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MANAGEMENT OF THE EDUCATIONAL ENVIRONMENT OF A HIGHER EDUCATION INSTITUTION

Augstskolas izglītības vides vadība

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ABSTRACT

The aim of the doctoral thesis "Management of the Educational Environment of a Higher Education Institution" is to investigate the basic components of the educational environment of a higher education institution and to work out a structural model of managing the educational environment.

On the basis of theoretical knowledge derived from Management, Psychology and Education Sciences, the educational environment of a higher education institution is described as a set of integrated resources including the following subsystems – 1) the physical and technological environment; 2) the instructional environment; 3) the psychological environment, 4) the executive environment – that on the whole work as the main components of the structural model. Additionally, in the framework of the structural model of managing the educational environment, the indicators for evaluating the integrated student-centred educational environment were developed and tested in practice.

The results of the empirical study suggest that students perceive the educational environment as an integrated system, which contains different interconnected and interdependent subsystems. This stresses the importance of applying the holistic approach to managing the educational environment.

The doctoral thesis contains Introduction, 6 Chapters, Conclusions, Recommendations, a List of References, 2 Appendices; its length is 174 in computer print. The thesis also includes 41 tables and 15 figures.

Keywords: *educational environment of a higher education institution, management of the educational environment, structural model of managing the educational environment, evaluation indicators*

ANOTĀCIJA

Promocijas darba „Augstskolas izglītības vides vadība" mērķis ir izpētīt augstskolas izglītības vides būtiskākos komponentus un izveidot izglītības vides vadības struktūrmodeli. Balstoties uz vadībzinātnes, psiholoģijas un pedagoģijas zinātņu teorētiskajām atziņām augstskolas izglītības vide tiek raksturota kā savstarpēji integrēts resursu kopums, kas ietver sekojošas apakšsistēmas – 1) fiziskā un tehnoloģiskā vide, 2) mācību un instruktīvā vide, 3) psiholoģiskā vide, 4) izpildu vide – kas kopumā darbojas kā galvenie struktūrmodeļa komponenti. Bez tam izglītības vides vadības struktūrmodeļa ietvaros ir izstrādāti un pārbaudīti praksē integrētas studentcentrētas izglītības vides novērtēšanas indikatori.

Empīriskā pētījuma rezultāti ļauj secināt, ka studenti uztver izglītības vidi kā integrētu sistēmu, kas ietver dažādas savstarpēji saistītas un atkarīgas apakšsistēmas. Tas īpaši akcentē holistiskās pieejas izmantošanas svarīgumu izglītības vides vadībā.

Promocijas darbs sastāv no ievada, sešām nodaļām, secinājumu un priekšlikumu daļas, izmantotās literatūras saraksta un 2 pielikumiem. Kopējais darba apjoms, izņemot pielikumus, ir 174 lappuses datorsalikumā. Darbā ir 41 tabula un 15 attēli.

Atslēgas vārdi: *augstskolas izglītības vide, izglītības vides vadība, izglītības vides vadības struktūrmodelis, novērtēšanas indikatori*

CONTENTS

INTRODUCTION

Actuality of the research issue

The selection of the research direction of the Promotion paper was determined by a number of important factors. The Bologna Declaration of June 1999 (Bologna Declaration, 1999) has launched a chain of reforms that are necessary to make European Higher Education more competitive and more attractive for Europeans and for students and researchers from other continents. Such concepts as educational environment in the framework of creating the European Higher Education Area (Bologna Declaration, 1999; Budapest-Vienna Declaration, 2010), its quality enhancement (Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2005) have become topical issues for discussion in the educational management domain in the context of the Bologna Process and lifelong learning.

Globalisation, international cooperation, fast development of science and technology, social, political, cultural and demographic changes dictates that the development of modern society requires from people continuous building of skills and enhancement of knowledge through their life. The changes in global environment influence as individuals as education institutions making modern education organisations constantly improve with the aim to provide their students with the opportunities to develop themselves. The external environment affects the internal environment of an educational organisation, this way inducing new types of challenges, risks and tasks for education managers. Managing the internal educational environment has become one of key concerns for European higher education institutions in the framework of their continuous improvement.

However, it should be noted that the educational environment in higher education institutions has not been studied in detail, especially in Latvia.

A student-centred educational environment is a strategic component of modern higher education. It is one of the foremost factors that influence students' learning. Accordingly, educators worldwide would like to establish the most favourable educational environment for their students to achieve the expected learning outcomes. It is vital that all learning process participants are entitled to a good educational environment that would improve their possibilities of self-development and broad education.

One of the key tasks of education managers is to create a favourable and motivating educational environment contributing to learning. The educational environment, where students have an opportunity to develop their creative potential, is an efficient means of preparing students for productive and satisfying careers in the knowledge-based economy.

Today, as educational organisations have become large and complex systems, the role of education managers in creating and developing the most efficient educational environment increases. Management of the educational environment presupposes giving a particular attention to students' needs and requirements in order to improve educational practice and enhance educational quality. Systematic student feedback becomes an essential source of analytical input in the process of managing the learner-centred educational environment; it is supposed to contribute to improving the learning process and increasing student satisfaction with the educational environment.

Modern higher education institutions being sophisticated organisations, education managers operate in a very complicated context. The complexity of the educational environment stipulates the variety of situations, in which managers make their decisions. In the face of the emerging challenges, they should take every advantage of traditional management practices, as well as new approaches to education and management to guarantee continuous quality enhancement of the educational environment. Implementing their strategy aimed at the improvement and development of a higher education institution educational managers employ a variety of integrated management practices accompanied by innovative pedagogical instruments. The symbiosis of pedagogical and management tools leads to quality enhancement of the educational environment.

Higher education institutions must be responsive to the changes occurring in the global environment; they are associated with reorganisation of knowledge acquisition and knowledge delivery processes, which includes providing new opportunities to graduates in the context of the job market customization and life-long learning. One of the most challenging tasks for educators is to stimulate students for learning and to encourage their participation in social life as active members of the academic community. For accomplishing this goal various knowledge strategies can be employed, regular educational environment evaluation being one of them. The obtained information is utilised for creating a strategy for the improvement of a higher education institution - introducing qualitative changes in the educational environment.

Student evaluations (as an element of a higher school self-assessment) are universally used today. Students' satisfaction with their education institution has various benefits including as individual as institutional. Student satisfaction is closely connected with student retention; it affects the reputation and image of a higher education institution.

The holistic approach to management of the educational environment presupposes that developing a system for the environment evaluation managers should not overemphasise one aspect at the expense of others, even though they deal with one particular subject included in the study programme. For example, in their attempts to create an educational environment

contributing to language learning education managers have to establish and analyse the relationships between various educational environment subsystems that are supposed to support sustainable learning process. This calls for assessing the educational environment from different perspectives. For the educational environment evaluation managers should employ various indicators. The analysis and assessment of the environment will allow them to use the available organisational resources in the most efficient way in order to achieve educational objectives.

Taking into account the relevance of the topic and problems outlined above, the author has studied the issues related to management of the educational environment of a higher education institution.

The aim of the research: to investigate the basic components of the educational environment of a higher education institution and to work out a structural model of managing the educational environment.

Object of the research: the educational environment of a higher education institution.

The tasks of the thesis:

1) To analyse theoretical literature on management, pedagogy and psychology related to the nature and management of the educational environment of a higher education institution;

2) to identify, analyse and study the basic constituents of the educational environment of a higher education institution having an impact on student satisfaction with the educational environment and student motivation for further studies;

3) to develop a structural model of managing the educational environment of a higher education institution;

4) to develop indicators for the educational environment evaluation, which can be regarded as an essential aspect of managing the environment, and to test the indicators in practice;

5) to work out practical recommendations for improving management of the educational environment of a higher education institution.

Limitations of the research: The research limitations are mainly connected with the research base. The sample in this study included two higher education institutions of Latvia. The study covers the period from 2006 to 2011.

Research Questions:

1. What kind of structural model is applicable for managing a higher education institution's resources for developing the integrated student-centred educational environment?

2. What are the basic constituents of the educational environment of a higher education institution having an impact on student satisfaction with the educational environment and student motivation for further studies?

3. What indicators are applicable for the evaluation of the integrated student-centred educational environment?

Research base:

Transporta un sakaru institūts (Transport and Telecommunication Institute) and Rīgas Tehniskā universitāte (Riga Technical University) - 424 students.

Stages of the research:

1st stage (2006 - 2007) – theoretical literature on the nature and management of the educational environment was analysed; the aim, the tasks of the research and the research questions were defined.

2nd stage (2007 - 2008) – a structural model of managing the educational environment of a higher education institution was worked out; a pilot study was conducted in Transport and Telecommunication Institute in the agenda of developing the model; the obtained data were processed and analysed.

3rd stage (2008 - 2009) – a survey was conducted in two higher education institutions of Latvia (in Transport and Telecommunication Institute and Riga Technical University) to test the structural model of managing the educational environment.

4th stage (2010 - 2011) – the obtained data were processed and analysed; the conclusions were made; some practical recommendations were worked out.

Novelty of the doctoral thesis:

The analysis of theoretical literature and the empirical study have contributed to the emergence of new ideas and approaches to the educational environment.

1. Management of the educational environment in a higher education institution is described as an integrated process embracing management of all educational environment resources: material, non-material, and informational. For the first time a

structural model of managing the integrated student-centred educational environment of a higher education institution was applied; the model includes management of the executive environment, psychological environment, physical and technological environment, instructional environment.

2. In the theoretical literature are rarely used indicators for assessing the educational environment. So the author has developed a set of indicators for evaluating the integrated student-centred educational environment in the framework of a structural model of managing the educational environment, which can be considered a new technique for the educational environment assessment.

3. The system of evaluation indicators has been tested in two higher education institutions of Latvia as a new technique, with the aim to identify the main factors having the most significant impact on student satisfaction with the educational environment and student motivation for further studies (based on a particular study course).

Theoretical base of the doctoral thesis:

- Change theory (M. Fullan);
- Theories of educational leadership and management (T. Bush, D. Glover);
- Principles of strategic management for school development (B. Fiddler) adapted for managing the improvement of a higher education institution;
- J. Dewey's philosophy of education and constructivist approach to education;
- Holistic approach to education (R. Miller, R. A Martin, S. H Forbes);
- Theories of research in social sciences (A. Cropley, N. K. Denzin).

The doctoral thesis includes interpretation of the ideas concerning the educational environment by the following Latvian authors: I. Katane, R. Burceva, I. Šumane.

Research methods:

- Analysis of the theoretical literature on the given problem.
- Case study – to provide a thorough analysis of a particular situation in order to obtain some information concerning the problem.
- Student survey – to find out the factors having impact on student satisfaction and student in the integrated the educational environment.

- Mathematical data processing by using SPSS statistical data processing software (SPSS version Statistics 17).

Theoretical importance of the research:

1. Theoretical analysis of the management of the integrated student-centred educational environment is given.

2. The concepts "educational environment" and "management of the educational environment" are specified.

Practical importance of the research:

1. The basic constituents of the educational environment of a higher education institution have been analysed.

2. A structural model of managing the educational environment of a higher education institution has been suggested

3. Evaluation indicators for assessing the integrated student-centred educational environment of a higher education institution have been developed.

4. Some suggestions for education managers, which may be used for improving the management of the integrated student-centred educational environment, have been put forward.

Approbation of the research results: the results of the research have been reported at fourteen conferences (including eight international conferences) and at the international seminars in the framework of the ERASMUS Intensive Programme IMBILD (2007, 2008, 2009). The main results of the research are presented in fourteen scientific publications.

*List of scientific publications related to the doctoral thesis***:**

1. *Stukalina Y.* Investigating the Essentialities of an Educational Environment // *Research, Planning and Policy: Emerging Trends in Baltic and Nordic Lifelong Learning* (ed. P. Ilsey, J. Karing, M. Kerulis), Finland: Juvenes Print, 2008, ISBN 978-951-44-7586-3, 141-151.

2. *Stukalina Y.* How to prepare students for productive and satisfying careers in the knowledge-based economy: Creating more efficient educational environment // *Technological and Economic Development of Economy: Baltic Journal on Sustainability*: Vilnius Gediminas Technical University, 2008, 14/2 (ed. Prof. K.

Zavadskas), ISSN 1392-8619, 197-207, [INDEX COPERNICUS International // http://journals.indexcopernicus.com/abstracted.php?icid=895776].

3. Ivanova I., *Stukalina Y.* Management of the educational environment as an essential factor for providing sustainability in teacher education // *Proceedings of the 16th Annual Meeting of European Network for Improving Research and Development in Education Leadership and Management* Proceedings of the International Conference // ENIRDELM" (eds. P. Hansson & K .Malmberg), Uppsala University, 2008, 52-71.

4. *Stukalina, Y.* Managing the educational environment: What management tools to use? // Proceedings of the International Conference *Modelling of Business, Industrial and Transport Systems*, Riga, TSI, 2008, eds. E. Kopytov, H. Pranevicius, E. Zavadskas, I. Yatskiv, ISBN 978-9984-818-04-7, 313-320.

5. *Stukalina, Y.* Highly integrated educational environment as a precondition for multidisciplinary education // starptautiskās zinātniskās konferences krājumā „*Creating a Global Culture of Peace Strategies for Curriculum Development and Implementation*: *Proceedings of the 13th World Conference on Education of the World Council for Curriculum and Instruction September 2-7, 2008 Antalya, Turkey*" (eds. J. A. Johnson & M. L. Higgins), Alaska: International Educational Initiatives Juneau, 2009., CD, ISBN: 4-901099-28-0, 211-224, [ERIC – Education Resources Information Center // http://www.eric.ed.gov/ERICWebPortal/search/simpleSearch.jsp;jsessionid=RduHdG mK9Rkev8m9-hH5Sg__.ericsrv002?newSearch=true&eric_sortField=&searchtype=keyword&pageSi ze=10&ERICExtSearch_SearchValue_0=yulia+stukalina&eric_displayStartCount=1& _pageLabel=ERICSearchResult&ERICExtSearch_SearchType_0=kw].

6. Stukalina, Y. Managing the educational environment conducive to language teaching and learning in a non-linguistic institute // *Applied Linguistics for Specialised Discourse* krājumā (Rīga, Latvijas universitāte, 2009., CD, ISBN 978-9984-789-4: CD, number of pages: 6.

7. *Stukalina Y.* The management of the integrated educational environment resources: the factors to be considered // *European Journal of Education*, 45/2, Wiley-Blackwell, 2010, ISSN 01418211, 345-361 [VOCED research database // http://www.voced.edu.au/td/tnc_100.710].

8. *Stukalina, Y*. Management of the Educational Environment: Developing a Strategy for School Improvement // Proceedings of the *2nd Paris International Conference on Education, Economy and Society – 2010* (ed. Prof. Guy Tchibozo), *Vol.1: Refereed Papers*, Paris, 2010, CD, ISBN 9782953384260, 428-440.

9. *Stukalina Y*. Using quality management procedures in education: Managing the learner-centered educational environment // *Technological and Economic Development of Economy*: *Baltic Journal on Sustainability*, Vilnius Gediminas Technical University, 2010, 16/1, ISSN 1392-8619, ed. Prof. K. Zavadskas, 75-93, [INDEX COPERNICUS International// http://journals.indexcopernicus.com/abstracted.php?icid=908684].

10. *Stukalina Y*. Discovering the factors influencing students' perception of the educational environment in the context of foreign language training in a technical higher school // *Signum Temporis: Pedagogy and Psychology*, 3/1, Riga, RPIVA, 2010, ISSN 1691-4929, 69-75.

11. *Stukalina Y*. Some knowledge strategies used to provide quality enhancement of the educational environment in a higher education institution // *Theory for Practice in the Education of Contemporary Society*. *Zinātniskie raksti un konferences referāti*, Riga, RPIVA, 2010, ISBN 978-9934-8060-5-6, 318-323.

12. *Stukalina Y*. Addressing student satisfaction and student motivation in the ESP course organization in the framework of creating a student-centered educational environment // *Proceedings of the 3rd Paris International Conference on Education, Economy and Society* (ed. Prof. Guy Tchibozo), Paris, 2011, CD, ISBN 978-2-9533842-9-1, 553-565.

13. *Stukalina Y*. Creating a constructive educational environment to foster language learning in a higher technical school: Using a blended-learning approach // *Proceedings of the 5th International Conference „Languages for Work and Life: Challenge for Teachers and Learners"* (20-21 May 2011, Vilnius University), ISBN 978-9955-880-80-6, number of pages: // http://lkpa.lhosting.info/straipsniai/st_16.pdf.

14. *Stukalina Y*. Addressing service quality issues in higher education: the educational environment evaluation from the students' perspective // the paper was accepted for publication in 2011 in *Technological and Economic Development of Economy: Baltic Journal on Sustainability*: Vilnius Gediminas Technical University (ed. Prof. K. Zavadskas), ISSN 1392-8619, number of pages: 11.

Reports on the results of scientific work:

1. ERASMUS Intensive Programme "IMBILD/Individual Plurilingualism in Education" (Austria, Linz, 09.08.09.-23.08.09) with report "Using Student Feedback in Managing the Educational Environment Conducive to Language Teaching and Learning".

2. ERASMUS Intensive Programme "IMBILD/Individual Plurilingualism in Education" (Austria, Linz, 17.08.08.-31.08.08) with report "Creating the Environment Conducive to Language Learning and Teaching in the EU Higher Education Institutions".

3. ERASMUS Intensive Programme "IMBILD/Individual Plurilingualism in Education" (Austria, Linz, 19.08.07.-01.09.07) with report "Highly Integrated Educational Environment as a Prerequisite for Foreign Languages Acquisition in an Engineering Higher School".

Conference abstracts and reports on international conferences:

1. *Stukalina Y.* Educational environment as an essential factor in education *// Conference in Social and Educational sciences: Social and Educational sciences in Baltic-Nordic Cultural Context*, Tallinn University, 13.03.2007 – 14.03.2007.

2. *Stukalina Y.* Highly integrated educational environment as a precondition for multidisciplinary education // 13th World Conference on Education of the World Council for Curriculum and Instruction September, Antalya, Turkey, 02.09.2008 - 07. 09. 2008.

3. *Stukalina Y.* Managing the educational environment: What management tools to use? *// Modelling of Business, Industrial and Transport Systems*, Riga, TSI, 7.05. 2008 – 10.05. 2008.

4. *Stukalina Y.* Managing the educational environment conducive to language teaching and learning in a non-linguistic institute *// Applied Linguistics for Specialised Discourse*, Rīga, University of Latvia, 22.05.2009 – 23.05.2009.

5. *Stukalina Y.* Management of the Educational Environment: Developing a Strategy for School Improvement *// 2nd Paris International Conference on Education, Economy and Society,* Paris, 21.07. 2010 – 24.07. 2010.

6. *Stukalina Y.* Some knowledge strategies used to provide quality enhancement of the educational environment in a higher education institution *// Theory for Practice in the Education of Contemporary Society*. Riga, RPIVA, 25.03.2010. – 27.03. 2010.

7. *Stukalina Y.* Addressing student satisfaction and student motivation in the ESP course organization in the framework of creating a student-centered educational environment

// 3rd Paris International Conference on Education, Economy and Society, Paris, 20.07. 2011 – 23.07. 2011.

8. *Stukalina Y.* Creating a constructive educational environment to foster language learning in a higher technical school: Using a blended-learning approach // *5th International Conference „Languages for Work and Life: Challenge for Teachers and Learners"*, Vilnius universitāte, 20.05.2011 – 21.05.2011.

Scientific conferences of the University of Latvia (Conference abstracts and presentations):

Stukalina Y. „Labvēlīgas svešvalodu mācīšanās vides vadības novērtēšanas indikatoru sistēmas veidošana", 68. Scientific Conference of the University of Latvia, 05.05.2010 - 06.05.2010.

Scientific and educational-methodical conferences of the Transport and Telecommunication Institute (Conference abstracts and presentations):

1. *Stukalina Y.* "Project-based learning as an efficient instrument of multilingual education" // *Mūsdienu izglītības problēmas*, Rīga, TSI, 22.02.2007 - 23.02.2007.

2. *Stukalina Y.* "Globalisation and Engineering Education: Preparing Students for the 21st Century Professions in Science and Technology" // *Mūsdienu izglītības problēmas: IT-tehnoloģijas mācību procesā,* Rīga, TSI, 22.02. 2008 - 23.02.2008.

3. *Stukalina Y.*, Savrasovs M. "The educational environment contributing to language teaching and learning in a higher school: What matters to students?" // *Mūsdienu izglītības problēmas*, Rīga, TSI, 19.02.2009 - 20.02.2009.

4. *Stukalina Y.* "Using content and language integrated learning (CLIL) for creating the educational environment contributing to language learning in a higher technical school" // *Mūsdienu izglītības problēmas*, Rīga, TSI, 25.02.2010 - 26.02.2010.

5. *Stukalina Y.*, Kazanovska V. "Benefits and problems of distance learning from the point of view of TSI teachers" // *Mūsdienu izglītības problēmas*, Rīga, TSI, 24.02.2011 - 24.02.2011.

Study aids:

1. *Stukalina J.* English for Students of Electronics and Telecommunications. Rīga, Transporta un sakaru institūts, 2006, number of pages: 168.

2. *Stukalina J.* English for Students of Logistics. Supplemented edition. Rīga, Transporta un sakaru institūts, 2010, number of pages: 63.

3. Pečennikova L., *Stukalina J.* Technical Aviation English. Rīga, Transporta un sakaru institūts, 2011, number of pages: 95.

Research theses to be defended:

1. The educational environment of a higher education institution is composed of a set of integrated resources arranged in various subsystems: (1) the physical and technological environment, (2) the instructional environment, (3) the psychological environment, (4) the executive environment.

2. The purposeful management of the educational environment of a higher education institution includes the management of the educational environment resources providing the development of the integrated student-centred educational environment of a higher education institution.

3. All-embracing evaluation indicators may be used in order to assess the educational environment from students' viewpoint and to identify the factors having impact on student satisfaction with the environment and student motivation for further studies.

Definitions used in the doctoral thesis:

The definitions used in the thesis are based on the author's analysis of theoretical literature and regulatory documents.

Organisation – a deliberately organised group of people, a created system, in which human activity is managed and coordinated to achieve a common goal.

Higher education institution – a higher education establishment, in which academic and professional study programmes are implemented.

External environment – the external context, in which an educational organisation is operating; the system is composed of two fundamental entities (Griffin, 1990): a) the general environment including a few subsystems - technological, economic, socio-cultural, political-legal, technological, etc.; b) the task environment - "the target audience" of an educational organisation - customers, sponsors, partners, regulators, etc.

Internal educational environment – a) conditions and factors that influence the activities of an educational organisation: b) integrated material, non-material and informational resources distributed in various organisational subsystems, which are necessary for providing efficient operation of the organisation and to sustain the learning process.

The physical and *technological environment* – part of the internal educational environment embracing material and informational resources of an educational organisation related to the laboratory equipment (including organisational databases) and various facilities.

The instructional environment – part of the internal educational environment embracing informational resources of an educational organisation, which are supposed to support the

learning progress (regulative documents, academic programmes and curricula, various teaching materials).

The psychological environment – part of the internal educational environment related to the atmosphere created in the learning process; it provides the social context, in which social relationships are established.

The executive environment (J. Stukaļina) – part of the internal educational environment related to the various processes taking place in the educational environment including the activities of teaching, learning, administration.

The educational environment evaluation – the systematic organised collection and analysis of data in the framework of social research procedures, which are necessary to make decisions aimed at creating an educational environment conducive to learning; this is an efficient managerial instrument for monitoring the quality of the educational services provided by a higher education institution.

Student satisfaction - the result of student interactions with the educational environment in the form of student perceptions of the educational environment, an outcome of the expectations and experiences of the subject, study course, or study programme as a requisite element of the integrated educational environment. It can be regarded as an indicator of the educational institution's receptiveness to students' requirements.

Student motivation - a student's eagerness, enthusiasm and need to participate in the learning process to obtain new knowledge. It is supposed to be associated with students' positive emotional experience in education.

Evaluation indicator – a parameter or a value derived from parameters, which provides information about "the state of phenomenon"; the purpose of evaluation indicators is to collect the requisite data.

Main content: the doctoral thesis consists of Introduction, six Chapters, Conclusions, Recommendations, List of Literature, Appendix I and Appendix II. The length of the thesis, excluding appendices, is 174 in computer print. The thesis also includes 41 tables and 15 figures.

The *Introduction* describes the topicality of the research theme, characterises the problem to be studied, sets the aim and object of the research, specifies the tasks and research methods, characterises the research base, the novelty of the research and its practical importance, describes the limitations of the research and states the theses to be defended.

In *the first chapter,* the author analyses the educational environment as one of elements of a higher education institution's development and improvement. In this chapter, a special attention is drawn to the challenges, which constitute the strategic context for the educational management in relation to developing a constructive educational environment in European higher education institutions. The analysis of theoretical literature and European documents on modernization of higher education and the related processes is used to characterize the objectives pursued by European higher education institutions.

In *the second chapter,* the author considers and evaluates the existing approaches to the educational environment, and provides a brief summary of the educational environment evolution from an archaic educational environment of the past to modern highly integrated educational environment.

In *the third chapter,* the author discusses the integrated (holistic) approach to management of the educational environment resources. A structural model of managing the educational environment (SMMEE) is proposed and its basic principles are summarised.

In *the fourth chapter*, the author analyses some innovative pedagogical strategies and managerial tools to be applied in the integrated educational environment in the framework of the structural model of managing the educational environment (SMMEE).

In *the fifth chapter,* the author discusses the evaluation of the educational environment as organized collection and analysis of data necessary for supporting decision-making process aimed at the creation and development of the integrated educational environment conducive to learning and quality improvement. The author considers some methodological issues of collecting the data necessary for performing the educational environment evaluation. In this chapter, a number of indicators for evaluating the integrated student-centred educational environment in the framework of SMMEE are described.

In *the sixth chapter,* the results of testing the evaluation indicators in two higher education institutions of Latvia – Riga Technical University (RTU) and Transport and Telecommunication Institute (TSI) – are reported. In this chapter, the main factors having the most significant impact on student satisfaction with the educational environment and student motivation for further studies are discussed.

The *concluding part of the thesis* contains the main conclusions and describes recommendations for those involved in managing the educational environment; the recommendations are worked out on the basis of the analysis of theoretical literature and the author's professional experience.

CHAPTER I

MODERNIZING EUROPEAN HIGHER EDUCATION

In the first chapter, the author analyses the essential challenges, which constitute the strategic context for the educational management in relation to developing a constructive and attractive educational environment in European higher education institutions.

1. Globalisation and the change process in education

Globalization has re-landscaped the global environment. The changes in the global environment are associated with rapid exchange of new ideas and technological innovation. The technological progress is increasing speed, which leads to new commodities, new markets, and of course, new knowledge.

In recent years, knowledge has been considered as the major instrument for economic value creation (Ali, 2001). Knowledge and qualification, as well as labour and capital are considered to be key elements of the future development of society (Erichsen, 1999). More than ever before, people are counting on innovation and new technologies to drive the growth of the economy, jobs and living standards (Gillespie & Nakatomi, 2002). The predictable consequence of the technological progress is the arrival of the knowledge-based society. The construction of the "Knowledge Society" is widely recognized as an unparalleled factor in human and social progress, this development is capable of giving people the competencies they need to face new challenges (Tovar & Castro, 2007).

Knowledge has always been a precious and sought-after commodity, most of the time restricted to an elite (Arora, 2005); now it is available to the greatest number of people. As living standards improve, people spend longer in the educational system, and more people realize the importance of raising the level of their education. The importance of learning experience with the emphasis on lifelong learning is crucial for the intellectual development of individuals; life-long learning can provide successful contribution to the knowledge society (Council Resolution of 27 June 2002; Recommendation of the European Parliament and of the Council of 18 December 2006). Thus, education becomes a long-term investment, which will determine the future.

In the knowledge-based society, technology, creativity and innovation are of fundamental importance for the economic development of any country. Among other equally important conditions to encourage economic development (such as a country's industrial infrastructure, business practices and strategies, government policies, cultural conditions,

etc.), experts mention workforce education and skills (Pan, 2005). Therefore, the development of modern society is directly related with the quality of a country's educational system; the economic growth and well-being of any country depends largely on the status of its educational system.

The Lisbon Strategy requires the European Union to become the most dynamic and competitive knowledge-based economy in the world; for achieving this ambitious objective, it is not enough to bring about a radical transformation of the European economy, but it is also vital to "implement a vast programme for modernizing the social security and education systems" (COM(2005)24 FINAL). Many educational reforms and reorganizations of educational institutions have been started in different parts of the world since 1990s; they are all aimed at improving educational quality (Cheng & Cheung, 2003). They are made to improve their outcomes, become more effective and customer-centric, so as to be able to stay competitive in the global environment (Sahney et al., 2008). Some universal trends are the following: "An emphasis on market forces and consumerism, school improvement and school effectiveness, teacher competence, etc" (Humes, 2004). The author believes that the same trends can be traced in higher education.

The knowledge-based society poses new challenges to traditional educational organizations and to their leaders. The external environment that higher education institutions have operated in has also changed considerably over the last several decades (DeShields et al., 2005). European educational institutions operate in the globalized environment, which is constantly changing and which is characterized by increasing competition to attract and retain talent. In the 21st century, education managers are concerned with the educational environment, which is under the constant influence of the basic globalization trends: rapid technological innovation and the widespread use of advanced information technologies, fast economic growth, increased international cooperation and a range of competitive pressures, enhanced workforce mobility, socio-cultural and demographic changes, etc. The expanded and modified job market brings about as new career prospects as new threats and uncertainties (e.g. unemployment, displacement of jobs, polarised work opportunities).

In the global environment characterized by dramatic constant change, educational organisations must have the ability to explore the emerging opportunities and threats, and provide their students with the access to educational capital and opportunities for learning. According to Fullan (2002), it is vital to understand the change process; educational leaders must be "much more attuned to the big picture, and much more sophisticated at conceptual thinking, and transforming the organisation through people and teams". He emphasises that now, business and education leaders have ever more in common, since their goal is to provide

sustainable change in the knowledge-based society; this convergence demands a "new mind and action set for leading complex change" (ibid).

For understanding the process of change, Fullan (2002) suggests six guidelines, which are aimed at sustained improvement of schools. The author thinks that it could be referred to the higher education area, school education as well as university education being interconnected parts of a lifelong learning cycle in the framework of European education and training systems.

These guidelines are as follows (Fullan, 2002):

1. The goal of educators is to innovate selectively with rationality.

2. It is not sufficient to have the best ideas; other's assessments in order to find shared meaning and commitment to new ways must be taken into considerations.

3. It is inevitable that trying something new, in spite of much pre-implementation preparation, many problems arise.

4. Educators should try to redefine resistance as a potential positive force.

5. The change required in the educational organisation is in the culture of what people value and how they work together to accomplish their common goals.

6. The work of educators must involve the hard day-to-day work of reculturing.

Following these guidelines, education managers are supposed to gain, make use of and improve their change knowledge in order to create their strategies aimed at achieving the best results in constructing the most efficient educational environment. As said by Fullan (2006), there are seven central principles that strengthen the use of change knowledge:

- a focus on motivation (the main prerequisite);

- capacity constructing (with a focal point on results);

- learning in context;

- changing context;

- a predisposition for reflective action;

- the so-called tri-level engagement;

- determination in company with flexibility in continuing the course of actions.

These principles should be transformed into concrete strategies and actions (Fullan, 2006). Using change knowledge higher education institutions will be able to reconsider their

business and culture models, and re-examine their educational and management strategies in order to make their organisational environment more prone to change, that is more flexible and capable. There is also the need for the efficient *management* of resources that educators have at their disposal (COM(2002)779 FINAL).

2. Drivers of change in higher education

Higher education institutions are now in the forefront of the creating knowledge-based society. Developments in European higher education are now moving at an increasing speed (Cooper, 2005). According to Erichsen (1999), higher education and research in modern society will be even more significant than in the 20th century, and "higher education institutions as parts of a rapidly changing world will have to play a vital role to meet with these challenges by organizing and promoting research and offering flexible and diversified study programmes". Today, higher educational organisations are evolving from traditional knowledge-producers into lifelong learning "contributors" in the context of developing key competences for lifelong learning (COM(2005)548 FINAL).

Thus, education in Europe is now a strategic area; education is an excellent means of social and cultural consistency and a considerable economic asset. European higher educational organizations play a key role in achieving the strategic goal set at the Lisbon European Council - to make the European Union (EU) the most competitive and dynamic knowledge-based economy in the world, capable of sustained economic growth with more and better jobs and greater social cohesion, since the knowledge economy and society rely on the combination of four interdependent elements: the production of new knowledge, its transmission through education and training, its dissemination through the information and communication technologies and its use through new services or industrial processes (Recommendation of the European Parliament and of the Council of 15 February 2006).

In this context, the role of higher education increases drastically. The low birth rate in Europe coincides with an increased demand for higher education (RTD info, 2001). Human capital is considered to be Europe's most significant asset; it is necessary to "raise the general standard of education" (Presidency Conclusions, 22-23 March 2005). Improving the quality of education higher education institutions will be able to make their contribution to supporting sustained economic growth with more and better jobs and greater social solidity, as well sustainable social development (Martens, 2007). European universities have a crucial contribution to make in realising a Europe of knowledge that is highly creative and innovative, as stated in Leuven/Louvain-la-Neuve Communiqué (2009).

Although the mission of higher education has remained the same for centuries, the environment, in which European universities work, has changed dramatically. There is the need to modernize higher education (COM(2001) 59 FINAL; COM(2003) 58 FINAL; COM(2005) 24 FINAL; COM(2005) 152 FINAL). Modernizing higher education along with raising funding to university research will "contribute to the European Union's objective of becoming a competitive knowledge-based economy" (COM(2007) 61 FINAL). It is vital for providing prosperity and social cohesion in Europe, since education and training are "an excellent means of social and cultural cohesion and a considerable economic asset with a view to making Europe a more competitive and dynamic society" (COM(2001) 59 FINAL). Modernization of higher education includes, among other things, creating an attractive European Higher Education Area (Prague Communiqué, 2001; Leuven/Louvain-la-Neuve Communiqué, 2009) – that is the attractive educational environment in the European higher education institutions (HEIs). Constructing an attractive educational environment in European higher education institutions is essential in the context of quality assurance in higher education (Bergen Communiqué, 2005; London Communiqué, 2007; Recommendation of the European Parliament and of the Council of 15 February 2006). The European Higher Education Area is supposed to "facilitate mobility of students, graduates and higher education staff, prepare students for life as active citizens in democratic societies, support their personal development, and offer broad access to high-quality higher education based on democratic principles and academic freedom", as stated in the Bologna Declaration (1999).

However, European education experts admit that the educational environment offered by the European universities is still less attractive compared to American universities, especially when it concerns attracting and retaining the best talent from all over the world (COM(2003) 58 FINAL). The burning questions, which are topical for European education managers today, are the following:

- Are European universities able to attract and retain young talents?

- How to motivate students to study?

- How to create the educational environment that will stimulate their interest and desire to learn?

To successfully cope with these issues education managers should be aware of the basic drivers of change in higher education. Among the most significant drivers of change in higher education, experts name the following:

- An increasingly competitive global environment that influence the expectations of students, who have a "consumer sort of mindset" (Luce, 2009).

- Knowledge expansion, which now doubles about every three and a half years and which leads to changes in the way students communicate (ibid).

- The increased role of Information and Communication Technologies and the corresponding need for information literacy and technology literacy for both students and university teachers (ibid).

- Responsibility to the public, the cost of higher education and the consumerization of technology (Futhey, 2009).

- Broad access to higher education in the context of life-long learning and the need to teach students metacognition – to assist them to "learn how they learn best" (Smith, 2009).

3. Moving towards reorganisation of knowledge delivery

European higher education institutions playing a central role in the creation of a Europe of knowledge (COM(2003) 58 FINAL), they have to rearrange their work and to reconsider the way they deliver knowledge to their students so that they will be able to reorganize their educational environment. As said by Fejes (2006), the Bologna process that has been going on in Europe for the last few years can be viewed as an *educational restructuring process* to be implemented in the European countries. Recently, European higher education institutions have seen to educational reforms and the associated *reorganisation of knowledge delivery*, a European reform process being aimed at creating the European Higher Education Area based on international cooperation and academic exchange, which is attractive to students and staff as from Europe as from other parts of the globe (Bologna Declaration, 1999).

Creating the European Higher Education Area includes providing the constructive educational environment in the European higher education institutions. Today, education managers are concerned with the educational environment that is under the constant pressure of globalization and the associated changes. In the face of the emerging challenges, education managers should take every advantage of traditional management practices, as well as new approaches to education and management for guaranteeing incessant quality enhancement of the educational environment. Managing for quality has become one of key concerns for European higher education institutions in the context of their continuous improvement.

According to Ehlers (2009), education managers are "entering a new era in quality management for higher education", which presupposes "moving away from a mechanistic to a holistic and cultural view of quality in higher education". Since higher education institutions are professional service organisations (Hardy; Mintzberg cited in McRoy & Gibbs, 2009), programmes that are intended for modernization of higher education must include a strategy for the continuous improvement of the quality of their educational services.

As stated in *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (2005), higher education institutions

- should have a policy and associated procedures for the assurance of the quality and standards of their programmes and awards;

- ought to commit themselves explicitly to the development of a culture which recognises the importance of quality, and quality assurance, in their work;

- must develop and implement a strategy for the continuous enhancement of quality;

- the strategy, policy and procedures should have a formal status and be publicly available, and they should also include a role for students and other stakeholders.

The rationale of the implementation of quality assurance procedures is to improve the education accessible to students in higher education institutions in Europe and to help higher education institutions in managing and enhancing their quality (Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2005).

So, to respond to the rapidly changing context and to sustain the reorganisation of knowledge delivery higher education institutions strive to find ways for improving the quality of their educational services. To reorganise their work, educators must answer a few important questions.

In the author's point of view, the questions may comprise the following issues:

- How is learning understood by students and how is knowledge constructed by learners?

- What helps them get integrated in the educational environment as both active learners and members of the academic community?

- What would students expect in terms of supporting and sustaining their learning and their motivation for studying?

It should be mentioned that the educational environment calls for reorganisation not only because of the global market demands but because the student has changed.

With Information and Communication Technology becoming one of the basic building blocks of modern society (Information and Communication Technology in Education: A Curriculum for Schools and Programme of Teacher Development, 2002), an essential question arises:

How has IT technology made modern students different from students a decade ago? Immediately, another important question arises:

What would learners want in terms of supporting and sustaining their learning using digital technologies? (Groundwater-Smith, 2007).

As said by Trilling (2005), learners progress in their use of ICT for learning. Technology has drastically changed the way students perceive the educational environment, and not only in terms of the number of electronic devices they use. It has influenced the way they study; it has changed their attitudes and expectations. Technology allows them to work in collaboration with each other; it breaks down barriers between students and their teachers. Today's students are accustomed to actively participate in the information exchange process in the electronic environment. They become more "digitally connected (Trilling, 2005). So, they are supposed to be more active learners than students of the past; they need more than just one-way flow of content. Smith (2009) calls modern learners "consumer students", who undoubtedly have big expectations for the information technology that educators will provide to them.

How can higher education institutions adapt to this new paradigm? The author believes that it could be done by providing students with the educational environment that allows interactive learning; the traditional educational environment should be converted into a more flexible and attractive "learning space".

According to Scott (2003), two developments can now be traced in higher education:

- Moving towards "flexible learning".

- Using more "online learning".

Shifting towards the educational environment that supports "flexible learning" includes developing new high-quality educational programs, which according to Scott (2003), are relevant to abilities and needs. Such programmes meet the expectations of students in terms of service level and support; they provide more opportunities for active learning and self-managed learning; they link theory with practice; they include collecting student feedback (ibid).

