

The concept of the GLM2 module design for the effective support of e-learning

Eugenia Smyrnova-Trybulska

University of Silesia in Katowice, esmyrnova@us.edu.pl

Jacek Grudzień

Economic and Gastronomic Schools in Cieszyn,
grudzien.jacek@gmail.com

Plan of the presentation

- Source of inspiration for works
- Current status of educational support systems
- Construction of the GLM module
- Work preparation
- Work of the module
- State of the project
- Expectations

Source of inspiration for works

- Advantages of distance learning: flexibility, quality, positive effect on the learner (Smyrnova-Trybulska 2009),
- Previous results of our research (Grudzień 2010) ,
- The necessity of continuing the research
- The necessity of designing new tools aimed at improving the effectiveness of teaching

The new proposal – GLM2 module

- based on the concept of using an artificial neural network to control the learning process,
- taking into account the structure of the intellect and its development (Smyrnova 1996).

The aspect of considering individualization of ICT in distance learning and e-learning

- Individualization of instruction is one of the major advantages of using computers in education (Gershunsky 1987 et al.)
- The consideration of the learning styles based on Howard Gardner's theory of multiple intelligences should be involved (Zajac, 2006)
- Comprehensive analysis and study of teaching and learning with the use of artificial intelligence systems and LCMS remains to be done

The current status of educational support systems

Modern ITS systems division:

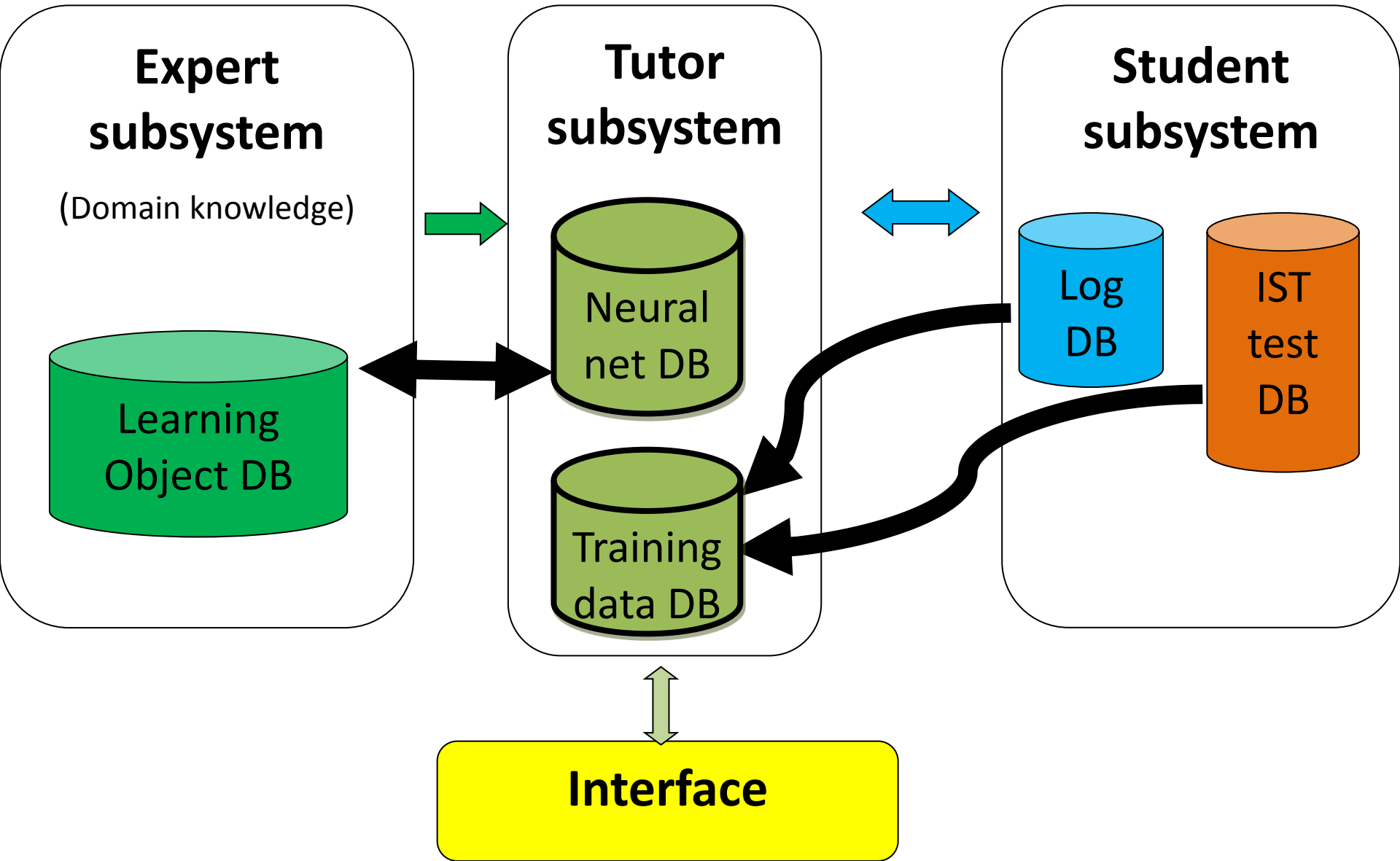
1. Curriculum Sequencing and Planning,
2. Tutoring Strategies,
3. Device Simulation and Equipment Training
4. Domain Expert System,
5. Multiple Knowledge Types,
6. Special Purpose and
7. Intelligent / Adaptive Hypermedia (Murray 1999).

