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## Models for Assessing the Level of Informatization of an Educational Institution

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### Abstract

This article discusses the model for assessing the level of informatization of an educational institution. Authors propose to use models of maturity levels for all types of educational institutions. The necessary assessment indicators are also justified.

**Keywords:** Model, ICT, Maturity model, Level of informatization

### Introduction

One of the most important ways to achieve a new quality of education is its informatization which involves the systemic integration of information technologies into the educational process and is accompanied by radical changes in the pedagogical, organizational, economic, theoretical and methodological subsystems of the educational system.

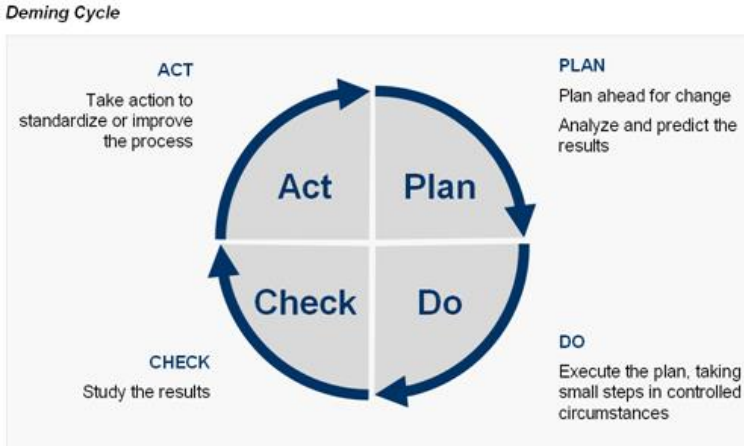
### Main part

Traditionally important during the implementation of any pedagogical project is an integrative assessment of current results and correction of activities aimed at achieving the set educational goals. Thus, in the course of creating and developing an educational information environment of an educational institution, it is important to conduct the necessary research for subsequent transformations of a unified information educational environment. The main task of ICT development in an educational institution at the present stage of development is the importance of a comprehensive integrative assessment of the informatization of an educational institution and the development of a strategy for its continuous improvement.

Currently, various models for assessing the level of informatization of an educational institution are used:

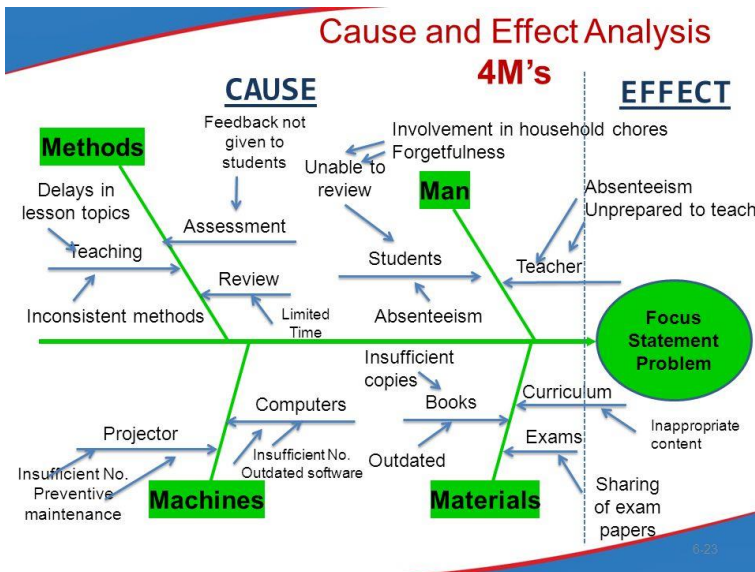
- Model UNESCO. Informatization process status indicators;

- Shewhart-Deming cycle model PDCA – “Plan – Do – Check – Act”. (“Planning – Execution – Verification – Corrective Actions”), focused on continuous development (Fig. 1);



**Fig. 1**

- SWOT analysis of the process of informatization of an educational institution
- Cause-and-effect diagram (Ishikawa diagram) (Fig. 2).



**Fig. 2**

To improve the efficiency of assessment, you can use the modern concept of business performance management (BPM). It involves the use of a balanced scorecard and the allocation of key performance indicators.

Balanced Score Card (BSC) is aimed at achieving goals in accordance with the stage of its life cycle and should take into account the alignment of the interests of the employees of the enterprise itself and the subjects interacting with it and customers of learning outcomes. The principle of balancing involves combining these indicators into a single mathematical model.

The balanced scorecard includes:

- financial aspect;
- internal business processes;
- customer relations (consumers of educational services);
- innovation and employee growth prospects.

Qualitative characteristics of information that can be used to assess:

- information of individual tasks (“patchwork automation”);
- the presence of integration at the level of complexes of functional tasks and business processes;
- the presence of a corporate information system;
- availability of ICT infrastructure across the enterprise.