The author thinks that moving to the educational environment maintaining "flexible learning" also presupposes applying interdisciplinary approach to learning, which may be considered as an essential instrument of modern European education. It is obvious that in the dynamic global environment, only innovative companies can be competitive; educational organizations have to be inventive when it comes to attract students. Modern knowledge-based society needs professionals who can learn, analyze, and innovate. Reorganization of knowledge delivery in the context of providing more attractive educational environment involves introducing some important modifications to the curriculum. This new curriculum will be characterized by interdisciplinary model for content and integration of topics (Evans et al., 2003). Multidisciplinary education based on the interdisciplinary approach to education is aimed at supporting the acquisition of excellent professional skills, at the same it is intended at encouraging the acquisition of additional skills required for the knowledge-based society.

Experts point out that "interdisciplinarity is key to sustaining knowledge-based development (KBD), since no single discipline can be capable of dealing adequately with the complex realities of the knowledge societies" (Carillo, 2006). An interdisciplinary approach to education (a flexible education paradigm) is gaining popularity among education experts in view of the fact that it ensures the necessary evolution of the country's educational system for coping with the requirements of modern society (Gillet & Nguyen Ngoc, 2005). This flexible education paradigm provides students with a large assortment of learning resources, and the opportunity to obtain a wide variety of skills.

The increasing diversification of knowledge is part of the process called the reorganisation of knowledge; this process embraces all European universities, which now have to adapt to the interdisciplinary character of the fields opened up by modern society's chief problems (COM(2003) 58 FINAL).

The global job market requires excellent technical skills, so modern higher education institutions must educate people for more sophisticated jobs. On the other hand, the idea of professional education must be re-evaluated (McGraw, 2004). Today, the worldwide job market needs interdisciplinary knowledge, cross-functional and intercultural teamwork skills. Experts assert that, for example, technical professionalism "is not just about having technical competences, but it is also about mastering the principles of behind business, strategy, process and people" (Pan, 2005). They also emphasize that "industry wants university to supply literate, educated, and technically competent individuals who, preferably, have some experience working in multidisciplinary, team-based projects" (Feller, 1999). Thus, the main concern for education experts is to provide graduate students with the non-science skills

required for the new global economy, without sacrificing the deep foundational knowledge, and to teach them how to think across disciplinary boundaries.

The interdisciplinary approach to learning is aimed at intellectual synthesis; it provides stronger ties to the national communities, and to the global community. A defining characteristic of the multidisciplinary academic program is extensive breadth and considerable depth across the various disciplines. Multidisciplinary programs, which support multidisciplinary education, are distinguished by their interdisciplinary model for content and integration of topics; general studies - humanities, social sciences, management, languages - are integrated with professional studies.

To successfully accomplish all complicated tasks, education managers have to create an attractive educational environment as the basis for learning - the environment, where students have an opportunity to enhance their creative potential and accept some social responsibilities. Educators need the educational environment with clear connections to the social and global contexts of the profession, which provides a broad multidisciplinary education that will prepare our graduates for productive and satisfying careers in the epicentre of economic, technological, social, and political changes. This new educational environment is supposed to be shaped by the dominant trends in the global environment.

Based on the said above the author has specified the challenges, which constitute the strategic context for the educational management in relation to developing a student-centred educational environment. These challenges are determined by drastic changes occurring in the global environment (Stukalina, 2008/a):

- Increasingly globalized external environment

- Rapid technological progress and innovation

- Globalization of the manufacturing base

- Faster economic growth

- Emergence of the knowledge-based society

- Enhanced international cooperation

- Increased need to communicate efficiently in the worldwide community

- Increased competition

- Socio-cultural and demographic changes in the society

- Formation of multicultural communities

- Increased workforce mobility and customized global job market

- Emergence of the idea of sustainable social development

- New career opportunities (globalization of jobs, new job growth overseas, new career prospects, etc.)

- New threats and uncertainties (unemployment)

- Commoditization of knowledge

- Increasing diversification and specialisation of knowledge

- Increased demand for higher education in relation to lifelong learning

- Integration of the concept of sustainability into all levels of education.

Rooted in the said above, the author regards the following challenges to be most essential for the educational management in a higher education institution (Stukalina, 2008/a):

- Enlarged competition in order to retain and attract talented students

- Reorganisation of knowledge delivery

- Providing new opportunities to students in the context of the job market customization and lifelong learning

- Providing computer-based learning to enhance knowledge and to change the way students learn

- Developing an educational environment based on information and communication technologies (ICTs)

- Providing multidisciplinary education to satisfy the requirements of the knowledge-based society

- Developing and making use of a set of integrated management and pedagogical tools to provide improved knowledge acquisition

- Creating an educational environment contributing to students' intellectual and professional development that will support their research activities and stimulate their creative potential.

The complexity of these challenges creates a demand for more thorough analysis of the educational environment and the factors, which influence its operation. Such analysis will be provided by the author in Chapter 2.

CHAPTER II

DIFFERENT APPROACHES TO THE EDUCATIONAL ENVIRONMENT

In this chapter, the author will analyse and evaluate the existing approaches to the educational environment, and provide a brief summary of the educational environment evolution from an archaic educational environment of the past to modern highly integrated student-centred educational environment.

1. Educational environment as a complicated multilevel structure

According to Fiddler (2002), the concept of the environment "arises from the systems theory and by which an organization is surrounded by a boundary, everything outside the boundary is termed as the environment". Higher education institutions operate in the external environment, which is constantly changing and getting more complicated as the pace of technological progress and globalisation is accelerating. A higher education institution is a higher education establishment, in which academic and professional study programmes are implemented (Law on Institutions of Higher Education of the Republic of Latvia, 1995); it is an educational organisation

Griffin (1990) characterizes the external environment of an organisation as the system composed of two fundamental entities:

1. The general environment including a few subsystems - technological, economic, socio-cultural, political-legal, technological, etc.

2. The task environment: customers, sponsors, partners, regulators, etc.

The author assumes that the general environment also involves a biological aspect (Fig.1).
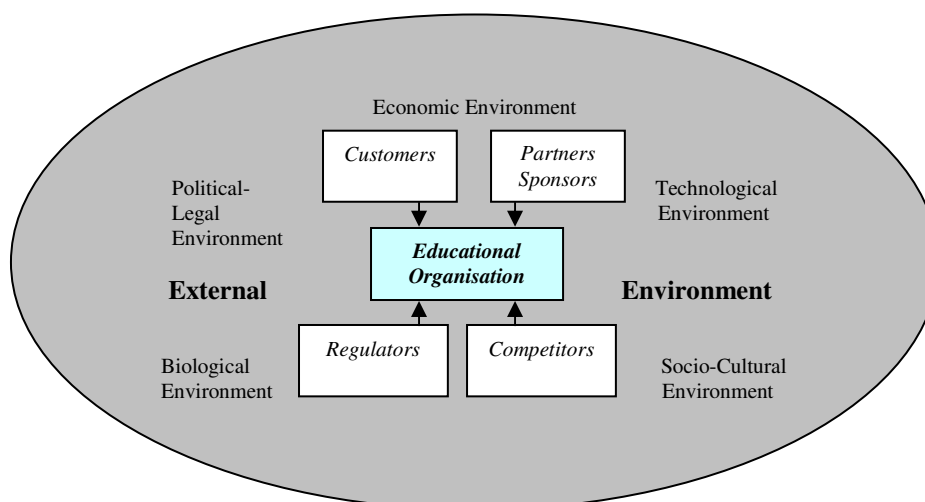
Fig.1 The external environment of the educational organisation

The task environment can be considered as "the target audience" of an educational organisation; the relationships between the educational organisation and the task environment determine the organisation's goals and objectives. The impact of the task environment is important because it affects the activities of the organization directly meanwhile the general environment's influence on the activities of the organization is more indirect. However, an effective manager should be aware of both external environment levels.

According to Kampas (2004), when the internal educational environment is aligned with the global job market needs, it stimulates the organisation's performance. As the external environment undergoes serious changes, the internal educational environment must alter as well. Changes in the external environment make the educational organisation adjust to the new situation in the global job market.

There is no universal classification of the educational environment, which characterise a higher education institution. In this paper, the author suggests her own taxonomy of the internal educational environment based on scientific literature review and twenty years of experience in higher education.

Every educational organisation represents a unique educational environment - "surroundings, circumstances, influences" (Hornby, 1984), or "conditions, forces, or factors within or exogenous to an educational setting capable of influencing the setting or those within it" (Glossary of Indicator Terms: Web source) - which provides a variety of resources necessary to ensure effective performance of the organisation, to support sustainable learning process, so that to guarantee the best learning opportunities to students. The educational environment can be regarded as the so-called "built environment" – the structures that people built as "separate from natural environment" (Macmillan on-line dictionary: Web source). So, the educational environment comprises the resources created by man, which are intended for supporting particular activities.

Hughes (2004) points out that there exist many approaches to organisational structure; each model can provide "significant insight in particular circumstances, but even the most sophisticated model can only provide partial enlightenment". The author supposes that no description of the internal organisational environment would be complete due to its complexity and interior diversity.

However, as said by Mullins cited in Bush & Middlewood (2005), all organisational structures are aimed at achieving efficient performance, monitoring the activities of the organisation, ensuring accountability for various areas of work, coordinating different parts of the organisation, providing flexibility of the organisation, and guarantying social satisfaction of people in this organisation.

The description of the educational environment presented in this paper is based on *the systems theory*, though it also takes into account *the phenomenological view of organisations* advocated by Greenfield (2004), which leads to the concept of organisations as invented social reality.

In systems theory, an organisation is viewed as an organism; organisations are evident entities of the reality which have goals towards which they direct their activities; they react and adjust to their environments (Greenfield, 2004). An educational system is considered to be "a constituent of subsystems and processes" comprising the inputs, processes and outputs; the different parts in a system operate together in order to generate a synergistic effect (Sahney et al., 2008).

The phenomenological view of organisations regards organisations as "accomplishments, as consequences of human action directed by individual will, intention and value which provide contexts for negotiation and construction of meaning, moral order, and power" (Greenfield cited in Bates, 2004). However, according to Bates (ibid.), this viewpoint does not disagree with the facts of organisational reality; it just "interprets them in a wider context". Educational organisations, being the most significant social institutions, can not be considered just as the sum of human and non-human resources. These resources come into play in various social situations; social relationships then become a key factor for the successful operation of the organisation if they assure social satisfaction of people in the organisation.

Calvano & John (2004) call the 21st century "The Systems Century" emphasizing an unprecedented level of integration in the society and the systemic nature of the modern world. An educational organisation, being an incorporated element of the global environment, is also undergoing deep changes now, so its internal environment is becoming more complicated and more integrated. This process is determined by the complexity and integrity of the global environment.

The internal educational environment contains a diversity of subsystems; they are interconnected and interdependent; they function together in order to achieve common objectives. As said by Montello & Wimberly (1975), such system can be defined as a supersystem. Diversity, being an essential feature of modern organisations, dictates creating new standards of leadership and management practices. Modern organisations (an educational organisation is not an exception) are characterised by Allen et al. (2006) as "dynamic non-linear systems with smaller non-linear dynamic systems nested within them"; thus, management needs multiple perspectives to be considered and leadership practices considering diversity as "a positive asset" of an organisation must be used.

Thus, a supersystem can be categorized as a multilevel structure; these levels embrace different subsystems. At each level of the organisational system "different effects can be conceptualised" (Hallinger & Heck, 2004).

As stated in a Paper presented by UNICEF at the Meeting of the International Working Group on Education (Document No. UNICEF/PD/ED/00/02, 2000), learning environments are made up of physical, psychosocial and service delivery elements.

Sasser et al. (cited in Douglas et al., 2006) utilize the term "a bundle of goods and services provided by a university" when speaking about "organisational resources"; this collection of goods and services comprises three components:

1. The physical/facilitating goods: the lectures and tutorials, supplementary handout materials and the recommended module text; physical facilities such as the lecture rooms and their level of furnishing, decoration, catering and recreational amenities, etc.

2. The sensual service/the explicit service: knowledge levels of staff, staff teaching ability, ease of making appointments with staff, etc.

3. The psychological service/the implicit service: the treatment of students by staff, availability of staff, capability and competence of staff; the ability of the university's environment to make the student feel comfortable, etc.

The author supposes that the term "organisational resources" would be more all-embracing for providing a more *thorough classification* of the educational environment constituents; and it would better suit to describe the complexity of modern educational environment. Besides, the author believes that the term "resources" in the educational context would be much more preferable that the term "goods", which is associated with commercial sphere of life rather than with education.

Katane (2006) describes the educational environment as a humanitarian purpose-oriented system, which is self-regulating, its rationale being to provide sustainable development and to keep balance with the ever-changing external environment; she emphasises that the educational environment of a school is multi-level, multi-component and multi-functional. Though Katane speaks about a rural school, the author thinks that the educational environment of a university is even a much more complicated structure.

Šūmane (2001) views the environment of an educational institution as a totality of organisational resources, which include the material environment, human resources, and psychological (intellectual) conditions. However, Šūmane speaks about the so-called learning environment.

The author supports Katane's point of view and suggests using a broader concept - the term "educational environment", this concept being more applicable to modern universities, since it better reflects the complicated nature of contemporary higher education institutions.

Burceva (2006) describes the educational environment of a higher educational institution as being composed of the physical environment, social environment, psychological environment, informational environment, pedagogical environment. However, the author thinks that this classification needs to be specified with an account of both the systems theory and the phenomenological view of organisations.

The author presumes that the educational environment embraces a variety of resources aimed at sustaining the learning process; that is at achieving certain learning goals. The author suggests categorizing a variety of organisational resources as a) material (non-human) resources; b) non-material (human) resources; c) informational resources (Table 1).

Table 1 Internal educational environment resources and the associated environment aspects

Material Resources	*Non-Material (Human) Resources*	*Informational Resources*
- Physical environment: buildings, premises including lecture rooms and lecture halls, library, laboratories, canteens, etc., classroom educational equipment (such as blackboards, etc.) - Technological environment: lecture rooms equipment and laboratory equipment, computers and physical elements of computer networks	- Resources associated with the Psychological and Executive environment: managers of all levels, administrative workers, teachers, attending staff as the intellectual capital bearers	- Technological environment: resources related to information - organizational databases - Instructional environment: regulative documents, academic programmes, teaching materials

Material (non-human) resources. These are material constituents that contain a low degree of human agent. Non-human resources embrace *the physical* and *technological environment*: lecture rooms and lecture halls, auxiliary apartments, classroom and laboratory equipment, etc. The physical and technological environment resources embrace, among other things, certain physical/facilitating resources – the resources related to the lecture rooms and lecture halls equipment and the amenities of a higher education institution.

Non-material (human) resources. These are non-material constituents that contain the highest degree of human agent. The author supposes that non-material resources are associated with

a) *the executive environment* (J. Stukaļina) - the learning process direct *execution* (conducting lessons and seminars or delivering lectures);

b) *the psychological environment* – the atmosphere created in the learning process.

The executive environment is related to the processes taking place in the educational environment. According to Sahney et. al. (2008), these processes include activities of teaching, learning, administration. The executive and psychological environment may be associated with both the explicit and implicit educational services. The executive environment embraces the elements of what Burceva (2006) calls the "pedagogical environment and social environment"; the authors considers this term to be more suitable for characterizing many-sided and versatile learning process.

Informational resources. These are *the environment's* constituents that contain a higher degree of human agent. One way or another, they are related to *information*. Informational resources embrace *the technological environment*, which is represented by organisational databases, and *the instructional environment*. The author views the instructional environment as part of the educational environment associated with facilitating materials, which are supposed to support and assist the learning progress (regulative documents, academic programmes and curricula, teaching materials). These resources represent a combination of material elements and the embodied intellectual capital. Since information is supposed to be "spread" throughout the organisation, the author supposes that the term "informational environment" proposed by Burceva (2006) to be quite vague.

In the next section, the author goes on with the analysis of the educational environment evolution through centuries.

2. The educational environment evolution: the historical aspect

The educational environment being part of the global environment undergoes profound changes. The society evolution is accompanied by progressive development of the educational environment, which is aimed at meeting the demands of the ever-evolving human civilization.

The educational environment has been developing since the Ancient times. The author has depicted the educational environment evolution through centuries in a few diagrams (Fig.2-4). The diagrams reflect the author's view on the educational environment evolution.

One can hardly say that in *Ancient and Medieval Times*, education was a fully integrated element of the society (the external environment). Teaching and learning were implemented in primitive forms and were based on observation and imitation.

The interaction with the outside world was minimal. The teacher's role was limited to giving theoretical knowledge and instructions (Fig.2).
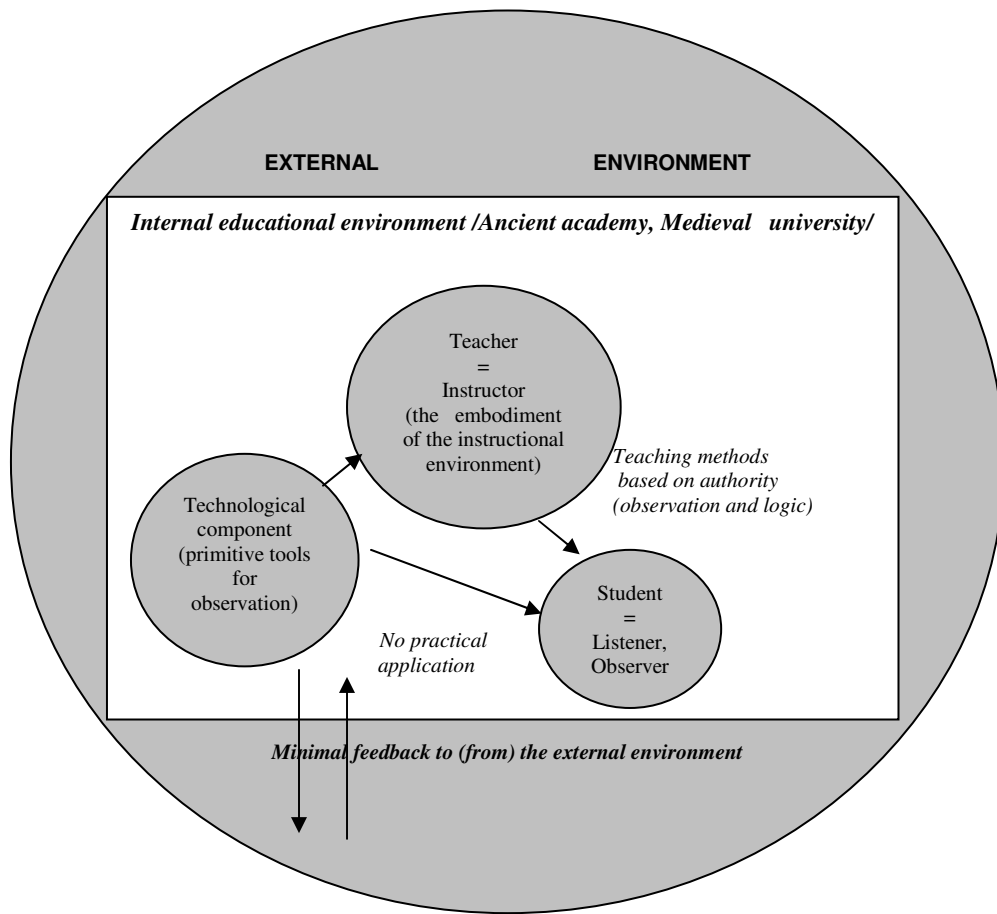
Fig.2 Ancient and Medieval Society: weakly integrated educational environment (Stukalina, 2008/b)

When the knowledge of people turned out to be more complex, and the technical progress became more central to the economic growth of the community, the community began to require a new type of educational system, which could meet the needs of constantly developing society. At that time the educational system became more integrated and more society-oriented (Fig.3). Teaching and learning were embedded in the form of studying a particular discipline, which provided special tools, methods and terminology. It was the time, when education has become a regulated system, and when first "education managers" – people whose responsibility was to organize the learning process - worked.
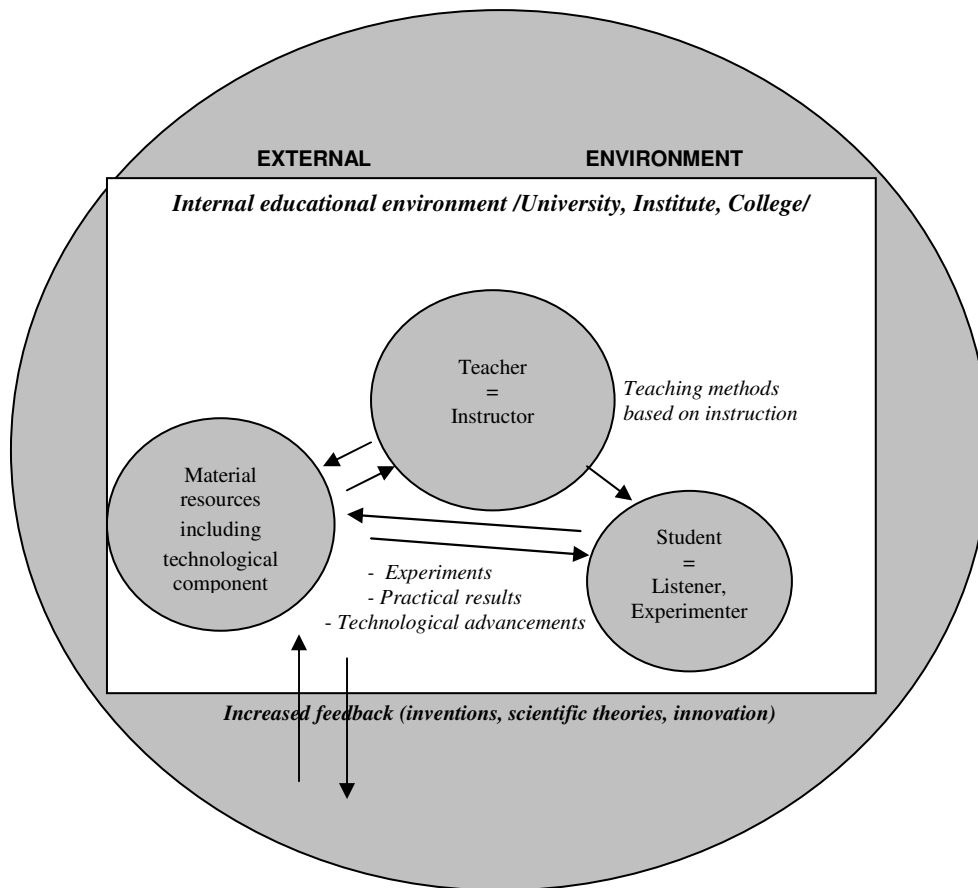
Fig.3 Engineering-oriented society: disciplinary approach to education/more integrated educational environment
(Stukalina, 2008/b)

Modern knowledge-based society poses new challenges to education. As said by Fiddler (2002), from the perspective of individual students, the range of aims of education involves the four key types: personal fulfilment, preparation for adult life, preparation for democratic participation, preparation for employment. For accomplishing these aims, education managers have to create the educational environment with clear social connections with the global environment, which can provide *multidisciplinary* education.

The author assumes that multidisciplinary education can only be accomplished in the highly integrated educational environment, which is supposed to be flexible enough for responding to changes in economy and technology, new developments in pedagogy, and the importance of lifelong learning. It must be sufficiently versatile to provide more active and explorative learning, as well as students' participation in social life. In this constructive educational environment, the teacher performs the roles of both instructor and manager (Fig.4).
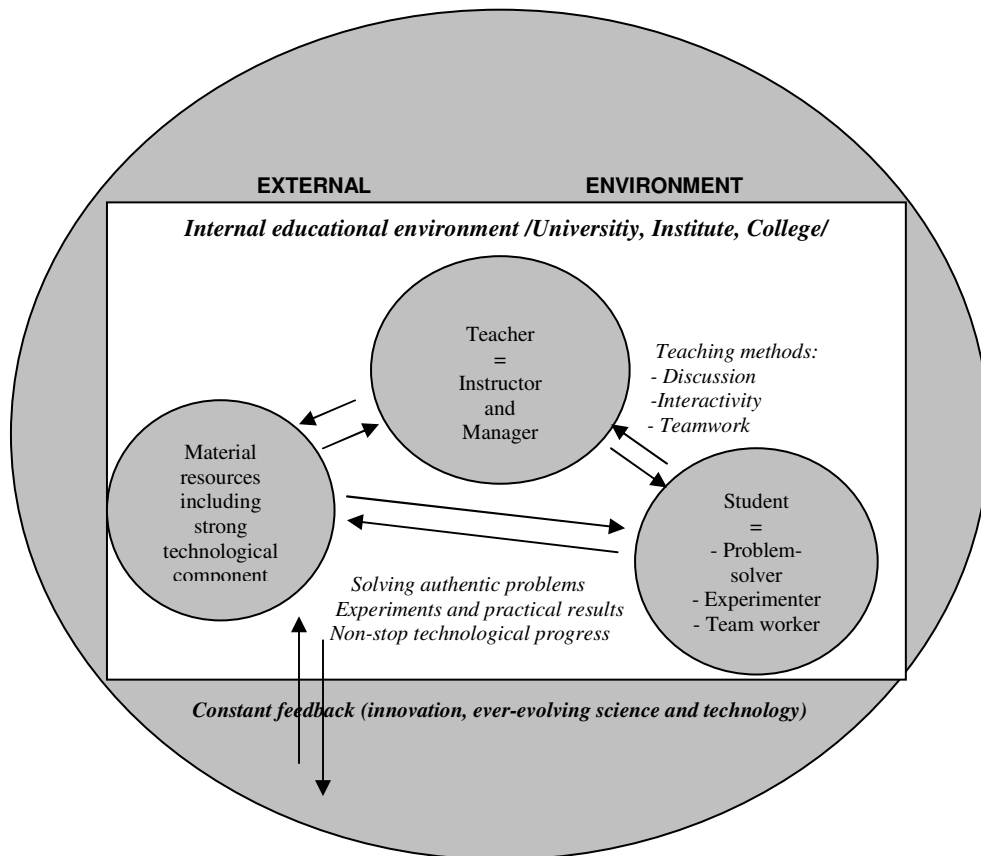
Fig.4 Knowledge – Based Society: interdisciplinary approach to education/highly integrated educational environment (Stukalina, 2008/b)

The highly integrated educational environment is supposed to support the learning process in various ways: from ensuring physical and psychological support to providing students with the most efficient teaching methods and the most appropriate teaching materials. In simple words, integration means assisting different subsystems of the educational environment "communicate" with one another better to guarantee that the integration is both beneficial and feasible for all participants of the learning process.

3. The integrated student-centred educational environment

An essential characteristic of modern educational environment should be its sustainability; sustainability has now become a necessity; it is likely to be the most significant factor affecting the environment's efficiency. To guarantee sustainable development in the changing external environment, the internal environment constituents must operate as an integrated whole; the educational environment tangible components can not be considered separately from the intangible and semi-intangible components. And the phenomenon that makes the entire system work like one entity is *the intellectual capital*.

The intellectual capital (or organisation's intellectual property) that determines the value and the competitiveness of an organisation (Sullivan, 2000) is embodied in the educational environment resources; it is a strategic intangible asset of a higher education institution. Different researchers on intellectual capital (IC) utilize different definitions of this term; there is no standard definition of IC. According to Choong (2008), most definitions state that an IC is "a non-monetary asset without physical substance" that "possesses value or can generate future benefits". Arenas & Lavanderos (2008) identify a group of similarities between various definitions of IC through such terms and constructs as "intangibles", "knowledge" and "value creation".

As said by Dawson (2000), the intellectual capital of the knowledge-based educational organization can be described as *structural capital* - internal networks, *human capital* - "the skills and capabilities of people in the organisation working individually or in teams", and *relationship capital* comprised by relationship with customers. Relationship capital can also be considered as the potential reserve for the organization's development, therefore, mangers must regularly receive and analyze the feedback from the task environment, so that to use the relationship capital more efficiently.

These customers include students and their parents, employers, suppliers, partners, sponsors, regulators, etc. Though, it should be mentioned that in relation to learners the word "customers" is rather a metaphor used to describe the service relationship between an educational institution and students; the "customer" metaphor is widely used today, since education is becoming much more of a service industry (DeShields et al., 2005), it is a "product" with various customers and stakeholders that require "satisfaction and value for money" (Sahney et al., 2008).

As the nourishing substance and chemicals in the sea water provide the necessary stuff for supporting life of the sea biomass, so the intellectual capital accumulated in the educational environment becomes the necessary "nourishing stuff" for ensuring the environment's positive educational activities and sustaining the learning process (Ivanova & Stukalina, 2008). The intellectual capital also provides the link between the external and organisational environment, since the flow of resources between the external and internal environment is determined by the human factor. The relationship capital plays an important role in this process. The author supposes that as "intellectual assets play a substantial and growing role in sustaining economic growth" (Bismuth & Tojo, 2008), so the intellectual capital of an educational organisation plays a vital role in the educational environment quality enhancement.

Metaphorically, the internal educational environment may be depicted as a sea in the open ocean (e.g. the Sargasso Sea in the Atlantic Ocean) – the external environment. The two systems are compared in Fig. 5. As microclimate has a great impact on the sea biophysical system, so the psychological and executive aspects of the educational environment to a great extent determine the sustainability of the learning process. As the nourishing substance and chemicals in the sea water provides the necessary stuff for supporting life of the sea biomass, so the intellectual capital accumulated in the educational environment becomes the necessary "nourishing stuff" for ensuring the environment's positive educational activities and sustaining the learning process. Similarly, as the sea biomass can not be discussed apart from other system's components, so the material resources can not be considered separately from the non-material constituents; they represent a factual whole, an integrated system. To guarantee sustainable development in the changing external environment, the internal environment constituents must operate synchronously.

1. The Sea Biophysical System
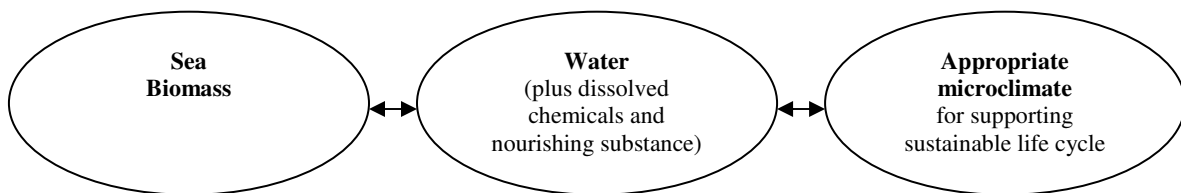
2. The Educational Organization's Environment
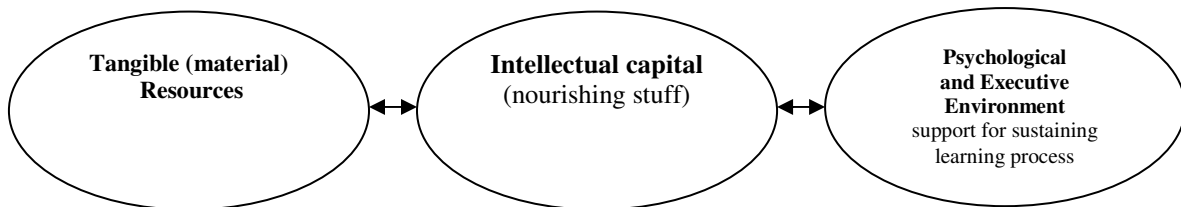
Fig.5 Sustainability scheme in the sea biophysical system and the internal educational environment

(Ivanova & Stukalina, 2008)

The author believes that it is the intellectual capital that makes the educational environment more than just a sum of organizational resources (Fig.6). The intellectual capital is the product of various social situations; some way or another it is personified in all organisational resources. People of the organisation, as the intellectual capital bearers, symbolize *a social community*. Their beliefs and their values, their abilities and ideas are as valuable for the organisation as physical resources. This is another high-quality level of the educational environment.
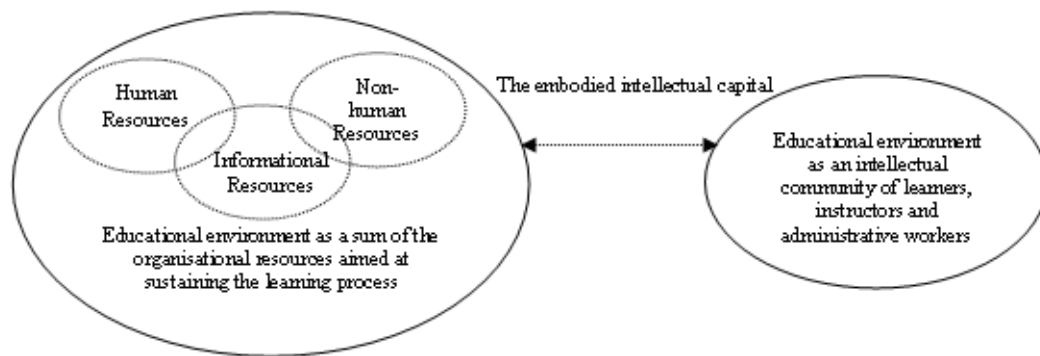
Fig.6 Educational environment as a multilevel complicated structure

Recently, the concept of *community* has become a trendy metaphorical image; school is considered to be a learning community, the embodiment of the learning society (Humes, 2004). The author regards an educational organisation as *a community of people* "having common ties or interests and associated together by the fact of subjection to the same laws and regulations" (New Webster's Dictionary of the English Language, 1988). These people, being the "citizens" of the community, are united by common goals; all of them - managers of all levels, teaching and attending staff, learners - are the intellectual capital bearers; they all participate in knowledge delivery, knowledge exchange and new knowledge construction. The author presumes that the highly integrated educational environment is characterized by the following features (Stukalina, 2010/a):

1. *Diversity of resources*. A variety of organisational resources material, non-material, informational – are aimed at sustaining the organisational performance and providing qualitative changes in the educational environment, the leading role belonging to the intellectual capital of an organisation.

2. *Integrity.* The higher the integration between the educational environment subsystems, the more efficient is the entire system's operation. The main task of an education manager then becomes to synergize the educational environment resources so that they will support the "quantity – quality" transition.

3. *Controllability.* All educational environment subsystems must be well-coordinated. Qualitative changes in one subsystem leads to qualitative changes in other subsystems, since all subsystems are interrelated and mutually dependent.

4. *Increased performance*. The environment, which provides the resources integration and efficient resources coordination, is supposed to be contributing to performance, efficient performance being related to the qualitative changes in the educational environment.

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5. *Adaptability and flexibility.* The highly integrated educational environment must operate as a well-coordinated and flexible network based on collaboration. Managing and redistributing the organizational resources within the entire network education managers can adapt the internal educational environment to the constantly changing global environment introducing qualitative changes in good time.

6. *Learner-centeredness.* A major aspect associated with the educational environment conducive to performance is student motivation. On the one hand, educators must encourage students for active and explorative learning. On the other hand, they should also engage students in the process of managing the educational environment; management of the educational environment presupposes giving a particular attention to the students' needs and requirements. The author considers student motivation to be an essential factor for the educational environment quality improvement.

To make the educational environment operate as an integrated system it is vital to maintain strong relationships throughout its subsystems. As "the value-creating potential of a given network is contained in the sum of resources and capabilities that are pooled by member firms" (Goerzen, 2005), so the knowledge-creating potential of the highly integrated educational environment can be found in the sum of resources and capabilities, which are provided by all its subsystems. The author believes that for this purpose, education managers need to use an integrated (*holistic*) approach to managing the educational environment. A variety of pedagogical techniques and management practices can be combined to facilitate an integrated approach. They guarantee the necessary support for the planning and management process at different levels of the educational environment, these processes being aimed at providing qualitative changes in the organisation. An integrated (holistic) approach would help coordinate resource use so that the long term sustainable benefits are optimized and efficient communication schemes throughout the educational environment are established. This approach brings together all resource groups - the educational environment subsystems - to balance various requirements of the organisation's sustainable development. Many tools are now being used, but have to be more widely applied and further improved.

In the Chapter 3, the author will discuss the integrated approach to management of the educational environment resources in more detail.

CHAPTER III

MANAGEMENT OF THE INTEGRATED STUDENT-CENTRED EDUCATIONAL ENVIRONMENT

In this chapter, the author will describe the complicated context, in which education managers are operating today. In this chapter, the author will also discuss the integrated (holistic) approach to management of the educational environment resources. A structural model of managing the educational environment (SMMEE) is proposed, and its basic principles are summarised.

1. Some marketing metaphors employed in the educational management

First, the author will discuss and evaluate some marketing metaphors, which tend to be used in the educational management today.

For every organization, improving the service quality is vital for their sustainable growth. The quality improvement process should start and finish with customers (Töremen et al., 2009). For managers, customer centricity is not just a slogan. In fact, the majority of definitions of service quality are customer focused, and service quality is defined as the "extent to which a service meets customers' needs and expectations" (Dotchin & Oakland; Asubonteng et al. cited in Sahney et al., 2008). Selden and MacMillan (2006) call a customer-centric system a precondition for sustainable growth.

However, from the educational management perspective, the problem is if the learner-centred educational environment can be associated with the customer-centric business organization. Some educators associate students with customers saying that without students, there would be no need for colleges; they suggest placing more emphasis on satisfying the needs of the customers (DeShields et al., 2005; Hill cited in Brochado, 2009). According to Marzo Navarro et al. (2005), in the university environment, the concept of customers is not clearly defined. Others do not agree that students are customers; they call then "citizens of the society (university)", but not customers (Svensson & Wood, 2007).

The author admits that "the customer model" should not be directly transferred from business area to the university environment. Though, education is now becoming much more of a "product", and there are enormous pressures on educational institutions to become more responsive to customer needs, that is to become more customer-centric (Sahney et al., 2008). As said by to Dobrzański & Roszak (2007), management of higher education institutions is

becoming more complicated; universities being part of modern educational market are now dealing with many problems including the economic aspect.

According to Garrick & Clegg (2000), education being a service industry, some marketing metaphors for describing the tools that education managers employ in their work may be adopted.

Thus, it may be concluded that modern educational institutions have accepted marketing terminology and concepts; marketing metaphors are becoming common for the academic vocabulary. Higher education institutions are now operating in the competitive global environment, so a set of marketing metaphors (for instance, the "knowledge-and-skill capacity" metaphor, the "value" metaphor, the "customer" metaphor, etc.) would help managers better describe both the multi-level relationships both between the external and internal educational environments, and within the internal educational environment. In this paper, the author will use a number of marketing metaphors to illustrate the principles of managing the integrated learner-centred educational environment. The author supports Ramachandran's (2010) point of view, who stated that from a higher education manager's perspective, it is vital to analyze and address issues, which "support the demands to recognize student as a customer instead of getting polarized in debates on correctness of applying marketing metaphors to student – HEI relationship". The author will refer to one of the central principles of TQC (Total Quality Control) is the customer focus, which stresses the service relationship between an educational organization and its customers (Varnavas & Soteriou, 2002).

The author assumes that educational institutions are supposed to deliver value (knowledge) to customers (students), in the process creating new value (new knowledge). The author regards the detailed knowledge of customers that an educational organization attracts, as well as their requirements, is an essential factor for our success. The question that education managers must answer is the following: *How can they attract and retain students (customers consuming their educational services)?* To answer the question, managers must have clear understanding of what students need today. The author thinks that the educational environment should be evaluated against students' needs and against their learning objectives; such feedback can drive the educational environment quality improvement. The author regards managing the integrated educational environment through student (customer) feedback (their experience in education) as a central principle of the educational management.

In the author's point of view, the metaphors that are universally employed in the customer-driven education context allow education managers to describe the complicated educational management framework in a higher education institution. Some of these

metaphors are used in the paper to discuss the topical issues of managing the educational environment.

