



Article

Value of Critical Thinking in the Labour Market: Variations in Employers' and Employees' Views

Valdonė Indrašienė , Violeta Jegelevičienė , Odeta Merfeldaitė , Daiva Penkauskienė , Jolanta Pivorienė , Asta Railienė and Justinas Sadauskas *

Institute of Educational Sciences and Social Work, Faculty of Human and Social Studies, Mykolas Romeris University, Ateities st. 20, LT-08303 Vilnius, Lithuania

* Correspondence: justas_sad@mrni.eu

Abstract: The fragmentation and narrowness of research on critical thinking in the labour market and the lack of critical thinking analysis in the context of the interplay between lifelong learning, education and the labour market presuppose the relevance of this article. The article analyses the views of employers and employees, highlighting their attitude toward the importance and manifestation of critical thinking in the labour market and the need for improving critical thinking competency. The article aims to answer the following problematic questions: (1) How important are critical thinking skills and dispositions in the labour market? (2) How do employers' and employees' opinions vary regarding critical thinking in professional activities? (3) What need is there to improve critical thinking skills and dispositions? Quantitative research methodology was chosen for data collection using a questionnaire. It was found that both employers and employees consider inference and argumentation to be the most important critical thinking skills in the modern labour market; however, their attitude toward self-regulation, which is highly regarded by employees, but not by employers, is fundamentally different. Both employers and employees understand the importance of dispositions and value them similarly. Both groups have the least regard for having scepticism. The assessment of critical thinking skills and dispositions in specific professional activities differs from the assessment in the labour market in general. In professional activities, substantiated decisions, flexibility and unbiased decisions are especially valued by both groups, and the skills listed as being in most need of improvement are the same ones that were given as being important. The attitudes of both groups were distinguished by assigning value to dispositions that need improvement. Employees are more likely than employers to work on dispositions that denote operational autonomy. The study also revealed correlations between various groups of critical thinking skills and dispositions, demonstrating both employers' and employees' deliberate choice in assessing one or other constituent of critical thinking competence and the perception of their interrelationships.

Keywords: critical thinking; labour market; employee; employer



Citation: Indrašienė, Valdonė, Violeta Jegelevičienė, Odeta Merfeldaitė, Daiva Penkauskienė, Jolanta Pivorienė, Asta Railienė, and Justinas Sadauskas. 2023. Value of Critical Thinking in the Labour Market: Variations in Employers' and Employees' Views. *Social Sciences* 12: 221. <https://doi.org/10.3390/socsci12040221>

Academic Editor: Nigel Parton

Received: 26 January 2023

Revised: 20 March 2023

Accepted: 4 April 2023

Published: 6 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The globalising labour market is facing increasing challenges. Organisations are operating in a digitalised, multicultural and diverse environment, and problem-solving skills that used to be suitable no longer are. Therefore, there is a need to look for new ways to adapt to the constantly changing situation in uncertain times.

Research on professions of the future has singled out critical thinking as a necessary competency, especially emphasising its value for human–technology interaction (e.g., artificial intelligence) (Mabić and Gašpar 2020). It is expected that within organisations and in relationships with other stakeholders, the diversity not only of technology, but also of people and relationships will increase, and this will require different ways of communication and cooperation than now (Voinea 2019). Vincent-Lancrin (Vincent-Lancrin 2021) argued that critical thinking is a skill for innovation, for the digital age and for personal and social

well-being. It is becoming a necessary and fundamental prerequisite not only for finding solutions for solving current problems (Habets et al. 2020; Pérez Rave et al. 2020; Whiting 2020) and creating innovations (Jiang et al. 2018; Tang et al. 2010; Rarita 2022), but also for predicting and implementing future changes in the labour market (Li 2022).

Researchers understand the importance of critical thinking, but studies are fragmented or conducted from a one-sided perspective. A scoping review of the past five years carried out by the authors of this article showed that research has focused on the perspective of either employees (Bangali 2021; Bekbayeva et al. 2021; Kovalchuk et al. 2022) or employers (Gruzdev et al. 2018; Sky4.0 2019; Tripathy 2020). Most of these employer studies have shown that critical thinking is highly regarded by employers and considered a necessary prerequisite for success in the labour market; however, dissatisfaction with education is also expressed, i.e., studies have shown that the education system does not develop the critical thinking competencies required for the labour market.

