# CLUSTERING AND KNOWLEDGE BASED ECONOMY

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***Abstract:***The main aim of the paper is to identify education quality focused on the need to make profound connection with the business environment with the goal of employability of graduates. The findings suggest that flow of ideas and information with focus on knowledge within the cluster serves as a powerful force for potential change in educational systems where links between practice and theory are firmly grounded and applied as the means to develop appropriate teaching and pedagogical strategies to meet the student's needs.

***Key words:*** clustering, education, research, economic development, employment.

# POVEZIVANJE U KLASTERE I EKONOMIJA ZASNOVANA NA ZNANJU

***Rezime:***Glavna svrha ovog rada je da se identifikuje kvalitetno obrazovanje koje je usredsređeno na duboku povezanost između poslovne sredine i postavljenog cilja da se zaposle diplomirani studenti. Istraživanja pokazuju da protok ideja i informacija sa fokusom na znanju u okviru klastera služi kao snažni pokretač mogućih promena u obrazovnom sistemu gde su veze između prakse i teorije čvrsto utemeljene i primenjene kao sredstvo za razvoj adekvatnog podučavanja i pedagoških strategija da bi se zadovoljile potrebe studenata.

***Ključne reči:*** povezivanje u klastere, obrazovanje, istraživanje, ekonomski razvoj, zapošljavanje.

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## 1 INTRODUCTION

Clustering of education institutions with business sector has its impact on economic development and contribution to enhanced employment. We have reached a "new" period of development, namely knowledge society which demands better understanding of anticipated needs of changing environment. Knowledge based economy focuses on human capital as the key source of organizations' competitive advantage (Diez, 2001). Education institutions have to radically change their curricula due to changing work situations and requirements of business environment. The development of any education institution has to be in line with the needs of companies that employ its graduates and individuals that enter lifelong learning courses. Education institutions have to master and transfer adequate knowledge that ensures employability of the graduates.

The research design of the study is based on qualitative literature review and description of the model of clustering of education, research and business sector. The paper has three parts. Firstly, it outlines theoretical part of the study, summarizing the importance of quality assurance that pursues students' growth and employability through the transfer of appropriate knowledge and skills offered within the curricula that is up-to date as a consequence of expert and scientific collaboration within clusters. Secondly, it covers qualitative analysis, based on imperative review on contemporary clustering as the answer to more and more demanding business environment. Finally, it discusses the importance of the clustering for achieving pedagogical excellence in terms of conveying adequate knowledge and skills that promotes employability of the graduates.

## 2 CLUSTER POLICY IMPLEMENTATION AND ENSURING STUDENTS' EMPLOYABILITY

Clusters as the tools for promoting growth, competitiveness, innovation and organizational survival strategy are becoming the prime principle of economic development. They serve as a valuable opportunity for sectorial collaboration, mutual learning and improving any kind of practices. Cooke (2001) emphasized the significance of public innovation support system along with institutional and organizational support from private sector when pursuing economic development. As such the clusters present guidelines for economic promotion policies, supporting innovativeness, and fostering competitiveness based on collaboration (Fromhold-Eisebith & Eisebith, 2005). Many believe (Sölvell, Lindquist & Kelers, 2003, Kitson, Martin & Tyler, 2004) that the new industrialization is based on small and medium firms and in particular on the clusters structuring through cooperation with education institutions, companies and institutes. Radman-Funarić (2011) defines clusters as formal or informal interrelated economic entities that seek to achieve common goals.

The global knowledge-intensive capitalism demands the creation of knowledge resources that lead to a learning economy where knowledge is the most important resource. The focus is shifted from short-run economic performance to re-creating, maintaining, and sustaining the required conditions to pursue continuous improvement (Florida, 1995). Globalization has affected almost all aspects of human life, not only the productive sectors but also the environment, health, education and society as a whole. It is a complex process that causes the creation of networks of capital and technology through enhanced competition, stronger interconnection and greater interdependence. Education sector being a part of service sector, cannot escape the challenges of globalization.