2. Educational management framework in a higher education institution

According to Bush (2003), educational management deals with the operation of educational organisations, although there is no single generally accepted definition of this subject. Complex environmental changes and influences create continuous change conditions in modern organisations, and have given rise to new forms of organisations (Wood et al., 2005; Ford et al., 2007; Lafollette et al., 2008).

The progress in all spheres of modern life has turned educational institutions into complex structures. Today, educational organisations have become large and sophisticated systems, and the role of education managers in developing the most constructive educational environment in European universities increases. To provide sustainable learning process, education managers deal with an assortment of organisational resources. In response to changes in the external environment management has to renew its recommendations (Ford et al., 2007). As said by Deligonaul (2008), modern managers have to adopt a new system view of their tangible and intangible assets; these are not only resources to be cultivated, but they are fixed capital of the society; she stresses that this demands employing interdisciplinary approaches for solving particular problems. In the face of emerging challenges, education managers should take every advantage of traditional management practices and new approaches to education and management to ensure continuous quality enhancement of their educational environment.

Across organisational levels and organizational units, managerial jobs are different, but at the same time, they are focused on the educational environment monitoring and developing; this is how management becomes "a team sport that makes similar demands on its players" (Kraut et al., 2006). Education managers' priorities are determined on the basis of an assessment of their specific needs (Bush, 2004). In the integrated student-centred educational environment, various aspects – *pedagogical, technological, managerial, social*, and *organisational* - provide important contributions to the developing educational managers' strategy aimed at quality improvement of the educational environment (Table 2).

The combination of these aspects is determined by the complexity of the organizational structure, the diversity of the organization's resources and the impact of the global environment and modern technologies that have changed the way people study. These factors, in turn, dictate the necessity of the reorganisation of knowledge delivery in European higher education institutions; the reorganisation of knowledge delivery being aimed at

improving the quality of European higher education (COM(2005) 152 FINAL; Recommendation of the European Parliament and of the Council of 15 February 2006).

Table 2 Educational management framework in a higher education institution (Stukalina, 2010/b)

Pedagogical Aspect	*Technological Aspect*	*Managerial Aspect*	*Social Aspect*	*Organisational Aspect*
Utilizing traditional and innovative pedagogical strategies for creating the environment conducive to learning and teaching with the emphasis on the learning goals orientation	Developing the educational environment based on information and communication technologies (ICTs) with the emphasis on non-traditional learning environments	Managing the integrated educational environment resources with the emphasis on achieving the educational environment effectiveness and ensuring quality enhancement of the organization	Motivating people of the organization to accept social responsibilities in the process of in-organisation communication	Responding of the organisation rapidly and effectively to changes in the global environment and in the organisation itself with the aim to "keep in step" with the environment (Fiddler, 2002)

The author thinks that the reorganisation of knowledge delivery includes providing new opportunities to students in the context of the job market customization and life-long learning, offering multidisciplinary education to meet the requirements of the knowledge-based economy and career needs of the graduates, making use of a combination of best management practices and inventive pedagogical instruments to provide better knowledge acquisition, creating a collaborative educational environment based on information and communication technologies to guarantee learner's intellectual and professional growth. So, education managers also manage young people development.

The author gives the detailed description of these aspects below.

I. *Pedagogical aspect* includes pedagogical strategies that focus on the learning goals, learning process and learning outcomes. In the knowledge-based society, the education managers' task is to provide the educational environment aimed at achieving the following learning goals:

1. To promote the acquisition of excellent skills and knowledge as well as reasoning and analytical skills, and to help the student get integrated in the knowledge-based society.

2. To provide opportunities for the following activities: manage, collaborate, design, innovate, experiment, and test.

3. To encourages students' interest and stimulates their desire for research work, creative work and innovation.

4. To promote the acquisition of the non-science skills required for the new global economy and global job market (presentation skills, teamwork skills, the fundamentals of management, etc.).

5. To prepare professionals who are able to communicate effectively in the global corporate environment and to promote language learning.

6. To encourage an appreciation for life-long learning.

7. To increase the student's capacity as producer and consumer of economic and cultural values and encourage their appreciation for human, moral and ethical values.

These educational objectives are determined by the strategic and associated objectives of the education and training systems, which were proposed in the Work Programme approved by the Education Council and the Commission at the Barcelona European Council Meeting (Detailed Work Programme on the Follow-up of the Objectives of Education and Training Systems in Europe, 2002), and which are aimed at

1. Improving the quality of education and training systems: developing the skills needed for a knowledge society, ensuring access to ICTs for everyone and increasing recruitment to scientific and technical studies.

2. Facilitating the access of all to education and training: creating an environment conducive to learning, making learning more attractive, and supporting active citizenship, equal opportunities and social cohesion.

3. Opening up education and training systems to the wider world: strengthening European cooperation, strengthening links with the world of work, research and society as a whole, developing the spirit of enterprise, improving foreign language learning, increasing mobility and exchanges.

II. *Technological aspect* plays a key role in the educational environment based on information and communication technologies (ICTs). Information technologies are changing the way students learn; they offer a great promise to both teachers and their students. Computer networks provide new alternatives for creating, storing, accessing, distributing informational resources (including study materials) and sharing knowledge within the educational

environment. Computer-based learning environments cover a wide range of domains (a great variety of subjects). Non-traditional learning environments are being developed rapidly; they include online learning environments, environments for educational multimedia, e.g. the so-called "virtual classroom" or "smart classroom" (Snow, 2005), which integrates computer-generated presentations and Web content. Learning environments developed with the support of the ICT can be customized on the basis of the needs of learners in terms of both learning goals and learning outcomes. Non-traditional learning environments are now of becoming an integrated part of modern educational environments.

Besides, with ICTs becoming more widespread and more sophisticated, some enabling technologies (organizational data bases, intranets, etc.) have been introduced to ensure knowledge transfer and knowledge sharing as an essential attribute of knowledge management. This, in turn, provides excellent opportunities for increasing educational management effectiveness.

In addition, education managers have to establish an efficient communication scheme within the environment. ITCs contribute much to enhancing the knowledge environment of the higher education organisation; they provide new alternatives for developing, storing, accessing, and sharing knowledge within the educational institution. When people of the organisation interact with information, new knowledge is supposed to be created. According to Abdul Hamid (2008), "the synthesis and analysis of information causes embedded knowledge to surface, thus emerging useful patterns, frameworks or concepts". ICTs add value to the processes of   learning, and in the organization and management of educational institutions (Information and Communication Technology in Education: A Curriculum for Schools and Programme of Teacher Development, 2002). Developing the educational environment based on information and communication technologies with the emphasis on non-traditional learning environments is believed to be the prerequisite of education managers' success.

III. *Managerial aspect* comprises a set of management practices used by an educational organisation to develop an efficient educational environment capable of providing sufficient learning opportunities for its students and ensuring quality enhancement of the educational organization. This aspect reflects the basic purpose of management – to guarantee that an organization's goals are attained in an efficient and effective manner (Griffin, 1990). Education managers, as all other managers, carry out five basic operations: they set objectives and decide how the organization can achieve them, they organize the work of the organization, motivate other people and communicate with all levels of the organization, they

measure the performance of the organization, and, finally they develop people including themselves (Drucker, 1993). They also operate with organizational resources (Fiddler, 2002).

Therefore, the key words for education managers become *goals*, *resources* as a means of achieving them, *efficiency*, i.e. economy in the use of resources, and *effectiveness* measured in terms of results (Sapre, 2002).

For making right decisions how to use the existing resources and how to create the new ones, managers have to consider several options. For considering all possible alternatives managers must have extensive data. In this paper, the author will pay special attention to the importance of information and data for the educational environment analysis.

In the focus of modern management and leadership, there is knowledge creation and sharing (Fullan, 2002). Management practices in an educational organization are connected with knowledge development cycle Bhatt (Bhatt, 2000), and as a result, in new knowledge creation. On the one hand, managers distribute and use the organizational resources in order to ensure knowledge sharing and new knowledge creation within the educational environment. On the other hand, they gather the necessary information about the environment (how effectively the resources are employed and what resources are needed), process this information and transform it into knowledge. This way, managers provide appropriate conditions for knowledge enhancement in their organization, their ultimate goal being quality improvement of the educational environment.

IV. *Organisational aspect* includes responding of the organization rapidly and effectively to changes in the global environment as well as in the changes in the organisation itself. Thus, it deals with the relationships between:

- The educational organisation and the external environment
- The educational organisation and the changes in the internal environment.

It is essential for an educational organisation to "keep in step" with its environment (Fiddler, 2002). According to Chamawat (2007), the organisational aspect is so important due to the fact that when your strategy includes nontrivially new elements (in our case, innovative pedagogical or management strategies), you should pay particular attention to how well they work with other things the organisation is doing.

V. *Social aspect* deals with motivating people of the organisation to accept social responsibilities in the process of in-organisation communication. The pressure for modern educational institutions to compete for customers strengthens the necessity for high performance that is related to the quality and commitment of staff (Bush, 2004); managers have to use some special motivational strategies to encourage people of the educational

organization to perform well. The author assumes that it also calls for motivating students to accept some social responsibilities.

All aspects mentioned above are interrelated and interdependent. They provide the framework for developing the educational management strategy. This strategy is aimed at "achieving advantages of the organization through its configuration of resources within a changing environment to meet the needs of markets and to fulfil stakeholder expectations" (Johnson & Scholes cited in Fiddler, 2002). It involves a number of tools applied in all five areas. These instruments are then implemented in the course of creating a highly integrated, knowledge-sharing, efficient, flexible and motivating educational environment based on the ICTs that is capable of providing multidisciplinary education to ensure new career opportunities for graduating students. At each stage of the educational environment development, different *integrated* educational management strategies are supposed to be used. This process will add the dynamics necessary for the environment evolution. This dynamic educational environment will play an increasingly important role as strategic component in modern technical education – a role that is transforming a traditional educational system into an adaptable and extremely capable tool, which meets the needs of ever-evolving knowledge-based society.

3. The strategic background of the educational management

Thus, the complex pattern of different contributory factors forms the background of educational management. The significance of the context (the settings), in which managers are operating, is apparent. For addressing the emerging challenges education managers must have a clear understanding of the environment they are managing: the internal educational environment structural design and the relationships across the system, the resources they have at their disposal, the communication scheme within the organisation, etc. Educational institutions are unavoidably influenced be pressures coming from the external environment including pressures from the wider educational environment (Bush, 2003). The analysis of the society – organisational environment relationships is also vital for working out the appropriate strategy.

Thus, for developing their strategy education managers must have a clear understanding of their internal environment, namely:

- The internal educational environment (IEE) architecture and the resources available

- The IEE structural components (subsystems), their operation and relationships

- The communication scheme within the organization and its impact on social relationships

- Current problems and challenges imposed by the external environment

- The society – internal environment relationships.

The author believes that education managers should take into consideration both external and internal *tactical determinants* – the factors that have the biggest impact on their operation and influence the choice of actions and methods aimed at achieving educational goals. The awareness of external opportunities and threats, as well as internal strengths and weaknesses provides the basis for SWOT analysis (Fiddler, 2002). Later education managers can also perform the analysis of cause-and-effect relationships by collecting data through the educational environment regular evaluation.

The author assumes that the basic tactical determinants of the educational management are the following:

- The external environment context

- The internal environment context

- Student motivation.

The description of these tactical determinants is provided below.

The external environment context embraces the external influences, which determine the way the internal resources of an organisation are distributed and used. The emerging challenges imposed by the external environment make education managers initiate a number of changes as a response to the constant changes in the global environment, such as globalisation and fast technological progress, enhanced worldwide cooperation and enlarged competition, increased workforce mobility and modified international job market, new career opportunities and new threats and uncertainties, socio-cultural and demographic changes, formation of multicultural communities, the inevitability of the society's sustainable development, etc. This leads, among other things, to the emergence of new skill development drives, increased demand for higher education in relation to lifelong learning, enhanced competition between higher education institutions with the aim to maintain and attract talent, and incorporation of the concepts of sustainability into all levels of modern education. "Learning how to learn" and lifelong learning have become vital for competitiveness, employability, economic prosperity, social inclusion, active citizenship and self-realization of people who live and work in the knowledge-based economy (COM(2007) 61 FINAL).

Developing those skills and competencies, which will help our graduates "meet the challenges they will face in their careers and as members of the society" (COM(2005) 548 FINAL), is in the focus of higher education. Pan (2005) states that technical professionalism, for example, "is not just about having technical competences, but it is also about mastering the principles of behind business, strategy, process and people".

Higher education institutions have to find ways to incorporate a multidisciplinary approach into their curricula (Shirland & Manock, 2007); it might help them attract students by offering them a more valuable degree.

Thus, European universities must offer researchers and students a more attractive environment by the "increasing diversification and specialisation of knowledge" in order to respond to the society's major problems including sustainable development, the new medical scourges and risk management (COM(2003) 58 FINAL). To provide multidisciplinary education an educational institution must consider the impact of the rapidly changing external environment on the organisation and people. It can be done through the environmental scanning that will make new opportunities and threats recognizable (Fiddler, 2002). Therefore, managers need to build the educational environment with clear connections with the external environment to address the needs of the knowledge-based economy and to meet the requirements of graduates.

The internal environment context includes both a) a variety of the resources (material, non-material, informational) provided by the educational environment that are necessary for sustaining the learning process; b) the relationships created within an educational organisation in the course of interaction among all learning process participants. Making the best use of the internal resources is vital for managing the educational environment; it means better matching of available resources and the organisation' needs. To be effective the educational environment must work as a highly integrated system. According to Bentley (1998), the new world organisations today demand "horizontal integration, effective communication, trust, distributed responsibility, and high-quality management of information". Therefore, the resources managers employ have to be integrated and well-coordinated to produce a synergistic effect. The educational environment resources integration will lead to their more efficient utilisation.

To achieve organizational effectiveness managers must perform at a high level (Odiorne, 1987; Madi Bin Abdullah et al., 2008) and the key element of performing at a high level is being aware of one's environment and its meaning for the organization (Griffin, 1990). In higher education, effective leadership presupposes having good understanding of

how the whole HEI (higher education institution) system works (Spendlove, 2007) – this is on of the most important competencies education managers are supposed to possess.

According to Drucker (1993), the main job of a manager is to generate a true whole that is larger than just the sum of its parts; it must be a productive unit that turns out more than the sum of the resources put into it. To accomplish the required degree of the educational environment synergy education managers have to manage their resources as a concordant system. The higher integration between the resources, the more effective is the performance of an organisation.

This way, managers can accomplish the environment's *synergy* – "the cooperative action of one or more parts, when the whole is greater than the sum of its parts" (New Webster's Dictionary of the English Language, 1988); in this fashion quantity is changed into quality. The study conducted by Madi Bin Abdullah et al. (2008) shows that there is a quite a strong significant positive linear relationship between quality improvement practice and organisational performance. So, the environment that provides the resources integration is contributing to performance.

Another aspect of organisational performance relates to *human resources*. People being the most important resource available to school and college managers (Bush, 2004), human resource management plays a major role in dealing with the educational environment conducive to performance. Bush (ibid) emphasises that for sustaining good performance managers have to give heightened attention to motivating people. Experts refer to the link between motivation and "the high performance cycle" (Riches cited in Bush, 2004).

Thus, to enhance performance of the educational environment education managers put into operation a set of management tools, which are aimed not only at generating and allocating the needed resources, but also at motivating people to perform well.

Managerial performance is determined how well a manager sets objectives, work out plans for their realization and put those plans into practice. But contemporary managers point out that the cumulative impact of the allocation of resources by managers at any level has more real-world effect on strategy than any plans developed at headquarters (Bower & Gilbert, 2007). Therefore, the conclusion suggests itself: the educational environment becomes the key aspect of the educational management practice, and the IEE resources allocation and utilization becomes the basic aspect of the IEE design and operation.

Recently, awareness of sustainability has increased significantly; sustainable development has become a strategic issue for companies virtually in every industry (Fiksel, 2007). Educational industry is not an exception; educational institutions start emphasizing sustainability in their internal processes. Education managers have to realize that practices,

processes and resources for the management of a high school environment should be aligned to meet the ever-growing demands of sustainability (Nicolaides, 2006). Sustainable development is a complex process; it includes various aspects. In a sustainable economic development, the focus is on the development of the economic infrastructure and on the efficient management of natural and social resources (Martens, 2007). Nowadays, educators are supposed to be committed to the improvement of instruction for enhanced and sustained learning (Edmonds, 2007).

From the educational management perspective, the challenge is to find options to employ the educational environment resources in the most effective way, so that it will enable sustaining learning process and quality improvement of the educational organization. To achieve this goal managers have to create a constructive integrated educational environment.

Inducing and sustaining *student motivation* and providing a positive motivational environment in the organisation is an obligatory prerequisite for the educational organisation's successful operation and development. According to Fullan (2006), school improvement is not possible without motivation; the key aspects of motivation being moral purpose, resources, leadership support, identity, etc. The author thinks that for supporting the improvement of a higher education institution motivation is as much important. It should be noted that education managers' task is really complicated; they have to motivate as people working in the organisation as those who according to Bush (2004), "consume" educational services, directly or indirectly. The difference is only in motivational styles.

The author believes that creating the environment conducive to teaching and learning contributes to a great extent to the development of the environment conducive to performance, student motivation being a key precondition for learning, and consequently a prerequisite the educational environment quality enhancement. According to Fiddler (2002), student-focused approach is supposed to be one of the major factors related to "effective departments in effective schools". He emphasises that "bringing more able and motivated students may be the only viable way of substantially raising achievement"; the whole atmosphere within an educational organization must be contributing to learning. According to Edwards (2001), is generally accepted that "favourable attitudes and positive motivations" are fundamental for successful learning.

Finding ways of making learning more attractive, both within the formal education and training systems and outside them, and fostering a culture of learning is an essential issue in relation to the quality of education and training systems improvement (Detailed Work Programme on the Follow-up of the Objectives of Education and Training Systems in Europe, 2002). To achieve the objectives specified in the Bologna Declaration (1999), the Prague

Communiqué (2001), Budapest-Vienna Declaration on the European Higher Education Area (2010) – to increase the international competitiveness of the European system of higher education and to create a constructive European Higher Education Area – education mangers should start with developing motivating environment in European educational institutions.

Motivation is a complex phenomenon; it is shaped by both external and internal contexts. Badawy (2008) states that "organisations can't motivate people, only people can motivate themselves, since motivation is a state of mind"; though he emphasises that "favourable conditions that will stimulate motivation" can be created. Educators should not forget that extrinsic motivation comes from external factors (Hutchinson, 2003).

Riches cited in Bush & Middlewood (2005) suggested a basic motivational model that involved needs and expectations, behaviour, goals and some form of feedback. Let us consider some aspects of this model. Motivation can be shaped by the external environment. Today, in the perspective of lifelong learning, it is vital to sustain student motivation. The main activities of an educational organisation are associated with teaching and learning, so the management of the educational environment includes giving a particular attention to the learners' *needs and requirements*. It is vital for meeting the needs of constantly developing modern society; the educational institutions have to become more society-oriented.

Today, the knowledge-based economy needs excellent professionals who possess a variety of skills and are able to constantly upgrade their skills. A university degree is now becoming a necessity; this encourages young people to achieve ambitious goals: to get an academic degree, to acquire multidisciplinary skills, to participate in lifelong learning programmes for ensuring constant self-development.

Motivation is also strongly influenced by the internal context (the internal educational environment). According to Bush & Middlewood (2005), a few *organisational factors* have a big impact on motivation:

- conditions of service;

- facilities and physical resources;

- cultural factors – the feeling that people believe in their organisation.

For encouraging student motivation managers need to create a constructive educational environment, which will encourage students to study and simultaneously participate in social life and decision-making. It presupposes organising education and in a way that allows involving learners in other activities and responsibilities apart from studying. This demands applying both pedagogical and supporting managerial instruments in the course of managing the educational environment. Students should not be excluded from the process

of managing the educational environment. Students' positive or negative learning experience (including social relationships within the internal educational environment) to a great extent affects the decisions education managers make. Thus, student feedback is vital for developing their strategy. At the same time, managers should not forget that "students' desires must be balanced against the realities of the ultimate markets for the output of higher education" (McCuddy et al., 2008).

4. Managing the integrated student-centred educational environment

4.1. Employing the holistic approach to managing the educational environment

The author views a higher education institution as a corporate entity with holistic capacity to function within an external environment. The author assumes that management of the integrated educational environment includes management of the following integrated resources:

- Material (non-human) resources

- Non-material (human) resources

- Informational resources.

The educational environment resources are utilized for a variety of purposes, which interact and may complement each other, so they are supposed to be managed in an integrated manner. Since management occurs simultaneously in various subsystems and on different levels of the organisation, the holistic approach to managing the educational environment as an integrated non-linear system is supposed to be an efficient tool to cope with the most important issues education managers face. The author believes that from a holistic viewpoint, educational management needs multiple perspectives to be considered in the context of providing constant improvement of the educational environment. The advantages of combining various techniques for managing the integrated educational environment depend critically on the way education managers use them in their routine work.

The author presumes that the holistic (integrated) approach to managing the educational environment is closely associated with the idea of holistic education - a philosophy of education based on the principle that the goal of education is developing students' potentials to the highest degree and motivating students for learning (Forbes, 1996; Baxter Magolda, 2000; Forbes & Martin, 2004; Miller, 2005).

Both holistic education and holistic approach to managing the educational environment conducive to learning have in view the same objective – to evoke from learners an intrinsic motivation for studying and continuous self-development. They acknowledge the necessity of knowledge delivery reorganisation. The reorganisation of knowledge delivery is supposed to be in the focus of holistic education as a response to the interdisciplinary nature and complexity of modern knowledge-based society; it includes providing new opportunities to students in the context of the job market customisation and life-long learning. The reorganisation of knowledge delivery dictates creating a constructive educational environment based on information and communication technologies to ensure students' intellectual and professional development.

Holistic education may involve several teaching strategies. *Transformative approach* to learning, which presupposes that in the process of learning, students transform their habits of mind to "make them more inclusive, discriminating, open, emotionally capable of change, and reflective" (Mezirow, 2000). Meaning (knowledge) is created by the context, holistic education being basically responsiveness to the wholeness of experience (Miller cited in Martin, 2000).

The idea of connections is emphasized in holistic education, since different aspects of life and living are interdependent and interconnected (Martin, 2000).

The concept of connections is associated with *the concept of transdisciplinary inquiry*; this is dictated by the necessity to provide more holistic educational experiences. Transdisciplinary inquiry is based on the idea that division between disciplines is avoided; the world must be understood as a whole; transdisciplinary approaches involve multiple disciplines (Charter of Transdisciplinarity, 1994).

In turn, the concept of transdisciplinary inquiry is related to *the concept of meaningfulness and the concept of meta-learning*. According to Baxter Magolda (2000), in the process of holistic learning, teachers "join students as partners in the knowledge construction process"; this way, they get access to "their meaning-making." Thus, educators have to help students what they really need to learn, what is important for their self-development. Meta learning is a tool that "facilitates the needed learning" (Forbes cited in Martin, 2002). It is vital for students' self-development to find meaning in the process of learning

In holistic education, the classroom is regarded as a community, which is part of the larger community of an educational institution, which is part of other larger communities - village, city, the community of humanity (Forbes, 1996). So, *the concept of community*, relationships and learning about relationships are essential for holistic education.

The author has extended the idea of holistic education to some significant issues of managing the integrated educational environment conducive to learning: the basic principles of holistic education may be adapted to suit the needs of education mangers in the context of creating the integrated educational environment based on knowledge sharing and close collaboration (Table 3).

Table 3 Using holistic approach for managing the educational environment (Stukalina, 2010/d)

Strategy/ Principle	**Manager's Perspective**	**Student's Perspective**
Transformative approach to learning	Knowledge is generated by the environment through social interactions, and is utilised by managers to perform strategic analysis aimed at a higher school improvement	Knowledge is generated through student - educational environment interactions in the form of student learning experience
The idea of connections	The educational environment is managed as an integrated system for achieving the system's synergy and providing quality enhancement	A variety of integrated organisational resources are utilised to create a learner-centred educational environment
The concept of transdisciplinary /interdisciplinary inquiry	The educational environment is managed through integrated pedagogical and managerial tools application	Providing multidisciplinary education to satisfy students' requirements and the needs of the knowledge-based society
Meaningfulness and meta-learning	Motivating people of the organisation to work in collaboration to achieve common goals through special incentives used to develop the educational environment into a community of shared concern	Encouraging students both as self-motivated learners and active community members to help them discover meaning in what they learn and do
The concept of community	Managing the educational environment as an intellectual community of people united by common goals	Communicating and learning about social relationships students take new social responsibilities and become real intellectual community members

The author believes that the idea of holistic education is closely linked with a holistic understanding of educational quality. As stated by Ehlers (2009), a holistic understanding of educational quality presupposes that quality enhancement of an educational organisation

should be focused on "change more than on control, development rather than assurance, innovation rather that compliance". The knowledge-based society developing quickly, modern educational organisations are in the process of continuous evolution towards organised complexity; they are striving for value and excellence, i.e. for improvement.

The sustained improvement of educational institutions is related to the system change (Fullan, 2002), its intention being to accomplish educational goals more successfully (Fiddler, 2002). Educational organisations that embrace change through data generation, usage of the obtained data and self-assessment are more likely to offer quality education to students (Glasser cited in Document No. UNICEF/PD/ED/00/02, 2000).

In the author's point of view, it also concerns higher education institutions, which are the integrated part of the entire educational system of a country. Profound changes in the global environment encourage managers working in higher education to implement quality-based management strategies and create a set of evaluation criteria for performance excellence of a particular educational institution (Rice & Taylor, 2003).

The author assumes that managing a higher school improvement is related to providing qualitative changes in the integrated educational environment. The author also thinks that the holistic view of quality in higher education corresponds to an organisational approach to school improvement advocated by Fiddler (2002); this approach presumes that school improvement has an organisational dimension besides being concerned with teaching and learning. Some way or another, qualitative changes should affect both school processes, and school conditions, which contribute to the accomplishment of educational goals (ibid). The improvement of educational organisations can focus on any or all dimensions of system quality: for example, the quality of buildings where teaching and learning occur may be related to other quality issues, such as the presence of adequate instructional materials and textbooks, working conditions for students and teachers, and the ability of teachers to accept certain instructional methods (Document No. UNICEF/PD/ED/00/02, 2000).

Thus, to provide qualitative changes in learning conditions and processes education managers have to guarantee qualitative changes in the educational environment as an integrated whole. As said by Feigenbaum & Feigenbaum (2005), one of the basic principles of successful management is "What makes quality better anywhere in the organisation makes it better everywhere in the organisation".

Therefore, management of the integrated educational environment aimed at improving both higher education institution's processes and conditions involves management of the four basic educational environment subsystems: the physical and technological environment, the instructional environment, the psychological environment, the executive environment (Fig. 7).
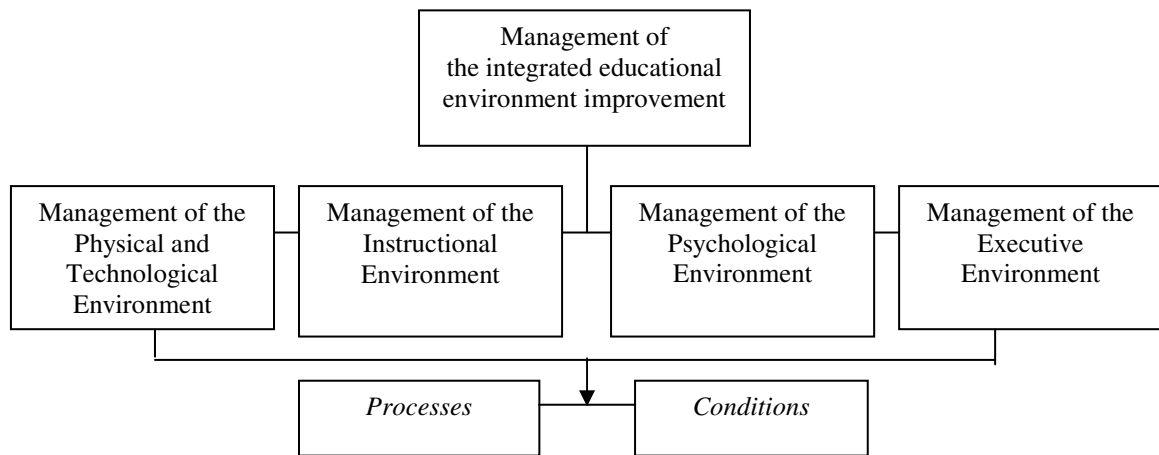
Fig.7 Management of a higher education institution's improvement: Employing a holistic approach (adapted from Stukalina, 2010/d)

The author will give the detailed description of a structural model for managing the educational environment in the next section.

4.2. Developing a strategy for the integrated educational environment improvement using the holistic approach

According to Fiddler (2002), management of school improvement is executed within a strategic planning framework, the initial stage of strategy formation including three elements:

- Evaluation of internal resources of the school and their utilisation

- Evaluation of external influences on the school

- Acknowledgment of the established school culture.

The author presumes that Fiddler's description suits well management of the educational environment of a higher education institution. The author believes that the basic principles of holistic education mentioned above - transformative approach to learning, the idea of connections, the concept of transdisciplinary/interdisciplinary inquiry, meaningfulness, meta-learning, and the concept of community - can be successfully employed in the process of managing the educational environment for enhancing organisational knowledge capabilities and introducing qualitative changes in the organisation.

Transformative approach to learning presupposes that knowledge is generated by the environment through social interactions, and is used by managers to perform strategic analysis aimed at a higher school improvement. In the process of managing the educational environment, education managers deal with *new knowledge creation* as one of its outcomes.

The continuous learning process may be represented in some knowledge conversion models (Nonaka, Nonaka & Takaushi cited in Gill, 2009):

- socialization – tacit to tacit knowledge conversion;

- externalization - tacit to explicit knowledge conversion

- combination - explicit to explicit knowledge conversion;

- internalization – explicit to tacit knowledge conversion.

The author assumes that these knowledge conversion models are realized through several knowledge strategies:

- Planned knowledge transfer schemes including regular educational environment evaluation based on collecting student feedback.

- Unplanned knowledge transfer schemes; Meroño-Cerdan et al. (2007) call them "spontaneous initiatives", which incorporate teamwork, mentoring, etc.

- Internet communication-based knowledge transfer schemes; according to Meroño-Cerdan et al. (ibid), they comprise decision support technologies and groupware.

These knowledge strategies are a good means of capturing what Bollinger & Smith (2001) called "collective intelligence" of the organisation. The author presumes that they can be effectively employed in the educational environment provided that the environment is a highly integrated system, and its subsystems are *interconnected and mutually supporting*.

The idea of connections is an important concept, since the educational environment should be managed as an integrated system for achieving the system's synergy and providing its quality enhancement. According to Bertolotti & Tagliaventi (2007), most organisational phenomena are mutually dependent. From a holistic viewpoint, the educational environment must be managed as an integrated system; achieving the environment's synergy facilitates quality enhancement and school improvement.

To accomplish the necessary synergy education managers must establish an efficient system of multi-level communications across the organisation, which is characterized by the following features:

- Knowledge is transferred across the educational environment through different social interactions.

- Enabling knowledge exchange and new knowledge creation in a collaborative environment demands applying a set of knowledge strategies.

- Knowledge can be transferred in the form of discussions, creating documents, teaching materials, etc. (Gill, 2009).

In the framework of multi-level communications, managers establish tight connections between people of the organisation for developing four fundamental competencies (Liu cited in Gill, 2009): the competency of creating a common consensus, the competency of generating innovation, the competency of creating learning ability, and the competency of creating integration ability. The development of these competencies is absolutely necessary for providing the improvement of a higher education institution. It is closely associated with the idea of an educational organisation as an intellectual community.

The concept of community is vital for understanding of an educational organisation in the context of modern holistic education. For generating an intrinsic motivation for studying (with the perspective of lifelong learning and continuous self-development) educators should allow students to discover identity, meaning, and purpose of education through connections to the academic community.

Connolly & James cited in Saiti & Eliophotou-Menon (2009) acknowledge that collaborative working in the educational area demands the participation of every level within the organisation. Being university's stakeholders and consumers of educational services (Hallinger & Snidvongs, 2008), students should also participate in decision-making. This demands establishing some "channels of effective customer communication" (ibid). Student feedback is an important source of analytical input for developing a strategy for a higher school improvement with the aim to provide qualitative changes in the educational environment. It is recognised that understanding the customers' needs is now in the focus of quality management in education (Kettunen, 2008).

Engaging students in participative decision-making education manages motivate them as the intellectual community members and help them discover meaning in the process of learning. The learner-centred environment is evaluated against students' requirements so that managers can discover what is really important for them.

Meaningfulness that goes in a copula with *meta-learning* may an efficient means of creating a learner-centred educational environment. In the process of managing a higher school improvement, managers must address the following questions:

- How to encourage students to find meaning in what they learn and do?

- How to make an educational environment a community of shared concern?

- How to increase student motivation?

For motivating workers, managers use organisationally oriented and professionally oriented tools (Badawy, 2008). In the learner-centred educational environment, education managers may also employ as organisationally oriented as professionally oriented incentives aimed at engaging students in the educational environment both as active intellectual community members and self-motivated learners (Stukalina, 2010/a):

1. Organisationally oriented incentives include involvement of students in participative decision-making and quality assurance activities, increased support from teaching and attending staff for providing constructive atmosphere in the environment, enhanced support from ICTs for improving in-organisation communication, etc.)

2. Professionally oriented incentives incorporate enhanced support from educators in relation to professional activities, encouragements to publish and participate in conferences/seminars, increased use of ICTs for teaching and self-development, improved participation in professional activities, enhanced involvement in international exchange programmes, etc.).

Different motivation incentives are supposed to help students find meaning in what they learn, and take new social responsibilities in the academic community.

The concept of transisciplinary/interdisciplinary inquiry is essential in the context of managing the integrated educational environment as a complicated multi-level structure; it demands applying instruments from various disciplines. The interdisciplinary nature of managing the improvement of modern higher education institution is a response to the interdisciplinary nature and complexity of modern knowledge-based society. According to Fiddler (2002), this process involves internal improvement initiatives that either directly or indirectly contribute to enhancement of student experience and outcome: organisational change philosophies (organisational development, cultural change programmes, learning organisation, Total Quality Management), and more limited management techniques (benchmarking, school self-evaluation, feedback from stakeholders, etc.). Fiddler (ibid) emphasises that different combinations of management techniques are suitable for particular circumstances. The management process being a chain of management activities (Kettunen, 2008), managers might employ integrated management procedures – Knowledge Management, Fact-based Management, Information management, Human Capital Management, etc. – to support innovative pedagogical tools based on the constructivist approach to education.

According to Hallinger & Snidvongs (2008), Knowledge Management is "an especially ripe domain for use by school managers and leaders" in the context of school improvement and change. The author thinks that knowledge management procedures should become the basis of pedagogical and managerial practices integration; knowledge management being a "strategic and systematic organisation-wide effort to plan, control and deploy resources" intended to provide learning across the organization and deliver a quality service to customers (Gill, 2009). Total Quality Management being associated with commitment to continuous improvement required by *the consumer of educational services* (Fiddler, 2002); Knowledge Management techniques conform well to TQM principles. Knowledge may be developed through regular data analysis in the form of the educational environment regular evaluation as part of a higher education institution's self-evaluation with emphasis on collecting student feedback.

Thus, several management strategies are supposed to sustain the process of the improvement of a higher education institution, *Knowledge Management* being the basis for all different managerial tools integration:

- Total Quality Management (managing the integrated educational environment using customer focus)

- Fact-based Management (managing the integrated educational environment through collecting data from stakeholders)

- Human Capital Management (managing the integrated educational environment through accumulating intellectual capital)

- Information Management (managing the integrated educational environment by creating, storing and sharing collaborative knowledge).

- Customer Relationship Management (managing the integrated educational environment by applying educational practices aimed at providing student-centred learning (Dyche cited in Hallinger & Snidvongs, 2008), that is for developing a student-centred environment.

