

FOSTERING CRITICAL THINKING SKILLS IN EUROPEAN AND ASIAN HIGHER EDUCATION INSTITUTIONS

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There is a demand for transformation in higher education. Undergraduates need to be taught critical thinking, an essential skill that should be central to the mission of all educational institutions. Critical thinking is a key focus of academic interest among researchers in the field of pedagogy and methodology. Despite this, there is still a lack of sufficient information on approaches, methods, techniques, and means of incorporating critical thinking skills in the classroom environment at the tertiary education level. The purpose of this paper is to provide a comprehensive review of the hands-on experiences of some European and Asian universities in promoting critical thinking education using a range of academic models. The review shows that critical thinking has already been integrated into many major tertiary education programmes in both European and Asian universities. Further, majority of the academic models implemented are transferable and flexible. The results confirm that in terms of content, methods, and technologies, university education is focusing on cultivating the higher order skills necessary for innovative professional activities in modern world.

KEYWORDS: Critical Thinking, Teaching Methods, Learning Outcome, Curricula, Case Study, Academic Model.

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INTRODUCTION

Providing quality education is a common global concern. The United Nations summit (2015) put forward and adopted a resolution of 17 goals (Transforming our world: the 2030 Agenda for Sustainable Development), in which the fourth goal targets high quality education. That echoes the Incheon Declaration (the World Education Forum, May 2015, UNESCO), which was elaborated to enable governments to implement the commitments. Based on renewed worldwide attention to the issue of quality education, it is urgent and relevant to consider critical thinking as one way of achieving desired results in education and even further, in job placement.

According to the Institute for the Future (IFTF, California) forecast, in 2020 critical thinking is at the second place in the list of skills rated as most valued and appreciated by employers. There are different academic approaches to the way critical thinking is defined, but the majority of scholars have a shared understanding of its nature. Critical thinking as a complex, multidimensional phenomenon, manifested in the student's readiness to transform their personal experience and practice into a communicative process, plays an essential role in attaining skills and competencies required for comprehensive analysis, processing and evaluation of a large amount of information, logical judgments, understanding, and collaborating (McPeck, 1981; Moore, 2013; Antonova & Pletyago, 2018). There is no doubt that a great number of activities can be modified by technological advancements such as VR, smart technologies, and robots. Manual labour can be easily done by robots. But it is only a human being who can think critically. Universities across Europe and Asia are integrating critical thinking courses and their components into curricula, as it is supposed to be one of the main and significant educational outcomes.

The present research may contribute to the rapidly evolving trend of student increasing cross-cultural academic mobility. A high level of critical thinking is an integral part of a constant choice and a flexible response to the "otherness" of foreign cultures. Besides, well-developed critical thinking skills may cultivate an active subjective position in students, which is highly important for achieving success in multicultural educational cooperation.

The sufficiency of critical thinking outcomes has been investigated from the viewpoint of such instrumentalities as instructional approach, teaching strategies, measurement methods, and student success (Norris & Ennis, 1989; Grbich, 2007; Stein, Haynes, Redding, Harris, Tylka, & Lisic, 2010; van der Zanden, Cillessen, Denessen & Meijer, 2018).

There has recently been some dispute regarding the issue of critical thinking-based courses (both specifically designed and integrated into other

courses) – how effective they might be in terms of triggering critical thinking acquisition (Behar-Horenstein & Niu, 2011; Tiruneh, Verburgh & Elen, 2014). Researchers indicate two approaches to developing critical thinking i.e. direct and indirect (Gelder, 2005; Mulnix, 2012). The former involves the development of special separate courses aimed at teaching students to think critically. The latter involves implicit ways of nurturing critical thinking through different courses (Meyers, 1986). The impact of both approaches has been associated with students' self-reported growth in critical thinking (Tsui, 1999).

The literature analysis showed that there is little empirical evidence connected with the results of the comparative analysis of academic models in European and Asian countries. In our research, the academic model includes a set of procedures and outcomes of critical thinking development.

REVIEW OF LITERATURE

A large number of modern researchers in humanities have focussed their academic interest on the development of the critical thinking concept. A lot of studies have been devoted to the analysis of means and ways of fostering, integrating and implementing critical thinking in the educational process (Duron, Limbach & Waugh, 2006; Bean, 2011). The main focus is to balance students' readiness to develop critical thinking and university professors' solid grounding in both critical thinking and the teaching strategies are essential for it.