Pedagogy oriented (green) and performance oriented (violet)

Idea of the presented solution

- The presumption of improvement of the effectiveness of teaching and utmost shortening the time necessary to prepare a course.
- Creation a system that could both take advantage of the existing theories of learning to build learning paths as well as create learning paths independently, on the basis of the data resulting from the characteristics of the student and his behavior while working with the system.
- Modification of the paths is possible owing to using a specially designed module called GLM2, and used for controlling the student's learning process

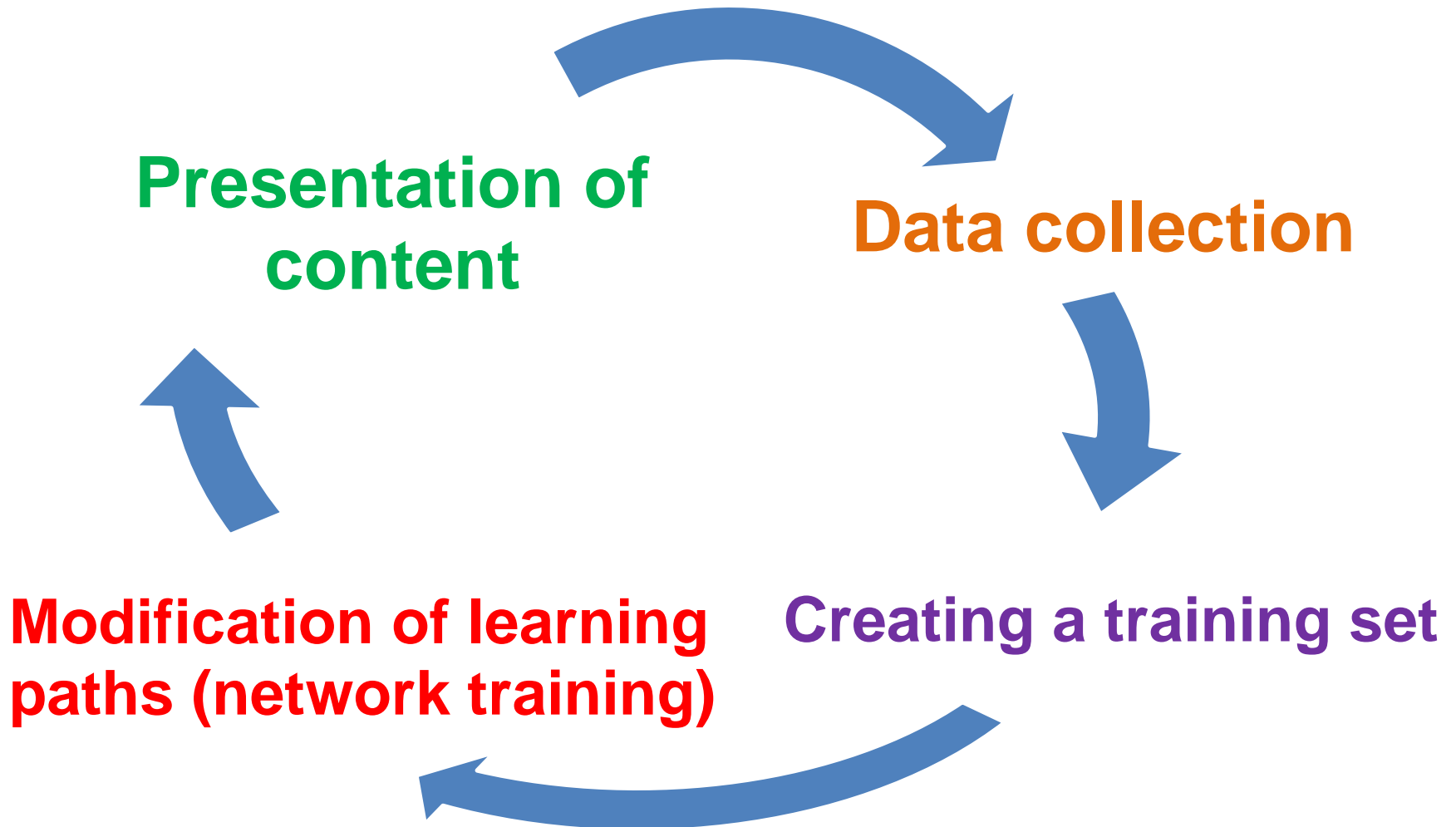
Construction of the GLM2 module



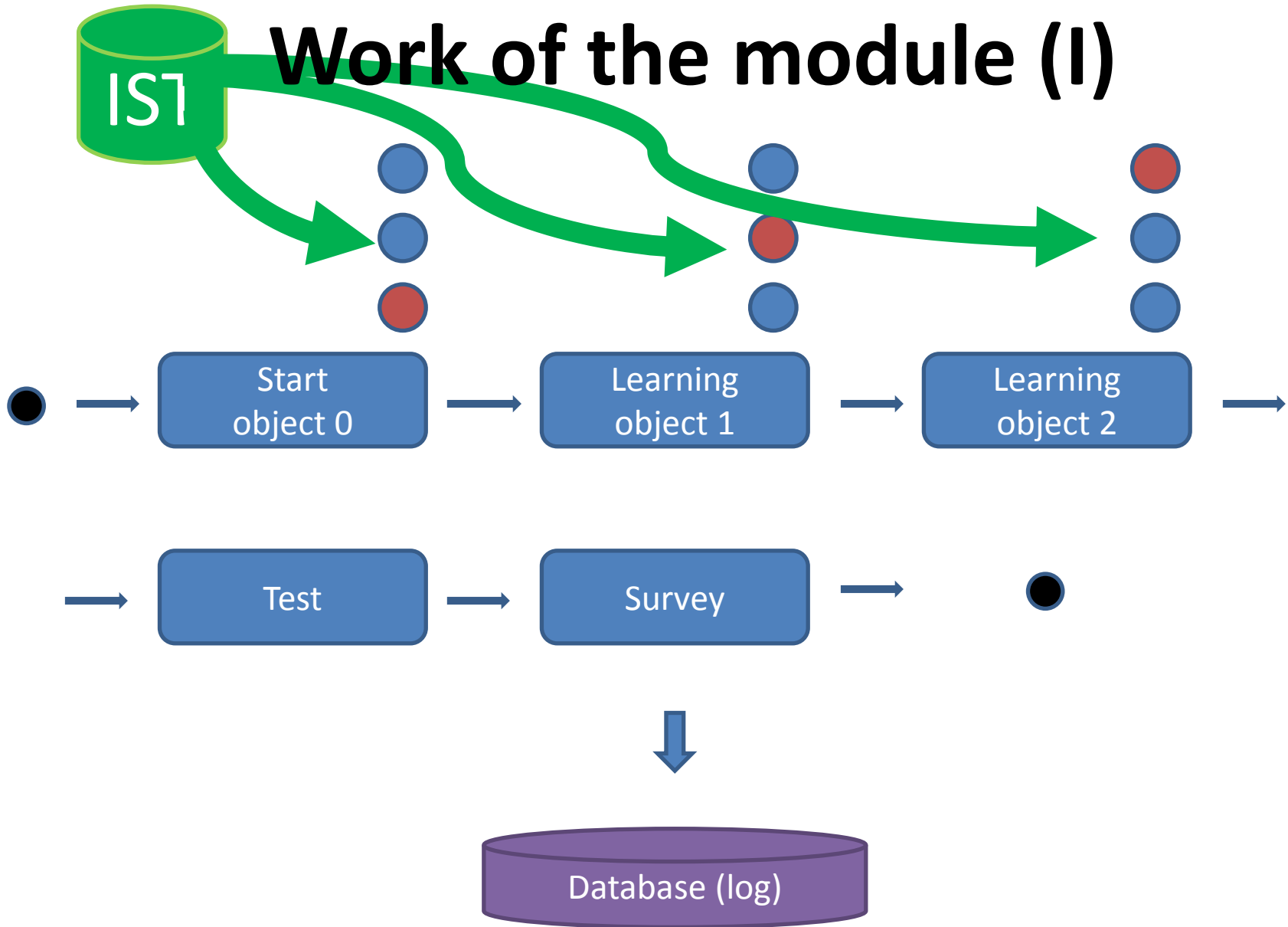
Initial steps of the GLM2 module

- preparing learning objects and questions testing the student's acquiring the learning content;
- initially establishing the order in which they are to be made available to the student (the creation of a path or paths of study);
- the intelligence structure tests.