Research on critical thinking in education is significantly more abundant than in the labour market but lacks a consensus. Mabić and Gašpar (2020) singled out the three main ongoing disagreements among researchers: what critical thinking is, how to develop it and how to assess it. Moreover, many studies have been conducted on critical thinking in various levels (general, higher) of formal education (Mabić and Gašpar 2020; Voinea 2019), but there is a lack of research on the development of critical thinking in non-formal education, i.e., in those forms of education that are relevant and could be applied in the context of the labour market. The labour market is changing faster than the educational processes, and although there is already talk about the University 4.0 model, which particularly emphasises the importance of critical thinking competencies (Jugembayeva et al. 2022), it is important to analyse the development of critical thinking—similar to other soft competencies needed in the 21st century—based on the lifelong learning paradigm (Li 2022).

Critical thinking is recognised as being one of the most important factors that have a positive impact on lifelong learning (Homayounzadeh 2015; Green 2016; Wei 2020). In today's labour market situation, lifelong learning is particularly relevant in the context of employee retraining (World Economic Forum 2020), with the aim of enabling individuals to remain active in the ever-changing labour market environment and creating more inclusive and sustainable economies and societies where no one is left behind. The European Commission estimates that less than two out of five adults in the EU participate in learning activities every year, which is not enough to meet the needs of Industry 4.0 and subsequent technologies (World Economic Forum 2020).

Labour market and education studies both emphasise the necessity of dialogue between the labour market and education. The abundance of general research (Brzinsky-Fay 2017; Wicht et al. 2019; Lauder and Mayhew 2020) lacks studies on the links between the labour market and education in the context of critical thinking. Some studies (Gruzdev et al. 2018; Habets et al. 2020; Mabić and Gašpar 2020) have discussed this, but mostly on the theoretical level, providing little evidence on how it is happening in practice, and only in exceptional cases has the central focus been kept on critical thinking at the intersection of the labour market and education (Indrašienė et al. 2021).

The fragmentation and narrowness of research on critical thinking in the labour market and the lack of critical thinking analysis in the context of the interplay between lifelong learning, education and the labour market presuppose the relevance of this article and underline its novelty. Rather than focusing on one individual group of stakeholders, it analyses the views of two related groups—employers and employees—highlighting their attitudes toward the importance and manifestation of critical thinking in the labour market and the need for improving critical thinking competency.

The purpose of this article is to reveal how the views of employers and employees vary in their assessment of critical thinking in the labour market in the context of lifelong learning. The article aims to answer the following problematic questions: (1) Which critical thinking skills and dispositions are important in the labour market? (2) How do employers'

and employees' opinions vary regarding critical thinking in labour market? (3) What need is there to improve critical thinking skills and dispositions?

2. Methodology

2.1. Participants

Quantitative research methodology was chosen based on a positivist paradigm (Phillips and Burbules 2000; Creswell and Guetterman 2019). In order for the sample to be representative of the entire statistical population, a multistage probability sampling method was used by interviewing two groups of respondents—employers and employees—from all regions of the country. Representative samples were compiled on the basis of 2020 data from the Official Statistics Portal and the State Social Insurance Fund SODRA. The survey conducted between December 2020 and October 2021.

The sample included 528 employers and 2012 employees. The employer and employee respondent groups reflected the Lithuanian labour market according to the parameters of management/work experience, type of organisation, sector of professional activity (according to the Industry Classifier of the country), organisation size and location (Table 1).

Table 1. Sociodemographic data for the employer and employee groups (%).