Key metrics for this model can be:

- the percentage of automated tasks in the total number of tasks to be automated;
- the number of implemented modules of the corporate information system and the percentage of this number to the total number of potentially necessary modules;
- the number of personal computers per one working or one employee from among the administrative and management personnel;
- the number of workstations of users of the information system and the percentage of this number to the total number of potential users;
- the value of non-current financial assets associated with ICT tools and intangible assets associated with software and databases;
- the value of current assets associated with the operation of the information system;
- the relative value of balance sheet assets associated with the creation and operation of information systems;
- the average cost of training end-users in the use of information technology;
- the number of ICT specialists in the company, the ratio of certified IT specialists to their total number;
- the relative number of ICT specialists to the total number of employees in the company;

– the degree of influence of ICT on the results of the company (revenue growth, cost reduction, improvement of the educational process, etc.).

The audit of the information educational environment should be based on the use of the COBIT standard (Control Objectives for Information and related Technology). Using the COBIT standard for auditing allows you to link the management of information technology with the objectives of the enterprise.

The Maturity model should be used as an integrative assessment of the general level of informatization of an educational institution (Fig.3). A brief description of the levels is given in the table.

## Characteristics of the Maturity levels

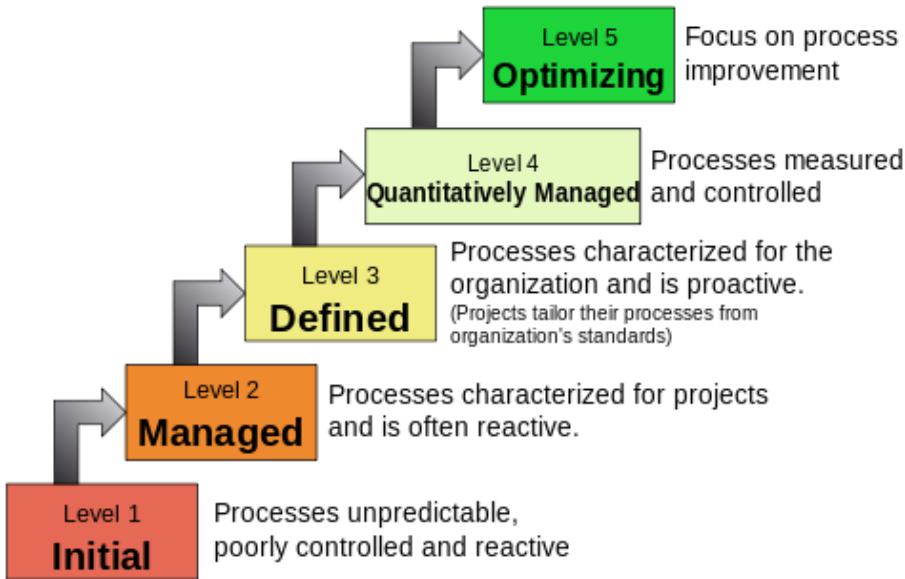


Fig. 3

**Table 1. Description of maturity levels in the projection of the process of evaluating informatization of an educational institution**

Level	Brief description of the levels
0	Complete lack of information technology (not considered an information metric).
1	Beginning of work on creating a unified information and educational environment, documenting processes.
2	Repetitive processes, knowledge base and electronic templates for repetitive processes.
3	Models and knowledge bases of repetitive processes are used.
4	Processes are measured and managed, the introduction and use of metrics to assess the quality, the construction of a quality management system of the education management process.
5	The information system is optimized, auditing and continuous improvement of processes based on best practices, the formation of its own practices and external assessments of the state of informatization.

## **Conclusion**

The authors propose to use the proposed assessment to measure the level of informatization of an educational institution. Such a solution allows us to most effectively assess the state of ICT and the information and educational environment, and to know the prospects for development. The authors also propose to introduce into the educational process a special adaptation training course for managers of educational organizations and to develop software for monitoring informatization.

## **Resources**

COBIT Assessment Programme update. Retrieved from: [http://www.isaca.org/Knowledge-Center/Blog/Lists/Posts/Post.aspx?ID=160&utm\\_referrer=direct%2Fnot%20provided](http://www.isaca.org/Knowledge-Center/Blog/Lists/Posts/Post.aspx?ID=160&utm_referrer=direct%2Fnot%20provided) (2019).

ISACA (2012). COBIT Five; *A Business Framework for the Governance and Management of Enterprise IT*.

*What is PDCA?* Retrieved from: <https://4improvement.one/ru/knowledge/tools-techniques/24-problem-solving-tools/145-pdca> (2019).