and its ICC

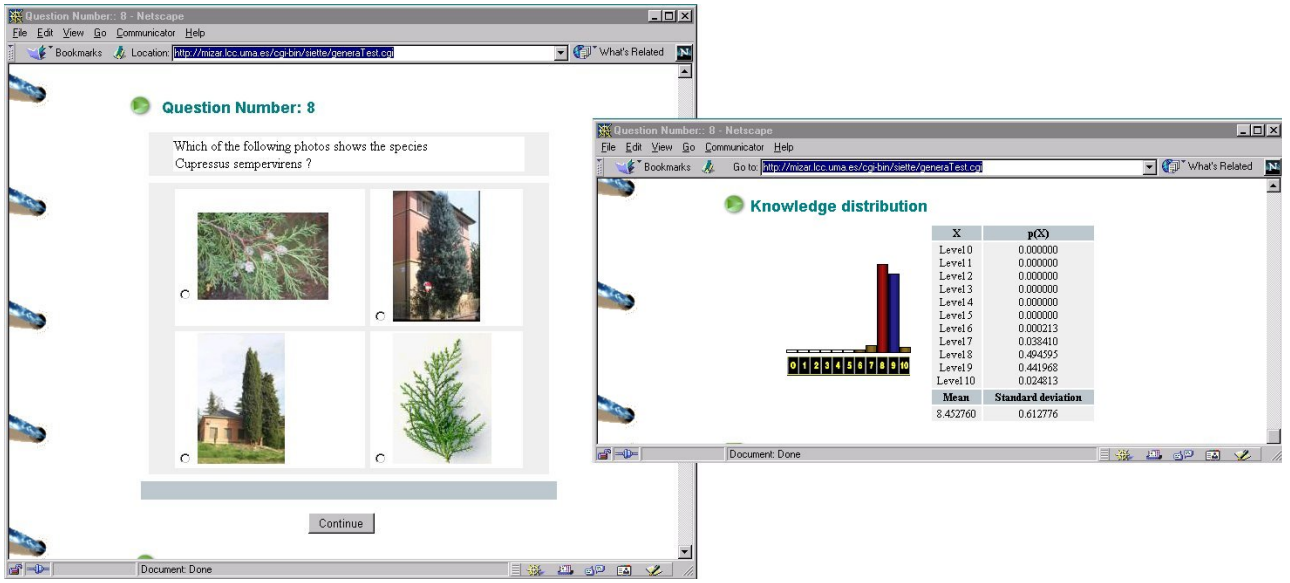


SIETTE: Internet-based evaluation system

- Introduction
  - TREE Project
  - Adaptive Testing
- SIETTE System
  - Description
  - Architecture
  - Modules
- Example
- Conclusions

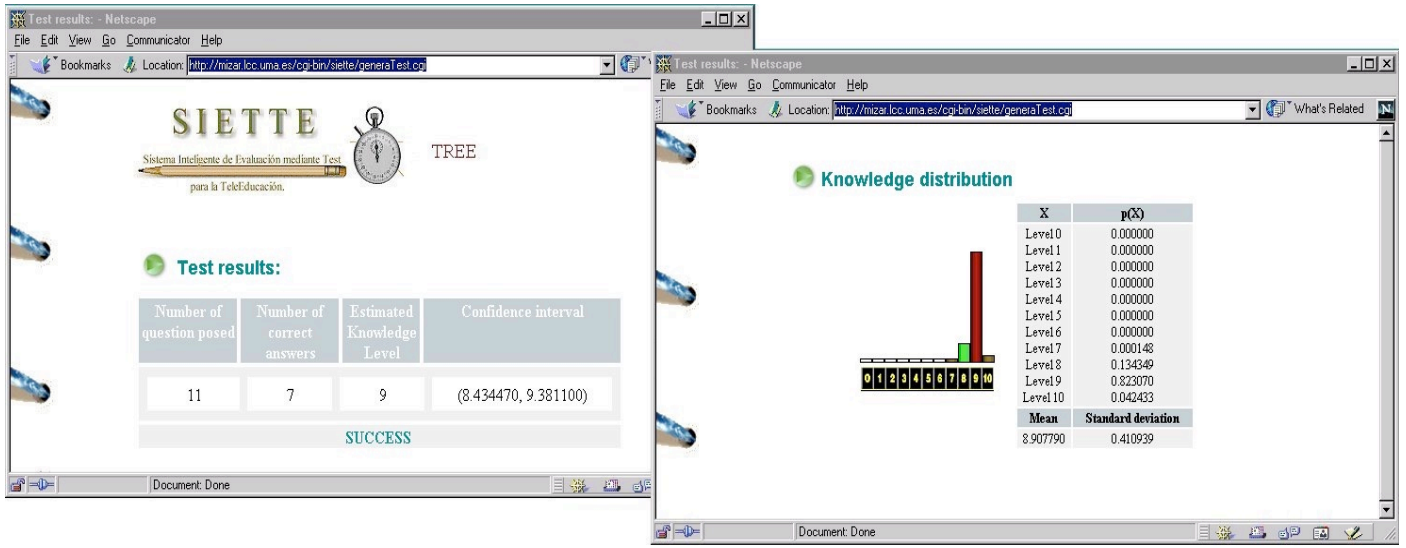
Example

Intermediate state (after seven questions)



Example

Final state



Conclusions

- We have developed a web-based tool to assist teachers in evaluation and students in learning and auto-evaluations.
- The tool can be used by many different users simultaneously.
- Format and aspect of questions are adaptable to teaches preferences, and can include multimedia content.
- Templates can be used to generate a wide number of questions.