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STANDARDIZATION OF MANAGEMENT SYSTEMS IN EDUCATION¹

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***Abstract:** The paper reviews international standards and guidelines, which can improve the quality of education. The focus is on the impact that the standard ISO/DIS 21001 and the agreement IWA 2 could have on the quality management system in higher education. The purpose of the paper is to establish a reference for improving the internal system for assessment and maintenance of the quality of education and of the academic staff at the University of Ruse 'Angel Kanchev'.*

***Keywords:** international standards, excellence models, higher education, ISO 21001, IWA 2.*

***JEL Codes:** I23*

INTRODUCTION

The international standardization in the domain of education is one of the recent developments of management systems. It is a natural continuation of the unification of requirements, criteria, work methods, assessment systems and others, both on domestic and on international scale.

In 1987 the International Organization for Standardization, ISO published the first standard with requirements for quality management systems- ISO 9001. Presently, this standard has undergone 5 changes, and its more recent edition (ISO 9001, 2015) reflects the current state of development in organizations, technologies, research, and of society as a whole. This standard aims to support organizations to demonstrate on a constant basis that they are capable to meet the applicable requirements of regulatory and normative documents, to meet the needs and expectations of their customers, to achieve conformity with their requirements and to increase their satisfaction.

The achievement of these requirements is unthinkable without taking to heart the quality management principles and without the proper understanding of the specific terminology. Thus, in parallel to the ISO 9001 editions, the International Organization for Standardization publishes the ISO 9000 standards whose more recent version is (ISO 9000, 2015).

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The Technical Specification (ISO/TS 9002, 2016) is published just a year after the latest editions of ISO 9000 and ISO 9001. This standard contains more detailed guidelines on how to apply the requirements of ISO 9001:2015.

Any organization which is not merely satisfied with meeting minimal requirements, and rather aims to achieve sustained success based on quality management, the ISO 9000 series of standard also includes ISO 9004. In 2017 ISO publishes the draft of its fourth edition titled 'Quality management - Quality of an organization - Guidance to achieve sustained success' (ISO/DIS 9004, 2017).

These global trends also affect education. An International Workshop Agreement (IWA) is approved in Mexico in October 2002. In 2003 it has been published as IWA 2:2003. In 2006 a working meeting took place in Korea. As a result, the first edition of the agreement of how to apply the requirements of ISO 9001 in education.

The aim of (IWA 2, 2007) is to assure the overall effectiveness of the quality management system of an educational institution. This allows the supply and continual improvement of educational services for learners.

The elaboration of IWA 2 involves numerous representatives of tens of countries from all continents and from several types of organizations related to education: governmental agencies, research institutes, universities, colleges, NGOs, syndicates, consultants, etc. The development of IWA 2 is supported by the work of a team of ISO experts (ISO/PC 288/WG 1, 2017). The outcome of their efforts is the draft version of the standard ISO 21001 (ISO/DIS 21001, 2017; ISO 21001 briefing note, 2017). In its essence it presents an extension and more detailed specification of the requirements of ISO 9001. It gives the educational organizations a common tool for managing their educational products and services, so that they can fulfil the requirements of the learners (pupils, students (bachelor, master, and doctorate), and trainees), and of other interested parties.

EXPOSITION

Specific Features of the International Workshop Agreement IWA 2:2007

IWA 2:2007 provides guidelines for development, implementation, maintenance and improvement of a quality management system (QSM) in educational organizations (EO). These guidelines do not add to and do not modify the requirements of ISO 9001:2000. They are also not intended to be used in contracts for conformity assessment or for QMS certification.

The structure of IWA 2:2007 completely follows the structure of ISO 9001:2000, and respectively the structure of ISO 9001:2008. The significant added value of this document is in:

- The rethinking of QMS requirements through the prism of EO;
- The specific guidelines for each clause of ISO 9001, and
- Both annexes to IWA 2.

Annex A presents a questionnaire for self-assessment of EO, and Annex B- a list of examples of educational processes, measures, quality records and tools.

The questionnaire for self-assessment encompasses all clauses of ISO 9001 as follows:

- Clause 4 „Quality management system in the educational organization“ – 9 questions;
- Clause 5 „Management responsibility in the educational organization“ – 8 questions;
- Clause 6 „Resource management in the educational organization“ – 7 questions;
- Clause 7 „Realization of the educational service“ – 19 questions;
- Clause 8 „Measurement, analysis and improvement in the educational organization“ – 9 questions.