Demographic Data for the Employers and Employees		
	Employers	Employees
Gender		
Women	59.1	59.8
Men	40.9	40.2
Age		
≤40 years	33.1	52.0
≥41 years	66.9	48.0
Education		
Higher university	70.3	44.2
Higher non-university	11.4	21.0
Post-secondary	7.0	14.8
Other	11.4	20.0
Management/work experience		
≤10 years	49.4	37.3
11–20 years	30.9	25.5
21–30 years	13.3	20.8
31–40 years	5.5	14.2
41–50 years	0.9	2.1

2.2. Data Collection

In the survey, data were collected through a questionnaire. The construction of the questionnaire was based on an analysis of scientific sources, which made it possible to distinguish critical thinking skills and dispositions. The authors of the research included 9 critical thinking skills and 18 dispositions in the questionnaire, which were identified on the basis of the analysed scientific sources. In total, 303 scientific publications on critical thinking published in the recent two decades in top-quality journals (Q1–Q4) were subjected to the review. As a result, 8 authors were identified whose defined critical thinking skills and dispositions were mostly cited in the current article: Ennis (1987), Facione (1990), Halpern (1998), Beyer (1987), Barnett (1997), Siegel (1988), Paul (1992) and Elder and Paul (2001). Cronbach's Alpha (α) criterion was applied to validate the internal consistency of the questionnaire. In the employers' questionnaire, Cronbach's Alpha (α) coefficient fluctuated between 0.745 and 0.916, and in the employees' questionnaire, the range was 0.891–0.945. Cronbach's Alpha (α) indicated that the scale of critical thinking skills and dispositions is a reliable measuring tool and is suitable to carry out statistical analysis. The data collection method chosen allows for comparison of the opinions of the employers

and employees. Both groups were presented with identical blocks of questions: views regarding the manifestation and development of critical thinking, the importance of critical thinking skills and dispositions in the labour market and the need for improvement.

2.3. Data Analysis Methods

IBM® SPSS® (Statistical Package for the Social Sciences) 23.0 statistical software was chosen for processing the research data. Descriptive (where the arithmetic mean (M) is calculated) and inferential statistical methods were used.

Since it was established that the data distribution was not normal, non-parametric methods of statistical inference were used. The non-parametric Mann–Whitney U test of independent samples was used, where the two groups of respondents (the employers and the employees) were compared to evaluate statistical significance. The Mann–Whitney U test is used to compare the positions of the distributions of ordinal variables of two independent samples.

Correlation analysis by calculating the Spearman's rank correlation coefficient (r_s) in order to determine the interrelationships of the variables was performed. Spearman's r_s was chosen because it is suitable for variables whose distributions are far from the normal distribution (Schober et al. 2018). The interpretation of correlation associations was based on the distribution of correlation association strength, where a correlation coefficient: from 0 to 0.20 indicates that the association between the variables is essentially non-existent or very weak; from 0.20 to 0.40—that the association is weak; from 0.40 to 0.60—that the association is moderate; from 0.60 to 0.80—that the association is strong; from 0.80 to 1—that the association is very strong.

2.4. Research Ethics

The quantitative research was conducted according to the basic ethical rules of anonymity, voluntary participation and no harm to the participants (Panter and Sterba 2011; Jones 2015; Creswell and Creswell 2021). When conducting the survey remotely, additional measures were taken to ensure the anonymity of the respondents: when collecting data, measures were in place to ensure that the IP network identifiers (IP addresses) of the digital devices used to complete the questionnaires were not captured and stored.

The collected data was stored in the university's data repositories, which cannot be accessed by third parties without the consent of the university and the researchers.

3. Results

3.1. Assessment of the Importance of Critical Thinking Skills in the Labour Market

Analysis of the research data revealed that the opinions of employers and employees differed regarding the importance of critical thinking skills in the labour market (Table 2).

Employers considered the most important critical thinking skills in the modern labour market to be inference ($M = 6.02$), argumentation ($M = 5.95$) and interpretation ($M = 5.92$). Meanwhile, employees thought that the most important skills in the modern labour market were self-regulation ($M = 5.70$), with argumentation in second place ($M = 5.62$) and decision-making in third ($M = 5.51$). It should be noted that the opinions of the employers and the employees coincided regarding the importance of argumentation in the modern labour market—this was among the top three most important skills for both groups.