Globalization poses pressure on education system. Higher education institutions are facing institutional change triggered by globalization (Vaira, 2004) linked to the frame of knowledge-based competition. The government funding is reduced and higher education institutions are becoming increasingly market oriented and financially independent (Kwiek, 2001). The impact of globalization and the development of knowledge based economy have caused changes in higher education (McBrunie, 2001; Vaira, 2004). Survival of higher education institutions solely depends on the quality level of their services (Aviram, 2001) therefore there is no option but to adapt to the era in which they function. Higher education institutions, driven by competition, examine the quality of their services, redefine their products and measure the results while pursuing their own pedagogical objectives and their mission of dissemination of knowledge (Wood, Tapsall, & Soutar 2005). Kember and Leung (2009) emphasise the

importance of the corresponding teaching environment that has to be dependent on learning outcomes. Effectiveness (Samy & Cook, 2009) is a multidimensional concept exploring the dynamics of education institution as an organization that serves the needs of its community. Pedagogic excellence correlates with the concern for student's growth (Gibbs & Iacovidou, 2004; Tsinidou, Gerogiannis & Fitsilis, 2010) and achievements (Gibbs & Iacovidou, 2004, p. 115) because student's achievements are the core concept paradigm of quality (Samy & Cook, 2009; Brauckmann & Pashiardis, 2010).It is important to understand the parameters that not only influence the teaching process, but also ensure development of transferable skills and enhancement of creativity. It is asserted that among different stakeholders, students are the most important and when examining service quality, their perception of quality performance is most relevant (McCuddy, Pirnar & Gingerich, 2008; Yeo, 2008; Gallifa & Batallé, 2010; Reid, 2010; Tsinidou, Gerogiannis & Fitsilis, 2010). Moreover, it is important to measure influence of education on students' academic and personal growth and achievements (Tam, 2002; Voss, Gurber & Szmigin, 2007; Wongsurawat, 2011). Education should not only promote knowledge, but also students values, skills for personal and social transformation helping them to cope with changes preparing them for job in the 21st century (Kaplan & Flum, 2012, p. 171). The goal is to enhance employability of graduates (Penger, Tekavčič & Dimovski, 2008). Quality imperative has to be rooted within the strategic plan and education institutions should not lose sight of the long-term commitment toward research and the nature of academic pursuit (Bosetti & Walker, 2010, p.17-18).

There is a need for teaching and learning processes to be based on the common purpose and designed to assure continuous quality improvement (Henderson-Smart, Winning, Gerzina, King and Hyde, 2006, p. 144). Evaluation within quality assessment provides evidence of good practice and gives directions for improvement. Quality cannot be guaranteed unless the quality process and culture is firmly established within the education institutions (Reed & Thompson, 2011). The most prominent researcher regarding learning methods is Kolb. He based his theory of experiential learning on persons' different approaches to perceiving, processing and information integration and formulated the model of learning styles based on Jungian concept. He indicates that various disciplines are localized in different learning style requiring specific learning strategies to be successful in that field (Jones, Reichard and Mokhtari, 2003, p. 365-366). Demirbas and Demirkan (2007) stressed that Kolb build Experiential Learning Theory on a set of theories namely Dewey's pragmatism, Maslow's humanism, Piaget's cognitive development, Ruger's client centred therapy, Lewin's social psychology and Perls' Gestalt therapy being widely accepted and his Learning Styles Inventory is presenting framework for learning in many disciplines. Kolb and Kolb (2005) define experiential learning theory as a holistic theory that identifies learning style differences and experiential learning as process of constructing knowledge and creative tension among experiencing, reflecting, thinking and acting. Kolb's model classifies learners into four learning styles as accommodating, diverging, converging and assimilating. Kolb and Kolb (2005) explain that experiential learning refers also to the experiential life space of the learner including physical, social environment and quality of relationships. Learning techniques should be designed in a way to meet students' needs (Rovai & Barnum, 2003; Liao & Wang, 2008). Student centred model of teaching focuses on what students do and need to deepen understanding (Buttler & Reddy, 2010, p. 785).