Critical thinking is a controversial and debatable issue (Liu, Frankel & Roohr, 2014). Therefore, this notion is defined from the view point of its different constructional aspects. Many researchers agree that critical thinking is a core generic competency comprising different general and specific domains (Shaw, Liu, Gu, Kardonova, Chirikov, Li, Hu, Yu, Ma, Guo, Su, Shi & Loyalka, 2019).

Educational institutions strive to meet the needs of students by offering programs and courses aimed at the development of critical thinking skills. It should be emphasized that to sharpen a deep understanding of the foundations of teaching and apply critical thinking is a long-term process (Moll & Greenberg, 1990; Stigler, 1999).

In most of the studies we have analysed, the experience of teaching critical thinking is discussed in terms of pedagogical potential and educational outcomes (McPeck, 1981; Bernstein, 1990; Behar-Horenstein & Niu, 2011). In this context, critical thinking is not just one of the many educational aims, but rather a way of teaching and acquiring a high level of professional

effectiveness. However, the degree of study remains insufficient due to the ambiguity of the notion of critical thinking itself, the diversity of its features, measurement methods, approaches, and the study of it.

The worldwide scientific community is looking for solutions to the above-mentioned issues regarding critical thinking development (Halpern, 1996; Petrucco & Ferranti, 2017). It is important to note that the diverse scientific views and opinions do not clash with but rather complement the overall picture of the foundations of critical thinking and its status in professional practice. All this confirms that studies conducted in this area are of great value and significance.

Our comparative literature analysis helps us to identify the mechanisms and substantive concept of critical thinking. Following the researchers Newmann (1991), Tsui (1999), Gelder (2005), Mulnix (2012) we assume that acquiring critical thinking has nothing to do with the common (and increasingly obsolete) practices of rote memorization, lecture, short-term study habits, and others in which the intellectual skills necessary for reasoning through complex issues are not involved. Innovative changes in higher education and professional training have led to the search for new solutions and additions to the educational paradigm. Knowledge is not given in a ready form, but through lessons aimed at transforming students' external, objective activity into the internal. This amounts to acquiring valuable soft skills as well as critical thinking, which employers want in candidates.

Despite the fact that critical thinking is a widely recognized 21st century skill there is a pressing necessity to define effective academic models implemented in current practice of universities.

RESEARCH METHODOLOGY

This research investigates how different academic models foster the development of critical thinking in students at the tertiary education level in some European and Asian universities. It is a comparative study of approaches, methods, techniques, and means of implementing critical thinking in the teaching process. The research concentrates on the academic content of the universities in such countries as Great Britain, Italy, Sweden, Poland, Slovakia, the Czech Republic, Finland, Germany, Russia, China, South Korea, Japan, Malaysia, and The United Arab Emirates.

Comparative analysis and case study methods have been used to help us evaluate and find academic models of teaching critical thinking in European and Asian countries. The literature review is based on scientific articles, university curriculum analysis, and education-related documents from

European and Asian universities that are open to the public. Academic models including features of curricula, teaching methods, and learning outcomes were reviewed and analysed in our research.

The authors are guided by the idea that the universities considered in the article are in equal conditions and have equal chances to become the object of scientific research. The criterion for the selection of universities was the availability of information on the development of critical thinking on universities' websites. We admit some limitations to the research given. The review is limited to fourteen European and Asian higher educational establishments and the empirical evidence of some academic models.

RESULTS OF THE STUDY

The academic model includes curricula description, teaching methods, and students' competencies (treated both as a learning outcome and criteria of the critical thinking development).

The first university under consideration is Nottingham Trent University (Great Britain, <https://www.ntu.ac.uk/>). Teaching critical thinking is involved in a great range of full-time and part-time study courses (Doctor of Education, MSc of Management, BA of Communication & Society and Philosophy, BA of History and Philosophy, MSc of Project Management, MSc of Marketing, MSc of Finance, and others). Students are engaged with debates from a great range of different cultures and periods and are encouraged to think more critically and clearly about the world around them. The teaching principally takes place through a combination of lectures (in which professors introduce the key ideas) and seminars (in which smaller groups discuss those ideas). The expected result is the development of argumentation skills and analytical and conceptual thinking through the search for answers to the questions.