The self-assessment of the QMS of EO is similar to the five maturity levels of the QMS which are applied in ISO 9004. The focus is to ask the process owners such questions which define the current level of the EO in order to determine the needs for quality improvement, to prioritize

the improvement activities and to measure progress in individual QMS elements. Table 1 shows the levels defined in IWA 2:2007.

Table 1. Scale of IWA 2:2007 levels

Level	Description
Level 1	<i>No formal approach</i> No systemic approach is evident. There are poor results or unpredictable results. Data are available, but not used for improvement of performance.
Level 2	<i>Reactive approach</i> Problem-based approach. The educational organization responds to complaints or mandates as needed. Data are reviewed as required. Limited additional educational organization data on results is available.
Level 3	<i>Stable approach</i> Data and detailed, timely local data are used to guide conformance to requirements. There is an established method or an approach. There is concern for improvement.
Level 4	<i>Systematic approach</i> Systemic process alignment with good results and sustained improvement trends. The data are effectively used and learner performance continuously improved. State standards are consistently met.
Level 5	<i>Substantial continuous improvement</i> Strongly integrated system management with institutionalized improvements. Learners are proficient according to educational organization criteria.

Annex B is especially useful because it provides 4 detailed lists with examples how to apply ISO 9001 in EO. 57 *educational processes* are listed as examples which need to be managed as a process. They encompass QMS elements from a palette ranging from the accreditation of scientific fields and specialities, through the allocation of spaces for teaching halls, laboratories and libraries, and to the purchasing of consumables and the security of EO.

IWA 2:2007 also specifies 27 *performance indicators (measures)* of EO processes. Among these are: competencies of the teaching staff, yearly number of research publications, number of patents, yearly number of advanced degrees granted, dropout rate, satisfaction surveys of learners and other identified interested parties, job placement rates of learners, etc.

70 different types of *quality records* are enumerated in order to demonstrate the success of the EO. In comparison to this figure, ISO 9001:2015 specifies a minimum of 22 records. Some of the necessary types of documented information are: quality objectives and their achievement, study plans, study programmes, learner group schedules, diplomas and certificates, research outcomes, projects, prototypes, etc.

In the last section of Annex B are listed 17 *tools* which can be used for improving the quality of education- Pareto charts, satisfaction surveys, statistical control charts, validation methods, etc.

Overview of ISO/DIS 21001:2017

The title of the standard- „*Educational organizations — Management systems for educational organizations — Requirements with guidance for use*“, clearly defines its scope – the specific interaction between the EO, the learners, the customers and other relevant interested parties.

This draft of an international standard follows closely the structure of the modern model for management systems based on Annex SL of the ISO Directives. Regardless of its similarity to ISO 9001:2015, ISO 21001 is a standalone international standard and not just a sector application. The

main differences from ISO 9001:2015 are in Clause 8 „*Operation*“ which contains the EO specific processes, and in Clause 9 „*Performance evaluation*“.

ISO/DIS 21001:2017 has 7 annexes. 3 of them are normative, i.e. mandatory for application:

- Annex A: „*Additional Requirements for Special Needs Education*“;
- Annex B: „*Additional Requirements for Research*“;
- Annex C: „*Additional Requirements for Early Childhood Education*“.

The standard has 4 informative annexes:

- Annex D: „*Principles for a Management System for Educational Organizations (EOMS)*“;
- Annex E: „*Classification of Interested Parties*“;
- Annex F: „*Guidelines for Communication with Interested Parties*“;
- Annex G: „*Processes, Procedures, Methods and Tools in Educational Organizations*“.

Requirements of Clause 8 of ISO/DIS 21001:2017

The main processes of the EOMS are concentrated in Clause 8. It contains 9 sub-elements. The most significant additions to ISO 9001:2017, Clause 8.1 „*Operational planning and control*“ are the requirements for planning of design and development, and the expected outcomes of the educational products and services including:

- a) Learning outcomes;
- b) Ensuring appropriate teaching methods and learning environments;
- c) Defining criteria for learning assessment;
- d) Conducting learning assessment;
- e) Defining and conducting improvement procedures; and
- f) Providing support services.

When defining the „*Requirements for products and services*“ (Clause 8.2) which will be offered to customers, learners and other beneficiaries, the EO shall ensure that along with normative requirements, the following requirements are defined:

- a) Those considered necessary by the organization due to its policy, objectives and strategic plan;
- b) Those resulting from needs analysis that is performed to determine requirements of (current and potential future) learners and other beneficiaries, in particular those with special needs;
- c) Those resulting from international demands and developments;
- d) Those resulting from research.

Clause 8.3 „*Design and development of products and services*“ devotes special attention to the common organizational measures for control, the design controls for specialities and curricula, followed by assessment design and development controls and Review of the requirements for educational products and services.