This list remains open: for coping with the complicated issues of the educational environment improvement education mangers should use a variety of management practices that are at our disposal (Fig.8).

```
┌─────────────────────────┐
│   The educational environment   │
│        improvement           │
│        initiatives           │
└─────────────────────────┘
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┌───────────────────────────┐   ┌───────────────────────────┐
│ **Organisational Change** │   │ **Integrated Management** │
│   **Philosophies:**   │   │   **Techniques:**   │
│ *- Organisational development* │   │ *- Knowledge management* │
│ *- Cultural change programmes* │   │ *- Fact-based management* │
│ *- Total quality management* │   │ *- Project-based management* │
│ *- Learning organisation* │   │ *- Information management* │
│   │   │ *- Human capital management, etc.* │
└───────────────────────────┘   └───────────────────────────┘

┌───┐
│   *Supportive Knowledge Strategies*   │
└───┘

┌─────────────────┐   ┌─────────────────┐   ┌─────────────────┐
│   Planned   │   │   Internet   │   │   Unplanned   │
│   knowledge   │   │ communication- │   │   knowledge   │
│ transfer schemes│   │ based knowledge │   │ transfer schemes│
│   │   │ transfer schemes│   │   │
└─────────────────┘   └─────────────────┘   └─────────────────┘

Fig.8 Framework of the strategy for the improvement of the educational environment (Stukalina, 2010/b, adapted from Fiddler, 2002)

The author believes that the internal improvement initiatives are supposed to be addressed in the framework of a structural model of managing the integrated student-centred educational environment.

5. Structural model of managing the educational environment (SMMEE)

The author assumes that a structural model of managing the educational environment (SMMEE) is supposed to be useful for guiding the resources allocation within the integrated student-centred educational environment.

According to Bush (2003), educational management is frequently regarded as a set of practical activities, nevertheless theories and concepts "provide a framework for managerial decision". Therefore, a theoretical model for managing the educational environment resources may be quite helpful, provided that theory is supported by the routine experience of the education manager.

Since there are an amazing variety of educational institutions, no single all-embraced theory for educational management exists (Bush, 2003). In reviewing the literature describing the models of educational management, the author encountered the typology of management

and leadership adapted by Bush from Bush and Glover (ibid). They distinguish between six basic educational management models linked to the corresponding leadership models: formal, collegial, political, subjective, ambiguity and cultural management models. Let us discuss these models in order to decide on the model that can best suit our needs.

According to Bush (2003), *formal models* are characterized by the hierarchy and expertise possessed by professional staff; *collegial models* presuppose that power and decision-making ought to be shared by some or all members of the organisation; *political models* presume that policy and decisions appear through a process of negotiating; *subjective models* focus on the perceptions of individuals rather than the whole organisation; *ambiguity models* emphasise uncertainty and unpredictability in organisations; *cultural models* focus on the values, beliefs and norms of individuals of the organisation.

Each model has its advantages and limitations. The formal models with their formal structure and "top-down" leadership decision-making have been recently criticised (Chapman cited in Bush, 2003), though Bush (ibid.) considers more current models also to be partial; he states that such models should not be dismissed from schools. In designing her model, the author has mostly used the principles characteristic for the formal model. So, the author's model would be rather hierarchical by nature. Besides, it possesses the basic features of *structural and systems* models (as sub-models of the formal model) described by Bush (2003) - it emphasises the importance of organisational unity and integrity along with good coordination between the subsystems, and efficient control from managers for achieving established goals.

However, for developing a structural model the author has also used the elements of other management models, since the author regards multidisciplinary approach to management rather practical for responding to multiplicity and diversity of modern society. Therefore, the proposed management model comprises some elements of *the collegial model,* because it includes decision-making as a participative process aimed at making the educational institution a harmonious and creative organisation (Bush, 2003). It also involves the main principle of *the subjective model* – the focus on the individual (in a higher school – student) perception, though this focus is not so strongly pronounced. The author took into account the leading role of organisational assets with the embodied intellectual capital. Thus, the author supposes that being a complicated multi-level structure; the educational environment demands a flexible management model, which contains the elements characteristic for different theoretical models. In this case, we will be able to deal with the educational environment as a supersystem comprised of various resources, and the intellectual community.

The proposed structural model of managing the educational environment (SMMEE), which includes various aspects associated with managing the educational environment as an integrated multi-level supersystem, is illustrated in Fig. 9.
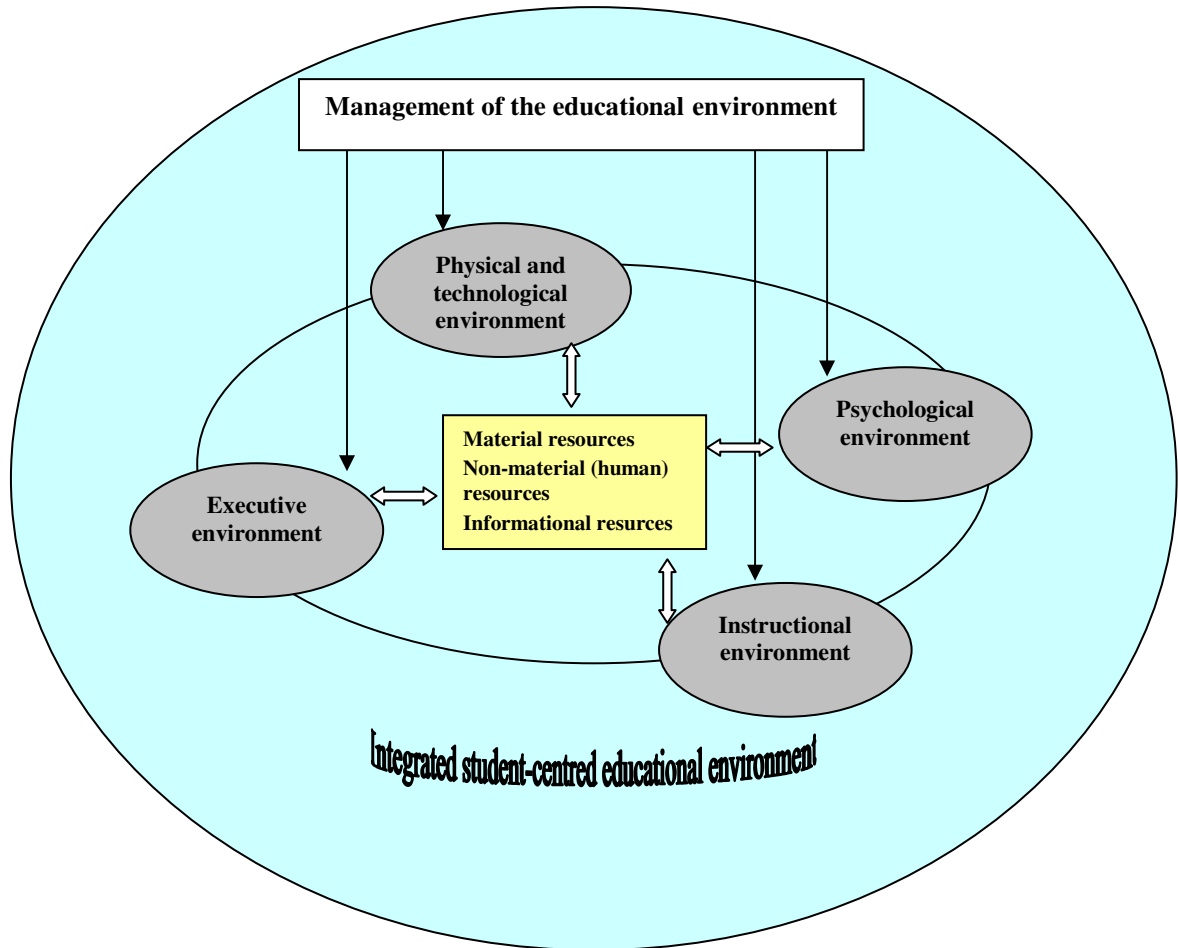
Fig.9 Structural Model of Managing the Educational Environment /SMMEE (adapted from Stukalina, 2010/c)

This model presumes that education managers, during their everyday interactions with the educational environment, coordinate and redistribute the following educational environment resources: (a) material, (b) non-material and (c) informational. The resources are associated with the four basic educational environment subsystems:

1. the physical environment and technological environment;

2. the instructional environment;

3. the psychological environment;

4. the executive environment.

The suggested model also assumes that management of the integrated student-centred educational environment is expected to sustain the learning process and to stimulate continuous improvement of the educational environment, in addition to encouraging students' motivation as the intellectual community members. *The basic principles of SMMEE* are summarised below:

- Managing the educational environment as a highly integrated system for accomplishing the system's synergy.

- Coordinating the resources – material, non-material, informational - in a centralised manner, at the same time giving the subunits a certain degree of autonomy.

- Managing the educational environment as an intellectual community and acknowledging the leading role of the intellectual capital.

- Managing the educational environment using the holistic approach: applying a variety of pedagogical and managerial tools.

- Managing the educational environment through student feedback and involving students in participative decision-making.

SMMEE is based on the typology of management and leadership models adapted by Bush from Bush and Glover (2003). It considers the educational environment as a multilevel supersystem with strong ties across the organisation, which includes a diversity of subsystems. The nature of the subsystems varies considerably throughout the supersystem; however the resources integration must be strong to attain the system's synergy. Thus, organisational unity and integrity is the most essential attribute of this model.

This supersystem is predisposed to be hierarchical; the resources are coordinated in a centralised manner so that effective control from managers can be provided. Though, the organisational units should have a certain degree of autonomy due to the diverse nature of the resources they coordinate. The integrated student-centred educational environment should operate as a well-managed flexible network based on cooperation across the system.

The intellectual capital (or organisation's intellectual property) that determines the value and the competitiveness of an organisation (Sullivan, 2000) is embodied in the educational environment resources; it is a strategic intangible asset of a higher education institution. Education managers play a critical role in maintaining the intellectual capital in the process of performing their routine activities. SMMEE regards an educational institution as an intellectual community of people united by common goals and values. It involves university workers' participation in decision-making. Students are also considered to be active

community members who can contribute to the development of the organisation in the form of participative decision-making.

Cheng and Cheung (2003) stress that the practice of participative decision-making may help build up "a sense of ownership" among school members participating in this process, and the resulting action plans will have a better chance of successful execution. Therefore, student feedback - students' perceptions of the educational environment and their learning experience - are important factors to be considered. From a pedagogical perspective, motivating students presupposes incorporating some innovative pedagogical strategies, which will stimulate their desire for further studies, in the learning process. The integrated management practices supplement a set of pedagogical tools to be implemented in the constructive educational environment to make it more attractive. The education managers' job is then to utilise a set of educational and management practices that can produce positive impacts on the learning process effectiveness and the educational environment quality.

As the educational environment resources are heterogeneous, for productively managing the environment we have to make use of management tools from various disciplines; the success will largely depend on "the right combination of knowledge and experiences" (Disterer, 2002). So, management of modern complicated educational environment as a complex non-liner supersystem calls for the4 holistic approach to be applied. In the next chapter, the author will go on to discuss several innovative pedagogical techniques and managerial tools to be applied in the integrated student-centred educational environment in the framework of the structural model of managing the educational environment.

CHAPTER IV

INSTRUMENTS TO BE APPLIED FOR MANAGING THE INTEGRATED STUDENT-CENTRED EDUCATIONAL ENVIRONMENT

In this chapter, the author will consider and assess some innovative pedagogical strategies and managerial tools to be applied for managing the integrated student-centred educational environment of a higher education institution in the framework of the structural model of managing the educational environment (SMMEE).

1. Innovative pedagogical instruments to be applied for managing the integrated student-centred educational environment

In the author's point of view, a set of pedagogical and managerial tools can be combined to facilitate an integrated approach to managing the integrated educational environment.

The effectiveness of an educational environment to a great extent is supposed to be determined by the learning methods supported. This is one dimension of the educational environment improvement that is concerned with teaching and learning, the second aspect being its organisational dimension (Fiddler, 2002).

Current trends in education demand that learners play an active role in the knowledge acquisition process. A strong sense of participation is required for every learner to experience a variety of processes, ranging from self-directed learning to group discussion to peer teaching to teacher guidance (Yeo, 2005). To improve practices used in higher education institutions for meeting the challenges of ever-changing environment it is vital to introduce a paradigm shift in education; this includes both a paradigm shift in learning (student is the centre of education), and a paradigm shift in teaching (teaching is intended to initiate, facilitate, and sustain students' self-learning, self-exploration and self actualization) (Cheong Cheng & Mo Ching Mok, 2007). The highly integrated educational environment is supposed to be the tool, which education managers would have at their disposal to support this paradigm shift.

In addition to enhancing traditional educational methods, education experts can also enable new ways of education delivery and innovative pedagogic strategies, constructivism being one of them. Constructivism is often opposed to objectivism – a teacher-centred learning method, whose goal is to represent and transfer objective realities from the instructors to the learners. In an objective environment, the learners become passive recipients

of instruction, acquiring and assimilating common understanding from instructors or experts, rather than creating their own knowledge.

In contrast, constructivism is a learner-centred learning method; the role of the instructor is to assist the learners in constructing their own knowledge (Dewey, 1956; Khalifa & Lam, 2002; Dunn, 2005). Constructivists state that knowledge is not mechanically acquired, but actively constructed within the constraints and offerings of the learning environment (Liu & Matthews, 2005). The author thinks that, in a broader sense, knowledge is created throughout the entire integrated educational environment.

Constructivism presupposes discovery-oriented learning processes and in these processes, social environment and social communication work as stimulus for individual cognitive conflict (ibid). In the integrated student-centred environment that supports constructivist approach to learning, *interactive knowledge delivery* and information exchange are of central importance. Interactivity as a means of instructors' and students' communication and learners' engagement can have significant impact on pedagogy; it can provide more effective learning, as it helps students organise pieces of information into a system of knowledge (Siau et al., 2006). Interactivity presupposes more explorative learning. The constructive educational environment supports the development of students' personal identities as active and capable learners who believe that learning to the best of their ability is their main task. It provides more active and explorative learning.

Therefore, at all levels of the highly integrated educational environment, student is supposed to be a focus of the environment. Learner is not the periphery of the educational environment. The focal point of education and training in the HIEE is on learning *how* to learn, analyze, and create. Managers' efforts should be aimed at making students self-motivated; it demands the appropriate guidance from educators. Besides, the teacher is no longer just an instructor; the educators at all levels (including teachers) enter the realm of management: the convergence of two domains – the educational domain and the management domain - is becoming a reality. The author has compared the basic pedagogical aspects of a highly integrated educational environment with its predecessors in Table 4.

The author suggests using the term *Flexible Educational Environment (FED)* as opposed to the term *Passive Educational Environment (PEE)*. The purpose of the Flexible Educational Environment is to give students structural knowledge, which presupposes not only the ability to perceive, assimilate and use the necessary information, but also the ability to use knowledge in practice, to work in a team, to analyse, innovate and create (Fig. 10).

Table 4 Weakly integrated educational environment vs. highly integrated educational environment (Ivanova & Stukalina, 2008)

Weakly Integrated Educational Environment	Highly Integrated Educational Environment
Disciplinary approach	Interdisciplinary approach
Teacher-centred	Student-centred
Linear learning	Interactive learning
Linear material delivery	Interactive material delivery
Clearly formulated problems	Authentic problems
Individual work	Team work combined with individual work
Inert listening	Critical and creative thinking and problem-solving

The author also proposes to use the terms *Highly Integrated Educational Environment* and *Flexible Educational Environment* as synonyms, since they both describe the interdisciplinary nature of modern educational environment.
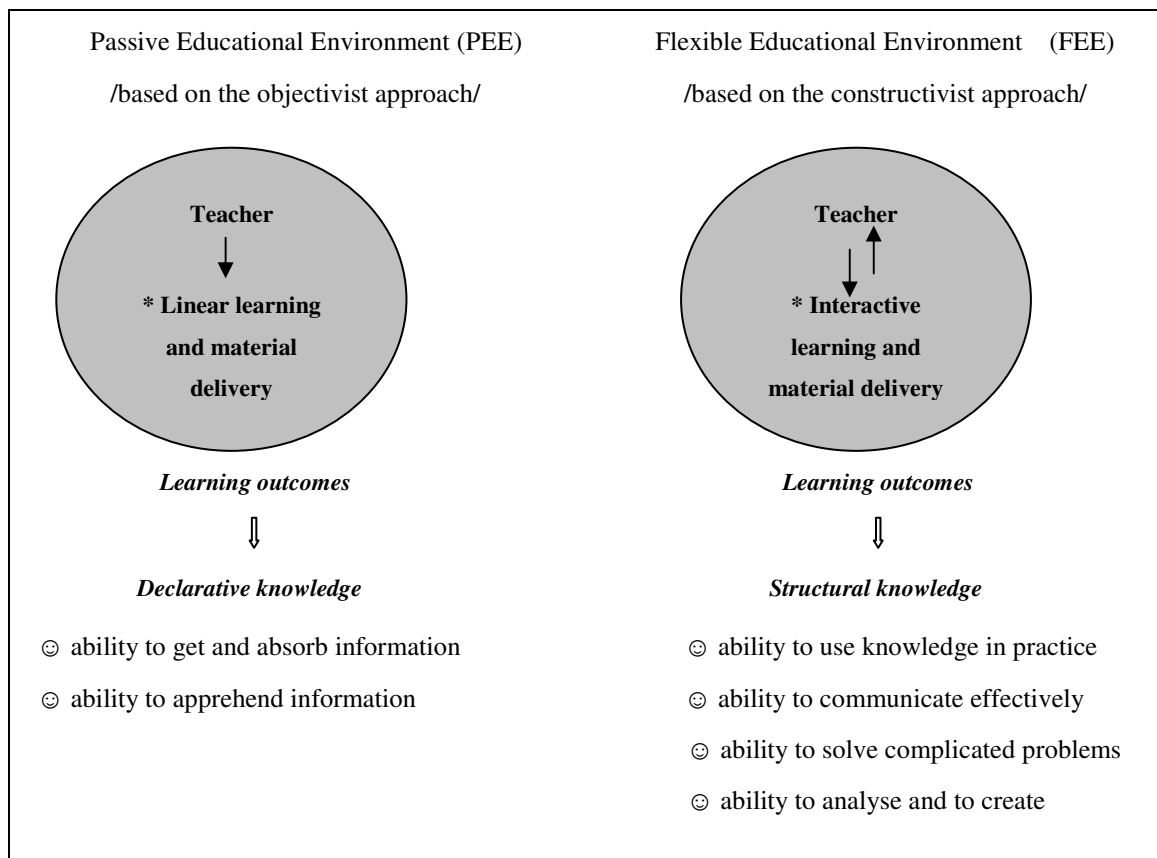
Fig.10 Passive educational environment vs. flexible educational environment (Ivanova & Stukalina, 2008)

In recent years, higher education institutions have become creative in their course offerings and broadened their target markets (Svensson & Wood, 2007). But it is obvious that just to replace the existing course content with newer course content is not enough. Education managers have to introduce some fundamental changes in the educational environment reflecting the main tendencies in the European system of higher education. For teaching students in the highly diverse and challenging global environment, educators must take every advantage of both traditional methods and new approaches to education; these up-to-date education and management strategies will support them in their efforts to improve teaching and instruction so that each student may achieve at higher levels, which is the mission of all professional development (Carole, 2007).

Customization of the educational environment to fit the requirements of students in the context of life-long learning presupposes the reorganization of knowledge delivery that includes many aspects: introducing some important modifications to the curriculum, developing new high-quality multidisciplinary educational programs, engaging students in more active and explorative learning, making the most of Information and Communication Technologies inside and outside the classroom, that is using more on-line learning. The conventional educational environment is being transformed into a more versatile learning space. This new environment responsive to students' needs is supposed to be capable of incorporating the multitude of learning formats. The so-called *blended learning* may become an effective pedagogical approach that combines the opportunities of a traditional classroom environment with the "technologically enhanced active learning possibilities of the on-line environment" (Dziuban et al., 2004). Blended learning presupposes a move from lecture-centred to student-centred education; increased communication between "student – instructor, student – student, student – content, and student – outside resources"; integrated assessment instruments for both student and teacher (ibid.). Through blended learning mechanisms educators will be able to enhance the educational environment resources by means of employing additional learning resources from the external environment.

New forms of learning "are based on the premise that the best way to prepare students for successful careers and lives is to engage them as active and deliberate learners, immersed in experiences that more closely resemble the world outside academia and allow students to bring their knowledge to bear on real-world situations" (Vaz & Orr, 2003). This dictates the creation of the educational environment conducive to the implementation of new approaches to learning – the environment that would encourage students "to learn how to learn".

In order to create an educational environment conducive to learning, educators can employ a few innovative pedagogical tools, which spring from the knowledge-based

economy. These tools present a combination of traditional classroom and out-of-classroom experiences with e-learning activities: face-to-face interaction, access to paper (textbooks, handouts), multimedia (video, audio) and electronic resources. The author views *Moodle* (Modular Object-Oriented Dynamic Learning Environment) as a flexible platform for supporting blended learning and increasing student motivation.

In the framework of blended learning, a few modern pedagogical strategies appear to be rather efficient today. Among them, Traylor et al. (2003) mention active (cooperative) learning, technology enhancement, just-in-time learning", curriculum integration, etc.

Cooperative, or active learning presupposes that educators employ several instructional activities, which engage students in doing and thinking instead of passive listening (Traylor et al., 2003). Technology enhancement involves utilizing of hardware and software tools, as information and communication technologies (ICTs) represent a significant opportunity for knowledge creation. Computer-based learning is an efficient means of supporting the new philosophy of knowledge delivery, since it changes the way students learn and teachers instruct. Computer networks make accessible new channels for interaction between educators and students. Distance learning is gaining popularity as one of computer-based learning forms. So, creating non-traditional learning environments educators can make teaching and learning more attractive and more accessible.

The so-called "just-in-time learning" means that teachers introduce theoretical concepts when students' experiences produce a demand for them (Traylor et al., 2003). The global job market needs interdisciplinary knowledge and multidisciplinary skills, so educators have to supply their graduates with a wide variety of skills required for the new global economy, without sacrificing the deep foundational knowledge. Therefore, curriculum integration (that is contextual connections between topics are introduced to the curriculum) can also become a powerful instrument in education.

The author's teaching experience is linked to teaching foreign languages in a higher education institution. The author supposes that for promoting multidisciplinary education in the framework of creating a constructive educational environment educators may apply other innovative pedagogical tools, which are likely to be based on the strategies mentioned above. CLIL - Content and Language Integrated Learning – is a special approach to foreign languages teaching: a non-linguistic subject is not taught in a foreign language, but by means of a foreign language. Through this kind of educational provision, students gain knowledge of some special subjects in the curriculum, at the same time mastering their language skills. Subjects and languages are combined to offer our graduates a better preparation for life in Europe, in which mobility is becoming more and more prevalent (Content and Language

Integrated Learning (CLIL) at School in Europe: Survey, 2006). CLIL can provide efficient opportunities for learners to use their new language skills now, rather than learn them now for use later; it also allows exposure to the language without requiring extra time in the curriculum (COM(2002) 779 FINAL).

In the environment conducive to learning, educators may also employ a set of efficient pedagogical instruments, which can teach them how to learn, *project-based learning (PLB)* being one of them. The project-based learning model is an illustration of a constructivist learning theory; "knowledge can be constructed personally, through reflection and relating new knowledge to prior experience, or socially, through interaction and discussion with others" (Bates cited in Kurzel & Rath, 2007). Today, in business, using teams to deal with particular problems has become a widespread practice (Urch Druskat & Wheeler, 2004). Business experts state that appointing such a multi-functional and intercultural team is frequently the only way to assemble the knowledge and breadth required to pull off many complex tasks business face today (Gratton & Erickson, 2007). Projects are now accepted to be learning intensive organizational forms (Disterer, 2002). Working in partnerships within teams is also an essential skill, which is highly esteemed in the economic environment characterized by dramatic change. Organizing multidisciplinary project teams working on a common project educators make students (teachers, education managers, supporting staff) work in close cooperation in a constructive learning environment. This procedure demands the integration of multidisciplinary skills. Some educators acknowledging a great role of projects in the learning process state that different departments of a higher education institution ought to get involved "with at least one visible interdisciplinary project on their campus", since strong departments are departments with some knowledge about their external environment, and other units of the educational organisation is "a salient piece of that environment" (Dasenbrock, 2004). Tight cooperation among learners and between various departments engaged leads to creating a collaborative environment, which may become a stimulus for all learning process participants as they are trying to achieve a common goal.

Involving project-based learning in the learning process educators can provide students with the non-science skills required for the new global economy, without sacrificing the deep foundational knowledge. This is especially important for modern students. The author thinks that project-based learning benefits much to the development of the collaborative educational environment conducive to learning how to learn:

- The graduates gain multidisciplinary team experience and acquire teamwork skills. To solve complicated multidisciplinary problems, they have to possess the ability to

integrate their knowledge, and to make connections across different disciplines. It is an actual project that helps to create the atmosphere of a community.

- Working in collaboration within a team and sharing multidisciplinary knowledge students master a great variety of skills - professional skills, presentation skills, communication skills, managerial skills, problem-solving skills, computer skills, language skills, etc. In other words, a university offers its students an opportunity to obtain a complete set of multidisciplinary skills necessary for technical professionals today for solving multidisciplinary problems. This is one of the efficient methods to integrate an interdisciplinary approach into the curricula a technical higher school.

- Through project-based learning universities stimulate developing new knowledge and skills, and what is more, collaborative knowledge. Project-based learning makes its contribution to enhancing the knowledge environment of the educational institution; it provides knowledge sharing and knowledge creation as within a concrete team, as on the organizational scale. The results of the project are afterward stored in the organizational database, so that they are accessible to everyone.

- Students are also exposed to some ethical questions; educators try to develop their awareness of social, professional and ethical responsibility, as well as some international issues (e.g. global warming). The created knowledge is social in nature, thus project-based learning becomes a means of social inclusion.

- Project-based learning helps to keep the learning process more interesting, it emphasizes the importance of diverse skills, and this way, it can stimulate the appreciation for life-long learning.

- The opportunities offered by Information and Communication Technology (ICT) are widely used to enhance traditional educational methods and management practices in the integrated educational environment.

- Working on the project, technical students are able to put their knowledge into practice – they can create a system, e.g. a video clip, a short movie, a Web site. This way, a university provides opportunities for our graduates' professional activities; experiment, design, test, improve.

Problem-based learning is an emerging teaching technique; it is characterized as a shift from the traditional didactic teaching "where the process of knowledge discovery lies almost entirely in the hands of the learner" (Yeo, 2005). Actually, project-based learning and problem-based learning go in a copula; any project presupposes working on a certain

problem. To support multidisciplinary education, educators should introduce multidisciplinary problems to be solved, i.e. the solution of the problem demands interdisciplinary knowledge.

By implementing the above mentioned pedagogical strategies based on interdisciplinary and constructivist approaches to learning educators provide students with the chance to increase their creative potential; they are intended on supporting the graduates' intellectual and professional development. Though, the author assumes that these approaches can only be successfully implemented in the highly integrated educational environment, since their implementation requires the use of all organisational resources in the most efficient manner.

The author also presumes that the best pedagogical strategies will not work, unless they are supported by effective management tools. An important point to keep in mind is that the implementation of innovative pedagogical strategies requires the best management practices incorporation into the learning process, in the process creating the highly integrated educational environment, which undergoes regular adaptations. In the integrated educational environment, management practices and pedagogical instruments complement each other to the greatest benefit of the learning process participants. The incorporated management and pedagogical tools comprise an indispensable element in the elaboration and implementation of a curriculum focused on providing students with opportunities to acquire a diversity of multidisciplinary skills.

It should be mentioned that management and pedagogical tools by themselves do not guarantee sustainable learning process. Pedagogical tools are supposed to be supported by various management practices. In turn, they both must be supported by the integrated organisational resources so that it will ensure sustainable learning process and quality enhancement of the educational environment (Fig.11).
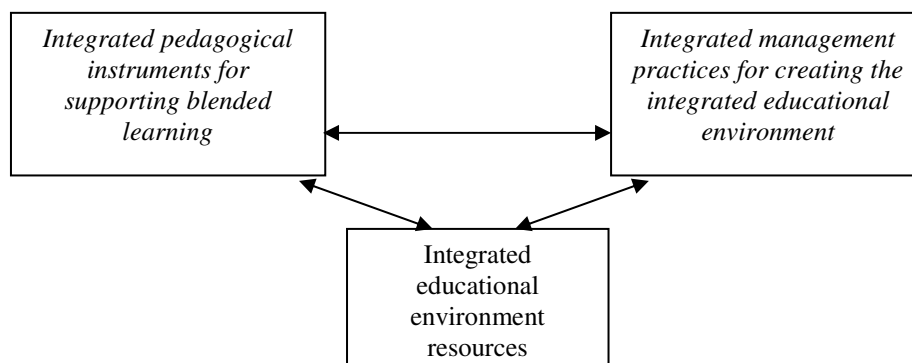
Fig.11 Pedagogical instruments and management practices integration aimed at creating the integrated student-centred educational environment

The author assumes that the symbiosis of pedagogical and management tools leads to the educational environment enhancement in terms of

- Knowledge (the knowledge environment enhancement)

- Resources (the educational environment resources enrichment)

- The educational environment overall quality (the environment quality enhancement).

2. Management tools to be applied for managing the integrated student-centred educational environment

The complexity of the problems that must be solved by education managers demands employing the holistic approach for solving them. Educational management now attends to the issues, which traditionally were addressed by other disciplines. To manage the integrated educational student-centred environment successfully, education managers have to utilise a variety of management instruments that are now at their disposal. Managers must take every advantage of traditional management practices, as well as new approaches to education and management. The interdisciplinary nature of contemporary higher education is a response to the interdisciplinary nature and complexity of modern knowledge-based society.

To understand the educational management practices is vital to understand how they are related to other management practices. Metaphorically, the educational management can be viewed as *the link*, which connects pedagogical disciplines and management disciplines, since an education manager must possess the ability to employ as pedagogical instruments as managerial skills for monitoring the organizational environment, allocating the environment's resources, managing people and improvement process. The complexity of this process dictates using a variety of integrated management instruments that are traditionally employed in all three areas. In the highly integrated student-centred educational environment, these tools are applied to

- implement a set of innovative pedagogical strategies;

- cope with complicated organizational context throughout the entire educational environment.

Applying a diversity of management practices to manage the educational environment requires utilizing all integrated organisational resources. On the one hand, managers use the resources of the highly integrated educational environment for addressing the most critical educational management issues, and in the process implement a variety of management tools. On the other hand, in the process, new resources and new knowledge are created, which later

can be employed for enhancing management and pedagogical practices. Thus, the process of implementing educational management practices possesses a cyclic character (Fig.12).
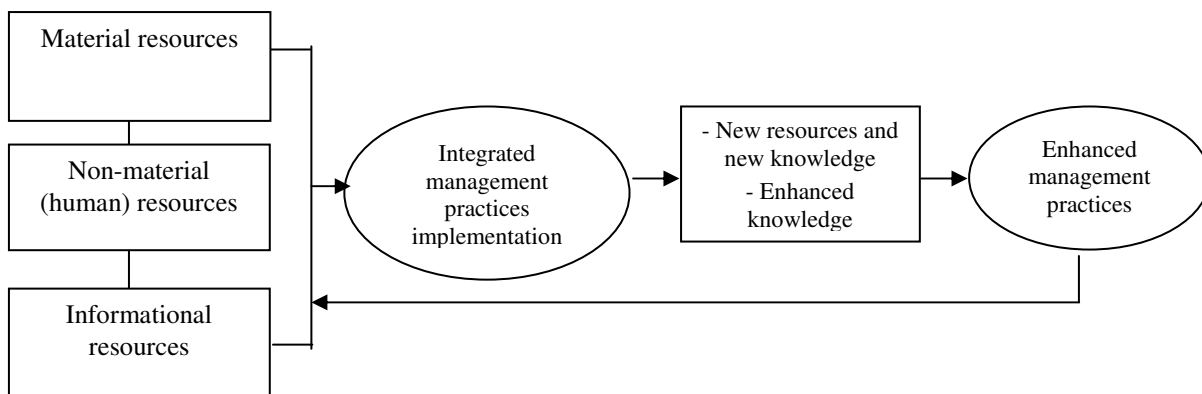
Fig. 12 Integrated management practices realization in the integrated student-centred educational environment: the process with a cyclic character

To support quality enhancement of the integrated student-centred educational environment the following aspects have to be considered: pedagogical, managerial, organisational, technological and social. People of the organisation interact with the educational environment in various contexts; their involvement in social life and decision-making takes various forms. The complexity of the environment stipulates the variety of situations, in which education mangers make their decisions, aimed the improvement of a higher education institution. According to Miller & Lee cited in Saiti & Eliophotou-Menon (2009), "the reaching of decisions in a large system such as the educational one involves not only one person but requires the participation of diverse groups".

The standard hierarchy of decision-making in a higher education institution is the following. To describe the "ladder" of decision-making in a higher education institution the pyramid metaphor is normally used; the basic management levels (Griffin, 1990) including top, middle and first-line managers (the vertical dimension of the organisation). The educational environment containing a diversity of subsystems, there are also various managerial jobs in the organisation (the horizontal dimension of the organisation). The logic of this arrangement is as follows. Top managers set the organisation's objectives, they also establish connections between the organisation and the external environment (meet the government officials, representatives of other organisations, the public, etc.). In other words, they are responsible for developing the organisation's educational strategy and make strategic decisions, which influence the organisation's future. Using some decision models top managers analyse and hypothesise rather than make instant decisions depending on a certain

context. They are the final authority in the decision-making process deciding on total financial, material and non-material resources allocation and redistribution (Table 5).

Table 5 Hierarchy of decision-making in a higher education institution (adapted from Griffin, 1990)

Management Level	Hierarchy of Decision-Making
Senior Management (Rector, vice-rectors)	Strategic decisions
Middle Management (Dean, head of the department, head of the chair, programme director)	Tactical decisions
First-line Management (specialist in teaching methods, teacher)	Operational day-to-day decisions

In various departments within a higher education institution, considerable responsibility is given to middle managers who constitute the majority of education managers. They are in charge of for implementing the strategy developed by top managers; they supervise and coordinate the activities of first-line managers. Middle managers make tactical decisions, and use a set of actions and methods aimed at gaining the organisation's goals. They are also responsible for the distribution of resources in most efficient way.

In business, first-line managers supervise and coordinate the activities of operating employees. It is also true in relation to managers performing some administrative functions in the educational organisation: engineers, supervisors or office managers in the area of ITCs, marketing, finance, etc. However, the author presumes that in the process of managing the educational environment conducive to learning, the key role belongs to people who regularly and directly deal with students and manage their development. They may be called *first-line* managers in terms of managing knowledge exchange and new knowledge creation *in a classroom*. First-line managers in a higher education institution are responsible for day-to-day management of the resources aimed at supporting sustainable learning process. Their job is also to stimulate students' positive learning activities and involve them in social life as active community members.

In their pursuit for quality, education mangers should not forget about students. The author presumes that the hierarchy of decision-making would be incomplete without including students into this format. Close cooperation between all people in the educational organisation as active and responsible social community members is vital for providing the

organisation's sustainability, since the intellectual capital guarantees the organisation's existence and quality enhancement.

So, one way or another, students ought to take part in decision-making. This way, they are involved in the process of sharing the intellectual capital and creating new knowledge. For providing communication and knowledge sharing a number of innovative knowledge strategies must be employed in the integrated educational environment.

3. Some knowledge strategies to be employed in the integrated student-centred educational environment

According to Rowley (2000), higher education institutions are now involved "in the knowledge business, since they are involved in knowledge creation and dissemination and learning". As said by Haughton et al. (2003), they have two primary responsibilities – to add new knowledge to the wider society through research, and to transmit knowledge to students A creative thinker, prolific author and appreciated expert on management Peter F. Drucker pointed out that the most valuable asset of a 20th century company was its production equipment, but the most valuable asset of a 21st century institution will be its knowledge workers and their productivity (Drucker, 1999).

Some time ago, the term "knowledge worker" was used to refer to anyone who was engaged with performing the tasks of developing or using knowledge: programmers, systems analysts, technical writers, researchers in the information systems disciplines, etc. However, this term has also progressively included people outside information technology: „anyone who communicates and transforms specialized information such as lawyers, teachers, scientists and learners of all kinds" (Garcia, 2007). The term "knowledge worker" implies a person, who decides largely what she/he will contribute to the organization and how great the yield from his/her knowledge will be (Chinying Lang, 2001).

According to Drucker cited in Malhotra & Majchzak (2005), successful organisations care for knowledge as the key resource of production. In turn, we regard knowledge as the key resource of the educational environment quality enhancement. The role of knowledge in developing the most efficient educational environment increases with the complexity of modern higher education institutions. In the dynamic process of managing and developing an integrated educational environment conducive to learning, managers deal with new knowledge creation as one of this process' outcomes. Education mangers need information and knowledge for making right decisions to the greatest benefit of their organisation's development. According to Fullan (2002), "learning in context" (the setting where education

managers operate) is the "learning with the greatest payoff", since it is more specific (factually applied to a particular situation) and social (intended on creating shared and collective knowledge and commitments); moreover, it is aimed at improving the organisation and its social, or moral, background.

Thus, knowledge work is in the centre of our attention, knowledge being the main area under discussion in the highly integrated educational environment. Managers utilize a vast variety of data from numerous sources; they employ a set of knowledge strategies. They also promote some competent knowledge strategies across the educational environment: among managers of different levels, among staff members, among students, and among students and other people of the organisation. Knowledge strategies are a means of obtaining information that will be employed for decision-making in various areas and at dissimilar management levels of the educational environment. Therefore, different knowledge strategies are used for supporting strategic, tactical and operational decisions. At the same time, there exist some universal knowledge strategies that can be applied for making decisions at various levels.

The author assumes that universities can use a combination of strategies toward knowledge creation, knowledge adoption, knowledge distribution, and knowledge review and revision processes; according to Bhatt (2000), this is the so-called "knowledge development cycle". The management of organizational knowledge generation and distribution is intended to "leverage the most important asset of the 21st century organisation - its knowledge" (Gray, 2001). The author regards knowledge enhancement as an essential precondition for overall quality enhancement of the educational environment of a university.

Rowley (2000) emphasizes that in the arena of teaching, higher education institutions have considerable experience and expertise in knowledge sharing. Abdul Hamid (2008) states that school leaders have to "cultivate competent knowledge strategies amongst their staff members to consolidate the knowledge culture in schools". He also emphasises that schools can progress to become knowledge centres provided that the human resources are adequately competent in their knowledge strategies. The author thinks that it refers to higher school as well. Education managers must promote knowledge sharing, knowledge adoption (acquisition) and knowledge storage within and across the educational environment subsystems. The author presupposes that from the educational management perspective, knowledge accessibility is one of the main factors, which characterizes the highly integrated educational environment efficiency, and which leads to new knowledge creation in the organization. The author also assumes that knowledge management instruments can be successfully applied for creating the integrated educational environment prone to development and improvement. It should be mentioned that knowledge management practices

embrace the entire educational environment; they appear to be universal tools for managing all environment's subsystems.

Knowledge management is described either as an operational tool or as a strategically focused management tool, as well as information handling tool (Mårtensson, 2000). Knowledge management is a discipline that supports educational organizations in creating the environment, which guarantees the knowledge development cycle realization. Actually, effective management of knowledge will enable an organisation to provide better customer service (Bollinger & Smith, 2001).

Knowledge management can cover all elements of an educational organization; however, the topic is too wide to be discussed in one paper only. In this paper, the author addresses the most significant issues, which can be of special interest to an education manager in relation to organizing the educational environment quality enhancement.

To group knowledge strategies that may be used for strengthening the educational environment integrity and for enhancing its quality, the environment knowledge resources should be categorized. The author supposes that the educational environment knowledge "assets" can be described in terms of the three dimensions of explicit knowledge (Phaal et al., 2004), resident in the educational organisations – know why, know what and know how. Meso & Smith (2000) call them cognitive knowledge, systems understanding, and advanced systems skills.

The author assumes that information associated with the *external environment context* (the external influences) presents the "know why" dimension of knowledge. In our interpretation it allows us to introduce the necessary changes responding to the emerging challenges imposed by the external environment, so it provides the answer to the question *why? - Why should these changes be introduced?*

At the same time recognizing that the primary drive for learning comes from the external sources (Lam, 2001), it must taken into account that education managers' work is to a great extent influenced by the internal organizational conditions and resources. Information from the *internal environment* is related to the following knowledge dimensions (Stukalina, 2008/c):