Another university included in the study is University of Padova (Italy, <https://www.unipd.it/>). Critical thinking development is included in the technology course for master's degree students. A group of forty-eight students participates in the Critical thinking course. The key aim of this program was to utilize the educational potential of the online environment to foster critical thinking skills. The educators of this programme focus on metacognitive skills as a basic component of critical thinking. The class activities include problem-based tasks, a collaborative approach, and the method of a dialogue (Petrucco & Ferranti, 2017). In the programme designers' opinion, students' motivational encouragement and metacognitive reflection

engender positive results of the experience.

One more tertiary education institution is Stockholm University (Sweden, <https://www.su.se/english/>). There are two courses devoted to critical thinking i.e. “Critical thinking in the 21st century” and “The traditions of critical thinking”. The courses are taught within Arts and Humanities through history of literature and the history of ideas. Teaching critical thinking is aimed at developing competencies such as autonomy, analytical skills, and communication skills, which are highly appreciated and demanded in the job market. Students get skills in an interdisciplinary and cross-cultural context. Collaborative and problem-based methods of work are applied in class (dialogue, polylogue, discussion, exchange of views, role games).

The next higher educational establishment, which became the object of our study is AGH University of Science and Technology (Poland, <https://www.study.eu/university/agh-university-of-science-and-technology>). Full-time students of the Faculty of Humanities, Faculty of Management, Faculty of Mechanical Engineering and Robotics, Faculty of AGH UST International Courses, and others are taught critical thinking skills. Training critical thinking is introduced into courses and programs such as the basics of marketing, corporate social responsibility, society and state, and the emergence of world society. Critical thinking is taught through students' participation in lectures, group project preparation and presentation, realization of independently performed tasks, case study analysis, participation in class discussions, problem-solving exercises, and pop quizzes. There are several outcomes claimed. A student can make a critical analysis of current activities and propose improvements, can develop a more critical perspective towards business and business ethics, and is capable of deep reflection on the contemporary world.

The results of some practical research on measurement and assessment of critical thinking in Slovakia prove students' critical thinking skills are insufficient (Elen, Jiang, Huyghe, Evers, Verburgh & Palaigeorgiou, 2019). The necessity to integrate a special component for developing critical thinking skills into all the aspects of training is considered important. The University of Economics in Bratislava (Slovakia, <https://euba.sk/en>) advocates critical thinking in the creative activity of university staff and students (mentioned in the university Code of Ethics). Master's Programme of International Finance (taught in English) supports critical thinking and encourages students to deeply and thoroughly analyse theories and problems and be able to formulate a balanced argument to explain the internal processes in organizations.

At Charles University (The Czech Republic,

1.html) developing critical thinking is sustained by university policy. The Code of Ethics claims that critical thinking is respected and appreciated, as is freedom of independent research and a free exchange of opinions and information. Criticism and alternative opinions are accepted with fairness. The development of critical thinking is implemented in a range of scientific, artistic and creative activities. The expected outcome is graduates' high-level proficiency, competitiveness, and good job opportunities.

The researchers of University of Turku (Finland, <https://www.utu.fi/en>) emphasize the importance and efficacy of the implementation of the direct method of teaching critical thinking (Horn & Veermans, 2019). The scientists claim it is necessary to introduce critical thinking across different courses, thus emphasizing its interdisciplinary nature. One example of those interdisciplinary courses is 'Critical thinking and Scientific conceptions of the World', which is included in many programmes. The teaching methods include interactive lectures and students' independent work. The learning outcomes are scientific reasoning and research ethics.

Another higher education institution that is in the focus of our attention is University of Freiburg (Germany, http://www.uni-freiburg.de/?set_language=en). The Centre for Key Qualifications of the University of Freiburg promotes critical thinking as one of the key competencies of the 21st century. The programme designed for Bachelor of Law Students includes interdisciplinary communication and media courses aimed at the development of key competencies. A wide range of teaching methods such as discussions and project-based learning are implemented to foster critical thinking. The introduction of special problem-solving strategies is of great importance within the framework of those programs. The learning outcome is the ability to analyse texts critically.

Like at the universities mentioned above, critical thinking is one of the strategic interests of Tyumen University (Russia, <https://www.utmn.ru>). Open extracurricular events devoted to the development of students' critical thinking (international forums, training, workshops, round tables, debate championships, and others) take place regularly. As a result, students navigate and analyse information that flows around them, develop their consciousness and demands on their knowledge, improve their public speaking skills and defend their viewpoints, justify their opinions and ask competent questions, and get extra-professional competencies, such as effective cross-cultural and multidisciplinary intersectoral communication, the ability to solve complex problems, and the ability to work in a team.