The principle of the module

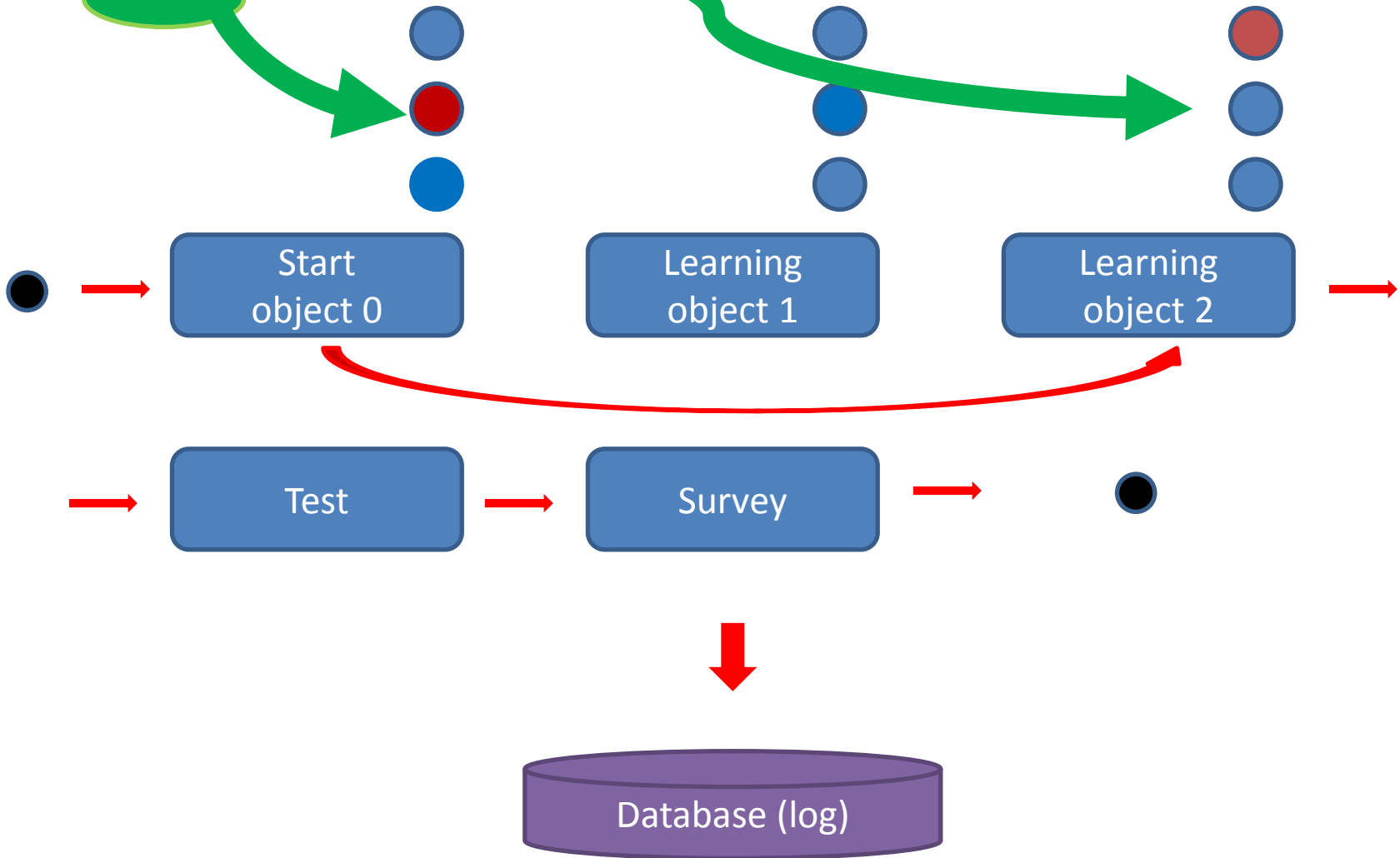


Work of the module (I)





Work of the module (II)



Module implementation

- The target environment - LCMS Moodle
- Preparation of teaching materials can be done in two ways:
 - For inexperienced authors - the material is prepared in a linear fashion,
 - For experienced programmers - the material is initially divided into parts using clusterisation.

The project

- The state of the GLM2 module - currently under reconstruction.
- The module uses a specially designed one-way artificial neural network for e-learning vocational instruction in the trade of IT technician in high school.
- Simultaneously, the e-learning platform is being improved and learning objects are being prepared.
- Expectation: **the quality of teaching students will improve and the pace of learning will increase.**
- The final goal is **to develop a comprehensive methodology for teaching** vocational subjects

Theoretical and methodological value of the research

- **Developing a comprehensive online teaching methodology (content, objectives, methods, forms, educational resources), with elements of artificial intelligence as an example of teaching vocational subjects.**
- Particular attention is paid to the efficient solution, consisting of the potential indirect account of individualization of the learning process based on the results of intelligence structure tests.
- The module also allows for the adaptation of learning paths according to the student's "on-site" progress.
- Its undeniable advantage **is the possibility of self-modifying paths based on the observation of the behavior of students.**
- On the basis of the learning paths formed by a neural network, there is also a hypothetical possibility to create new ways of teaching.

The practical value of the obtained results

- **Creating original distant vocational instruction courses, including a new IT tool, allowing for the provision and conducting individualized learning, which should result in improving educational outcomes.**
- Development and availability of methodological recommendations for teachers conducting online classes in the above mentioned subjects with a different level of IT preparation in a printed and electronic form.
- Full integration of the GLM2 module with LCMS Moodle.
- Shortening the preparation time for individual teaching and learning paths and many others.

The end

Thank you for your attention

Any questions?

Děkuji Vám za pozornost

Otázky?