Clause 8.4 „*Implementation*“ consists of 3 stages: 1) preparing for service provision, 2) approval of the conformity to acceptance criteria and taking responsibility by the person who approved the educational service, and 3) control of changes in the educational product and the provided educational service.

The essence of Clause 8, and a key process in ISO 21001 is Clause 8.5 „*Service provision*“. It is described in detail and comprises:

- 1) Overall process control;
- 2) Admission of learners: preliminary information and admission conditions;

- 3) Carrying out the education in various specialities (programmes): teaching, facilitation of learning, administrative services, control of nonconforming educational outputs, documenting the provided education;
- 4) Summative assessment which takes into consideration plagiarism, assessment objectivity and retention of exam documentation, and
- 5) Recognition of assessed learning.

When the implementation of the educational process requires the participation of external people (lecturers, consultants, demonstrators, etc.) and organizations, the EO shall determine and apply criteria for „*Control of externally provided processes, products and services*,“ specified in Clause 8.6.

According to the requirements of Clause 8.7 „*Traceability and preservation*“ the EO shall ensure traceability in respect to:

- a) The progress of learners through the organization;
- b) The study and employment paths of those who graduate or complete a course or programme of study;
- c) The output from the work of staff: what, when and by whom was done.

Coherent with the topical trends of more intensive information flow in the modern society, and more specifically- the operation of EO, ISO 21001 in Clause 8.8 „*Protection and transparency of learners' data*“ requires the establishing and publishing of a special procedure. It shall establish:

- a) What learner data is collected, and how and where it is processed and stored;
- b) Who has access to the data;
- c) Under which conditions learner data may be shared with third parties;
- d) How long the data is stored for.

The EO shall collect and share learner data with their explicit consent. According to the procedure, the measures for technological data protection shall be validated, and the access to data shall be given by authorized people and is guaranteed for the personal data of the learners and other interested parties.

Clause 8.9 „*Property belonging to interested parties*“ imposes requirements for the EO to identify, verify, protect and safeguard any property provided for use or incorporation into the products and services.

Requirements of Clause 9 of ISO/DIS 21001:2017

The performance evaluation is presented in 3 sub-elements: 1) monitoring, measurement, analysis and evaluation; 2) internal audit, and 3) management review. Since the last two elements cover the ISO 9001:2015 requirements, ISO 21001 concentrates on measuring educational processes. The standard plans for:

- Monitoring the satisfaction of learners, interested parties, and EO staff;
- Handling of complaints;
- Determining the needs for monitoring the educational products and services, the effectiveness of achieving the educational outcomes, and the effect of EO on society;
- Methods for monitoring, measurement, analysis and assessment, including the development of Key Performance Indicators (KPIs) with relevant interested parties.

CONCLUSION

The article presents the development of concepts and standards for quality management in the domain of education. Key processes of ISO/DIS 21001:2017 are summarized and main

requirements for achieving a quality educational process are presented. No matter how well an EOMS has been developed, it cannot guarantee the success of the learners. ISO 21001 is one of the means to satisfy more effectively the needs of the learners and it contributes to better results from the educational processes.

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REFERENCES

ISO 9000 (2015). “Quality management - Fundamentals and vocabulary”.

ISO 9001 (2015). “Quality management systems - Requirements”.

ISO 21001 briefing note (2017). “Educational organization management systems”.

ISO/DIS 9004 (2017). “Quality management - Quality of an organization - Guidance to achieve sustained success”.

ISO/DIS 21001 (2017). “Educational organizations - Management systems for educational organizations - Requirements with guidance for use”.

URL: [http://isotc.iso.org/livelink/livelink/fetch/16442665/16442667/16474949/-](http://isotc.iso.org/livelink/livelink/fetch/16442665/16442667/16474949/-ISO_21001_%2DBriefing_Note_EN_%2D_LR.PDF?nodeid=17475075&vernum=-2)

ISO_21001_%2DBriefing_Note_EN_%2D_LR.PDF?nodeid=17475075&vernum=-2 (Accessed on 24.08.2017).

ISO/PC 288/WG 1 (2017). ISO Expert group on ISO 2001. www.iso.org/iso/iso_technical_committee.htm?commid=4960304 (Accessed on 5.06.2017)

ISO/TS 9002 (2016). “Quality management systems - Guidelines for the application of ISO 9001:2015”.

IWA 2 (2007) International Workshop Agreement IWA 2:2007 “Quality management systems - Guidelines for the application of ISO 9001:2000 in education”.