



The concept of the courses based on the e- learning intelligence mechanisms

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Presentation scheme



- ❑ the needs
- ❑ problem
- ❑ solution
- ❑ concepts
 - ❑ sort of lessons
 - ❑ implementation of lessons
 - ❑ generation comparison
- ❑ research sample
- ❑ the state of research
- ❑ preliminary results
- ❑ conclusions

The needs



- ❑ requirement of using new techniques of teaching
- ❑ optimal development abilities for students
- ❑ the individualization of teaching

Problem



- ❓ student variability in motivation and ability to learn
- ❓ the lack of teacher's time

Solution



- ❑ use of information and communication technologies
- ❑ use of learning management system (LMS)
- ❑ the individualization of teaching
- ❑ use new generations of the LMS modules

Concepts



- ❓ identification student's structures of intelligence (Amthauer tests)
- ❓ applying different sort of lessons (LMS modules) for research and test works

Sort of lessons



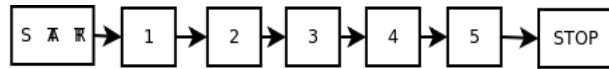
- ❑ zero generation - containing self study material with random access
- ❑ first generation with linear characteristics
- ❑ second generation with branch characteristics
- ❑ third generation with branch characteristics (driven by implemented expert system)
- ❑ fourth generation with branch characteristics (driven by simple AI - based system and easy learning path adaptation)
- ❑ fifth generation with non-linear characteristics (driven by total self adaptive system e.g. neuron net)

Implementation of lessons

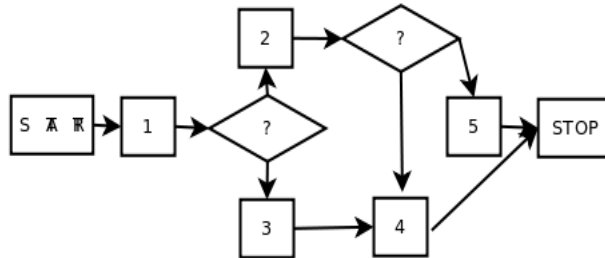


- ❑ zero generation - web page
- ❑ first generation - module lesson (MOODLE), module learning path (Claroline)
- ❑ second generation - module lesson (MOODLE)
- ❑ third, fourth, fifth generation - new modules developed by author