According to the need of interfacing of theoretical with experiential learning Sheehan, McDonald and Spence (2009) conclude thatit is important to provide training facilities where experiential learning activities through which deeper understanding of what is like to work in an organization is gained. Students prefer interactive and experiential learning methods which enhance understanding and produce transferable knowledge (Abrantes, Seabra and Lages, 2007, p. 962). Critical reflective learning helps students to comprehend theoretical knowledge much deeper (Hedberg, 2009, p.28). Buttler and Reddy (2010) demonstrated practically-based learning as an approach to study as a key to later function successfully in competitive environment. Academics are attempting to provide the knowledge that meets students' needs. Assessing service quality means to fulfil students' expectations (Angel, Heffernan and Megicks, 2008). The ultimate goal of education is to enhance students' growth and prepare them for future career development (Liao & Wang, 2008, Kaplan & Flum, 2012). One of the most sound and reliable measurement of quality is employability of graduates (Domadenik, Drame & Farčnik, 2009, p. 302).

The mission of education institutions has to be the creation and dissemination of knowledge that enables students' successful entry into the business world and at the same time to offer a rewarding investment opportunity to the business community (Penger,

Tekavčič & Dimovski, 2008). The development of these new skills and knowledge requires education institutions and business sector cooperation to form a curriculum that continuously fills the gaps of anticipated needs of changing environment.

## 3 SLOVENE MODEL OF CLUSTERING OF EDUCATION AND BUSINESS SECTOR

According to Entwistle and Peterson (2004, p. 409), William Perry was in the seventies the first who suggested that students' knowledge development has to be progressive through education intervened with experience based training. Similarly, later Garrison and Kanuka (2004) emphasised that higher education institutions have to provide relevant experiences to students who need to develop high level of knowledge and upgrade current skills in accordance with rapid technological development. The employability agenda affects a discerning student population who require key skills in order to live and work in an increasingly technologically focussed, complex work environment (Weaver, 2006). Higher vocational education is therefore tightly linked to the development of technological capability and the aim is to prepare students for the workplace, to enable them to successfully enter into the business world and add value to the business community (Lee, Kozar & Larsen, 2003). Understanding of the parameters that not only enhance the quality of teaching process but also those which ensure development of transferable skills are of key importance (Ojiako, Ashleigh, Chipulu and Maguire, 2010).

The education institutions from the fields of agriculture, horticulture, forestry and food processing have built a regional cluster with the aim to exchange information, knowledge for the mutual benefits when forming new curriculum that matches the needs of the labour market. To gain the additional insights about the needs of potential employers of the graduates, education institutions have established Inter-entrepreneurial education centres that seek cooperation with business sector which gives insights about knowledge and skill shortages as well as provide training infrastructure where theoretical knowledge is practically applied (Consortium of biotechnical education institutions, 2011). Basically Inter-entrepreneurial education centres are the centres of excellence that encourage students to accept new knowledge and apply scientific achievements. Inter-entrepreneurial education centres offer their students experienced based training as means to practically upgrade theoretical knowledge gained in classrooms. The education polygons of those Slovene higher vocational institutions enable student knowledge and skills development in line with the labour market demands. Adequate training programs are being shaped through inter-entrepreneurial - business sector flow of insights of the labour demands and required knowledge that is being updated constantly as Pawlovski (2007) Brown (2011) emphasised that quality development should be part of everyday operations and commitment and a continuous process of improvement and further development. Only by the transfer of adequate knowledge and skills employability of graduates is assured.

The regional cluster was founded primarily to establish linkages to professional labour market, namely, local firms and other organizations with the desire to exchange knowledge and conduct research activities. Further the endeavours in mastering adequate knowledge and skills contributes to economic development of the region and causes employability of their graduates. The synergy of the regional cluster continues through the development of constantly updated programs. Tangible benefits of clustering are the results of following clear research and development policies (Consortium of biotechnical education institutions, 2011).