China is believed to have introduced a culturally-specific academic model

for developing students' critical thinking. An educational reform in China (2010 – 2020) prescribes the necessity of critical thinking development. The first Chinese University to meet the challenge was Tsinghua University (<https://www.tsinghua.edu.cn/en/>). In 2011, it launched a general programme, 'Critical thinking and moral reasoning'. The course includes both lectures and discussion-based seminars. The empirical evidence shows that, in contrast to Tsinghua University, Fudan University (<https://www.fudan.edu.cn/en/main.psp>) integrates critical thinking components in different syllabuses. The Chinese University of Hong Kong (<http://www.cuhk.edu.hk/english/index.html>) introduced a critical thinking course aimed at providing independent thinking skills based on both practical and theoretical issues. The learning outcomes include acquiring analytical skills and the ability to evaluate different types of arguments. Most of the teaching methods are reading assignments, discussions, and written feedback essays.

Teaching critical thinking is included in many bachelor's programs at Seoul National University (South Korea, <http://www.useoul.edu/>). The courses (Critical Thinking in Dentistry, Critical Thinking and Expression, and others) are provided with lectures and seminars/laboratory work. The goals are to enable students to think critically exploring human nature, intelligence, and cognition; to foster critical thinking in social life; to develop the ability to deal with problems and issues critically and rationally. Problem-solving and communication-based tasks are the teaching methods used in class to achieve these goals. Students are taught to actively read relevant texts, to discuss their text-interpretations, and to express their opinions both in oral and written forms. The outcome of the courses is the ability to think logically, structurally, and effectively while decision-making and problem-solving and to contribute the most benefit to socially significant spheres of life.

There is another higher education institution in our list, University of Tokyo (Japan, <https://www.u-tokyo.ac.jp/en/>), where critical thinking is commonly taught through an interdisciplinary approach. Cross-program open lectures, seminars, and workshops are provided both by domestic professors and guest lecturers. Agnostic practice, problem-based tasks, course-embedded research and critical evaluation of phenomena are examples of the wide range of teaching methods used for sharpening students' critical thinking. Along with learning to think critically, students gain reconfiguration of the teacher-student relationship, improved problem-solving, interpersonal and research skills, not to mention new knowledge, experience, and perspectives.

Critical thinking is among the educational objectives at University Kuala

Lumpur (Malaysia, <https://www.unikl.edu.my>), which is focused on preparing highly-skilled specialists for industrial, economic, environmental and societal achievements. Graduates get the knowledge and skills required to be professional, competent, innovative and socially responsible people. They are also well-prepared for effective leadership, team-work, and problem-solving within economics, industry or other contexts. Critical thinking is taught in a variety of subjects included in full-time programmes i.e. Foundation in Computer Technology, Mechanical Engineering, Diploma in Electrical Electronics Engineering, Bachelor of Science Nursing, Bachelor of Science in Pharmaceutical Technology, Bachelor of Biomedical Science, Master's in Manufacturing Management, Diploma of Engineering Technology in Electromechanical Installation and Maintenance, and others. Critical thinking is cultivated through discussions, logical inquiry, and reasoning tasks.

The development of critical thinking skills is included in all programs for undergraduates and postgraduates of Abu Dhabi University (The United Arab Emirates, <https://www.adu.ac.ae>) such as Bachelor of Business Administration in Management, Master of Private Law, Master of Public Law, Master of International Relations, Bachelor of Business Administration in Digital Marketing Communications, and many others. Teaching students to think critically is implemented in a range of majors, such as major and open electives, college and general education subjects, and critical thinking courses etc. Interdisciplinary methods are used which combine both traditional academic procedures and innovative teaching technologies. Critical Thinking Workshops are in great demand among students. The learning outcomes are graduates' high professional performance and increased employability.

The findings of the case study are summarized in the Table 1 which shows the practices of some European and Asian universities in terms of curricular description, what teaching methods to foster critical thinking are used there, and what competencies students obtain as learning outcomes.

The comparative analysis of European and Asian universities' academic models revealed that teaching critical thinking is integrated into many education programmes both explicitly and implicitly. We have also discovered that critical thinking is sometimes taught outside of the context of a specific academic discipline, as a class in its own right. Our findings suggest that the European and Asian universities we studied provide various learning outcomes related to critical thinking because of its complex and multifaceted character. Moreover, teaching methods are comprised of diverse pedagogical tools in implicit and explicit courses in a variety of fields. Therefore, the

academic models are transferable, flexible, and adaptable.