1. The "know why" dimension of knowledge. In the author's interpretation, this type of organizational knowledge allows managers to introduce the necessary changes responding to the altering conditions in the internal environment, so it also provides the answer to the question *why? - Why are qualitative changes in the educational environment needed?*

2. The "know what" dimension of knowledge. In the author's interpretation, managers should know *what resources* are at our disposal, and *what* resources must be created for supporting sustainable development of their organisation.

3. The "know how" dimension of knowledge. In the author's interpretation, the knowledge-based resources provide the answer to the question *how?* Managers should know *how* the resources can be used most efficiently to provide sustainable development of their organisation.

Therefore, the author thinks that explicit knowledge provides the basis of the education managers' "know how" strategy. The author supposes that from the knowledge management perspective, one of the main goals of education managers is effectively managing explicit knowledge in the form of know-what, know-how, and know-why, so that "a supportive culture will encourage and facilitate the sharing of tacit knowledge" (Bollinger & Smith, 2001). The complexity of modern educational organisation dictates intensification of knowledge sharing processes; information being a key to the educational environment development and improvement.

To stimulate positive activities towards knowledge enhancement of the educational environment, managers can utilize the whole set of knowledge management instruments. These are the technologies, which are employed to enable knowledge generation, codification and transfer (Ruggles, 1997). Knowledge management is often regarded as a socio-technical system (Meso & Smith, 2000); it includes more than just a technology. The significance of both technological tools (including structural capital), and human initiatives (the involvement of human, relationship, and intellectual capital) must be acknowledged. Communication and knowledge creation require frequent, informal, direct, face-to-face personal interaction (Chinying Lang, 2001). On the other hand, virtual communication (through the organisation's computer networks is also a necessity today. Knowledge review can occur in the technology-based environment, where special repositories for keeping the accumulated knowledge have been created, and the instructional environment resources are easily accessed.

The author proposes to categorise knowledge strategies to be used in the integrated educational environment as

a) Structured (planned) knowledge transfer schemes

b) Internet communication-based (computer-based) knowledge transfer schemes

c) Natural (spontaneous or unplanned) knowledge transfer schemes (Fig.13).
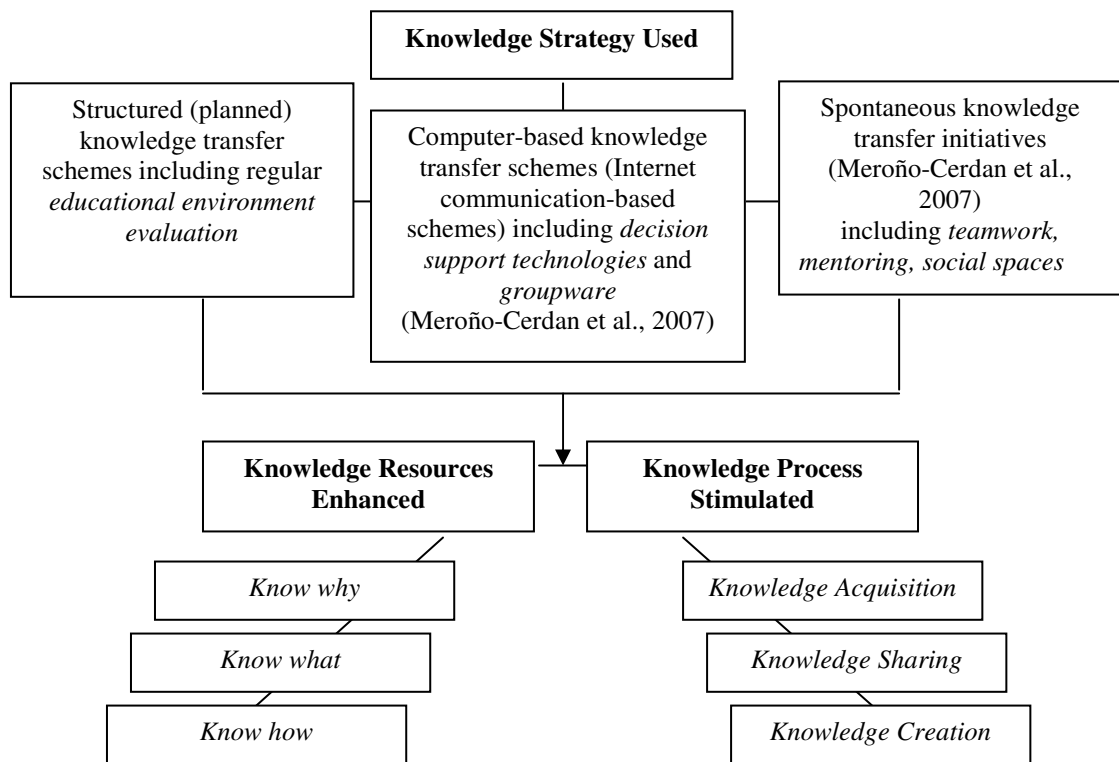
Fig.13 Knowledge enhancement in the integrated educational environment (Stukalina, 2010/b)

The suggested classification takes into account the categorization of the basic knowledge management tools given by Meroño-Cerdan et al. (2007), which comprise technological instruments such as decision support technologies (data mining, simulators, artificial intelligence, etc.); groupware (a combination of computer-based systems, which enable people to communicate and to work together on common projects: e-mail, on-line diaries, document repositories, expert directories, video conferencing, on-line catalogues of books, articles, etc); and non-technological instruments such as spontaneous knowledge transfer initiatives (creating social spaces where people can communicate, so that knowledge flows unofficially); mentoring (on-the-job tuition, which promotes the transfer of knowledge); teams and communities of practice (people work in a team to achieve common objectives).

The author assumes that the knowledge strategies mentioned above should become an integral part of what may be called the education manager's toolbox (the metaphor, which the author suggests using for describing the incorporated pedagogical strategies and the supportive management practices applied by education managers in the integrated student-centred educational environment). This is education managers' *"know-how"* - they know what resources of the educational environment can be employed in a particular context (*why?*), and *how* they can be used more efficiently.

The author also thinks that these knowledge strategies can be successfully used for such knowledge processes as knowledge acquisition, knowledge sharing and new knowledge creation. *Structured (planned) knowledge transfer schemes* usually support decision-making at the highest level of decision-making. Top managers may have a range of decision models based on their experience in education or business that they may employ to perform the analysis of new situations. They use analogies for examining a new "state of affairs". In the process of developing their strategy, decision-makers selectively call attention to "situations that have meaning for them, interpret those aspects with others, and socially construct action on this basis" (Nilsson, 2008). When they analogise, they bring into play the similarity between two rational models (Holyoak & Thagard cited in Nilsson, 2008).

Regular educational environment evaluation is also regarded by the author as an efficient managerial tool. The information obtained is then used for performing cause-effect relationship analysis. Later, on the basis of this analysis, certain decision models may be created. In the integrated educational environment, this analysis embraces all organisational subsystems: the executive environment, the physical environment, the technological environment, the instructional environment, and the psychological environment. For this reason, all people of the organisation should be engaged in the process of collecting data for the environment evaluation, this way contributing to knowledge enhancement in the educational environment. The author believes that the educational environment evaluation can become one of the most significant management instruments supporting the decision-making process, since effective decision-making requires a clear understanding of the situation, in which the decision is made. In education, there exist a wide variety of methods for systematic data collection – participant observation, case studies, interviews, surveys, etc. The most widely method used is carrying out regular student surveys. The author thinks that in a learner-centred educational environment, student evaluation, being one of the most perceptive evaluation methods and an effective investigation instrument, provides the basic information on the educational environment assessment. However, education managers should not limit the range of the educational environment evaluators to students only. They also ought to involve other learning process participants: teachers, attending staff members, administrative workers, education experts, etc. Students' parents and potential employers can also be engaged in the process.

Various techniques can be combined with the aim to generate fully grounded conclusions or theories and to make the investigation more valid. The author supposes that in a learner-centred educational environment, student evaluation, being one of the most perceptive evaluation methods and an effective investigation instrument, provides the basic

information on the educational environment assessment. Students participating in the educational environment evaluation assume new social responsibilities and indirectly take part in the decision-making process. Student evaluations in the context of managing the integrated educational environment will be considered by the author in Chapter 5.

Evaluation is a formal procedure. However, to support knowledge sharing and new knowledge generation managers also need some *natural (spontaneous) knowledge transfer initiatives*. It is essential to create positive social settings (that is a constructive collaborative environment) - social spaces or certain social conditions, so that different people can meet and exchange information in an informal way. Teamwork is supposed to be an excellent means of promoting knowledge sharing and new knowledge production. Such knowledge management instruments seem to be quite helpful for managing the educational environment intangible resources associated with the intellectual capital, since they are used to facilitate internal communication within the organisation. This, in turn, leads to sharing information and creating new knowledge, stimulating problem-solving and assisting decision-making. As said by Emison (2004), "only knowledge can initiate the solution to problems. Spontaneous knowledge transfer initiatives can be a very efficient method of creating the environment conducive to learning (in a broad sense).

Internet communication-based knowledge transfer schemes embrace web surfing and internet communication for knowledge acquisition, knowledge sharing, and knowledge generation. The ITCs used present a forum for information exchange as in a formal, as in informal way. Various decision support technologies - data mining, simulators, artificial intelligence, etc. (Meroño-Cerdan et al., 2007) - may be used to construct decision-making models (that is for making strategic decisions). Groupware - e-mail, on-line diaries, document repositories, expert directories, video conferencing, on-line catalogues, articles, etc. (ibid) - can be extensively utilized for making tactical and operational decisions. The information accumulated in organizational databases provides some food for thought for every manager.

Soliman & Spooner (2000) point out that knowledge management is most useful as an integrated system bringing together numerous disciplines, so education managers should use knowledge management tools as a universal and flexible platform of various management practices integration. A variety of traditional and innovative management instruments are employed to provide knowledge enhancement of the educational environment, at the same time creating appropriate conditions for the educational environment quality improvement: Total Quality Management, Fact-based Management, Human Capital Management, Information Management, Customer Relationship Management, etc.

The author goes on with a few examples. The acquired knowledge must be accumulated either in regulative and instructional papers, or electronically (in knowledge repositories for storing external and internal knowledge). It is essential that explicit knowledge that has been captured and stored in computer environment may be shared by applications and users (Hicks et al., 2007). Explicit knowledge can be codified (Meso & Smith, 2000). Today, the media for storing and transferring knowledge are the so-called Net technologies – Internet, intranet, extranet (Yakhlef, 2001); these technologies are represented by the organizational databases - the technological environment. Rowley (2000) points out that the constructed knowledge is also embodied and disseminated within the organization's environment through social interchange. So, the author agrees on the great role of information management in keeping up to date with all changes in the organization, in providing knowledge accessibility, and consequently in enhancing knowledge environment of the educational institution.

Management of the educational environment presupposes finding relevant data and information to assist decision-making with the aim to provide better usage of the available resources and produce new resources necessary for sustaining the learning process; fact-based management can also be considered as a helpful educational management tool.

In the highly integrated educational environment, there is a demand for tight cooperation between all functional units; let's call them project groups. With the shift toward team-based knowledge work, for stimulating collaborative and knowledge sharing in the integrated educational environment, managers also need to involve some project-based management practices to facilitate their work.

For providing knowledge enhancement in the educational organization the educational environment most valuable resource – the human capital – must be engaged. Human capital management, being one of human resource management forms, includes such things as leadership development, job design, and knowledge sharing (Bassi & McMurrer, 2007).

The author thinks that the convergence of various management domains is unavoidable. The list of potential management instruments for an education manager's strategy realization i s almost unlimited. Applying an assortment of integrated management practices education managers strive for providing quality enhancement of the educational environment. The author assumes that collaborative learning stimulated by a set of knowledge strategies could pave the way to qualitative changes in the educational environment, Total Quality Management with its accent on continuous improvement (Emison, 2004) being an efficient way achieve this goal.

Knowledge enhancement of the educational organisation is supposed to be accompanied by the quality improvement of the educational environment. The author believes that managing the integrated educational environment for quality is one of the most significant challenges that higher education institutions face today.

The quality of educational services is the topic frequently discussed today. As declared in *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (2005), "learning resources and other support mechanisms should be accessible to students, designed with their needs in mind and responsive to feedback from those who use the services provided". As stated in the Bologna Declaration (1999) and Berlin Communiqué (2003), in the meantime, managing for quality is a very important aspect in the context of constructing the European Higher Education Area that is expected to provide citizens of the European Union with broad access to high-quality higher education. Thus, education managers should acknowledge an essential role of Total Quality Management (TQM) for providing quality enhancement of the integrated student-centred educational environment.

Sahney et al. (2008) accentuate that quality management in education is now a priority issue for research and analysis. Educational managers are progressively more using various quality assurance and quality control techniques in managing schools, universities and study programmes (Diamantis & Benos, 2007). In this context, total quality management (TQM) is an important tool that education managers have at their disposal for improving their organisations and to keep up with the changes in the external environment (Töremen et al., 2009). Fiddler (2002) includes TQM in the list of organizational change philosophies (approaches) - ways of generating improvement of an educational institution - along with organizational development (OD), cultural change programmes and learning organization.

As sad by Cheng & Cheung (2003), education quality can be described using different indicators including "the satisfaction of strategic constituencies' – policy-makers, parents, teachers, students, etc". On of the basic principles of TQM is the customer focus (Varnavas & Soteriou, 2002; Kettunen, 2008), the rationale for TQM being "that an organization will prosper if it meets and surpasses clients' expectations (Fiddler, 2002).

Töremen et al. (2009) define TQM as "a management process and a set of disciplines that are co-ordinated to make certain that the organisation constantly meets and exceed customer needs"; they emphasise that TQM involves all units and all levels of the organisation, evaluatory and developmental processes being its indispensable practices. They also pint out that TQM, being a human-focused approach, can make an essential contribution to enhancing quality of education and improving educational organizations (ibid).

As said by Kettunen (2008), quality management in education "has evolved and taken varying forms in terms of stakeholder accountability, customer satisfaction and issues of assessment, accreditation, ratings and rankings"; the focus is essentially on understanding the customers' needs. Cheng and Tam cited in Sahney et al. (2008) propose to discuss education quality from two perspectives:

- The process model regards quality as "an internal process of transformation - the administrative staff to perform the administrative tasks, the teachers to perform the teaching task and students to gain knowledge".

- The satisfaction model regards education quality as "the satisfaction of expectations of the various customers and stakeholders".

So, education quality can be considered from both perspectives, student satisfaction being its inalienable characteristic. Although the author disputes that students are "customers" in complete sense of this word, being also citizens of the intellectual community, we have to be responsive to their varying interests and needs.

The fact that without students, there would be no need for an educational organisation is indisputable (DeShields et al., 2005). As said by Fiddler (2002), educational institutions have "two-part main clients - parents and their students", student being a direct beneficiary of the educational service. According to Chitty & Soutar 2004), students' satisfaction is determined by student-university interactions; and "in tertiary education context, students' satisfaction is the result of many encounters with teachers, administrative workers and facilities of the university". In other words, students' satisfaction is the result of their interactions with the educational environment in various social contexts.

According to Emison (2004), an emphasis on customers is one essential characteristic of TQM; its other fundamental features being a focus on continuous improvement and fact-based analysis. He states that managers function in "the practical world of achieving results" using knowledge to accomplish improvement in their organizations; he also stresses the importance of measurement for monitoring quality. The author assumes that from the point of view of the process model, education quality can be described in terms of higher school improvement. TQM puts emphasis on continuous improvement, so it can be successfully used for managing organizational resources with the aim to accomplish school improvement and customer satisfaction.

As said by Fiddler (2002), in the framework of any organizational change approach, individual management techniques (internal initiatives) that are "more limited in the scale and scope of changes" may be employed as part of a strategy for school improvement: school

development planning, benchmarking, school self-evaluation, performance management, staff development, feedback from parents and students, etc. Fiddler also points out that regular feedback from parents and students can be utilized to get a "fuller picture of teaching and learning", students' experiences being particularly informative "in terms of how they perceive their education" (ibid). The author believes that the same approach may be applicable to higher education.

Subsequently, everything associated with learning conditions and other related internal conditions - that is the internal educational environment embracing all organizational resources – can be assessed by means of getting student feedback. The importance of collecting student feedback in a university was supported by research findings concerning student satisfaction, which acknowledged that "student perceptions are essential parameters of the social and psychological aspects of the learning environments" (Fraser; Ramsden cited in Nair et al., 2010). Nair et al. (ibid) consider collecting student feedback as a key component of quality improvement in higher education.

The author believes that collecting student feedback education managers will be able to get answers to the following questions (associated with the three basic explicit knowledge dimensions):

- *Why* are qualitative changes in the educational environment necessary?

- *What* to change/improve?

- *How* to change/improve?

The author assumes that management of the educational environment resources includes systematic *educational environment evaluation* as one of total quality control procedures. Knowledge is developed through regular data investigation, and the educational environment evaluation. Evaluation is regarded as an important element of knowledge management strategy (Mårtensson, 2000). The author thinks that from the human capital management point of view, the environment evaluation can be considered as a process of accumulating intellectual capital that is embodied in all organizational resources. Thus, the educational environment evaluation being an indispensable attribute of both total quality control and knowledge management appears to be an effective instrument for an education manager's strategy realisation. This way, we manage the educational environment on the basis of the collected evidence/facts analyzing the cause-and-effect relationships in the organization.

The author regards the educational environment evaluation as part of the so-called *strategic analysis process* for school improvement. According to Fiddler (2002), it includes

three components: assessment of internal resources of the educational organisation and their utilization, assessment of external pressures on the organisation and acknowledgment of the existing internal organisational culture. Fiddler points out that such an analysis may involve "the evaluation of the working of a previous strategy"; for making good decisions about "which direction to head in the future" the education managers have to be knowledgeable enough, and "any judgments about the present state of school need to be as accurate as possible". The educational environment evaluation that includes gathering data from a diversity of sources is supposed to be the groundwork for the strategic analysis process. The educational environment evaluation contains feedback from all learning process participants, student feedback being its vital element. Collecting student feedback can become a means of *engaging learners* as intellectual capital bearers in the process of managing the integrated student-centred educational environment with the aim to provide qualitative changes in the environment.

4. Engagement of students in decision-making as a precondition for quality enhancement of the integrated student-centred educational environment

One of the most significant issues for management is managing human resources. Badawy (2008) supports the view of management as a new form of "social technology" that covers an "integrated system of interactions and interrelationships" between the fundamental organizational resources (technological, informational, physical, human, and financial). In the process of knowledge sharing and new knowledge creation (that is in the process of multi-level communication), social capital (or relationship capital) - relationships between people within an organization - as a form of human capital (Ratten & Suseno, 2006) - is created. Therefore, the emphasis on human and social capital (thus, everything that comprises the *intellectual capital*) is an essential factor for ensuring the educational environment integrity, effectiveness and consequently, quality enhancement. The results of the research done by Bassi & McMurrer (2007) has revealed that student performance is directly influenced by the teachers' overall work and learning culture, the educational institution's ability to reinforce and attract talent, and other factors relating to human capital processes.

Thus, efficient human resource management becomes a key to providing qualitative changes in the educational environment. The author supposes that in the context of human resource management, the main task for education managers is to create the educational environment conducive to meeting

1. the educational goals declared;

2. the workers' and students' needs for satisfaction and motivation.

In different environments, there can be different approaches to motivation. It is obvious that the educational environment must be collaborative, collaboration being "a synergistic response to present conditions" (Slater, 2006). As said by Bentley (1998), "it's vital to establish, maintain and develop social relationships." As stated by Fullan (2002), the main premises that are intended on strengthening "our use of change knowledge" aimed at school improvement (see Chapter 1) are "all about motivation and engagement". The author presumes that creating a collaborative environment, managers should concentrate their efforts on motivating all people in the organization to work on close cooperation to achieve common goals. In modern higher education institutions, the process of developing social relationships involves as teachers and administrative workers as students, education being an "excellent means of social and cultural cohesion" (COM(2001) 59 FINAL). As said by Chitty & Soutar (2004), tertiary education is "an intangible and variable service in which production and consumption occur in an environment that requires students to contribute to the service process".

Regular feedback from students contributes to the elaboration of education managers' strategy (for instance, students can be engaged in the process of the educational environment evaluation).

The author thinks that students should be regarded as responsible members of the community (a higher education institution), one of our aims being to promote the "learning of democratic values and democratic participation in schools"; in this fashion, we will prepare young people for "active citizenship" (Detailed Work Programme on the Follow-up of the Objectives of Education and Training Systems in Europe, 2002). The author believes that education managers must acknowledge students' contribution to sharing and creating intellectual capital in the integrated educational environment

As total quality management presupposes including everybody and everything in an organisation (Sallis cited in Töremen et al., 2009), managers should employ motivation strategies aimed both at increasing workers' motivation and student's motivation. This comports with the principle to engage students in the improvement of the higher education institution. So, the author regards increasing student motivation as an essential factor in the context of such improvement.

Now, the author will consider some motivation strategies that, in her opinion, may be productively employed in the learner-centred educational environment. In the environment, which is student-centred, developing social relationships and sharing intellectual capital presuppose involving students in the process of decision-making.

The question the author would like to address is the following: *How to get students engaged in the educational environment as active and motivated intellectual community members?*

As was said above, during his/her studies a student constantly interacts with the educational environment, in the course being in a close contact with other learning process participants – students, managers, attending staff. Social relationships created in the learning process contribute much to the successful performance of the organisation that is supposed to be associated with qualitative changes in the organisational environment. The author supposes that the educational environment should be developed into a community of shared concern, motivation being one of its "head stones".

According to Bentley (1998), "motivating young people to take their place in the world with intelligence and consideration for others depends on allowing them to take responsibility for what they do". Thus, to delegate students some responsibilities in relation to making decisions about running the higher education institution can become one of the efficient educational management instruments. Students being also "citizens" (Svensson & Wood, 2007) of the community, the student - higher education institution relationship are crucial for development of a constructive educational environment.

As said by Badawy (2008), ultimately motivation comes from within; it depends on different external and internal factors. However, he states that managers can "create favourable conditions that will stimulate motivation, the motivational environment being characterised by close links between motivational effort, job performance, and organisational awards". Education managers need to create an environment, in which all learning process participants may contribute to the quality improvement of their organization. The author has a preference for the so-called *Human resource model* advocated by Argyris, McGregor, Likert and Maslow (Stoner, 1978); according to Stoner (ibid.), it puts emphasis on encouraging full participation of people on important matters and it offers greater responsibility.

Traditionally, for encouraging workers' participation on important issues managers employ a number of management procedures for motivating their workers; these instruments can also be successfully used for motivating university workers in a collaborative educational environment (Table 6). On the other hand, for motivating university students in a collaborative educational environment, education managers might use an assortment of special incentives intended on engaging students in the educational environment as active intellectual community members making them self-motivated active learners (Table 7); they also include as organisationally oriented incentives as professionally oriented incentives.

Table 6 Traditional incentives used for motivating workers (Source: Badawy, 2008)

Organisationally Oriented	Professionally Oriented
Merit salary increases	Encouragements to publish
Promotions within career ladder	Time off for professional meetings
Rewards for suggestions	Paid transportation to professional meetings
Improved office space	Better technical equipment
Increased technical or clerical assistance	Tuition or other educational aid
Increased challenge in job assignments, etc.	Participation in company seminars, etc

Professionally oriented incentives are employed to encourage students as self-motivated learning process participants. Organizationally oriented incentives are employed to increase students' motivation as the intellectual community members giving them a good opportunity to take responsibility for what they can for their higher education institution's improvement.

Table 7 The proposed incentives for motivating students of a higher education institution (Stukalina, 2010/a, adapted from Badawy, 2008)

Organisationally Oriented Tools	Professionally Oriented Tools
Scholarship increases	Encouragements to take part in educational or professional conferences and seminars
Student-friendly physical environment	Encouragements to publish
Enhanced technological environment	Enhanced use of ICTs for training and self-development
Increased support from teaching staff	
Increased technical support from attending staff	Opportunity to participate in professional activities (practice)
Increased support from managers	
Participative decision-making in the form of student councils	Appropriate guidance from educators in relation to professional activities
Participative decision-making in the form of regular *educational environment evaluation*	Participation in international student exchange programmes

The author regards *the educational environment evaluation* as a universal management technique that can be also used for increasing *motivation*. Student feedback will be taken into account in the process of developing and revising education managers' strategy. This way, students indirectly participate in decision-making assuming new social responsibilities. Student experience in education may significantly influence the decisions education managers make. According to Kotler and Fox (cited in DeShields et al., 2005), "treating students as partners is crucial to optimise student experience from enrolment to graduation". By analysing the factors, which shape student experience in education, education managers will be able to outline what educational environment aspects have the biggest impact on student satisfaction and on student motivation for further studies. The analysis will also show, which area – the executive environment, the physical and technological environment, instructional environment, or the psychological environment - needs additional support and improved resources utilization. In Chapter 5, the author will provide a detailed description of the educational environment evaluation from different aspects: in the context of the educational environment improvement, as part of the strategic analysis process, and from the customer-driven education point of view.

CHAPTER V

EVALUATION AS AN ESSENTIAL PROCEDURE OF THE MANAGEMENT OF THE INTEGRATED STUDENT-CENTRED EDUCATIONAL ENVIRONMENT

In this chapter, the author discusses the evaluation of the educational environment as organized collection and analysis of data necessary for supporting decision-making process aimed at the creation and quality improvement of the integrated student-centred educational environment conducive to learning. In this chapter, some methodological issues of performing the educational environment evaluation and collecting the requisite data are discussed.

1. The holistic approach to the educational environment evaluation

According to Diamantis & Benos (2007), institutional evaluation is one of the most modern and appealing issues of higher education systems. As stated in *The Research Methods Knowledge Base* (Web source), evaluation – "the systematic assessment of the worth or merit of some object" - is regarded as a methodological area directly linked to, however different from more traditional social research. On the one hand, it makes use of some similar methodologies applied in traditional social research; on the other hand, evaluation takes place in a political and organisational context and it calls for "group skills, management ability, political dexterity, sensitivity to multiple stakeholders" (ibid).

There are numerous definitions and explanations of evaluation in education. Rossi & Freeman (1993) define evaluation as "the systematic application of social research procedures for assessing the conceptualization, design, implementation, and utility of ... programs". As defined by *The American Evaluation Association* (Web source), evaluation assists to consider the strong and weak points of programs, policies, staff, and organizations in general, etc. and to improve their effectiveness.

Therefore, evaluation in education can be characterized as the organized collection and analysis of data to provide constructive feedback about different aspects of the educational environment, which is necessary to support decision-making within an educational institution.

The author views the educational environment evaluation as the systematic organised collection and analysis of data in the framework of social research procedures, which are necessary to make decisions aimed at creating an educational environment conducive to learning; it is an efficient managerial instrument for monitoring the quality of the educational services provided by a higher education institution.

There exist a variety of evaluation strategies or perspectives on evaluation (The Research Methods Knowledge Base: Web source):

- *Scientific-experimental models*, which involve methods from the sciences, especially the social sciences, and which prioritize on the desirability of impartiality, accuracy, objectivity and the validity of the information generated.

- *Management-oriented systems models* (for example, PERT - the Program Evaluation and Review Technique), which emphasize comprehensiveness in evaluation and use evaluation in a larger framework of organizational activities.

- *Qualitative/anthropological models*, which stress the significance of observation, the need to keep the „phenomenological quality of the evaluation context, the value of subjective human interpretation in the evaluation process".

- *Participant-oriented models*, which put emphasis on the central importance of the evaluation participants, especially customers; they are consumer-oriented evaluation systems.

The author believes that the holistic approach to the educational environment evaluation presupposes employing elements of different evaluation strategies:

- The educational environment evaluation should be performed in a larger framework of organisational activities (Diamantis & Benos, 2007), education administrators are gradually more using Quality Assurance techniques in the management of schools and higher education institutions)

- For the educational environment evaluation managers may use methods from in the social sciences.

- From the phenomenological view, managers have to take into account the value of subjective human interpretation in the educational environment evaluation process.

- Since education managers' efforts are aimed at creating the student-centred educational environment, participant-oriented approach seems to be rather helpful.

The author assumes that the educational environment evaluation is supposed to be closely associated with assessing quality and value; it should be considered in the context of continuous improvement of higher education institutions.

Educational reforms in Europe are aimed at higher education modernization and educational quality enhancement. Brauckmann & Pashiardis (2010) call them

"competitiveness-driven" educational reforms, and characterise them as an "evaluation-based steering concept that represents a combination of

a) decentralization of decision-making;

b) use of education standards;

c) attempts to set up monitoring systems;

d) evaluations, both external and internal".

School improvement is directed to guarantee "change in both learning conditions and other connected in-school conditions (Miles & Eckholm cited in Fiddler, 2002). The author thinks that the improvement of a higher education institution also involves activities aimed at providing changes in both groups. Learning conditions are associated with the internal educational environment of an educational organisation comprising a wide range of resources. As stated in Standards and Guidelines for Quality Assurance in the European Higher Education Area (2005), the resources vary from physical resources (libraries or computing facilities, etc.) to human support in the form of teachers, tutors, counsellors, and other advisers. The author assumes that these resources are associated with the four basic educational environment subsystems (see Chapter 2).

It is acknowledged that the confidence of students as stakeholders in higher education is expected to be established and maintained through effective quality assurance activities (Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2005). In the context of a higher school improvement, education managers should perform regular educational environment evaluation, student feedback being an essential contribution to the process of managing the learner-centred educational environment This way, managers may ensure that that the educational organisation has ample and appropriate resources necessary for supporting sustainable learning process in general, as well as a definite study programme/subject in particular.

The report prepared by the European Association for Quality Assurance in Higher Education (ENQA) provides a few recommendations on standards and guidelines for quality assurance in higher education, the term "quality assurance" referring to such processes as *evaluation, accreditation and audit* (Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2005). European standards for quality assurance in higher education incorporate standards for both internal quality assurance within higher education institutions and the external quality assurance of higher education. Among other things these standards include policy and procedures for quality assurance that should have a formal status and acknowledge a role for students and other stakeholders (ibid).

The author presumes that to provide quality enhancement of the integrated student-centred educational environment, higher education institutions should create and implement a strategy for the continuous enhancement of quality, i.e. *a strategy for the educational environment improvement*, a long-term action plan aimed at achieving organisational goals, which includes

a) the management of the subsystems of the educational environment as interconnected and interdependent entities;

b) the engagement of students in quality assurance activities as enthusiastic and responsible academic community members.

The author regards the educational environment evaluation that involves student's indirect participation in decision-making as one of the most essential quality assurance activities. It is vital to understand the change from the point of view of participants (Fiddler, 2002). Ehlers (2009) emphasises that both educators *and* students are supposed to perform as "competent quality developers of their own improved educational environment".

The author supposes that from the holistic perspective and realizing the interdisciplinary approach to managing the educational environment, educational environment evaluation may be performed in the framework of several integrated management practices. The author thinks that, in the context of managing the educational environment, these management techniques (Table 8) have in common the following features:

- They may all complement each other, since management of the improvement of a higher education institution is a complicated multi-level process that requires employing instruments from various disciplines.

- The ability to manage and make use of *information* for decision making is acknowledged as a central competency obligatory for modern managers (Drucker cited in Hallinger & Snidvongs, 2008).

- Successful organisations take care of *knowledge* as the key resource of production (Drucker cited in Malhotra A., Majchrzak, 2005); knowledge can become a means of the educational environment quality enhancement, especially "change knowledge" (Fullan, 2006).

- As stated by Hallinger & Snidvongs (2008), *knowledge management* is can be successfully used in the context of improvement and change of an educational organisation. Knowledge management is regarded as "strategic and systematic organisation-wide effort to plan, control and deploy resources" intended to sustain

learning within the organisation and provide quality services to customers (Gill, 2009). So, knowledge management procedures should become the basis of various pedagogical and managerial practices integration in the dynamic process of managing the educational environment.

- For transferring knowledge across the educational environment managers need to establish an efficient system of internal communication based on ICTs, which comprises a set of knowledge strategies.

Table 8 Some integrated management practices used to provide quality enhancement of the educational environment.

Management practice	Key attribute
Total Quality Management	Managing the educational environment using customer focus by means of involving students in different quality assurance activities including *the educational environment. evaluation*
Fact-based Management	Managing the educational environment by means of collecting data from customers/students *in the form of regular educational environment evaluation*, and using them for performing the fact-based analysis
Human capital Management	Managing the educational environment by means of collecting and utilising the intellectual capital through involving students in participative decision-making, *the educational environment evaluation playing an essential role in this process*
Information Management	Managing the educational environment by constructing, accumulating and exchanging collaborative knowledge through creating an efficient system of internal communication based on ICTs, *the educational environment evaluation being one of the basic knowledge transfer schemes in the organisational communication system*
Customer Relationship Management (Hallinger & Snidvongs (2008)	Managing the educational organisation by employing various educational and managerial instruments aimed at creating a learner-centred educational environment, *regular educational environment evaluation being a helpful managerial tool to monitor the quality of educational services*
Knowledge Management	Managing the educational environment with the aim to provide knowledge enhancement of the organisation, *regular educational environment evaluation being a useful tool for developing collaborative knowledge*

The author believes that in the framework of integrated management procedures, educational environment evaluation is supposed to be an efficient managerial instrument for monitoring the quality of the educational services provided by a higher education institution. In this context, regular assessment of the educational environment can be regarded as part of *the strategic analysis process*.