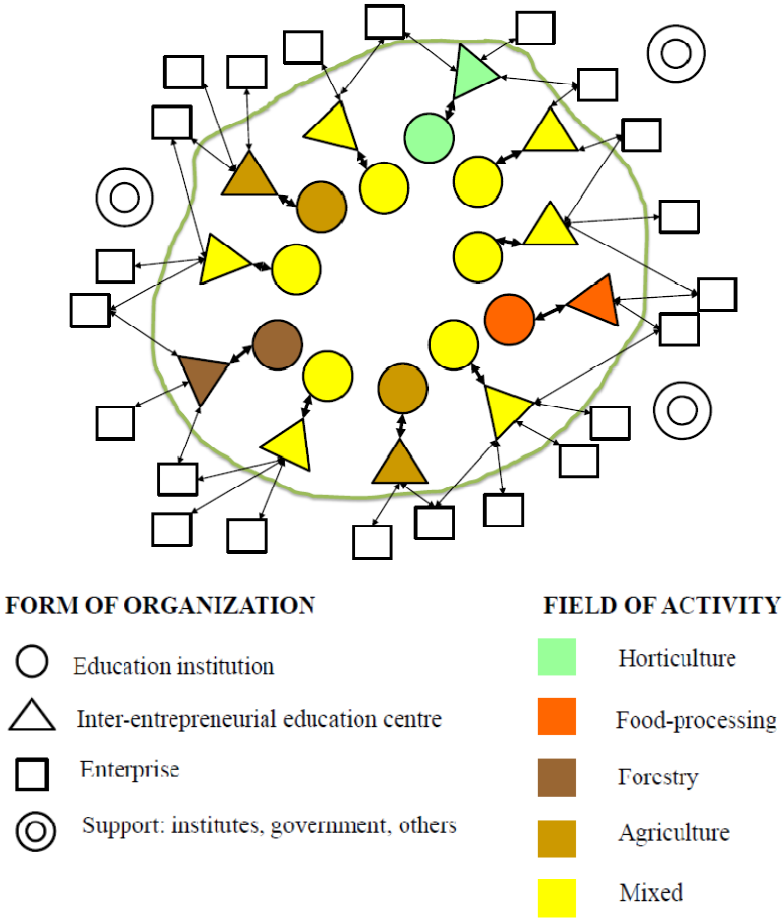


***Figure 1: Slovene model of clustering of education and business sector***

## 4 CONCLUSION

The impact of globalization and the development of knowledge based economy have altered demands of education. Nowadays human capital is the source of the strongest competitive advantage therefore organisations that succeeded in the future will have to focus on acquiring knowledge as the key business process and its priority and accordingly recruit individuals that possess knowledge and skills demanded by the nature of rapidly changing environment. Knowledge, learning, and innovation are keys to competitiveness and economic development. By knowledge creation organizations will be able to adapt to changing work situations and requirements of business environment.

Many European higher education institutions perceived globalisation as pressures toward standardizing the study programmes whereby reduce the direct governments' control with increasingly performance-based funding. Globalization forced education institutions to use their resources to deliver a high level of quality. In the process of developing the competencies of students, they shifted toward students needs moving beyond providing just knowledge and skills but helping them to develop critical thinking and deepen their theoretical understanding. Programs that provide training support and meet the needs of society have to be developed.

Clustering presented in the paper is a challenge for the education institutions in giving priority to the development of applicable knowledge that enables employability of graduates. Therefore the key approach is the integration and cooperation between public and private sector from education, research to business. Clusters connect subjects while encourage innovation process, flow of ideas and information with focus on knowledge to enhance competitiveness.

Through the qualitative analysis we can conclude that clustering where links between practice and theory are firmly grounded serve as a powerful tool of mastering over knowledge and skills that are anticipated in rapidly changing environment in pursuing economic development and employability enhancement.