Table 1

Academic Models of Critical Thinking Development.

No.	Country	Curricula Description	Teaching Methods	Learning Outcomes
1	<i>Nottingham Trent University (Great Britain)</i>	A range of full-time and part-time study courses	Lectures and seminars (group discussions)	Power of argumentation, analytical and conceptual thinking through the search for answers to the ultimate questions
2	<i>University of Padova (Italy)</i>	Included in the Technology course (Master's program)	Problem-based tasks, collaboration, dialogue	Metacognitive skills
3	<i>Stockholm University (Sweden)</i>	Critical thinking in the 21 st century, The traditions of critical thinking, Arts and Humanities through the history of literature the and history of ideas	Collaborative and problem-based tasks	Autonomy, analytical and communication skills
4	<i>University of Science and Technology (Poland)</i>	Basics of marketing, Corporate Social Responsibility, Society and State, The Emergence of World Society	Lectures, group projects, independent tasks, case study analysis, class discussions problem-solving exercises	Deep reflection upon the contemporary world
5	<i>University of Economics in Bratislava (Slovakia)</i>	Master's Programme of International Finance	Analysis; problem-solving tasks; open questions	Ability to formulate balanced arguments, to provide reasonable explanations and solutions
6	<i>Charles University (The Czech Republic)</i>	Represented implicitly in major courses	Action research, collaborative approach	Autonomy, independence
7	<i>University of Turku (Finland)</i>	Interdisciplinary explicit courses	Interactive lectures; students independent work	Scientific reasoning
8	<i>University of Freiburg (Germany)</i>	Interdisciplinary communication and media courses	Discussions, project-based learning	Ability to convey and analyse texts critically

No.	Country	Curricula Description	Teaching Methods	Learning Outcomes
9	<i>Tyumen University (Russia)</i>	Open extracurricular events	International forums, training, workshops, round tables, debates	Public speaking skills, opinion justification, effective communication, ability to solve complex problems
10	<i>Tsinghua University; Fudan University; Chinese University of Hong Kong (China)</i>	A general programme 'Critical thinking and moral reasoning'	Lectures, seminars, reading assignments, discussions and written feedback essays	Analytical skills, ability to evaluate arguments
11	<i>Seoul National University (South Korea)</i>	Critical Thinking in Dentistry, Critical Thinking and exploration of human nature, intelligence and sharing/care	Problem-solving communication tasks	Logical and structural thinking
12	<i>University of Tokyo (Japan)</i>	Cross-program open lectures, seminars, workshops	Agnostic practice, problem-based tasks, course-embedded research	Problem-solving, interpersonal, and research skills
13	<i>University Kuala Lumpur (Malaysia)</i>	A variety of academic subjects	Logical inquiry, reasoning tasks	Effective leadership, teamwork, problem solving skills
14	<i>Abu Dhabi University (The United Arab Emirates)</i>	All programs for undergraduates and postgraduates	Interdisciplinary methods	Graduates' high professional performance, increased employability.

Viewed in this way, our results indicate that critical thinking is a balanced combination of both generic and specific competencies (Indrasiene, Jegeleviciene, Merfeldaite, Penkauskiene, Pivoriene, Railiene, Sadauskas & Valaviciene, 2019). That is why fostering critical thinking can be achieved through a wide range of pedagogical means, as was confirmed in our research. The results also imply that an interdisciplinary approach is most effective for fostering critical thinking.

DISCUSSION OF RESULTS

We may conclude that both European and Asian universities promote critical thinking consistently and use common methods of fostering it. We have not found any specific teaching methods that contribute to the development of critical thinking. Our results show that the methods are various, including project-based learning, blended learning, inquiry-based learning and others.

In this aspect, our findings correlate with other researchers (Tiruneh, Verburgh, Elen, 2014, Elen, Jiang, Huyghe, Evers, Verburgh & Palaigeorgiou, 2019). The research has also shown that while some courses are explicit in their goal to develop critical thinking skills, other courses tend to be implicit because they are limited to encouraging only some elements of critical thinking. Thus, we conclude that both direct and indirect approaches to course design are used.

The study suggests that a universal tool for assessing critical thinking and its outcomes is a controversial idea. The outcomes related to critical thinking development are diverse. Overall, this study confirms that both European and Asian universities are using their content, methods and technologies to develop one of the most universal and necessary skills of the 21st century i.e. the ability to think critically.

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