As was said above, to provide qualitative changes in the educational environment is of fundamental importance for successful performance of any educational organization. In this fashion, education managers may ensure the appropriate Quality of Educational Environment. Managing for quality is one of the most imperative issues that educational organizations encounter in the global competitive environment. However, as said by Varnavas & Soteriou (2002), although the improvement of quality in the educational setting has received much attention from education managers, no formal approach exists on how to actually apply the TQM principles and concepts to improve the quality of the services of educational institutions.

In spite of the fact that educational organisation performance and education quality are key concerns for education managers, their concepts and measurements are often unclear, and different indicators can be used to describe education quality: the performance in terms of the quality of processes and outcomes, the fitness for use, the satisfaction of strategic constituencies' (e.g. policy-makers, parents, school management committee, teachers, students, etc.) needs, etc (Cheng & Cheung, 2003). But, in any case, one of the core principles of TQM remains the *customer focus*, which emphasizes the service relationship between an educational institution and its customers (Varnavas & Soteriou, 2002). In this paper, the author will concentrate on the learners' assessment of the educational environment.

Qualitative changes in the environment must lead to the improvement of a higher education institution. Managing school improvement includes performing the strategic analysis, which involves internal resource audit and environmental scanning – SWOT analysis, as well as culture and values (Fiddler, 2002). The author believes that it also concerns higher education institutions as an integral part of a country's educational system.

Evaluation is regarded not only as a technical, but as a political activity associated with decision-making (Rossi & Freeman, 1993). The author supposes that evaluation is part of the strategic analysis, since the data education managers collect must be assessed to assess their previous strategy and to identify their future strategy – that is to make the right decisions aimed at providing sustainable development of the educational organisation.

To carry out the strategic analysis education managers may use several management procedures, regular environment evaluation being one of them. Evaluation is a topic frequently discussed by managers. "If you can't measure it, then you can't manage it" – paraphrasing South African Minister of Finance (OECD Observer, 2003), the author would say, "If you can't evaluate the effectiveness of your environment, then you can't manage it". Measurement of quality in the educational environment being a current concern of education managers (Postema & Markham, 2001), measurement issues are now receiving enlarged attention among the education research community (Fejes, 2006). According to Postema & Markham (2001), from the point of view of educators it is important to look towards measures of quality that reflect a "realist set of possibilities within a particular educational environment".

The author assumes that the educational environment evaluation can become one of the most important management instruments, which supports the decision-making process. Evaluation is supposed to be an integrated component of the total quality control (TQC) with the intention "to make quality a guiding factor in everything the organization does" (Griffin, 1990). The author thinks that the educational environment evaluation can be carried out as *educational research* – an inquiry in seeking the fundamental principles of the educational environment formation, and the factors, which determine its operation and quality enhancement. Using these procedure managers would focus on how to satisfy customer needs and expectations through continuous educational environment quality improvement.

It is clear that effective decision-making requires a clear understanding of the situation, in which the decision is made. To sustain the organizational development managers must have sufficient *information*. As said by Pfeffer & Sutton (2006), managers can practice their craft more effectively if they "are routinely guided by the best logic and evidence – and if they relentlessly seek new knowledge and insight, from both inside and outside their companies"

According to Fiddler (2002), the universal procedure for performing strategic analysis should include gathering data from a diversity of sources; later these data should be independently examined and assessed. Only then managers can practice their craft more effectively, when they "are routinely guided by the best logic and evidence – and if they relentlessly seek new knowledge and insight, from both inside and outside their companies" (Pfeffer & Sutton, 2006). The author believes that in the context of a higher school improvement, managers have to utilize a vast variety of data from multiple sources in order to understand the environment they are operating in. The data is collected to provide knowledge

enhancement of the educational environment with the aim to improve the quality of educational services.

Accepting a participative model of school development (Brauckmann and Pashiardis, 2010) the author extends this idea to a higher education institution and regards the educational environment evaluation, which involves students' indirect participation in decision-making, as one of the most essential quality assurance activities in the framework of the strategic analysis process.

It is vital to understand the change from the point of view of participants (Fiddler, 2002); education managers have to allow students to "interact with their environment in an active, critical and reflective way" (Asher, 2005).

Ehlers (2009) emphasises that both educators and students are supposed to perform as "competent quality developers of their own improved educational environment".

2. Methods of the educational environment evaluation

In this section, the author will discuss some data collection methods to be applied for the evaluation of the integrated student-centred educational environment.

2.1. Data collection procedures

Educational authorities regularly collect information on their educational institutions as part of their standard operations, the data including facilities, number of teachers by qualification, number of grades offered, etc. (Guidebook for Planning Education in Emergencies and Reconstruction, 2006). Once education managers have been agreed on the research question, they need to choose the appropriate data collection method.

As said by Fiddler (2002), the collection of data can be a process, in which a lot of people are involved; the range of data sources includes school records, surveys, focus groups, impressions and personal opinions, and personal knowledge. The data collecting procedures are based on the interaction between the researcher and the respondent (students, their parents, teachers, education managers, etc.), so that "the information provided by the respondent constitutes the data" (Cropley, 2002). In education, there exist a wide variety of methods for systematic data collection – participant observation, case studies, interviews, etc.

The most popular method and a perceptible feedback instrument employed by higher education institutions are surveys: paper-based questionnaires and online questionnaires, which are performed to "monitor and track perceptions and to identify areas for improvement and change" (Nair et al., 2010).

Managers can also combine various techniques with the aim to generate fully grounded conclusions or theories. For instance, if our basic strategy is employing student surveys for gathering data, then we may also employ student interviews in combination with supporting staff and teaching staff evaluations. Besides, using multiple evaluation sources (teaching and attending staff, education experts, etc) increases the internal validity of the evaluation system (Brauckmann & Pashiardis, 2010).

The author summarizes the most popular methods of educational environment evaluation in Table 9.

Table 9 Educational environment evaluation methods

Method	Purpose and Description
1. Student evaluation *Student surveys*: - Student questionnaires - Student interviews	- Methodological technique, which presupposes "the systematic collection of data from populations or samples through the use of the interview or the self-administered questionnaire" (Denzin, 1970); one of the most insightful evaluation methods, an efficient information-gathering tool - Student-involved activity that provides the *basic information* on the educational environment evaluation - Strategy for revealing cause-and-effect relationships
2. Attending staff evaluation Attending staff surveys through questionnaires and interviews	- Methodological technique, which presupposes "the systematic collection of data from populations or samples through the use of the interview or the self-administered questionnaire" (Denzin, 1970) - Attending staff-involved activities that provide *additional information* on the educational environment evaluation - Strategy for revealing cause-and-effect relationships
3. Teaching staff evaluation Teaching staff surveys through questionnaires and interviews	- Methodological technique, which presupposes "the systematic collection of data from populations or samples through the use of the interview or the self-administered questionnaire" (Denzin, 1970) - Teaching staff-involved activities that provide *additional information* on the educational environment evaluation - Strategy for revealing cause-and-effect relationships
4. Expert evaluation Expert interviews	- Methodological technique, an information-gathering tool, which provides *additional information* on the educational environment evaluation and school improvement - Strategy for revealing cause-and-effect relationships

The author supposes that in the integrated learner-centred educational environment, student evaluation survey, being one of the most perceptive evaluation methods and an effective investigation instrument, provides the basic information on the educational environment assessment, which may be used for revealing cause-and-effect relationships within the environment. Today, students' judgements about all aspects of the academic community life are widely used by educational institutions on a global scale, commonly, in the form of a satisfaction feedback questionnaire (Nair et al., 2010). The advantage of evaluation surveys as a "diagnostic tool for quality assurance and enhancement purposes" has been emphasized by many researchers (ibid).

The purposes for using evaluation surveys, among other things, include (Nair et al., 2010):

- Supplying diagnostic feedback, gathering helpful research data to foster development and improvement of a department, study course, academic curriculum, etc.

- Providing useful information for present and prospective students for selecting a department/a study course.

- Presenting some kind of indicator of teaching efficiency; it could then be used for decision-making (that is for managing the educational environment), etc.

However, education managers should not limit the range of the educational environment evaluators to students only. They also ought to involve other learning process participants in the process - teachers (tutors, instructors), attending staff representatives, education managers (experts). Teaching and attending staff evaluation provide additional information on the educational environment assessment. Expert interviews help education managers better understand the challenges an educational organization faces, as well as the ways that may lead to school improvement. Expert support may become a means of university workers' motivation.

Therefore, the more data managers can collect, the more objective will be the results of the educational environment evaluation. The integrated student-centred environment evaluation can be carried out either on a semester-by-semester basis (e. g. student evaluation) or year-by-year basis (e. g. teaching staff evaluation).

The author has depicted the hierarchy of the internal educational environment evaluation methods in Table 10.

Table 10 Hierarchy of the internal educational environment evaluation methods (Stukalina, 2010/a)

Method	Method Importance	Frequency of Use
Student surveys - student interviews - student questionnaires	*Very high* In the student-centred environment, this method implies the active involvement of customers for a clear understanding of customer needs and requirements; it may have the biggest impact on management of the educational environment	*Regular* It is desirable to conduct them at the beginning and the end of each semester
Teaching staff surveys - questionnaires - interviews	*High* In the student-centred environment, both student and teacher evaluations have a big impact on management of the educational environment	*Regular* It is desirable to conduct them at the beginning and the end of each year
Attending staff surveys - questionnaires - interviews	*Auxiliary tool* In the student-centred environment, this method is considered to be an essential factor reflecting the degree of collaboration between all participants of the learning process; this way, it may have its impact on management of the educational environment	*Regular* It is desirable to conduct them once a year
Formal expert interviews	*Auxiliary tool* In the student-centred environment, this method is considered to be an extra tool used for successful management of the educational environment, a subjective factor that may affect the educational environment improvement	*Regular* It is desirable to conduct them once a year

The more data managers can collect, the more objective will be the results of the educational environment evaluation. It should also be mentioned that today, when the impact of Information and Communication Technology (ICT) on higher education is great, managers should apply not only paper-based, but also Internet-based data collection that is supposed to reduce the cost of the procedure and to involve the maximum number of participants in the process of the integrated educational environment evaluation.

2.2. Student evaluations from the customer-driven education standpoint

The increased competition in the higher education marketplace makes higher education institutions use more customer-oriented philosophy in delivering their services (Kara & DeShields, 2004). According to Fiddler (2002), management of school improvement need to be performed within a strategic planning framework; strategic analysis involves, among other things, assessment of internal resources of the school and their utilisation, assessment of external influences on the school, and recognition of the established school culture. In the author's point of view, it may be referred to higher education area as well.

To work out an effective strategic plan in the customer-driven education context, it is essential to identify who the customers are and what they want; later this information can be transformed into strategies to attain customer satisfaction by means of *quality function deployment – QFD* (Raharjo et al., 2007). QFD may be used by education managers as a method of transforming user requirements into service quality. To improve the quality of education and student satisfaction QFD principles are now being utilised in many higher education institutions for performing educational research (Suliman, 2006; Ho et al., 2009; Raharjo et al., 2007).

It is acknowledged that educational institutions have several customers: students, staff, faculty, alumni, donors, etc. (Kara & DeShields, 2004). Every customer in higher education perceives educational quality in a different way; it depends on their requirements and needs. Josef et al.; Oldfield & Baron cited in Voss et al., (2010) point out that administrators should focus on what their students essentially want and call for (and not what education managers suppose their students consider as significant). Rowley cited in Voss et al. (ibid) stresses that administrators should attempt to reveal the key quality dimensions from a student's point of view. This way, service quality in higher education is assessed through the learner's perspective.

According to Hemsley-Brown & Oplatka (2010), a faculty that supports the customer-oriented approach would gather information about "the environment, which students inhabit"; it would be attentive and responsive to their interests and points of view." This way, managers can get their internal customers' perspective about the educational environment quality engaging students in participative decision-making. Using this approach education managers are likely to introduce improvements for future students "based on their anticipated needs" (ibid).

Voss (2009) acknowledges that if instructors have enough understanding of students' expectations, they could manage them and "bring them to a realistic level"; the information

they collect would help in the development of various innovative management and pedagogical tools. This way, the obtained information is utilised for creating a strategy for the improvement of a higher education institution.

Knowledge necessary for accomplishing educational quality enhancement may be developed by means of employing different knowledge strategies including regular educational environment evaluation as part of school self-assessment with emphasis on collecting student feedback. Student evaluations (as an element of school self-assessment) are commonly used today. Student feedback is widely used as by educational organizations, as many organizations in commerce and industry concerned with training; course evaluations has become an essential part of educational and training process (DeShields et al., 2005). It should be mentioned that they are utilised in many universities as part of their *quality assurance system* (Timpson & Andrew; Kwan cited in Crumbley & Reichelt, 2009). No wonder that student evaluations have become so popular among educators: they are easy and inexpensive to manage: they give an impression of objectivity, as they produce exact numbers; there are not many alternatives to SEF if you want to assess teaching effectiveness (Huemer, 2009) Moreover, according to Huemer (ibid), most researchers have the same opinion that SEF are "highly reliable, in that students tend to agree with each other in their ratings of an instructor, and that they are at least moderately valid, in that student ratings of course quality correlate positively with other measures of teaching effectiveness". As stated by Sojka (cited in Hsu & Chiu, 2009), despite the fact that there was a debate on the issue of reliability and validity of student evaluations in education, student perception of the learning process as an important component of the measure should not be mistreated.

The author presumes that education managers can successfully employ student evaluations in various contexts – SEF (student evaluations of faculty), SET (student evaluations of teaching), SESC (student evaluations of study course), SESP (student evaluations of study programme), etc., provided that they are used in the framework of a wide-ranging educational environment evaluation performed as internal resources audit.

Since the author assumes that the highly integrated educational environment must be a student-centred system, the detailed knowledge of the customers' experience and requirements is a crucial factor for the success of an educational organization. In the focus of customer-centric (student-centred) environment is the target audience (students); the educational environment is evaluated by gathering student feedback in the form of student surveys: student interviews and student questionnaires. In this fashion, education managers provide students with an opportunity to express their impressions and individual opinions. The students (customers) are supposed to be involved in the discussion of the learning

conditions and other related internal conditions in school; they are also expected to participate in the process of decision-making. This way, students can be regarded as "co-creators of value" within an educational organization (Vargo & Lusch cited in Voss et al., 2010).

According to Meyer & Schwager (2007), it is customer experience that encompasses every aspect of a company's offering (e. g. the quality of customer care), being "the internal and subjective response customers have to any direct or indirect contact with a company". Student experience (feedback) is the subjective response of students to their contacts with the educational environment, the way to express their attitude to this environment. By understanding the main factors shaping customer (student) experience educators will be able to avoid the gap between customer's expectations and the educational organization's actual offering. The educational environment is assessed against students' needs/expectations, and against their experience in a higher school. Managers have "to translate the "voice of students" into management characteristics in order to improve the educational services provided to students" (Varnavas & Soteriou, 2002), that is to enhance quality of the educational services provided. The author would like to emphasize that this paper is only concerned with *students' perceptions* of service quality offered by a higher education institution.

3. Evaluation of the integrated educational environment from students' perspective

3.1. Approaches to the educational environment evaluation

Evaluating the quality of the educational environment from students' perspective raises some methodological problems related to the criteria to be employed for evaluation. To facilitate data collection and interpretation education managers need an organization-wide evaluation system. To create this system the author addresses a few important questions:

- *What educational environment aspects to assess?*
- *What assessment criteria (indicators) to use?*
- *What data collecting procedures to employ?*
- *How to use the obtained information most effectively?*

The author presumes that the process of the internal environment evaluation goes through the following phases:

1. Education managers make a list of special *attributes* – the basic educational environment aspects – that must be assessed

2. The second step is to identify the basic criteria - *indicators* – used for evaluating these attributes

3. Then education managers have to decide on the main data collection procedures that will be employed in the process of the educational environment evaluation

4. When the organization-wide system of the environment evaluation has been worked out managers must test it in practice collecting data by means of appropriate methodological techniques

5. The next phase involves introducing some changes to the evaluation system if necessary

6. Finally, education managers analyze the collected data in order to identify the strategic areas, which demand more attention from educational management in the context of the educational environment quality enhancement. For this purpose, managers may use the analysis of the cause-and-effect relationships that demonstrates how several variables (aspects) influence outcomes (Govindarajan & Trimble, 2009).

Education managers need a comprehensive instrument for assessing the internal educational environment. In the integrated educational environment, which is learner-centred, the every effort of education managers is bent to use the internal resources most effectively in order to sustain the learning process with the aim to prepare graduates for the changing global job market. The author assumes that a thorough educational environment evaluation should be carried out in the framework of the structural model of managing the integrated student-centred educational environment (SMMEE). This model presupposes that education managers coordinate and redistribute material, non-material and informational resources related to the four fundamental educational environment subsystems: (1) the physical environment and technological environment, (2) the instructional environment; (3) the psychological environment, (4) the executive environment (see Chapter 2). These subsystems are included in the organisation-wide evaluation scheme as the four basic *evaluation aspects*. The learner-centred educational environment assessment scheme used in the framework of SMMEE is based on seeking constructive feedback from students. It should take into account students' perceptions of the educational environment. A set of the *evaluation indicators* are supposed to be employed for assessing various aspects of the educational environment as perceived by students

When the aspects necessary for the educational environment evaluation have been identified, education managers can get down to searching for the basic evaluation criteria. According to Kettunen (2008), in the context of the philosophies of quality assurance, the

management needs to be able to identify strategic objectives and to develop the "internal processes and structures of the organisation" to achieve them; it is also necessary to define the indicators used to describe the achievement of these objectives. He states that "you cannot manage if you cannot measure" (ibid.). So, determination of the assessment criteria becomes rather important in the context of the educational environment evaluation. The question arises: *What criteria are supposed to be more appropriate for performing the integrated student-centred educational environment evaluation*?

In business, evaluation often presupposes measurement, which is "the process of quantifying the efficiency and effectiveness of action" (Neely et al., 2005). A set of performance metrics (a performance measurement system) is employed to quantify the efficiency of actions: purchase price, productivity, salaries, expenditures, etc. Thus, the emphasis is put on measuring the amount, capacity, size, strength or extent – this is a typical quantitative model. These criteria rather characterize a manufacturing performance system, which demands regular quantitative assessment, than the quality of an educational environment.

In the social sciences, there are two basic approaches to doing research: the quantitative and the qualitative, the difference between them is understood in terms of the six basic dimensions of all research: design, setting, method of data collection, kind of data, approach to data analysis, and strategies for making generalizations (Cropley, 2002). According to Strauss and Corbin (cited in Hoepfl, 1997), qualitative research is used to obtain new perspectives about some phenomena, or to get more in-depth information, which can be hard to gain quantitatively. The qualitative approach is quite popular due to an increasing acknowledgment of the importance of philosophical considerations for methodological topics and concerns; they better reflect the uniqueness of humans (Bryman, 2008). Even in the management domain, we witness a growing interest in the use of qualitative management research (Cassel & Symon, 2006; Johnson et al., 2007). In education, the qualitative material, which may be rather impressionistic, is usually collected; even quantitative data from school records or surveys can be interpreted in a qualitative and subjective way (Fiddler, 2002). According to Bertolotti & Tagliaventi (2007), qualitative research is expected to enrich academics' and managers' knowledge of organisational settings owing to its potential to provide a thorough understanding of social dynamics. Sherman & Webb (2001) regard qualitative research as "discovery" concentrating on "natural settings" and "leading to new insights"; the experience we gain is then supposed to be studied holistically.

The author thinks that education managers need an evaluation model, which would focus on qualitative attributes rather than on quantitative characteristics, and which must take

into account students' perspective about the quality of the educational environment. In the author's view, it is especially important when managers deal with the educational environment as an intellectual community where social relationships are created in the process of multi-level communication.

Employing qualitative methods would give education managers a good opportunity to examine different aspects from diverse perspectives, to make the educational environment more collaborative – to establish, maintain and develop social relationships. The learner-centred evaluation model is supposed to be based on those elements of the educational services quality, which learners themselves consider being essential.

The author supposes that qualitative data are likely to give a worthwhile indication of student satisfaction and motivation provided that they originally contain what Fiddler (2002) calls "factual statements".

For evaluating various aspects of the educational environment from students' perspective the author would recommend using a set of qualitative indicators, which focus on students' direct experience in education. The author assumes that student experience in education may be expressed in terms of

a) student satisfaction with the educational environment;

b) student motivation for further studies.

To select a preferred set of criteria (indicators) for a manufacturing performance system a few guidelines were offered by Globerson (1985) and Maskell (1989). Taking into consideration the specific character of the educational environment evaluation, the author has adapted these guidelines to the needs of educational experts.

The proposed guidelines are listed below.

1. Evaluation criteria (indicators) are used by education managers to assess and manage the integrated educational environment from the learning process participant's point of view.

2. Evaluation criteria (indicators) should be chosen proceeding from the educational management's goals.

3. The purpose of each evaluation criterion (indicator) must be clear.

4. Every evaluation criterion (indicator) is related to a certain pedagogical dimension.

5. Evaluation criteria (indicators) can be qualitative or quantitative, qualitative indicators being preferable in the context of the educational environment evaluation from the learning process participant's perspective.

6. Evaluation criteria (indicators) should be simple and easy to comprehend

7. Evaluation criteria (indicators) should be designed so that their analysis will stimulate continuous educational environment improvement and education quality enhancement

8. Data collection and data processing methods must be clearly defined before performing the integrated student-centred educational environment evaluation.

An indicator is "a parameter or a value derived from parameters, which points to provide information about the state of phenomenon" (Glossary of Indicator Terms: Web source). An evaluation indicator is supposed to reflect a certain character of the assessed entity; it is "definite, measurable, comprehensive, representative" (Du & Zhao, 2010). Evaluation indicators should be integrated in the evaluation indicator system utilized to measure the level or statement of the evaluation entity in accordance with the assessment aim; this system is considered to be the core of the evaluation plan (ibid.).

Indicators used to collect evaluation data may be collected in a "structured way" - that is they specify accurately which data are to be collected; the purpose of evaluation indicators is to "collect and process data in a form that may be used directly when answering questions", to eliminate gathering an disproportionate quantity of irrelevant data (EuropeAid: Methodological Bases: Web source). The basic evaluation indicators are associated with some judgement criteria, which define the data necessary to make an assessment based on those criteria (ibid).

An indicator designed specifically for an evaluation is called *ad hoc indicator* and is measured during a survey (EuropeAid: Methodological Bases: Web source). So, for the educational environment evaluation managers have to construct a set of ad hoc indicators, which later will be assessed during some survey. The author assumes that the indicators, which may be used for the educational environment evaluation, are related to the basic educational environment aspects. A particular indicator (or a few indicators) is also related to every educational environment aspect. The author supposes that they refer to diverse parameters of the education quality from students' perspective. According to Cheng & Cheung (2003), the concept of the education quality includes "the input, process, output and multiple constituencies of a school". The author thinks that the concept of higher education quality involves the same parameters, though on a more complicated level.

Therefore, the author supposes that education managers need to apply a set of evaluation indicators to assess these parameters.

Besides, managers need the criteria, which could be utilized in combination rather than independent from each other. Student experience in the educational environment can not be evaluated employing a single-dimension scale, for example, general satisfaction; it should incorporate different aspects of student satisfaction to become a useful investigative tool.

Knowledge is constructed through different contexts and various activities. For this reason, the evaluation indicators the author suggests using reflect these contexts and these activities. The main idea of utilizing the educational environment evaluation indicators is to guide education managers through the creation of the integrated student-centred educational environment; it includes assessing the following factors: knowledge quality, knowledge accessibility, efficacy of knowledge delivery, communication and collaboration value, working conditions, etc.

Qualitative and quantitative indicators may complement each other. Quantitative research is normally based on gathering numerical data, while qualitative research is based on gathering descriptive data, which need the researcher's interpretation; the qualitative model focuses on people's direct experience (Cropley, 2002). Quantitative indicators are based on a counting process; for example, they may include "time attributes" - how long students can work in the laboratory, "number" attributes – the number of PCs per student, the number of qualified teachers per learner, etc. Quantitative indicators are aimed at discovering the existing facts, and the results of data analysis later are presented in a numerical and objective way.

A qualitative indicator (descriptor) "takes the form of a statement that has to be verified during the data collection" (EuropeAid: Methodological Bases: Web source). Qualitative indicators may include: the performance-based, information-based, resource-base qualitative evaluation indicators, etc. If qualitative indicators are employed, later the so-called scoring (or rating) technique may be applied, which generates some figures that "synthesize a set of qualitative data and or opinions" (ibid).

Some qualitative and quantitative indicators, which from the author's point of view, can be used for the educational environment evaluation are presented in Table 11.

Since the evaluation indicators are intended to gather data in a manner, which demands answering a set of questions (or making some statements), in the questionnaire the indicators are presented by a set of evaluation questions, or statements. Evaluation questions (or statements) would help us concentrate the evaluation effort on a restricted number of key factors, therefore "allowing better reflection on judgement criteria (reasoned assessment), more targeted data collection, more in-depth analysis and a more useful report" (EuropeAid: Methodological Bases: Web source).

To create focused evaluation questions (statements), managers must be aware of the purpose of the evaluation. The purpose of evaluation may vary from "program improvement, program justification, or generating new knowledge and theories" (Radhakrishna & Relado, 2009) to the overall evaluation of the educational environment. A particular study course may be also assessed in the framework of the integrated student-centred educational environment evaluation.

As said by Darby (2008), study course evaluations are an indispensable part of the educational process; they "typically measure feedback about the course itself and/or sometimes whether attitudes have been changed".

Table 11 Some indicators that can used for the educational environment evaluation

Indicators	*Description*
Qualitative Indicators	
1. Satisfaction-and motivation-based indicators	- Overall satisfaction - Motivation for further studies
2. Performance-based indicators	- Quality of conducted lessons - Psychological comfort and atmosphere of collaboration - Support from managers, teachers and attending staff
2. Information-based indicators	- Quality and availability of given information - Quality of acquired skills and competences - Quality and availability of the instructional materials
3. Resource-based indicators	- Laboratory facilities/Library facilities - Environment safety and comfort
Quantitative Indicators	
1. Time-based indicators	- The time students may spend in the laboratory - The time students may spend in the library
2. Quantity-based indicators	- Number of computers per student - Number of lessons per week - Course group size, etc.

The author presumes that the educational environment can be evaluated from the two perspectives:

1. In relation to supporting the learning process in general.
2. In relation to supporting the learning and teaching of a particular study course.

In any case, supporting the learning and teaching of a particular study course involves employing a variety of organizational resources to sustain the learning process. It is a synchronized procedure that among other things includes social relationships creation; any subject integrated in the curriculum requires substantial support from managers. Therefore, managers should always evaluate the educational environment in a complex, even if the goal is to assess the support that educational environment provides for teaching and learning one subject. This will enable managers to utilize the available resources in the most efficient manner. Since the author teaches ESP (English for Specific Purposes) course, the example given below is taken from this area.

For the evaluation of the educational environment in relation to ESP managers may use a set of indicators that are either directly or indirectly associated with the course delivery, since the learning process is carried out as a complex multiform procedure. So, the evaluation may include such indicators as the course content, the course delivery style/the quality of conducted lessons, the quality and availability of the course instructional materials (including multimedia), the instructor's knowledge of subject matter, etc.

Some factors (the quality of conducted lessons, the quality/availability of the instructional materials) are supposed to be directly related to student satisfaction with the delivered course (and consequently, to student motivation). Other factors (the educational environment safety and comfort, possibility to work in collaboration with other students, psychological support from administrators and teachers) are expected to influence student satisfaction with the delivered course (and consequently, to student motivation) indirectly.

Subsequently, the more aspects learners can assess the more proficient analysis of the cause-effect relationships in the environment can education managers perform. Suppose that students are not satisfied with the learning opportunities offered by the computer laboratory. Perhaps, education managers should not only re-equip the laboratory with up-to-date devices, but modify the instructional materials used in the laboratory, strengthen the support from laboratory instructors. That's why it seems reasonable to evaluate the language laboratory facilities together with the quality of teaching materials and the support from teachers and laboratory instructors. This way, a particular study course in the framework of a wide-ranging evaluation of the educational environment is assessed.

Such evaluation is supposed to help managers create a student-centred educational environment contributing to learning. In the next section, the author will provide the description of some evaluation indicators that can be used in the framework of SMMEE.

3.2. Evaluation indicators and the related pedagogical dimensions

The author presumes that student satisfaction with the educational environment and student motivation for further studies is supposed to be shaped by four integrated educational environment subsystems: a) the physical and technological environment; b) the instructional environment; c) the psychological environment; d) the executive environment.

For assessing these four fundamental aspects (subsystems) of the integrated student-centred educational environment the author suggests employing a set of evaluation indicators, each indicator being associated with a particular subsystem (Table 12).

Table 12 Evaluation indicators proposed to be used in the framework of SMMEE (adapted from Stukalina, 2010/a)

Evaluation Aspect	*Indicator*
1. Executive environment	*Indicator 1*: Quality and availability of information *Indicator 2:* Quality of acquired skills and competences *Indicator 3*: Quality of conducted lessons
2. Physical and technological environment	*Indicator 4:* Laboratory facilities *Indicator 5:* Library services
3. Instructional environment	*Indicator 6:* Study course content *Indicator 7:* Teaching materials quality and availability (including availability and quality of the Internet/intranet instructional resources)
4. Psychological environment	*Indicator 8:* Environment safety and comfort *Indicator 9:* Collaborative learning *Indicator10:* Support from the teaching staff, attending staff and education managers

The suggested evaluation indicators symbolize some qualitative attributes, which are abstract in nature. They have been conceptualized for students' requirements and expectations that refer to students' awareness of their educational environment. Thus, they represent no

more than *student's perception of the educational environment*, and are not based on any scientifically developed criteria.

The evaluation indicators related to four basic subsystems of the educational environment are essential elements of managing the integrated educational environment resources in accordance with one of the central principles of SMMEE - managing the educational environment through student feedback and involving learners in participative decision-making.

It should be mentioned though, that such theoretical concepts as the quality of conducted lessons, quality of acquired skills, quality of information, etc. have to be put in more plain words in student evaluation questionnaires. For this reason, in the questionnaire, every indicator is exemplified by a set of items - statements or questions. Every item (statement, question) should reflect the respondent's attitude to a particular evaluation aspect; "the more favourable a respondent's attitude, the higher his expected score for the item" (Denzin, 1970).

The items then are grouped under ten constructs – ten evaluation indicators. In the questionnaires, the researcher can apply a certain scaling technique (the method of summated ratings): Likert, Osgood, Guttman, Thurstone, etc. The choice depends on the purpose and complexity of the research. Today, Likert scale is widely used in educational research. For each item, there can be provided five – three categories of response, which are scored from 1 to 5, or from 1 to 3. Survey responses are anonymous.

The statements specified in the questionnaire describe the effects students expect to perceive from the educational environment, the anticipated effects being associated with certain pedagogical dimensions (PDs). Normally, educators employ different pedagogical dimensions to investigate various aspects of the learning process including student satisfaction and student learning outcomes (Yi & Hwang; Agarwal & Karahanna; Davis & Venkatesh; Laitenberger & Dreyer; Hubona & Geitz cited in Toral Marin et al., 2005): application-specific self-efficacy and enjoyment, focused immersion, curiosity, playfulness and willingness, user friendliness, usefulness, behavioural intention and use, etc.

The author assumes that the basic pedagogical dimensions, which are associated with the learning effects that may be detected by students from the integrated educational environment, are the following:

PD 1 – usefulness;

PD 2 – efficiency;

PD 3 – curiosity;

PD 4 – enjoyment;

PD 5 - appropriate level of interactivity;

PD 6 – availability;

PD 7 - user-friendliness;

PD 8 - cooperation;

PD 9 – safety;

PD 10 - comfort.

The author presumes that each evaluation indicator is supposed to be related to a number of pedagogical dimensions (Fig.14).
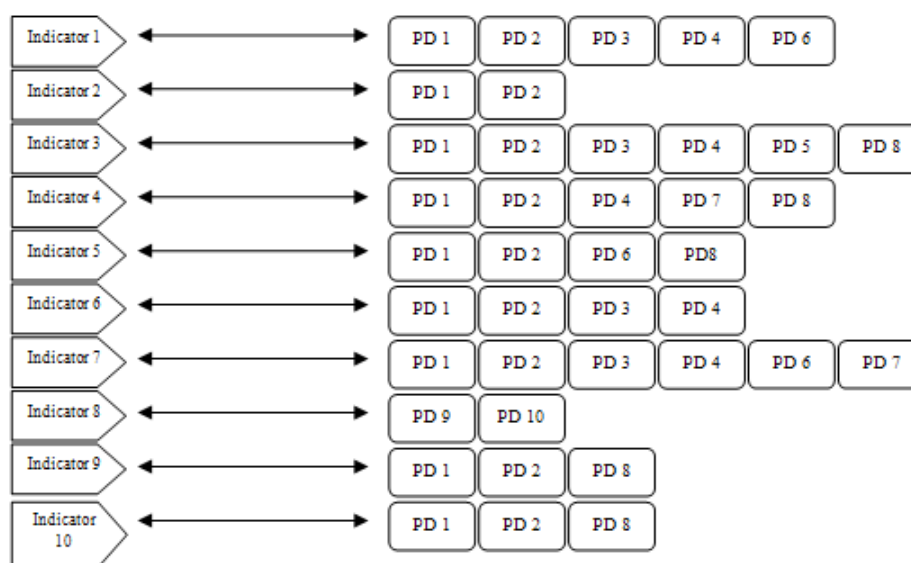
Fig.14 Evaluation indicators and the related pedagogical dimensions

The evaluation indicators, which are related to the four basic educational environment aspects, were developed by the author on the basis of:

1. The analysis of theoretical literature on pedagogy, psychology, management.

2. The author's experience in education.

3. A pilot study performed in Transport and Telecommunication Institute.

4. Assessing student satisfaction and student motivation in the framework of the structural model of managing the educational environment (SMMEE)

In this section, the author will address the issue of assessing student satisfaction with the educational environment and student motivation for further studies in the framework of performing a thorough evaluation of the integrated educational environment of a higher education institution.

The author supports the general approach to customer satisfaction (Wittingslow & Markham, 1999) that highlights the relationship between customers' expectations of services/products and their actual ratings of their satisfaction of those services/products. From the author's point of view, in the educational context, it corresponds to the relationship between students' expectations of the educational environment (and the related educational services) and their actual ratings of their satisfaction with the environment (with the offered services).

The academic literature postulates that positive awareness of service quality can bring about student satisfaction (Marzo-Navarro et al.; Helgesen & Nesset cited in Voss, 2009). It was Guolla, who in his work "Assessing the teaching quality to student satisfaction relationship: Applied customer satisfaction research in the classroom", related a customer satisfaction model to student evaluation of teacher performance (Postema & Markham, 2001). The author assumes that student satisfaction can be related to student evaluation of the educational environment.

According to Astin (1993), student satisfaction is regarded as a key product of higher education. As said by Harvey (2001), students are considered to be "important stakeholders in the quality monitoring and assessment processes". Chitty and Soutar (2004) define students' as "a customer's post-consumption evaluation of a service" including "cognitive and affective components". Value perceived by students then can be termed as a general evaluation of a service's usefulness (Zeithaml & Bitner cited in Chitty and Soutar, 2004).

The author suggests using the following definition of <u>student satisfaction</u>:

"*Student satisfaction, being the result of student interactions with the educational environment in the form of student perceptions of the educational environment, is an outcome of the expectations and experiences of the subject, study course, or study programme as a requisite element of the integrated educational environment*".

Stimulating students' development is one of the main goals of higher education (Astin, 1993). There are different ways to achieve this objective, continuously collecting information on student satisfaction being one of them. Measuring student satisfaction with their experience in higher education has become a normal practice (Douglas et al., 2006). According to Melone (cited in Gallardo et al., 2007), learner satisfaction is considered to be "an important theoretical construct" because of its potential for helping discover both forward and backward links in a causal chain that are important for the learning community".

As stated by Newby & Marcoulides (2008), the eventual outcome of the person-environment interaction is likely to affect both the person and the performance outcome. In their interactions with the educational environment, students gain new experience in

education assessing the educational services provided by the university. The author supposes that student perceptions of their educational environment are significant for determining their level of satisfaction.

Higher education institutions may employ student satisfaction data to better understand and improve their educational environment with the aim to increase retention rates – that is to manage the university retention process; retention rates to a great extent influence their reputation and their image.

According to Douglas et al. (2006), "keeping customers satisfied is what leads to customer loyalty". Seymour cited in Kara & DeShields (2004) emphasizes that managing the retention process from student entrance to graduation has become very important today.

Nowadays, successful higher educational institutions focus on their students' requirements and expectations; they utilize student satisfaction data as an indicator of how efficiently they provide what learners "expect, need and want" (Low, 2000).

According to Voss et al. (2010), "positive perceptions of service quality can result in student satisfaction"; satisfied students may want to take further courses at the same university. Student satisfaction can be regarded as a significant factor for attracting students with high potential, and, in turn, for increasing the reputation and status of the higher education institution;

Satisfaction is regarded as the central mediator of post-learning behaviour (Gallardo et al., 2007). Students with high level of satisfaction are supposed to possess "higher level of reuse intention" (Wang cited in Gallardo et al., 2007). The research conducted by Elliott & Shin (Voss et al., 2010) showed that student satisfaction has positive impact on student motivation. Motivation being considered as "desire or want that energizes and directs goal-oriented behaviour" (Kleinginna & Kleinginna cited in Huitt, 2001), can be associated with students' positive emotional experience in education. According to Bomia et al. cited in Estrella (2007), student motivation is "a student's willingness, need, desire, and compulsion to participate in, and be successful in, the learning process". Student motivation concerns learners' aspiration to take part in knowledge-gaining activities (ibid).

The environment, which is created throughout an entire educational institution, cultivates the motivation to learn – *to obtain new knowledge* (Renchler, 1992). So, satisfaction is supposed to be closely related to *motivation*; in other words, with students' post-learning behaviour - the *intention to continue their studies*. Being responsive to our students' requirements and expectations, we are also supposed to increase their motivation for further studies. The author believes that student satisfaction can be viewed as a precursor of student motivation.

The author suggests using the following definition of <u>student motivation</u>:

"Student motivation, being associated with students' positive emotional experience in education as the result of student interactions with the educational environment in the form of student perceptions of the educational environment, is a student's eagerness, enthusiasm and need to participate in the learning process to obtain new knowledge."

Numerous studies were dedicated to analyzing the factors having their impact on university student satisfaction. The study performed by Wiers-Jenssen et al. (2002), shows that the most important determinants of student satisfaction are the academic and pedagogic quality of teaching. Other researchers mention the following factors: student centeredness, the social climate and instructional effectiveness (Elliott & Healy, 2001), course content and social aspects (Garcia-Aracil, 2008).

Therefore, student satisfaction with the educational environment and student motivation for further studies are supposed to be inspired by various aspects of the environment; these aspects being related to different organisational processes and the results of the organisation's operation. The author assumes that learner's assessment of the educational environment quality can serve as an efficient mechanism employed for generating evaluative information about the environment. Participating in the assessment process students are inspired as active members of the academic community.

According to Franklin & Shemwell (1995), the conventional evaluation format is a satisfaction/dissatisfaction question measured on a four to five point Likert-type scale, the format being based on the job satisfaction theory of the 1970s; in this format, students were comparable in motivation to employees. However, in a few past decades, the shift from "student as employee" to "student as consumer of educational services" has been traced; it is reasonable that traditional questionnaires should be modified (ibid.). Traditional surveys should include broader aspects of students' learning experience than just satisfaction; for "grasping the complexity of that learning experience", it is not sufficient to identify the degree to which students are satisfied; it is also significant to understand the factors that pay a regular contribution to student satisfaction (British Columbia College Issue Paper, 2003).

The author suggests using a questionnaire, which contains four sections (evaluation aspects) and ten evaluation indicators. The author proposes to include in the questionnaire student satisfaction with the educational environment and student motivation for further studies as separate items along with evaluation indicators. Each item is assessed by means of a Likert-type scale ranging from "strongly disagree" to "strongly agree". When formulating

their satisfaction and motivation judgements respondents concurrently consider the significance of a particular indicator.

The purpose of the questionnaire is to discover various factors associated with students' learning experience in the integrated educational environment, which may have the biggest impact on their satisfaction and motivation. Determining the factors that are most closely related to satisfaction might "provide information about actions that can be taken to maintain high levels of satisfaction and improve student learning" (British Columbia College Issue Paper, 2003).

The author will go on with giving an example. In the student questionnaire, which consists of four sections, three indicators may be associated with the executive environment:

- *Indicator 1*: Quality and availability of information
- *Indicator 2:* Quality of acquired skills and competences
- *Indicator 3*: Quality of conducted lessons.

Indicator 1 (*Quality and availability of information*), being an abstract concept in nature, should be clarified in the questionnaire to make it understandable for students. For this purpose, a set of descriptive statements (items) may be suggested to be evaluated on a Likert-type scale (Table 13).

Table 13 Descriptive items used for explaining some abstract concepts in the evaluation questionnaire

Factor (Indicator)	Descriptive Item (Statement)
I1: Quality and availability of information	1. The information was presented in a logical and well-organized manner 2. The information was effective in supporting the learning process 3. I found the information interesting 4. I found the information useful in this course 5. The information was easily available 6. Using the information aroused my curiosity 7. I was satisfied with the obtained information 8. The acquired information has stimulated my motivation for further studies.

In Chapter 6, the author will report on the results of the study conducted in two higher education institutions of Latvia with the aim to test the all-embracing evaluation indicators that are developed for assessing the integrated student-centred educational environment.

CHAPTER VI

TESTING THE EVALUATION INDICATORS IN TWO HIGHER EDUCATION INSTITUTIONS OF LATVIA

In this chapter, the results of testing the indicators developed for the evaluation of the integrated student-centred educational environment in two higher education institutions of the Republic of Latvia - Riga Technical University (RTU) and Transport and Telecommunication Institute (TSI) - are reported, and the main factors having the most significant impact on student satisfaction with the educational environment and student motivation for further studies are discussed.

1. Research methodology

The author has chosen an exploratory field research format involving two case studies. First, the author conducted a pilot research that involved a student survey. Since the author is teaching foreign languages in a higher education institution, the study was performed on the basis of the subject taught by the author – ESP (English for Specific purposes). Data were collected to determine if the educational environment aspects specified in the questionnaire were considered by students as factors that might have a significant impact on their studies in the context of language learning. This study has examined some concerns associated with creating an integrated student-centred educational environment in a higher education institution. The results of the study have suggested directions for further research.

The next step of the author's research was to test the evaluation indicators developed in the framework of SMMEE in practice. During this stage, the author tested the developed all-embracing evaluation indicators in two higher education institutions of Latvia - Riga Technical University (RTU) and Transport and Telecommunication Institute (TSI) – in the framework of the integrated student-centred educational environment evaluation. The research questions were aimed to explore students' perceptions of their educational environment. The student survey was conducted by emphasizing on the satisfaction of students with the educational environment and student motivation for further studies.

1.1. Pilot study: Examining the factors influencing students' perception of the educational environment

A prospective case study was carried out in Transport and Telecommunication Institute (TSI). Information was gathered through the use of the student survey conducted in TSI on the basis of the subject taught by the author – ESP (English for Specific Purposes).

The study was aimed at determining what factors associated with the integrated educational environment students regard to be important in the context of language learning in a higher education institution. The author has developed a questionnaire including eleven indicators associated with the four basic educational environment aspects: the executive environment, the physical and technological environment, the instructional environment, the psychological environment (see Appendix I):

- Items focused on perception of the executive environment embrace 1) quality of acquired skills and competences; 2) quality and availability of the given information; 3) quality of conducted lessons.

- Items focused on perception of the physical and technological environment include 4) quality of the laboratory equipment; 5) lecture rooms and lecture halls amenities.

- Items focused on perception of the instructional environment comprise 6) academic programs and curricula content; 7) teaching materials quality and availability; 8) availability and quality of the Internet/intranet instructional resources.

- Items focused on perception of the psychological environment include 9) environment safety and comfort; 10) possibility to work in cooperation with other students; 11) support from managers, teachers and attending staff.

The questionnaire included eleven indicators (or *Q - questions*):

Q1 - Quality and availability of the given information

Q2 - Quality of acquired skills and competences

Q3 - Teaching materials quality and availability

Q4 - Quality of conducted lessons

Q5 - Availability and quality of the Internet/intranet instructional resources

Q6 - Support from managers, teachers and attending staff

Q7 - Environment safety and comfort

Q8 - Academic programs and curricula content

Q9 - Possibility to work in cooperation with other students

Q10 - Lecture rooms and lecture halls amenities

Q11 - Quality of the laboratory equipment.

The respondents anonymously rated each item as "Essential", "I don't know", or "Non-essential". Answering the question the interviewer ticked the appropriate box. The so-called "other" category was included in the questionnaire to account for unexpected answers.

The questionnaire was distributed among students enrolled in the ESP (English for Specific Purposes) course. Data collection for the present study took place at the beginning of the 2nd semester, 2007/2008 academic year. The type of sampling was clustered according to the Faculty of Management and Economics and the Faculty of Electronics and Computer Science such that the students selected were distributed representatively from both faculties. The rationale for selecting students was to obtain a constituent and comprehensive perspective from within the Institute. The research population in the sample included 210 students taking their ESP course in Transport and Telecommunication Institute.

The responses from 201 respondents have been received. In all, from 201 students voluntary participated in the survey, 141 were students of the Faculty of Management and Economics, and 60 were students of the Faculty Electronics and Computer Science. The mean age of the students was 19 years.

The obtained data then were processed using SPSS 17 software package. Table 14 and Table 15 show the percentage of students versus ratings: mean, standard deviation and variance.

Table 14 Percentage of students versus ratings

Rating	Percentage of students who rated various factors associated with the educational environment as essential (1), I don't know (2), or non-essential (3)										
	Q1	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*	*Q10*	*Q11*
Essential	87,6	90	81,6	52,2	64,7	62,7	85,1	79,6	75,6	65,2	78,1
I don't know	11,4	7,5	14,4	25,4	16,4	22,9	12,4	11,9	18,4	21,4	14,9
Non-essential	1,0	2,5	4,0	22,4	18,9	14,4	2,5	8,5	6,0	13,4	7,0

Table 15 Mean, standard deviation and variance

Rating	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*	*Q10*	*Q11*
Mean	1,13	1,12	1,22	1,70	1,54	1,52	1,17	1,29	1,30	1,48	1,29
Standard deviation	,370	,399	,505	,813	,793	,735	,441	,613	,577	,722	,588
Variance	,137	,159	,255	,660	,629	,541	,195	,376	,332	,521	,346

To summarize, the main results are as follows:

- Regarding [Q1], most students (87, 6%) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q2], most students (90 %) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q3], the majority of students (81, 6%) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q4], 52, 2% of students agree that this aspect is essential for supporting the ESP course.

- Regarding [Q5], 64, 7% of students agree that this aspect is essential for supporting the ESP course.

- Regarding [Q6], 62, 7% of students agree that this aspect is essential for supporting the ESP course.

- Regarding [Q7], the majority of students (85, 1%) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q8], most students (79, 6%) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q9], most students (75, 6%) agree that this aspect is essential for supporting the ESP course.

- Regarding [Q10], 65, 2% of students agree that this aspect is essential for supporting the ESP course.

- Regarding [Q11], most students (78, 1%) agree that this aspect is essential for supporting the ESP course.

Performing a statistical analysis of the obtained results reveals that the majority of students perceive the educational environment aspects specified in the questionnaire as essential factors to helping them acquire a foreign language in a higher education institution, these aspects being related to

1. *The executive environment*: "quality of acquired skills and competences" (87, 6%), "quality and availability of the given information" (90 %), "quality of conducted lessons" (81, 6%).

2. *The instructional environment*: "teaching materials quality and availability" (85, 1%), "availability and quality of the Internet/intranet instructional resources" (79, 6%);

though for the indicator "academic programs and curricula content" the percentage is lower (62, 7%).

3. *The psychological environment*: "environment safety and comfort" (75, 6%), "support from managers, teachers and attending staff (78, 1%); for the indicator "possibility to work in cooperation with other students" the percentage is lower (62, 7%).

4. *The physical and technological environment*: 52, 2% of students think that "quality of the laboratory equipment" is essential for supporting the ESP course; 62, 7% of students think that "lecture rooms and lecture halls amenities" are vital for supporting the ESP course.

The hierarchy of the educational environment aspects related to language teaching and learning is presented below:

1. Quality and availability of the given information (90 %)

2. Quality of acquired skills and competences (87, 6%)

3. Teaching materials quality and availability (85, 1%)

4. Quality of conducted lessons (81, 6%)

5. Availability and quality of the Internet/intranet instructional resources (79, 6%)

6. Support from managers, teachers and attending staff (78, 1%)

7. Environment safety and comfort (75, 6%)

8. Academic programs and curricula content (62, 7%)

9. Possibility to work in cooperation with other students (62, 7%).

10. Lecture rooms and lecture halls amenities (62, 7%)

11. Quality of the laboratory equipment (52, 2%).

The cluster analysis was used to classify respondents into various groups, where members of the groups share properties in common. The cluster analysis shows the difference between students' answers related to the following indicators:

• [Q4] - "Quality of the laboratory equipment"

• [Q5] - "Lecture rooms and lecture halls amenities"

• [Q6] - "Academic programs and curricula content"

• [Q10] - "Possibility to work in cooperation with other students" (Fig. 15).
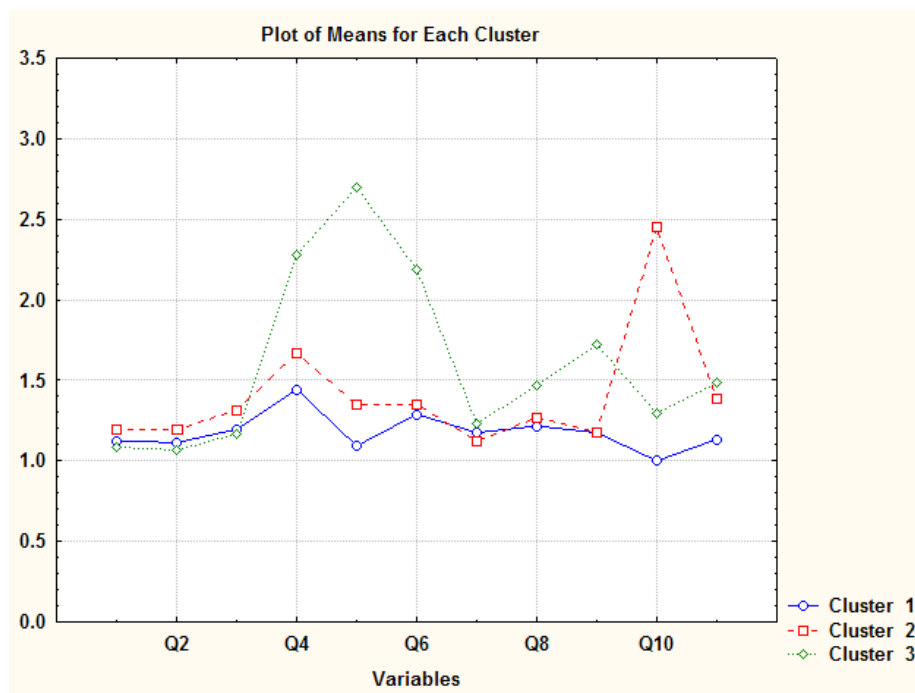
Fig. 15 Distribution of respondents by clusters: Comparison of student perception of items Q4, Q5, Q6, and Q10.

The divergence in the students' estimation of the significance of some factors in the context of language teaching and learning is rather big, especially with reference to indicator Q5 – "Lecture rooms and lecture halls amenities" and Q10 - "Possibility to work in cooperation with other students".

Among other factors that can have a positive influence on student perception of the educational environment, learners have also mentioned the following:

- "More extra-curriculum activities" (1 respondent)

- "More sport activities" (1 respondent)

- "More communication with teachers"(1 respondent)

- "More active participation in student exchange programmes" (4 respondents)

- "More active engagement in practical work" (7 respondents)

The main findings of the pilot study are the following. Concerning students' attitudes and students' perceptions of four basic educational environment aspects, the results basically would imply that the factors, which students regard as the most significant for supporting their studies are those, which they directly associate with learning a language.

For a number of students, such aspects as the physical and technological environment are less associated with learning a language, lecture hall amenities and the laboratory equipment being essential for accordingly 62, 7% and 52, 2% of students. For them, learning a language is more connected not with the physical conditions the educational environment provide, but with direct interaction between learners, instructors, attending staff members and education managers. These results also indicate that teachers should involve Information and Communication Technologies (ICTs) in the learning process more actively, and encourage their students to use them more willingly.

With respect to the instructional environment, the instructional materials, which students use directly in the learning process (teaching materials and the Internet/intranet resources), are regarded by students as significant factors associated with the educational environment in the context of a particular subject. Academic programs and curricula content is perceived by students as a more abstract concept.

The indicator Q10 – "Possibility to work in cooperation with other students" – is assessed differently; the author supposes that it may be explained by the phenomenon called the learning style – the way people learn, how they perceive and process information. A student's individual learning style (Wright, 1987; Harmer, 2004) is associated with his/her individual behaviour and is related to his/her attitude to learning and knowledge implementation, the ability to work in a team in cooperation with other learners, and relationships with the teacher (instructor).

In general, the results of the pilot study show that the students assess all educational environment aspects identified in the survey as significant factors associated with the educational environment in the context of learning a particular subject. So, the author supposes that in their attempts to create an educational environment conducive to learning, education managers have to consider it as an integrated whole. They must establish and analyse the relationships between different educational environment aspects related to teaching and learning a particular subject. For this reason, education managers can perform large-scale evaluation of the educational environment.

This study has examined some but not all of the concerns associated with creating a favourable and constructive educational environment in a higher education institution. The results of the study have suggested directions for further research. The next step of the author's research was to test a set of evaluation indicators in the process of complex evaluation of the educational environment.

In the final variant of the questionnaire, the author included ten indicators; the fifth indicator "Availability and quality of the Internet/intranet instructional resources" was combined with Indicator 1 – "Quality and availability of the given information".

1.2. Complex evaluation of the educational environment in two higher education institutions of Latvia

This section provides a description of the second case study - testing the educational environment evaluation indicators in two higher education institutions of the Republic of Latvia - Riga Technical University and Transport and Telecommunication Institute. The research questions were aimed to explore students' perceptions of the integrated educational environment and to test the hypotheses. In this study, the author has put the emphasis on student satisfaction with the educational environment and student motivation for further studies as the main perceptible effects from student – the educational environment interaction.

1.2.1. Methodology and hypotheses

The hypotheses that the study attempts to test are as follows:

H1. The evaluation indicators representing four higher order dimensions (the executive environment, physical and technological environment, instructional environment, psychological environment) are positively related to student satisfaction with the educational environment and student motivation for further studies.

H2. Student satisfaction with the educational environment is positively related to student motivation for further studies in the integrated student-centred educational environment.

In Transport and Telecommunication Institute (TSI), the educational environment complex evaluation was carried out at the end of the 2008 summer term with 210 students enrolled in the ESP (English for Special Purposes) course in the form of a student survey. In Riga Technical University (RTU), the educational environment complex evaluation was performed at the end of the 2009 summer term with 214 students enrolled in the ESP course, also in the form of a student survey. The surveys were conducted as anonymous post course evaluations of the educational environment in relation to language learning.

The research population in the sample included 424 respondents from the following faculties: Faculty of Management and Economics, Faculty of Electronics and Computer Science (TSI); Faculty of Architecture and Urban Planning, Faculty of Civil Engineering,

Faculty of Computer Science and Information Technology, Faculty of Electronics and Telecommunications (RTU).

The students selected were distributed representatively from different faculties. The rationale for selecting students was to obtain a constituent and comprehensive perspective from within the TSI and RTU. The mean age of the students was 19 years.

The purpose of the evaluation was twofold: 1) to discover students' attitudes towards different aspects of the educational environment; 2) to identify the factors having the most significant impact on student satisfaction with the educational environment and student motivation for further studies.

The author has developed an original wide-ranging evaluation questionnaire containing four parts (see Appendix II). Each part was associated with a particular educational environment evaluation aspect: the executive environment, physical and technological environment, instructional environment, psychological environment.

The questionnaire contains 73 items grouped into 10 qualitative evaluation indicators representing four higher order dimensions (the executive environment, physical and technological environment, instructional environment, psychological environment): six items (evaluation statements) for I1, I2, I3, I6, I7; five items for I8, I9, I10; four items for I4 and I5. Satisfaction and motivation associated with every indicator are presented by separate items: 6(satisfaction)/7 (motivation), and 15/16, 23/24, 29/30, 35/36, 43/44, 51/52, 58/59, 65/66, 72/73 accordingly. Students were asked to rate the items on a five-point Likert scale, as follows: 1 = strongly disagree, 2 = disagree, 3 = partly agree or disagree, 4 = agree, 5 = strongly agree.

Dependent variables:

1) student satisfaction with the educational environment;

2) student motivation for further studies.

Independent variables: the student satisfaction and student motivation models incorporate the 10 independent variables (ten evaluation indicators that represent four higher order dimensions – four basic aspects of the educational environment).

For analysing the obtained data, the standard tools and procedures of SPSS 17 software package and were utilised. Measurement scale reliability was evaluated by means of Cronbach alpha; the coefficient alpha values were calculated for all ten indicators. The reliability check indicates that all measures satisfied the requirement for Cronbach's alpha reliability. The coefficient alpha ranged from 0.804 to 0.871 indicating that the scale was internally consistent (Table 16).

Table 16 Distribution and reliability for ten qualitative evaluation indicators

Variable (Indicator)	Number of items	Cronbach alpha
I1: The information quality and availability	6	0.817
I2: The quality of acquired skills and competences	6	0.837
I3: The quality of conducted lessons	6	0.849
I4: The language laboratory facilities	4	0.846
I5: The library services	4	0.806
I6: The study course content	6	0.871
I7: Teaching materials quality and availability	6	0.860
I8: The environment safety and comfort	5	0.804
I9: Collaborative learning	5	0.867
I10: Support from the teaching staff, attending staff and education managers	5	0.851

1.2.2. The t-test

To test the hypotheses and to determine the factors having the biggest impact on student satisfaction with the educational environment and student motivation for further studies the following operations were performed.

The t-test was carried out to compare the means of two groups (two samples) to find out if the two groups are homogeneous. The t-test was used to assess if the means of two groups are statistically different from each other. The author was interested in whether the means of two independent groups are truly different or of the observed difference merely occurred by chance. The t-value was calculated for the two groups. A two-tailed test was then used to test the null hypothesis that there will be no significant difference in scores between TSI and RTU. The difference is significant at the .001 level. The null hypothesis, which states that there is no difference between the two groups (H0: $\mu 1 = \mu 2$), was rejected.

The summary of statistics – the mean, standard deviation, number of subjects for each group as well as T-test for equality of means (ten indicators) – is presented in Table 17. The summary of statistics - the mean, standard deviation, number of subjects for each group as well as T-test for equality of means (four aspects) - is presented in Table 18.

Table 17 The mean, standard deviation, number of subjects for each group and T-test for equality of means: ten evaluation indicators

Indicator	*N (TSI/RTU)*	*Mean*	*Std. Deviation*	*df*	*Sig. (2-tailed)*	*Mean Difference*
I1: The information quality and availability	210 214	3.9195 3.7065	.70714 .53379	422	.001	.21298
I2: The quality of acquired skills and competences	210 214	3.8076 3.5556	.66702 .62772	422	.000	.25201
I3: The quality of conducted lessons	210 214	3.8343 3.6631	.59862 .62910	422	.004	.17120
I4: The language laboratory facilities	210 214	3.4443 3.4864	.73705 .79933	422	.573	-.04216
I5: The library services	210 214	3.6771 3.8192	.69712 .68138	422	.034	-.14202
I6: The study course content	210 214	3.8633 3.5589	.58099 .62408	422	.000	.30445
I7: Teaching materials quality and availability	210 214	3.8190 3.6967	.65878 .55618	422	.039	.12232
I8: The environment safety and comfort	210 214	3.9495 3.7402	.60959 .60029	422	.000	.20934
I9: Collaborative learning	210 214	3.9214 3.7850	.72069 .67006	422	.044	.13638
I10: Support from teaching staff, attending staff and education managers	210 214	3.8290 3.5935	.64353 .62600	422	.000	.23559

Table 18 The mean, standard deviation, number of subjects for each group and T-test for equality of means: four evaluation aspects

Aspect	N (TSI/RTU)	Mean	Std. Deviation	df	Sig. (2-tailed)	Mean Difference
Asp1: The executive environment	210	3.8538	.57634	422	.000	.21206
	214	3.6417	.52734			
Asp2: The physical and technological environment	210	3.5607	.62810	422	.117	-.09209
	214	3.6528	.57708			
Asp3: The instructional environment	210	3.8412	.57446	422	.000	.21339
	214	3.6278	.53757			
Asp4: The psychological environment	210	3.9000	.55122	422	.000	.19377
	214	3.7062	.51103			

The results of the t-test indicate that the obtained information should be analysed in two separate groups – TSI and RTU, since the data are not homogeneous.

1.2.3. Testing the hypotheses

Correlations and factor analysis were employed to test the two hypotheses. Since students evaluated items and not indicators, factor analysis was used to generate summated scales on an objective basis, and for determining the numerical value of the correlations.

Table 19 Correlations between ten evaluation indicators and student satisfaction/student motivation (TSI)

	S7	M8	S15	M16	S23	M24	S29	M30	S35	M36	S43	M44	S51	M52	S58	M59	S65	M66	S72	M73
I1	.54**	.45**	.52**	.53**	.54**	.50**	.36**	.33**	.41**	.30**	.47**	.49**	.49**	.61**	.43**	.42**	.40**	.51**	.42**	.44**
I2	.48**	.55**	.67**	.64**	.64**	.62**	.35**	.39**	.32**	.31**	.52**	.57**	.48**	.59**	.39**	.35**	.47**	.53**	.40**	.43**
I3	.58**	.50**	.63**	.63**	.65**	.63**	.36**	.30**	.37**	.31**	.55**	.57**	.59**	.63**	.48**	.42**	.47**	.51**	.53**	.51**
I4	.33**	.45**	.39**	.46**	.38**	.45**	.70**	.69**	.47**	.52**	.40**	.38**	.42**	.51**	.27**	.36**	.36**	.41**	.37**	.45**
I5	.38**	.35**	.29**	.38**	.30**	.37**	.39**	.39**	.71**	.66**	.42**	.35**	.50**	.42**	.44**	.40**	.36**	.40**	.52**	.41**
I6	.55**	.57**	.58**	.61**	.65**	.69**	.42**	.45**	.40**	.40**	.63**	.75**	.61**	.71**	.46**	.44**	.46**	.60**	.49**	.51**
I7	.52**	.51**	.56**	.49**	.58**	.51**	.36**	.35**	.44**	.36**	.54**	.56**	.70**	.75**	.46**	.42**	.43**	.52**	.50**	.47**
I8	.42**	.33**	.31**	.36**	.33**	.38**	.24**	.26**	.46**	.36**	.44**	.40**	.52**	.54**	.65**	.53**	.37**	.42**	.44**	.49**
I9	.41**	.40**	.40**	.49**	.46**	.54**	.36**	.41**	.38**	.32**	.53**	.57**	.50**	.56**	.43**	.39**	.75**	.78**	.46**	.57**
I10	.51**	.38**	.45**	.51**	.46**	.44**	.38**	.40**	.49**	.47**	.53**	.46**	.57**	.60**	.46**	.46**	.56**	.58**	.67**	.67**

**. Correlation is significant at the 0.01 level (2-tailed)

S – Satisfaction; M - motivation

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Table 19 provides the Pearson correlations between each evaluation indicator and student satisfaction/student motivation in relation to TSI data. Table 20 provides the Pearson correlations between each evaluation indicator and student satisfaction/student motivation in relation to RTU data.

Table 20 Correlations between ten evaluation indicators and student satisfaction/student motivation (RTU)

	S7	M8	S15	M16	S23	M24	S29	M30	S35	M36	S43	M44	S51	M52	S58	M59	S65	M66	S72	M73
I1	.65"	.55"	.53"	.47"	.56"	.50"	.36"	.31"	.24"	.27"	.42"	.49"	.38"	.44"	.34"	.32"	.25"	.35"	.29"	.21"
I2	.46"	.44"	.62"	.60"	.59"	.56"	.29"	.28"	.19"	.29"	.59"	.55"	.43"	.52"	.36"	.38"	.29"	.42"	.38"	.38"
I3	.57"	.47"	.60"	.57"	.72"	.61"	.27"	.25"	.31"	.28"	.58"	.51"	.52"	.52"	.35"	.32"	.45"	.43'	.28"	.30"
I4	.20"	.18"	.25"	.22"	.25"	.30"	.69"	.55"	.17'	.21"	.16'	.20"	.23"	.24"	.13	.15'	.41"	.49"	.39"	.41"
I5	.27"	.26"	.26"	.28"	.29"	.33"	.31"	.29"	.70"	.66"	.40"	.34"	.21"	.37"	.40"	.38"	.45"	.44"	.35"	.22"
I6	.55"	.56"	.61"	.60"	.67"	.61"	.25"	.29"	.26"	.36"	.71"	.70"	.55"	.62"	.40"	.42"	.38"	.41"	.36"	.33"
I7	.47"	.46"	.44"	.47"	.57"	.53"	.27"	.34"	.26"	.28"	.50"	.55"	.64"	.64"	.24"	.38"	.22"	.20"	.14'	.17'
I8	.25"	.24"	.31"	.24"	.28"	.32"	.23"	.25"	.40"	.39"	.40"	.34"	.30"	.38"	.69"	.63"	.25"	.31"	.22"	.38"
I9	.38"	.41"	.49"	.48"	.51"	.44"	.24"	.30"	.29"	.30"	.47"	.47"	.43"	.47"	.52"	.51"	.28"	.18"	.26"	.20"
I10	.29"	.42"	.40"	.41"	.39"	.42"	.28"	.40"	.30"	.40"	.47"	.47"	.41"	.48"	.47"	.46"	.28"	.28"	.30"	.40"

**. ** Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

S – Satisfaction; M - motivation

The results presented in Tables 19 and 20 indicate that correlations between ten evaluation indicators (the independent variables) and student satisfaction/student motivation (the dependent variables) are statistically significant. The results suggest that on the whole, the evaluation indicators are significantly positively related to student satisfaction and student motivation. A positive relationship in this context signifies that, in general, higher scores on one variable tend to be paired with higher scores on the other and that lower scores on one variable tend to be paired with lower scores on the other. The higher the number of the positive correlation, the stronger is the connection. It means that the two variables are likely dependent; they are related in some way and one affects the other. Thus, *hypothesis one (H1)* that relates the evaluation indicators with student satisfaction with the educational environment and student motivation for further studies is supported.

These results imply that there is strong connection between students' perceptions of various aspects of the educational environment, as the ten evaluation indicators represent four higher order dimensions (the executive environment, physical and technological environment, instructional environment, psychological environment). From these results one may conclude that students perceive the educational environment as an integrated system containing a variety of interconnected and interrelated subsystems.

From Table 19, one can see that four indicators with the strongest relationship to TSI student satisfaction (the numerical value was approximated to two numbers) are the following:

- *I7 – teaching materials quality and availability* (the numerical value of the correlations is 0.70)
- *I4 – the computer laboratory facilities* (the numerical value of the correlations is 0.70)
- *I5 – the library services* (the numerical value of the correlations is 0.71)
- *I9 – collaborative learning* (the numerical value of the correlations is 0.75).

From table 20, one can see that the indicator with the strongest relationship to *RTU student satisfaction* (the numerical value of the correlations r=0. 71) is *I6 – the study course content*.

From Table 19, one can see that two indicators with the strongest relationship to *TSI student motivation* (the numerical value of the correlations is < 0.7) are the following:

- *I6 – the study course content* (the numerical value of the correlations is 0.75)
- *I7 – teaching materials quality and availability* (the numerical value of the correlations is 0.75).

The indicator with the strongest relationship to *RTU student motivation* is *I6 - the study course content*, the numerical value of the correlations being 0.70 (Table 20).

Consistent with *H2*, a positive relationship between satisfaction and motivation was found (Tables 21 and 22).

Table 21 Correlations between student satisfaction and student motivation (TSI)

Mainīgais	S7	M8	S15	M16	S23	M24	S29	M30	S35	M36	S43	M44	S51	M52	S58	M59	S65	M66	S72
S7	1	.42**	.52**	.44**	.50**	.44**	.35**	.30**	.36**	.27**	.43**	.40**	.42**	.49**	.38**	.34**	.33**	.35**	.40**
M8	.42**	1	.45**	.57**	.46**	.51**	.26**	.34**	.31**	.36**	.33**	.47**	.39**	.53**	.36**	.32**	.31**	.42**	.31**
S15	.52**	.45**	1	.53**	.64**	.55**	.32**	.30**	.28**	.23**	.41**	.44**	.49**	.49**	.33**	.31**	.34**	.38**	.39**
M16	.44**	.57**	.53**	1	.52**	.58**	.30**	.29**	.29**	.33**	.44**	.55**	.45**	.57**	.31**	.33**	.40**	.43**	.39**
S23	.50**	.46**	.64**	.52**	1	.66**	.32**	.32**	.30**	.26**	.45**	.52**	.51**	.53**	.27**	.32**	.32**	.41**	.43**
M24	.44**	.51**	.55**	.58**	.66**	1	.39**	.45**	.30**	.36**	.43**	.62**	.47**	.52**	.35**	.40**	.42**	.50**	.33**
S29	.35**	.26**	.32**	.30**	.32**	.39**	1	.66**	.36**	.41**	.38**	.38**	.37**	.42**	.21**	.33**	.35**	.40**	.26**
M30	.30**	.34**	.30**	.29**	.32**	.45**	.66**	1	.35**	.47**	.28**	.41**	.34**	.40**	.27**	.47**	.39**	.48**	.31**
S35	.36**	.31**	.28**	.29**	.30**	.30**	.36**	.35**	1	.58**	.33**	.30**	.42**	.37**	.41**	.33**	.34**	.40**	.47**
M36	.27**	.36**	.24**	.33**	.26**	.36**	.41**	.472*	.58**	1	.36**	.33**	.39**	.40**	.32**	.39**	.35**	.40**	.36**
S43	.43**	.33**	.41**	.44**	.45**	.43**	.38**	.28**	.33**	.36**	1	.51**	.57**	.55**	.30**	.31**	.41**	.46**	.37**
M44	.40**	.47**	.44**	.55**	.52**	.62**	.38**	.41**	.30**	.33**	.51**	1	.48**	.59**	.38**	.50**	.41**	.60**	.38**
S51	.42**	.39**	.49**	.45**	.51**	.47**	.37**	.34**	.42**	.39**	.57**	.48**	1	.62**	.45**	.42**	.41**	.43**	.50**
M52	.49**	.53**	.49**	.57**	.53**	.52**	.42**	.40**	.37**	.40**	.55**	.60	.62**	1	.46**	.48**	.39**	.56**	.45**
S58	.38**	.36**	.33**	.31**	.27**	.35**	.21**	.27**	.41**	.32**	.30**	.38**	.45**	.46**	1	.53**	.37**	.42**	.37**
M59	.34**	.32**	.31**	.33**	.32**	.40**	.33**	.47**	.33**	.39**	.31**	.50**	.42**	.48**	.53**	1	.32**	.50**	.38**
S65	.33**	.31**	.34**	.40**	.32**	.42**	.35**	.39**	.34**	.35**	.41**	.41**	.41**	.39**	.37**	.32**	1	.68**	.42**
M66	.35**	.42**	.38**	.43**	.41**	.50**	.40**	.48**	.40**	.40**	.46**	.60**	.43**	.56**	.42**	.50**	.68**	1	.44**
S72	.40**	.31**	.39**	.39**	.43**	.33**	.26**	.31**	.47**	.36**	.37**	.38**	.50**	.45**	.37**	.38**	.42**	.44**	1
M73	.33**	.32**	.40**	.39**	.41**	.46**	.35**	.40**	.36**	.40**	.39**	.49**	.45**	.47**	.41**	.52**	.48**	.56**	.61**

**. Correlation is significant at the 0.01 level (2-tailed)
I1 - S6 (satisfaction)/M7 (motivation), I2 - S15/M16, I3 - S23/M24, I4 - S29/M30, I5- S35/M36, I6 - S43/M44,
I7 - S51/M52, I8 - S58/M59, I9 - S65/M66, I10 - S72/M73

Table 22 Correlations between student satisfaction and student motivation (RTU)

Mainīg.	S7	M8	S15	M16	S23	M24	S29	M30	S35	M36	S43	M44	S51	M52	S58	M59	S65	M66	S72
S7	1	.50**	.40**	.38**	.45**	.37**	.18*	.18**	.14*	.21**	.32**	.38**	.36**	.39**	.27**	.25**	.25**	.35**	.29**
M8	.45**	1	.36**	.56**	.47**	.50**	.18**	.29**	.21**	.37**	.42**	.60**	.37**	.43**	.23**	.30**	.29**	.42**	.38**
S15	.40**	.36**	1	.61**	.64**	.46**	.25**	.22**	.24**	.29**	.58**	.48**	.38**	.36**	.33**	.33**	.45**	.43**	.28**
M16	.38**	.56**	.61**	1	.50**	.60**	.20**	.27**	.16*	.27**	.47**	.65**	.41**	.52**	.31**	.37**	.41**	.49**	.39**
S23	.45**	.47**	.64**	.50**	1	.57**	.23**	.23**	.25**	.30**	.63**	.51**	.45**	.45**	.36**	.33**	.45**	.44**	.35**
M24	.37**	.50**	.46**	.60**	.57**	1	.22**	.32**	.14*	.34**	.46**	.60**	.38**	.55**	.31**	.38**	.38**	.41**	.36**
S29	.18*	.18*	.25**	.20**	.23**	.22**	1	.54**	.29**	.26**	.22**	.22**	.19**	.23**	.19**	.20**	.22**	.20**	.14*
M30	.18**	.29**	.22**	.27**	.23**	.32**	.54**	1	.17*	.37**	.24**	.38**	.19**	.30**	.17*	.35**	.25**	.31**	.22**
S35	.14*	.21**	.24**	.16*	.25**	.14*	.29**	.17*	1	.57**	.42**	.22**	.25**	.29**	.27**	.34**	.28**	.18**	.26**
M36	.21**	.372*	.29**	.27**	.30**	.34**	.26**	.37**	.57**	1	.37**	.39**	.23**	.34**	.32**	.45**	.28**	.28**	.30**
S43	.32**	.42**	.58**	.47**	.63**	.46**	.22**	.24**	.2**	.37**	1	.61**	.47**	.47**	.36**	.39**	.40**	.35**	.42**
M44	.38**	.60**	.48**	.65**	.51**	.60**	.22**	.38**	.22**	.39**	.61**	1	.45**	.58**	.32**	.44**	.40**	.49**	.44**
S51	.36**	.37**	.38**	.41**	.45**	.38**	.19**	.19**	.25**	.23**	.47**	.45**	1	.53**	.28**	.35**	.38**	.40**	.24**
M52	.39**	.43**	.36**	.52**	.45**	.55**	.23**	.30**	.29**	.34**	.47**	.58**	.53*	1	.34**	.51**	.43**	.50**	.42**
S58	.27**	.23**	.33**	.31**	.36**	.31**	.19**	.17*	.27**	.32**	.36**	.32**	.28**	.34**	1	.64**	.46**	.41**	.40**
M59	.25**	.30**	.33**	.37**	.33**	.38**	.20**	.35**	.34**	.45**	.39**	.44**	.35**	.51**	.64**	1	.44**	.51**	.44**
S65	.25**	.29**	.45**	.41**	.45**	.38**	.22**	.25**	.28**	.28**	.40**	.40**	.38**	.43**	.46**	.44**	1	.64**	.32**
M66	.35**	.42**	.43**	.49**	.44**	.41**	.20**	.31**	.18**	.28**	.35**	.49**	.40**	.50**	.41**	.51**	.64**	1	.38**