## REFERENCES

[1] *Pedagogical affect, student interest, and learning performance,* Abrantes, J.L., Seabra, C. & Lages, L.F. Journal of Business Research, 6, 2007, 960-964.
[2] *Service quality in postgraduate education,* Angell, R.J., Heffernana, T.W. & Megicks, P. Quality Assurance in Education, 16 (3), 2008, 236-254.
[3] *From »Computers in the classroom« to mindful radical adaptation by education systems to the emerging cyber culture,* Aviram, A. Journal of Educational Change 1, 2001, 331–352.
[4] *The clash of evaluations In search of the missing link between school accountability and school improvement – experiences from Cyprus,* Brauckmann, S. & Pashiardis, P. International Journal of Educational Management, 24(4), 2010, 330-350.
[5] *Bringing about positive change in the higher education student experience: a case study*, Brown, S. Quality Assurance in Education, *19*(3), 2011, 195-207.
[6] *Developing critical understanding in HRM students: Using innovative teaching methods to encourage deep approaches to study. Butler,* M.J.R. & Reddy, P. Journal of European Industrial Training, 34(8/9), 2010, 772-789.
[7] *Learning styles of design students and the relationship of academic performance and gender in design education,* Demirbas, O.O. & Demirkan, H. Learning and Instruciton, *17*, 2007, 345-359.
[8] *Consortium of biotechnical education institutions,* 2011, internal documentation.
[9] *Regional Innovation Systems, Clusters, and the Knowledge Economy,* Cooke, P. Industrial and Corporate Change, 10(4), 2001, 945-974.
[10] *The Evaluation of Regional Innovation and Cluster Policies: Toward a Participatory Approach*, Diez, M.A. European Planning Studies, 9(7), 2001, 907-923.
[11] *The School-to-Work Transition of Business Graduates in Slovenia,* Domadenik, P., Drame, M., & Farčnik, D. *Rev.* soc. polit., 17(2), 2009, 299-324.
[12] *Conceptions of learning and knowledge in higher education: Relationships with study behaviour and influences of learning environments,* Entwistle, N.J., & Peterson, E.R. International Journal of Educational Research, 41, 2004,407- 428.
[13] *Toward the learning region,* Florida, R., Futures, *27*(5), 1995, 527-536.
[14] *How to institutionalize innovative clusters? Comparing explicit top-down and implicit bottom-up approaches,* Fromhold-Eisebith, M. & Eisebith, G. Research Policy 34, 2005, 1250-1268.
[15] *Student perceptions of service quality in a multi-campus higher education system in Spain*, Gallifa, J., & Batallé, P. Quality Assurance in Education, 18(2), 2010, 156-170.
[16] *Blended learning: Uncovering its transformative potential in higher education,* Garrison, D.R. & Kanuka, H. The Internet and Higher Education, 7, 2004, 95-105.
[17] *Quality as pedagogy of confinement: is there an alternative?,* Gibbs, P. & Iacovidou, M. Quality Assurance in Education, 12(3), 2004, 113-119.
[18] *Learning Through Reflective Classroom Practice: Applications to Educate the Reflective Manager,* Hedberg, P.R, Journal of Management Education, 33(1), 2009, 10-36.
[19] *Benchmarking learning and teaching: developing a model,* Henderson-Smart, C., Winning, T., Gerzina, T., King, S. & Hyde, S. Quality Assurance in Education, 14(2), 2006, 143-155.
[20] *Are students' learning styles discipline specific?,* Jones, C., Reichard, C., & Mokhtari, K. Community College Journal of Research and Practice 27, 2003, 363-375.
[21] *Identity formation in educational settings: A critical focus of education in the 21st century*, Kaplan, A., & Flum, H. Contemporary Educational Psychology, 37(3), 2012, 171-175.
[22] *Development of a questionnaire for assessing students' perceptions of the teaching and learning environment and its use in quality assurance,* Kember, D. & Leung, D.Y.P. Learning Environments Research, 12,2009,15-29.
[23] *Regional Competitiveness: An Elusive yet Key Concept?,* Kitson, M., Martin, R. & Tyler, P. Regional Studies, 38(9), 2004, 991-999.
[24] *Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education,* Kolb, A.Y. & Kolb, D.A., Academy of Management Learning & Education, 4(2), 2005, 193-212.
[25] *Globalization and Higher Education,* Kwiek, M. Higher Education in Europe, 26(1), 2001, 27-38.
[26] *The Technology Acceptance Model: Past, Present, and Future,* Lee, Y., Kozar, K.A., & Larsen, K.R.T. Computer and Information Science, 12(1), 2003, 752-780.
[27] *Applying The ARCS Motivation Model In Technological And Vocational Education,* Liao, H.C. & Wang, Y.,Contemporary Issues In Education Research, 1(2), 2008, 53-58.
[28] *Using student feedback in designing student-focused curricula,* McCuddy, M.K., Pinar, M., & Gingerich, E.F.R. International Journal of Educational Management, 22(7), 2008, 611-637.
[29] *Globalization: A New Paradigm for Higher Education Policy. Levering Globalization as a Policy Paradigm for Higher Education,* McBurnie, G. Higher Education in Europe, 26(1), 2001, 11-26.
[30] *Learning and teaching challenges in project management,* Ojiako, U., Ashleigh, M., Chipulu, M. &