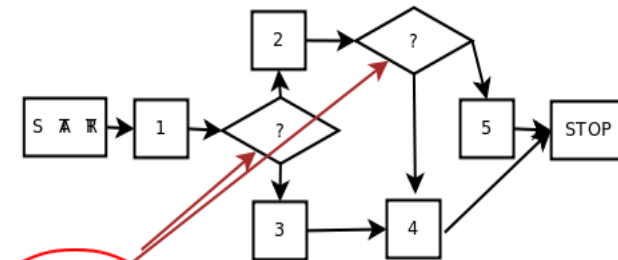
Generation comparison



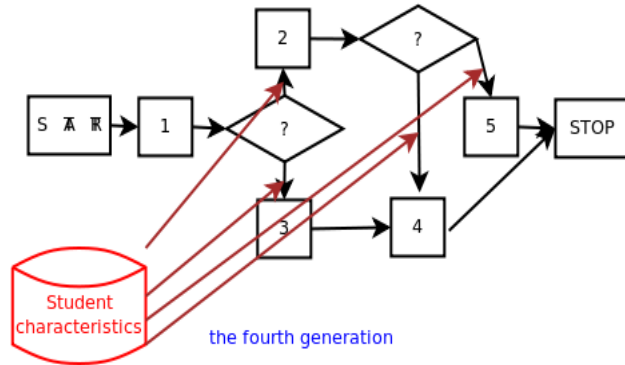
the first generation



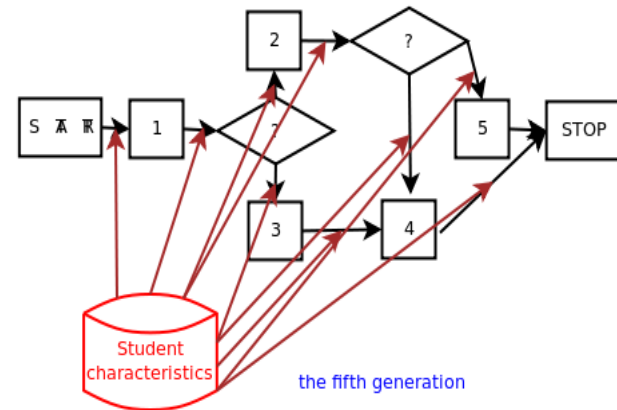
the second generation



the third generation



the fourth generation



the fifth generation

Research sample



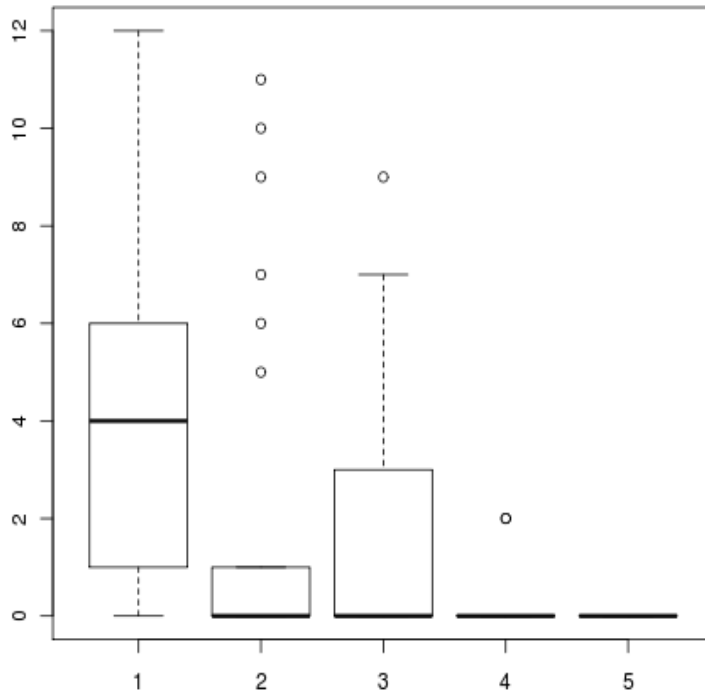
- ❑ group of 145 students (will increase)
- ❑ pilot sample divided into:
 - ❑ 3 testing groups
 - ❑ 2 reference groups

The state of research



- ❑ comparative, preliminary research were done
- ❑ knowledge about computer arithmetics and digital circuits were tested
- ❑ groups taught by different methods were compared
- ❑ preliminary results were obtained

Computer arithmetics test



The exemplary test results obtained by the learners after completing an CTD course.

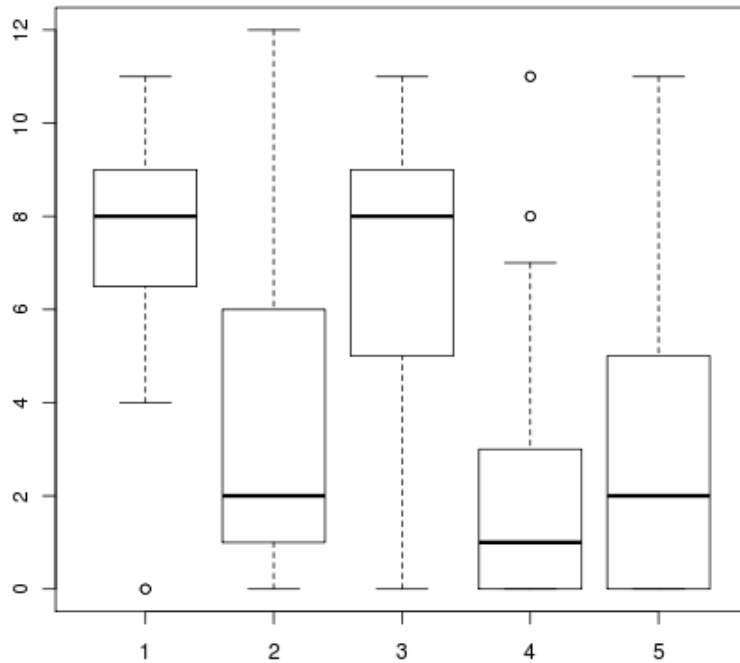
Label description:

1 - groups taking second generation lessons;

2, 3 - groups taking first generation lessons;

4, 5 - groups taking zero generation lessons.

Digital circuits test



The exemplary test results obtained by the learners after completing an CTD course.

Label description:

1 - groups taking second generation lessons;

2, 3 - groups taking first generation lessons;

4, 5 - groups taking zero generation lessons.

Conclusions



- ❑ E-learning tools allowing the author to implement the choice of paths of conducting lessons on the basis of an individual learner's capability are not known to the author,
- ❑ carried out research suggests the necessity of new tool implementation to teach student individually,
- ❑ the introduction of tools based on artificial intelligence techniques should improve the effectiveness of teaching.



**Thank you for your
attention**