S72	.29**	.38**	.28**	.39**	.35**	.36**	.14*	.22**	.26**	.30**	.42**	.44**	.24**	.42**	.40**	.44**	.32**	.38**	1
M73	.21**	.38**	.30**	.41**	.22**	.33**	.17*	.38**	.20**	.40**	.31**	.50**	.29**	.39**	.31**	.50**	.26**	.43**	.65**

**. Correlation is significant at the 0.01 level (2-tailed)

I1 - S6 (satisfaction)/M7 (motivation), I2 - S15/M16, I3 - S23/M24, I4 - S29/M30, I5- S35/M36, I6 - S43/M44,

I7 - S51/M52, I8 - S58/M59, I9 - S65/M66, I10 - S72/M73

The Pearson correlation coefficients range from 0.42 to 0.68 (TSI), and from 0.50 to 0.65 (RTU); the numerical value was approximated to two numbers.

1. *TSI data*/on descending order (Table 21):

- for collaborative learning (I9) r=0.68

- for support from the teaching staff, attending staff and education managers (I10) r=0.61

- for the quality of conducted lessons (I3) r=0.66

- for the computer laboratory facilities (I4) r=0.66

- for teaching materials quality and availability (I7) r=0.62

- for the library services(I5) r=0.58

- for the quality of acquired skills (I2) r=0.53

- for the environment safety and comfort (I8) r=0.53

- for the study course content (I6) r=0.51.

- for the information quality and availability (I1) r=0.42

2. *RTU data*/on descending order (Table 22):

- for support from the teaching staff, attending staff and education managers (I10) r=0.65

- for the environment safety and comfort (I8) r=0.64

- for collaborative learning (I9) r=0.64

- for the quality of acquired skills (I2) r=0.61

- for the study course content (I6) r=0.61

- for the library services(I5) r=0.57

- for the quality of conducted lessons (I3) r=0.57

- for the computer laboratory facilities (I4) r=0.54

- for teaching materials quality and availability (I7) r=0.53

- for the information quality and availability (I1) r=0.50.

Correlations allow using the value of one variable (satisfaction) to foresee the value of another (motivation). The positive correlation coefficients indicate that as the score for student satisfaction increases, so does the rating for student motivation These findings support *hypothesis two (H2).*

1.2.4. Multiple linear regression analysis: student satisfaction with the educational environment

Correlations as observed patterns in the data are the only type of data produced by observational research. Multiple regression analysis is generally appropriate for hypotheses generated in the behavioural science including education (Cohen et al., 2003). The regression analysis was used to measure the degree of influence of the independent variables on a dependent variable. Linear regression is a statistical tool for modelling the relationship between a dependent variable and one or more independent variables; the parameters of the linear regression model are typically estimated using the least-squares method which results in a line that minimizes the sum of squared vertical distances from the observed data points to the line (Lewis-Beck; Neter et al. cited in Klein & Rossin, 1999).

Since the purpose of the study was to analyse the impact of various factors (presumed causal factors, or predictors) on student satisfaction and student motivation, that is to learn more about the relationship between several independent or predictor variables and a

dependent or criterion variable, the collected data were used to build a number of *multiple linear regression models* that contained more than one predictor variable.

The impact of the various indicators associated with the four basic aspects of the educational environment was investigated using a regression on the students' level of satisfaction with the variables, which had significant correlation coefficients (Table 23).

Table 23 Correlations between the ten evaluation indicators

Indicator	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
I1	1	.58**	.66**	.42**	.38**	.69**	.57**	.52**	.55**	.55**
I2	.58**	1	.72**	.49**	.39**	.72**	.63**	.37**	.60**	.56**
I3	.66**	.72**	1	.45**	.45**	.76**	.69**	.54**	.62**	.64**
I4	.42**	.49**	.45**	1	.53**	.49**	.42**	.33**	.35**	.52**
I5	.38**	.39**	.45**	.53**	1	.45**	.50**	.50**	.40**	.58**
I6	.69**	.72**	.76**	.49**	.45**	1	.72**	.50**	.64**	.57**
I7	.57**	.63**	.69**	.42**	.50**	.72**	1	.56**	.56**	.64**
I8	.52**	.37**	.54**	.33**	.50**	.50**	.56**	1	.47**	.61**
I9	.55**	.60**	.62**	.35**	.40**	.64**	.56**	.47**	1	.58**
I10	.55**	.56**	.64**	.52**	.58**	.57**	.64**	.61**	.58**	1

**. Correlation is significant at the 0.01 level (2-tailed)

The stepwise regression model definition procedure (Afifi & Clark, 1996) was applied as a model-building method. The forward stepwise selection began with independent variables being entered into the regression equation one at a time, provided predictors meet the statistical significance criteria with the dependent variable.

Selection of independent variable entry was based on the descending order of the largest significant correlation coefficient. The forward stepwise regression was conducted for the ten evaluation indicators to limit the number of input variables. Independent variables were entered into the regression until an independent variable did not uniquely influence the dependent variable.

In the first model, there was only one variable; in the eighth model, there were eight independent variables. The model was obtained with high adjusted R square (coefficient of determination), which is equal to 0.835; the quality criterion increased with each step, the corresponding Standard Error of the Estimate decreased with each step (Table 24).

Indicators I2 and I8 were excluded from the model as non-significant.

Table 24 The forward stepwise regression procedure for the ten indicators (student satisfaction)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Model Summary (Satisfaction: TSI)				
1	.776[a]	.602	.600	.35982
2	.862[b]	.744	.741	.28942
3	.883[c]	.780	.777	.26883
4	.894[d]	.799	.795	.25739
5	.902[e]	.813	.808	.24921
6	.910[f]	.828	.823	.23970
7	.915[g]	.838	.832	.23323
8	.917[h]	.841	**.835**	.23115

a. Predictors: (Constant), Ind6
b. Predictors: (Constant), Ind6, Ind10
c. Predictors: (Constant), Ind6, Ind10, Ind5
d. Predictors: (Constant), Ind6, Ind10, Ind5, Ind3
e. Predictors: (Constant), Ind6, Ind10, Ind5, Ind3, Ind9
f. Predictors: (Constant), Ind6, Ind10, Ind5, Ind3, Ind9, Ind4
g. Predictors: (Constant), Ind6, Ind10, Ind5, Ind3, Ind9, Ind4, Ind7
h. Predictors: (Constant), Ind6, Ind10, Ind5, Ind3, Ind9, Ind4, Ind7, Ind1

Estimated values of the regression coefficients are shown in Table 25.

Table 25 Regression of significant factors (indicators): dependent variable – student satisfaction/TSI

Independent variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.021	.120		-.174	.862
Ind6	**.143**	.051	.146	2.792	.006
Ind10	**.137**	.039	.155	3.521	.001
Ind5	**.132**	.030	.162	4.351	.000
Ind3	**.136**	.047	.144	2.905	.004
Ind9	**.130**	.031	.164	4.133	.000
Ind4	**.123**	.028	.159	4.423	.000
Ind7	**.138**	.039	.160	3.525	.001
Ind1	**.072**	.033	.089	2.155	.032

Multiple regression analysis was performed to create a regression equation that would optimally predict a particular phenomenon within a particular population. The formula of the multiple linear regression model for predicting student satisfaction, which includes eight factors (predictors): *I6, I7, I10, I3, I5, I9, I4,* and *I1* (on descending scale), is given below.

Multiple Linear Regression Model 1 for predicting student satisfaction (TSI)

> *Sat* (satisfaction estimated) = -0.021+0.143×I6 + 0.138×I7 + 0.137×I10 + 0.136×I3 + 0.132×I5 + 0.130×I9 + 0.123×I4 + 0.072×I1*

The forward stepwise regression was then conducted for the four basic aspects of the educational environment; four independent variables were identified as input. In the first model, there was only one variable; in the fourth model, there were four independent variables. The model was obtained with high adjusted R square (coefficient of determination), which is equal to 0.838; the quality criterion increased with each step, the corresponding Standard Error of the Estimate decreased with each step (Table 26).

Estimated values of the regression coefficients are shown in Table 27.

Table 26 The forward stepwise regression procedure for the four aspects (student satisfaction)

Model Summary (Satisfaction: TSI)				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.826[a]	.682	.681	.32151
2	.883[b]	.779	.777	.26867
3	.910[c]	.828	.825	.23797
4	.917[d]	.841	**.838**	.22897
a. Predictors: (Constant), Asp4				
b. Predictors: (Constant), Asp4, Asp3				
c. Predictors: (Constant), Asp4, Asp3, Asp2				
d. Predictors: (Constant), Asp4, Asp3, Asp2, Asp1				

Table 27 Regression of significant factors (aspects): dependent variable – student satisfaction/TSI

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.114	.121		-.948	.344
Asp4	**.309**	.048	.300	6.408	.000
Asp3	**.261**	.052	.264	4.991	.000
Asp2	**.245**	.033	.271	7.539	.000
Asp1	**.218**	.052	.221	4.185	.000

The formula of the multiple linear regression model for predicting student satisfaction, which includes four factors (predictors) *Asp4, Asp3, Asp2, and Asp1* (on descending scale) is given below.

Multiple Linear Regression Model 2 for predicting student satisfaction (TSI)

> *Sat* (satisfaction estimated) = -0.114 + 0.309×Asp4 + 0.261×Asp3 + 0.245×Asp2 + 0.218×Asp1*

With RTU data, the same analysis was used for building multiple linear regression models No3 and No4. The results of the analysis are presented in Table 28 and Table 29 (indicators), Table 30 and Table 31 (aspects).

Table 28 The forward stepwise regression procedure for the ten indicators (student satisfaction)

Model Summary (Satisfaction: RTU)				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.790[a]	.625	.623	.31453
2	.857[b]	.735	.733	.26488
3	.883[c]	.780	.777	.24183
4	.896[d]	.802	.798	.23004
5	.904[e]	.818	.814	.22122
6	.910[f]	.827	.822	.21600
7	.914[g]	.835	**.829**	.21165
a. Predictors: (Constant), Ind6				
b. Predictors: (Constant), Ind6, Ind8				
c. Predictors: (Constant), Ind6, Ind8, Ind3				
d. Predictors: (Constant), Ind6, Ind8, Ind3, Ind10				
e. Predictors: (Constant), Ind6, Ind8, Ind3, Ind10, Ind5				
f. Predictors: (Constant), Ind6, Ind8, Ind3, Ind10, Ind5, Ind9				
g. Predictors: (Constant), Ind6, Ind8, Ind3, Ind10, Ind5, Ind9, Ind4				

Table 29 Regression of significant factors (indicators): dependent variable – student satisfaction/RTU

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.003	.119		-.029	.977
Ind6	**.238**	.041	.289	5.862	.000
Ind8	**.166**	.031	.194	5.280	.000
Ind3	**.197**	.038	.242	5.162	.000
Ind10	**.124**	.032	.152	3.882	.000
Ind5	**.106**	.025	.141	4.226	.000
Ind9	**.101**	.031	.133	3.300	.001
Ind4	**.061**	.020	.096	3.097	.002

Table 30 The forward stepwise regression procedure for the four aspects (student satisfaction)

Model Summary (Satisfaction: RTU)				
Model	*R*	*R Square[b]*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.811[a]	.657	.655	.30077
2	.891[b]	.793	.791	.23410
3	.898[c]	.807	.804	.22668
4	.905[d]	.819	**.816**	.21990
a. Predictors: (Constant), Asp4				
b. Predictors: (Constant), Asp4, Asp1				
c. Predictors: (Constant), Asp4, Asp1, Asp2				
d. Predictors: (Constant), Asp4, Asp1, Asp2, Asp3				

Table 31 Regression of significant factors (aspects): dependent variable – student satisfaction/RTU

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.123	.125		-.987	.325
Asp4	**.406**	.043	.405	9.398	.000
Asp1	**.286**	.051	.295	5.588	.000
Asp2	**.132**	.032	.148	4.153	.000
Asp3	**.200**	.053	.210	3.764	.000

The formula of the multiple linear regression model for predicting student satisfaction, which contains seven factors (predictors): *I6, I3, I8, I10, I5, I9, I4* (on descending scale) is presented beneath.

Multiple Linear Regression Model 3 for predicting student satisfaction (RTU)

> *Sat* (satisfaction estimated) = -0.003 + 0.238×I6 + 0.197×I3 + 0.166×I8 + 0.124×I10 + 0.106×I5 + 0.101×I9 + 0.061×I4*

The formula of the multiple linear regression model for predicting student satisfaction including four factors (predictors): *Asp4, Asp1, Asp3,* and *Asp2* (on descending scale) is presented below.

Multiple Linear Regression Model 4 for predicting student satisfaction (RTU)

> *Sat* (satisfaction estimated) = -0.123 + 0.406×Asp4 + 0.286×Asp1 + 0.200×Asp3 + 0.132×Asp2*

1.2.5 Multiple linear regression analysis: student motivation for further studies

Multiple regression analysis was performed for creating multiple linear regression models related to student motivation. Once more, the stepwise regression model definition procedure was applied. The model with high adjusted R square (coefficient of determination), which is equal to 0.802 was obtained (Table 32).

Table 32 The forward stepwise regression procedure for the ten indicators (student motivation)

Model Summary (Motivation: TSI)				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797[a]	.634	.633	.37760
2	.855[b]	.731	.728	.32488
3	.886[c]	.785	.782	.29111
4	.896[d]	.802	.798	.27973
5	.898[e]	.807	**.802**	.27705
a. Predictors: (Constant), Ind6				
b. Predictors: (Constant), Ind6, Ind4				
c. Predictors: (Constant), Ind6, Ind4, Ind9				
d. Predictors: (Constant), Ind6, Ind4, Ind9, Ind10				
e. Predictors: (Constant), Ind6, Ind4, Ind9, Ind10, Ind5				

Estimated values of the regression coefficients are shown in Table 33. The obtained model for predicting student motivation includes five factors (predictors) - *I6, I4, I9, I10 and I5* (on descending scale). Other variables were excluded.

Table 33 Regression of significant factors (indicators): dependent variable – student motivation/TSI

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.284	.142		-1.994	.047
Ind6	**.419**	.047	.391	8.864	.000
Ind4	**.220**	.033	.260	6.619	.000
Ind9	**.206**	.037	.238	5.566	.000
Ind10	**.144**	.043	.149	3.317	.001
Ind5	**.080**	.036	.090	2.232	.027

The formula of the multiple linear regression model for predicting student motivation containing five factors (predictors): *I6, I4, I9, I10, I5* (on descending scale) is given beneath.

Multiple Linear Regression Model 5 for predicting student motivation (TSI)

Mot* (motivation estimated) = -0.284 + 0.419×I6 + 0.220×I4 + 0.206×I9 + 0.144×I10 + 0.080×I5

To proceed with the construction of a multiple linear regression model for predicting student motivation, four variables (the four basic aspects of the educational environment) were identified as input. The model with high adjusted R square (coefficient of determination), which is equal to 0.774 was obtained (Table 34).

Table 34 The forward stepwise regression procedure for the four aspects (student motivation)

Model Summary (Motivation: TSI)				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.797[a]	.635	.633	.37751
2	.855[b]	.732	.729	.32419
3	.878[c]	.772	.768	.29986
4	.882[d]	.778	**.774**	.29625
a. Predictors: (Constant), Asp3				
b. Predictors: (Constant), Asp3, Asp2				
c. Predictors: (Constant), Asp3, Asp2, Asp4				
d. Predictors: (Constant), Asp3, Asp2, Asp4, Asp1				

The model contains four factors (predictors) - *aspects Asp3, Asp4, Asp2,* and *Asp1* (on descending scale) (Table 35).

Table 35 Regression of significant factors (aspects): dependent variable – student motivation/TSI

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.371	.156		-2.374	.019
Asp3	**.326**	.068	.300	4.805	.000
Asp2	**.286**	.042	.289	6.800	.000
Asp4	**.310**	.062	.275	4.968	.000
Asp1	**.166**	.067	.153	2.458	.015

The formula of the linear regression model 6 for predicting student is presented below.

Multiple Linear Regression Model 6 for predicting student motivation (TSI)

Mot* (motivation estimated) = -0.371 + 0.326×Asp3 + 0.310×Asp4 + 0.286×Asp2 + + 0.166×Asp1

Multiple regression analysis was applied to RTU data for generating multiple linear regression models related to student motivation; the stepwise regression model definition

procedure was employed again. The model with high adjusted R square (coefficient of determination), which is equal to 0.679 was obtained (Table 36).

Table 36 The forward stepwise regression procedure for the ten indicators (student motivation)

Model Summary (Motivation: RTU)				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.720[a]	.519	.516	.42167
2	.787[b]	.619	.615	.37614
3	.809[c]	.655	.650	.35884
4	.822[d]	.676	.670	.34846
5	.828[e]	.686	**.679**	.34363
a. Predictors: (Constant), Ind6				
b. Predictors: (Constant), Ind6, Ind10				
c. Predictors: (Constant), Ind6, Ind10, Ind9				
d. Predictors: (Constant), Ind6, Ind10, Ind9, Ind5				
e. Predictors: (Constant), Ind6, Ind10, Ind9, Ind5, Ind7				

The obtained model for predicting student motivation comprises five factors (predictors) - *I6, I10, I9, and I7, I5* (on descending scale) (Table 37). Other variables were excluded.

Table 37 Regression of significant factors (indicators): dependent variable – student motivation/RTU

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.261	.188		-1.390	.166
Ind6	**.274**	.058	.282	4.723	.000
Ind10	**.269**	.049	.277	5.511	.000
Ind9	**.183**	.047	.202	3.927	.000
Ind5	**.143**	.039	.160	3.707	.000
Ind7	**.156**	.059	.143	2.630	.009

The formula of the linear regression model 7 for predicting student motivation is given below.

Multiple Linear Regression Model 7 for predicting student motivation (RTU)

Mot* (motivation estimated) = -0.261 + 0.274×I6 + 0.269×I10 + 0.183×I9 + 0.156×I7+ 0.143×I5

The results of the multiple regression analysis in relation to the basic aspects of the educational environment are presented in Tables 38 and 39 (coefficient of determination is equal to 0.668).

Table 38 The forward stepwise regression procedure for the four aspects (student motivation)

Model Summary (Motivation: RTU)				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.748[a]	.559	.557	.40341
2	.812[b]	.660	.657	.35525
3	.820[c]	.673	**.668**	.34921
a. Predictors: (Constant), Asp4				
b. Predictors: (Constant), Asp4, Asp3				
c. Predictors: (Constant), Asp4, Asp3, Asp2				

The acquired model for predicting student motivation incorporates only three factors (predictors) - *aspects Asp3, Asp4,* and *Asp2* (on descending scale) (Table 42). One variable (aspect 1) was excluded.

Table 39 Regression of significant factors (aspects): dependent variable – student motivation/RTU

Independent variable	Unstandardized Coefficients		Standardized Coefficients		
	B	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	-.440	.195		-2.256	.025
Asp4	**.463**	.068	.390	6.765	.000
Asp3	**.468**	.063	.415	7.479	.000
Asp2	**.142**	.049	.135	2.892	.004

The formula of the multiple linear regression model for predicting student motivation is presented below.

Multiple Linear Regression Model 8 for predicting student motivation (RTU)

Mot* (motivation estimated) = -0.440 + 0.468×Asp3 + 0.463×Asp4 + 0.142×Asp2

The results of the multiple regression analysis has allowed the author to identify the presumed causal factors (predictors) having the biggest impact on student satisfaction/motivation. Correlations analysis has let the author to assert that these factors are interconnected and interrelated in the framework of the integrated student-centred educational environment. The summary of the factors (indicators) that are supposed to generate student satisfaction with the educational environment and their motivation for further studies is given in Table 40.

The factors are arranged in four groups: 1) TSI (satisfaction); 2) TSI (motivation); 3) RTU (satisfaction); 4) RTU (motivation).

Table 40 Presumed causal factors for student satisfaction with the educational environment/student motivation for further studies (indicators)

Higher education institution	*Presumed causal factor (on descending scale): indicators*	
	Student satisfaction with the educational environment	*Student motivation for further studies*
TSI	I6 (Study course content)	I6 (Study course content)
	I7 (Teaching materials quality and availability)	I4 (Computer laboratory facilities)
	I10 (Support from teaching and attending staff, managers)	I9 (Collaborative learning)
	I3 (Quality of conducted lessons)	I10 (Support from teaching and attending staff, managers)
	I5 (Library services)	I5 (Library services)
	I9 (Collaborative learning)	
	I4 (Computer laboratory facilities)	
	I1 (Information quality and availability)	
RTU	I6 (Study course content)	I6 (Study course content)
	I3 (Quality of conducted lessons)	I10 (Support from teaching and attending staff, managers)
	I8 (Environment safety and comfort)	I9 (Collaborative learning)
	I10 (Support from teaching and attending staff, managers)	I7 (Teaching materials quality and availability)
	I5 (Library services)	I5 (Library services)
	I9 (Collaborative learning)	
	I4 (Computer laboratory facilities)	

From this table, one can see that there are *six predictors* common for both TSI and RTU in relation to student satisfaction with the educational environment:

- I6 (Study course content)
- I3 (Quality of conducted lessons)
- I4 (Computer laboratory facilities)
- I5 (Library services)
- I9 (Collaborative learning)

- I10 (Support from teaching and attending staff, managers).

From Table 40, one can also see that there are *four predictors* common for both TSI and RTU in relation to student motivation for further studies:

- I6 (Study course content)
- I9 (Collaborative learning)
- I10 (Support from teaching and attending staff, managers)
- I5 (Library services).

One interesting finding of the study is that *the main causal factor* in all groups (TSI satisfaction, TSI motivation, RTU satisfaction, RTU motivation) is *I6 - Study course content*. It is supposed to have the biggest impact on student satisfaction and student motivation.

Another interesting finding is that three factors – *I9 (Collaborative learning), I5 (Library services)* and I10 *(Support from teaching and attending staff, managers)* also to some extent influence student satisfaction and student motivation in all four groups.

The summary of the factors (aspects) that are supposed to influence student satisfaction and their motivation for further studies is given in Table 41. The factors are arranged in four groups: 1) TSI (satisfaction); 2) TSI (motivation); 3) RTU (satisfaction); 4) RTU (motivation).

Table 41 Presumed causal factors for student satisfaction with the educational environment/student motivation for further studies (aspects)

Higher education institution	*Presumed causal factor (on descending scale): aspects*	
	Student satisfaction with the educational environment	*Student motivation for further studies*
TSI	Asp4 (the psychological environment) Asp3 (the instructional environment) Asp2 (the physical and technological environment) Asp1 (the executive environment)	Asp3 (the instructional environment) Asp4 (the psychological environment) Asp2 (the physical and technological environment) Asp1 (the executive environment)
RTU	Asp4 (the psychological environment) Asp1 (the executive environment) Asp3 (the instructional environment) Asp2 (the physical and technological environment)	Asp3 (the instructional environment) Asp4 (the psychological environment) Asp2 (the physical and technological environment)

From Table 41, one can see that *the main causal factor* in two groups (TSI satisfaction, RTU satisfaction) is *Asp4* - the *psychological environment*. It is supposed to have the biggest impact as on student satisfaction with the educational environment. *The main causal factor* in two groups (TSI motivation, RTU motivation) is *Asp3 - the instructional environment*. It is supposed to have the biggest impact as on student motivation for further studies.

1.2.6 Concluding remarks

The study has provided an illustrative case of how two higher education institutions of Latvia tested the learner-centred educational environment evaluation model in order to identify the main factors that are assumed to have the most significant impact on student satisfaction with the educational environment and student motivation for further studies.

It was hypothesized that the evaluation indicators presenting four higher order dimensions – four aspects of the educational environment – would influence student satisfaction with the educational environment and student motivation for further studies. In turn, student satisfaction with the educational environment was hypothesized to be related to student motivation for further studies. Using correlations and multiple regression analysis, the hypothesized effects were tested empirically.

The results show that there exist strong positive relationship between the evaluation indicators and student satisfaction with the educational environment and student motivation for further studies. These results would imply that students perceive the educational environment as an integrated system. The study has empirically shown that student motivation for further studies would increase when students are satisfied with the educational environment .

Employing multiple regression analysis the author has examined a few predictors (factors) of student satisfaction with the educational environment and student motivation for further studies. Since all regression coefficients are positive, these results indicate that many different factors are important in shaping student satisfaction with the educational environment and student motivation for further studies.

There are some limitations that need mentioning. The sample in this study included two higher education institutions. A larger sample would increase the reliability of the results. The scale items could be further refined to better define and measure the factors that might influence student satisfaction with the educational environment and student motivation for further studies in a higher education institution.

CONCLUSIONS

The analysis of the theoretical literature and of the empirical research results has served for the following conclusions, which provide answers to the research questions and to the research theses to be defended.

- The analysis of the theoretical literature carried out in Chapter 2 allows the author to characterize the educational environment as a set (system) of integrated resources (material, non-material, informational) that contains the following subsystems: 1) the physical and technological environment; 2) the instructional environment; 3) the psychological environment; 4) the executive environment. The physical and technological environment comprises lecture rooms and lecture halls, laboratories and the laboratory equipment (including databases), etc. The instructional environment contains regulative documents, academic programmes, teaching materials that support the learning process. The psychological environment is associated with the atmosphere created in the learning process. The executive environment includes activities of teaching and learning (lecturing, conducting practical lessons and workshops), administration.

- The analysis of the theoretical literature performed in Chapters 3, 4, 5 allows the author to conclude that purposeful management of the educational environment includes management of a set of the environment resources ensuring the development of the integrated student0centred educational environment in a higher education institution. Having employed the typology of management and leadership models adapted by Bush from Bush and Glover the author has suggested *a structural model of managing the educational environment (SMMEE)*. The structural model suggested in this Paper is intended to help describe the process of managing the integrated educational environment resources. The structural model itself is built on the supposition that management of the integrated student-centred educational environment requires the holistic approach to be employed.

- Having used B. Fiddler's principles of the strategic management for school improvement adapted particularly for the area of higher education the author concludes that from a holistic viewpoint, various integrated managerial instruments can be employed for purposeful management of the educational environment aimed at the improvement of a higher education institution. They are the following: Total Quality Management (TQM), Knowledge Management, Fact-based Management,

Human Capital Management, Project-based Management, Customer Relationship Management, etc. Purposeful management of the educational environment involves regular environment evaluation, which is used in the framework of the integrated managerial activities.

- The analysis of the theoretical literature performed in Chapter 5 allows the author describe evaluation as a tool used for managing the integrated student-centred educational environment. Assessment of the integrated student-centred educational environment includes collecting student feedback. A set of evaluation indicators have been developed on the basis of a) the analysis of theoretical sources; b) the author's experience in education; c) the pilot study carried out in Transport and Telecommunication Institute. These all-embracing evaluation indicators can be used to assess the educational environment from students' point of view (in accordance with their needs and requirements), and to identify the main factors that influence student satisfaction with the educational environment and student motivation for further studies. The evaluation indicators are supposed to be associated with the four basic aspects of the educational environment - the physical and technological environment, the instructional environment, the psychological environment, the executive environment.

- The evaluation indicators have been tested in two higher education institutions of Latvia. The results of the empirical study suggest that students perceive the educational environment as an integrated system, which contains different interconnected and interdependent subsystems. This stresses the importance of applying the holistic approach to managing the educational environment.

- The analysis of the obtained data has allowed the author to identify essential factors that influence student satisfaction with the educational environment and. These factors are the following.

a) Student satisfaction with the educational environment:

- the study course content;

- the quality of conducted lessons;

- the computer laboratory facilities;

- library services;

- collaborative learning;

- support from the teaching staff, attending staff and education managers.

b) Student motivation for further studies:

- the study course content;

- library services;

- collaborative learning;

- support from the teaching staff, attending staff and education managers.

RECOMMENDATIONS

- Having taken into consideration the data obtained via the analysis of theoretical literature and the results of the empirical research the author recommends to education managers to perform regular assessment of their educational environment in the framework of carrying out strategic analysis aimed at the improvement of a higher education institution.

- Collecting student feedback in the form of regular educational environment evaluation can be a valuable source of analytical input in the process of managing the integrated student-centred educational environment.

- The author hopes that whatever lessons the empirical study provides will be useful to education managers who are interested in analyzing their educational environment for providing sustainable learning process.

- A special attention should be paid to applying the holistic principle to managing the environment in order to develop an integrated student-centred educational environment.

- For regular assessment of the environment the author suggests using the integrated student-centred educational environment indicators. These all-embracing indicators may be used by education managers to create their own scheme for assessing the educational environment.

- The author suggests the Higher Education Quality Evaluation Centre of Latvia to assess the evaluation indicators for applying them in the accreditation process.

- The author recommends education mangers to pay special attention to the factors, which influence student satisfaction with the educational environment and student motivation for further studies, in order to increase student satisfaction and student motivation in the context of continuous improvement of a higher education institution.

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1. Questionnaire used to rate the significance of different educational environment aspects in supporting the learning process in a higher education institution

Dear ESP students! With the help of this questionnaire we would like to find out your opinion about the quality of the educational environment for foreign languages training in the University. Put a tick (√) next to the right answer, and write free answers in indicated places!

Institution _____

Faculty _____

Study year _____

Study programme _____

How important are the following factors for foreign languages training?			
Factor	**Essential**	**I don't know**	**Non-essential**
I. *The executive environment (learning process organization)* 1) Quality of acquired skills and competences			
2) Quality and availability of the given information			
3) Quality of conducted lessons			
II. *Physical and technological environment* 4) Quality of the laboratory equipment			
5) Lecture rooms and lecture halls amenities			
III. *Instructional environment* 6) Academic programs and curricula content			
7) Teaching materials quality and availability			
8) Availability and quality of the Internet/intranet instructional resources			
IV. *Psychological environment* 9) Environment safety and comfort			
10) Possibility to work in cooperation with other students			
11) Support from managers, teachers and attending staff			
VI. *Other (specify)* 12) ………………………			

Thank you!

2. Pilot study results

Tables

Table 1

Quality of acquired skills and competences

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	176	87,6	87,6	87,6
	I don't know	23	11,4	11,4	99,0
	Non-essential	2	1,0	1,0	100,0
	Total	201	100,0	100,0	

Table 2

Quality and availability of the given information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	181	90,0	90,0	90,0
	I don't know	15	7,5	7,5	97,5
	Non-essential	5	2,5	2,5	100,0
	Total	201	100,0	100,0	

Table 3

Quality of conducted lessons

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	164	81,6	81,6	81,6
	I don't know	29	14,4	14,4	96,0
	Non-essential	8	4,0	4,0	100,0
	Total	201	100,0	100,0	

Table 4

Quality of the laboratory equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	105	52,2	52,2	52,2
	I don't know	51	25,4	25,4	77,6
	Non-essential	45	22,4	22,4	100,0
	Total	201	100,0	100,0	

Table 5

Lecture rooms and lecture halls amenities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	130	64,7	64,7	64,7
	I don't know	33	16,4	16,4	81,1
	Non-essential	38	18,9	18,9	100,0
	Total	201	100,0	100,0	

Table 6

Academic programs and curricula content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	126	62,7	62,7	62,7
	I don't know	46	22,9	22,9	85,6
	Non-essential	29	14,4	14,4	100,0
	Total	201	100,0	100,0	

Table 7

Teaching materials quality and availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	171	85,1	85,1	85,1
	I don't know	25	12,4	12,4	97,5
	Non-essential	5	2,5	2,5	100,0
	Total	201	100,0	100,0	

Table 8

Availability and quality of the Internet/intranet instructional resources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	160	79,6	79,6	79,6
	I don't know	24	11,9	11,9	91,5
	Non-essential	17	8,5	8,5	100,0
	Total	201	100,0	100,0	

Table 9

Environment safety and comfort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	152	75,6	75,6	75,6
	I don't know	37	18,4	18,4	94,0
	Non-essential	12	6,0	6,0	100,0
	Total	201	100,0	100,0	

Table 10

Possibility to work in cooperation with other students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	131	65,2	65,2	65,2
	I don't know	43	21,4	21,4	86,6
	Non-essential	27	13,4	13,4	100,0
	Total	201	100,0	100,0	

Table 11

Support from managers, teachers and attending staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	157	78,1	78,1	78,1
	I don't know	30	14,9	14,9	93,0
	Non-essential	14	7,0	7,0	100,0
	Total	201	100,0	100,0	

Histograms

Quality of acquired skills and competences

Mean =1,13
Std. Dev. =0,37
N =201

Fig.1

Quality and availability of the given information

Mean =1,12
Std. Dev. =0,399
N =201

Fig.2

Quality of conducted lessons

Mean =1,22
Std. Dev. =0,505
N =201

Fig.3

Quality of the laboratory equipment

Mean =1,7
Std. Dev. =0,813
N =201
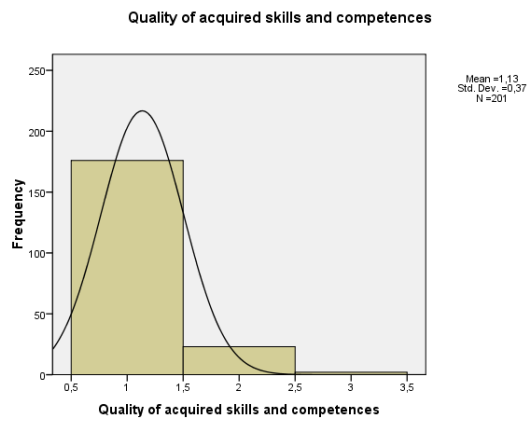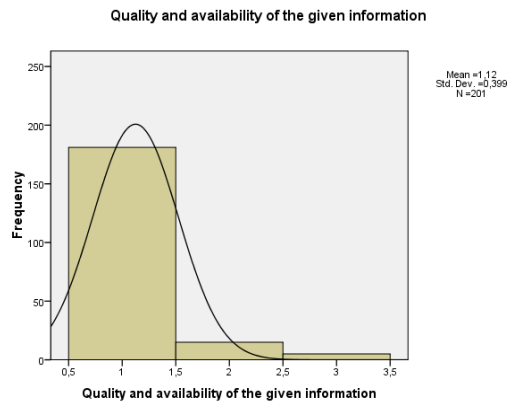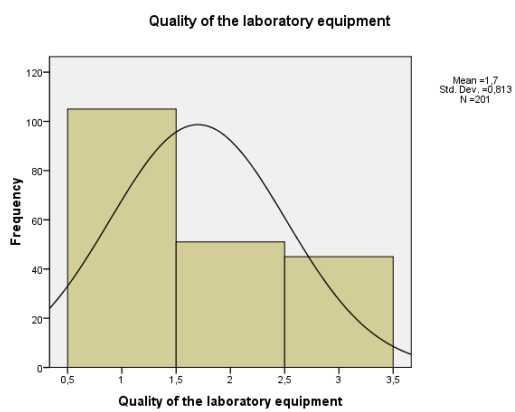
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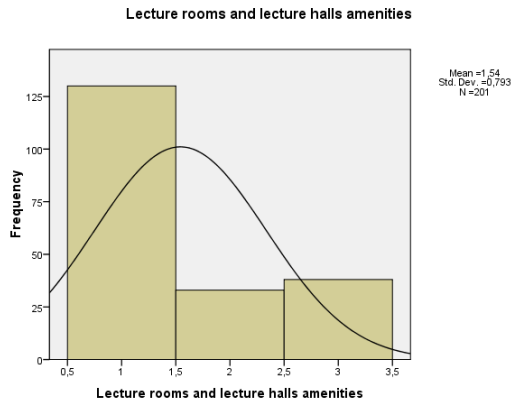
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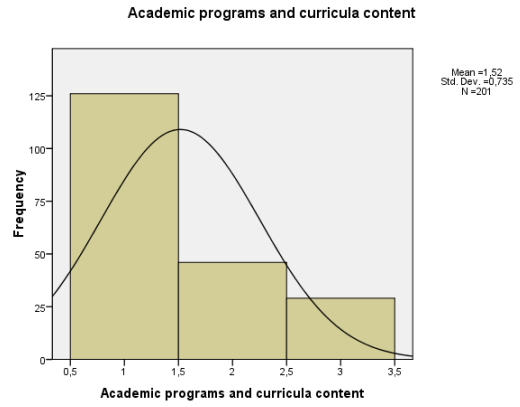
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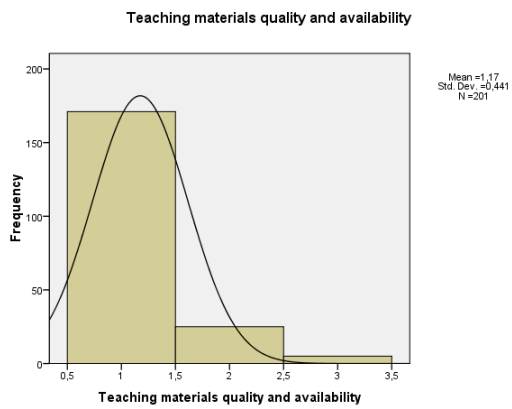
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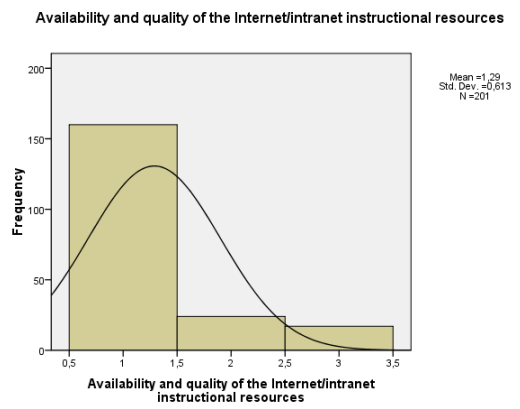

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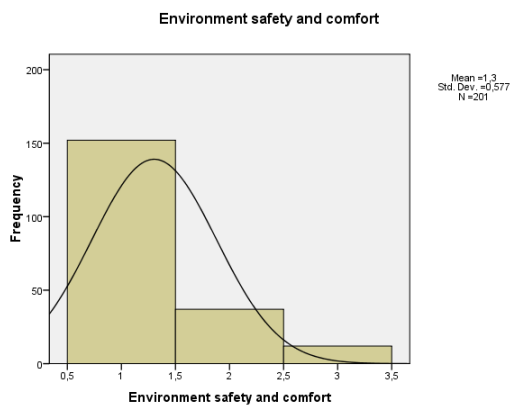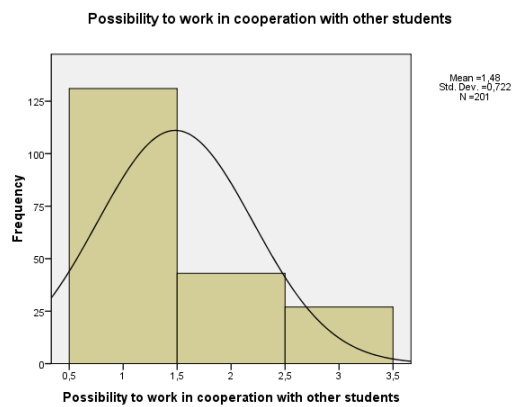

Fig.9

Fig.10

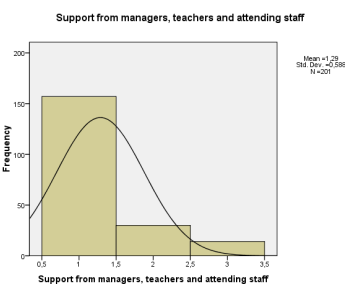
Fig.11

1. Questionnaire used to evaluate the integrated educational environment in a higher education institution

Dear ESP students! With the help of this questionnaire we would like to find out your opinion about the quality of the educational environment in relation to providing foreign languages acquisition in the University. Put a tick (√) next to the right answer!

Institution _____

Faculty _____

Study year _____

Study programme _____

On a scale of 1 to 5 rate: *1 = strongly disagree*

2 = disagree

3 = partly agree or disagree

4 = agree

5 = strongly agree

I. The executive environment

a) The information quality and availability

Item	*1*	*2*	*3*	*4*	*5*
1. The information was presented in a logical and well-organized manner					
2. The information was effective in supporting the learning process					
3. I found the information interesting					
4. I found the information useful in this course					
5. The information was easily available					
6. Using the information aroused my curiosity					
7. *I was satisfied with the obtained information*					
8. *The acquired information has stimulated my motivation for further studies*					

b) The quality of acquired skills and competences

Item	*1*	*2*	*3*	*4*	*5*
9. The ESP course met my professional needs					
10. The ESP course enhanced my language skills					
11. The ESP course enhanced my teamwork skills					
12. The ESP course enhanced my problem-solving skills					
13. The ESP course enhanced my presentation skills					
14. I was able to use what I had learned in class					
15. *I am satisfied with the quality of acquired skills*					
16. *The acquired skills have stimulated my motivation for further studies*					

c) The quality of conducted lessons

Item	*1*	*2*	*3*	*4*	*5*
17. The ESP lessons held my interest					
18. The ESP lessons provided the appropriate level of interactivity					
19. The ESP lessons were well planned and organized					
20. The ESP lessons enabled free communication					
21. The ESP lessons were enjoyable					
22. The ESP lessons aroused my curiosity					
23. *I am satisfied with the quality of the ESP lessons*					
24. *The ESP lessons have increased my motivation for continuing this course and improving my skills*					

II. The physical and technological environment

a) The computer laboratory facilities

Item	1	2	3	4	5
25. The computer laboratory equipment was easy to use					
26. The feedback from the laboratory instructor was useful					
27. The teaching materials were useful					
28. The teaching materials were enjoyable to use					
29. *I was satisfied with the opportunities provided by the computer laboratory*					
30. *Using the laboratory facilities has stimulated my motivation for developing language skills*					

b) The library services

Item	1	2	3	4	5
31. The library facilities assist the learning process					
32. The feedback from the librarians was useful					
33. The library resources (including electronic materials) are fully available					
34. The library is equipped with the devices providing access to external information sources					
35. *I am satisfied with the library services*					
36. *Using the library services has stimulated my desire to study*					

III. The instructional environment

a) The study course content

Item	1	2	3	4	5
37. The ESP course met my requirements and expectations					
38. The ESP course held my interest					
39. The ESP course was useful and helpful					
40. I found this course enjoyable					
41. The ESP course aroused my curiosity					
42. The ESP course enhanced my language skills					
43. I am satisfied with the ESP course					
44. The ESP course has increased my motivation for further studies					

b) Teaching materials quality and availability

Item	1	2	3	4	5
45. Teaching materials met my professional needs					
46. Teaching materials held my interest					
47. Teaching materials were useful and helpful					
48. Teaching materials (including intranet instructional resources) were easily available					
49. Teaching materials were enjoyable to use					
50. Teaching materials (including intranet resources) were effective in supporting the learning process					
51. I am satisfied with the teaching materials, which I have at my disposal					
52. Using the instructional materials has enhanced my motivation for further studies					

IV. The psychological environment

a) The environment safety and comfort

Item	1	2	3	4	5
53. The environment in the institute is student-friendly					
54. The environment in the institute is safe					
55. The institute provides students with all necessary conveniences					
56. I can always find a place for relaxation					
57. The institute's environment enables free communication					
58. *I am satisfied with the institute's environment amenities*					
59. *The educational environment conditions motivate my desire to study*					

b) Collaborative learning (teamwork, project-based learning)

Item	1	2	3	4	5
60. I found working in a team useful					
61. I found working in a team enjoyable					
62. Working in a team I looked for opportunities to develop my language skills					
63. Working on a project (in a team) improved my performance in the ESP course					
64. Working in a team aroused my curiosity and stimulated my imagination					
65. *I liked working on a certain project in a team*					
66. *Working on a project (in a team) has increased my motivation for further studies*					

c) Support from the teaching staff, attending staff and education managers

Item	1	2	3	4	5
1. I was able to get considerable instructional support from my teachers					
2. I was able to get considerable instructional support from tutors and mentors					
3. I was able to get considerable support from education managers of all levels					
4. I was able to get considerable instructional support from the attending staff - lab assistants, engineers, librarians, and other institute's workers					
5. I was able to get the necessary emotional support from other institute's workers					
6. *I was satisfied with the level of instructional and emotional support from the institute's workers*					
7. *Support from the institute's workers has increased my motivation for further studies*					

Thank you!

2. Data from Transport and Telecommunication Institute (TSI)

1) Frequencies

TSI

Statistics

		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
N	Valid	211	211	211	211	211	211	211	211	211	211
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3,89	3,83	3,84	3,43	3,62	3,87	3,84	3,92	3,95	3,81
Median		3,89	3,88	3,88	3,50	3,67	3,88	3,88	4,00	4,00	3,86
Mode		4,00	3,88	3,75	4,00	3,67	3,88	4,00	4,00	4,00	4,00
Std. Deviation		,60	,65	,59	,74	,70	,58	,76	,60	,78	,64

2) Case processing summary and reliability statistics

Case Processing Summary

Cases		N	%
Cases	Valid	211	100
	Excluded[a]	0	0
	Total	211	100

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0,925	10

3) Ten evaluation indicators
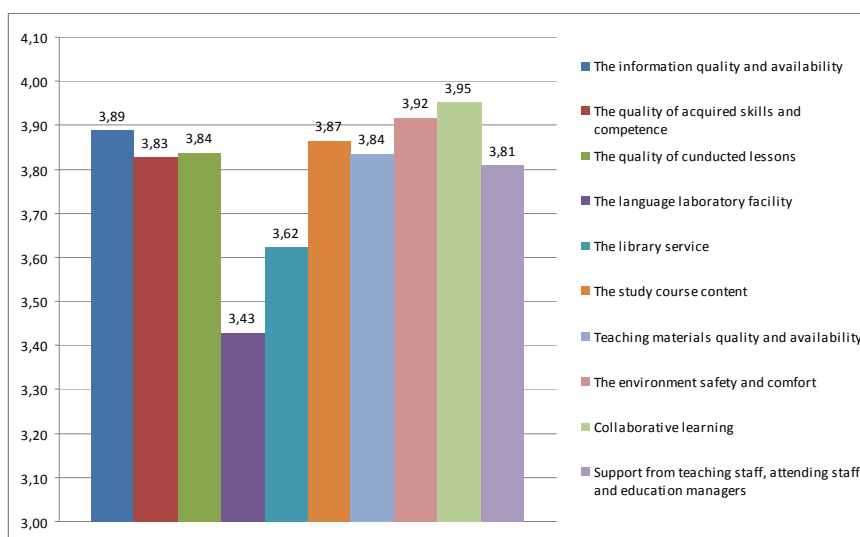
4) Four basic aspects of the educational environment
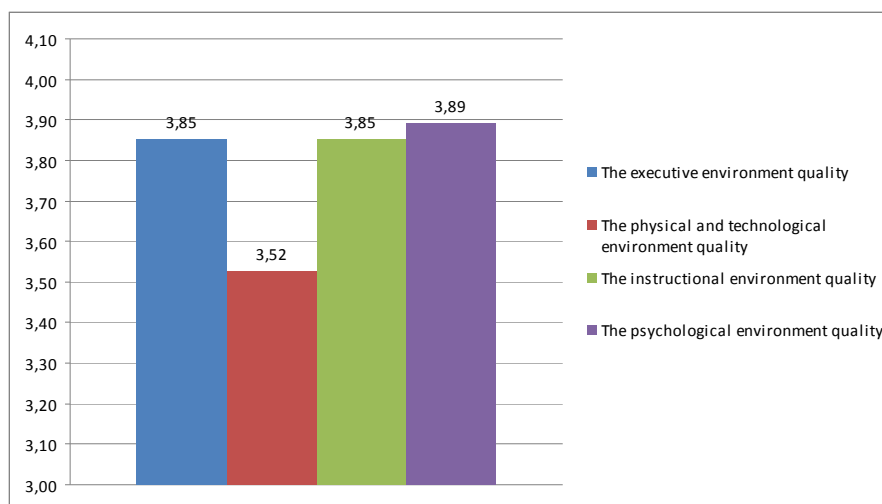
3. Data from Riga Technical University (RTU)

1) Frequencies

RTU

Statistics

		I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
N	Valid	214	214	214	214	214	214	214	214	214	214
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3,7	3,6	3,7	3,4	3,7	3,6	3,7	3,7	3,8	3,5
Median		3,8	3,6	3,7	3,5	3,8	3,6	3,6	3,7	3,7	3,6
Mode		3,6	3,6	3,750[a]	3,8	3,7	3,0	4,0	4,0	4,0	4,0
Std. Deviation		,5	,6	,6	,7	,7	,6	,6	,6	,7	,7

2) Case processing summary and reliability statistics

Case Processing Summary

		N	%
Cases	Valid	214	100
	Excluded[a]	0	0
	Total	214	100

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0,903	10

3) The evaluation indicators
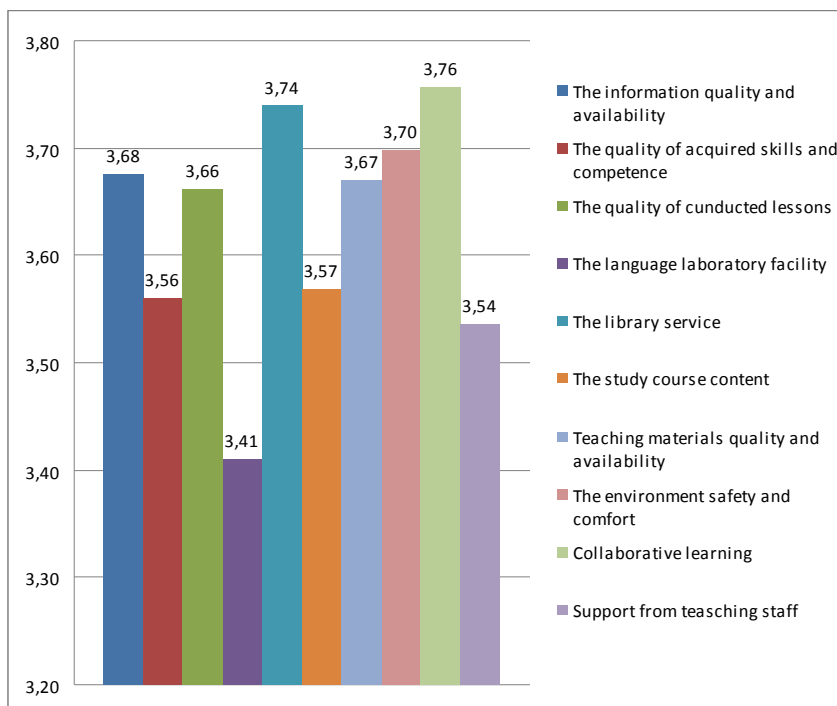
4) Four basic aspects of the educational environment
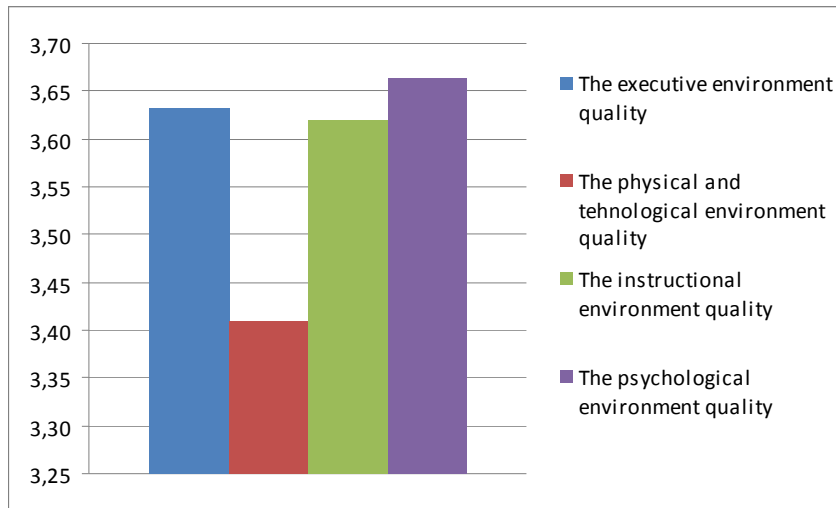
4. Statistics: Integrated data from Riga Technical University (RTU) / Transport and Telecommunication Institute (TSI)

1) Frequencies

TSI&RTU

Statistics

		I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
N	Valid	425	425	425	425	425	425	425	425	425	425
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3,780	3,693	3,749	3,419	3,681	3,716	3,752	3,806	3,851	3,671
Median		3,750	3,750	3,750	3,500	3,667	3,750	3,750	3,857	3,857	3,714
Mode		3,625[a]	3,625	3,750	3,833	3,667	3,875	4,000	4,000	4,000	4,000
Std. Deviation		,577	,640	,610	,744	,692	,620	,665	,608	,737	,658

2) Ten evaluation indicators

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