Maguire, S.,International Journal of Project Management, 29(3), 2010, 268-278.
[31] *The Quality Adaptation Model: Adaptation and Adoption of the Quality Standard ISO/IEC 19796-1 for Learning, Education, and Training,* Pawlowski, J.M.,Educational Technology & Society, 10(2), 2007, 3-16.
[32] *Meta-Analysis And Empirical Research Of Learning Style Theories In Higher Education: The Case Of Slovenia,* Penger, S., Tekavčič, M. & Dimovski, V. Journal of College Teaching & Learning, 5(11), 2008, 1-21.
[33] *Information, innovation and connection – limitation in the cluster development in Pannonian Croatia,* Radman-Funarić M.,Poslovna izvrsnost Zagreb, 1, 2011, 77-99.
[34] *Survey Responses to the Baldrige Quality Model and Implementing a College of Education Strategic Plan,* Reed, M. & Thompson, S.,Kentucky Journal of Excellence in College Teaching and Learning, 9(1), 2011, 16-28.
[35] *An evaluation of an internal audit on student feedback within a British university: A quality enhancement process,* Reid, K. Quality Assurance in Education, 18(1), 2010, 47-63.
[36] *On-Line Course Effectiveness: An Analysis of Student Interactions and Perceptions of Learning,* Rovai, A.P. &Barnum, K.T. Journal of Distance Education, 18(1), 2003, 57-73.
[37] *Perceived school effectiveness: case study of a Liverpool collage*, Samy M. & Cook, K. International Journal of Educational Management, 23(2), 2009, 185-198.
[38] *Developing Students' Emotional Competency Using the Classroom-as-Organization Approach,* Sheehan, B.J., McDonald, M.A., & Spence, K.K.,Journal of Management Education, 33(1), 2009, 77-98.
[39] *The Cluster Initiative Greenbook*,Sölvell, Ö., Lindquist, G. & Kelels, C. Bromma tryck AB, 2003, Strockholm.
[40] *Measuring the effect of higher education on university students,*Tam, M. Quality Assurance in Education, 10(4), 2002, 223-228.
[41] *The changing debate on internationalisation of higher education,* Teichler, U.,Higher Education, 48, 2004, 5-26.
[42] *Evaluation of the factors that determine quality in higher education: an empirical study,* Tsinidou, M., Gerogiannis, V., & Fitsilis, P.,Quality assurance in Education, 18(3), 2010, 227-244.
[43] *Globalization and higher education organizational change: A framework for analysis,* Vaira, M. Higher Education, 48, 2004, 483-510.
[44] *Exploring conceptions of learning and teaching through the creation of flexible learning spaces: the Learning Gateway - a case study,* Weaver, M.,New Review of Academic Librarianship, 12(2), 2006, 109-125.
[45] *Service quality in higher education: The role of student expectations,* Voss, R., Gruber, T. & Szmigin, I. Journal of Business Research, 60, 2007, 949-959.
[46] *What's a comment worth? How to better understand student evaluations of teaching,*Wongsurawat, W. Quality Assurance in Education, 19(1), 2011, 67-83.
[47] *Borderless education: some implications for management,* Wood, B.J.G., Tapsall, S.M., & Soutar, G.N., International Journal of Educational Management, 19(5), 2005, 428-436.
[48] *Brewing service quality in higher education. Characteristics of ingredients that make up the recipe*, Yeo, R.K. Quality Assurance in Education, 16(3), 2008, 266-286.