Employers considered critical thinking skills such as self-regulation ($M = 5.91$), evaluation ($M = 5.91$), explanation ($M = 5.86$) and decision-making ($M = 5.84$) to be less important in the modern labour market. Analysis of the data showed that employees considered inference ($M = 5.50$), explanation ($M = 5.46$) and interpretation ($M = 5.30$) to be less important skills in the modern labour market.

Table 2. Evaluation of the importance of critical thinking skills in the modern labour market/evaluation comparison by group.

Arithmetic Mean (M), Statements Were Evaluated on a 7-Point Scale (Where 1 Is 'Not Important at All' and 7 Is 'Very Important')		Skill Group	Evaluation Comparison by Group Mean Rank		
Employers	Employees		Employers	Employees	p Value
5.84	5.51	Decision-making	1433.07	1227.84	$p < 0.0001$
6.02	5.50	Inference	1508.15	1208.13	$p < 0.0001$
5.86	5.46	Explanation	1456.73	1221.63	$p < 0.0001$
5.79	5.23	Analysis	1511.49	1207.26	$p < 0.0001$
5.91	5.70	Self-regulation	1376.05	1242.80	$p < 0.0001$
5.95	5.62	Argumentation	1433.44	1227.74	$p < 0.0001$
5.92	5.30	Interpretation	1547.61	1197.78	$p < 0.0001$
5.91	5.23	Evaluation	1567.67	1192.51	$p < 0.0001$

Both employers ($M = 5.79$) and employees ($M = 5.23$) considered analysis to be the least important critical thinking skill in the modern labour market.

Statistically significant differences were found between the opinions of employers and employees regarding the importance of individual critical thinking skills in the modern labour market (Table 2). Judging from the mean ranks obtained, employers were significantly more likely than employees to recognise the importance in the modern labour market of critical thinking skills such as evaluation ($p < 0.0001$), interpretation ($p < 0.0001$), analysis ($p < 0.0001$) and inference ($p < 0.0001$). Employers also valued the importance in the modern labour market of critical thinking skills such as explanation ($p < 0.0001$), argumentation ($p < 0.0001$), decision-making ($p < 0.0001$) and self-regulation ($p < 0.0001$) more than employees.

The analysis of employers' and employees' attitudes toward the importance of critical thinking skills in today's labour market revealed correlations between the different groups of critical thinking skills. Employers and employees who stressed the importance of inference also emphasised the importance of explanation (employers— $r_s = 0.733$, $p < 0.01$; employees— $r_s = 0.812$, $p < 0.01$) and evaluation (employers— $r_s = 0.701$, $p < 0.01$; employees— $r_s = 0.722$, $p < 0.01$). Those who stressed the importance of argumentation also emphasised the relevance of evaluation (employers— $r_s = 0.726$, $p < 0.01$; employees— $r_s = 0.729$, $p < 0.01$) and interpretation (employers— $r_s = 0.709$, $p < 0.01$; employees— $r_s = 0.760$, $p < 0.01$). Emphasising the importance of interpretive skills in the labour market, both employers ($r_s = 0.748$, $p < 0.01$) and employees ($r_s = 0.835$, $p < 0.01$) highlighted the relevance of evaluation skills. However, emphasizing the relevance of analysis in the labour market, while employers stressed the importance of explanation ($r_s = 0.733$, $p < 0.01$), employees emphasized the importance of interpretation ($r_s = 0.799$, $p < 0.01$) and evaluation ($r_s = 0.775$, $p < 0.01$) skills.

3.2. Attitudes toward Critical Thinking Dispositions of Importance in the Modern Labour Market

The study revealed that the same dispositions are rated as the top six in terms of importance by both employers and employees (fairness, rightness, self-confidence, flexibility, accuracy, attentiveness)—only the order of their prioritisation differed (Table 3).

Employers prioritised the aforementioned dispositions in the following order: fairness ($M = 6.27$), rightness ($M = 6.23$), accuracy ($M = 6.09$), self-confidence ($M = 6.02$), flexibility ($M = 6.02$) attentiveness ($M = 5.97$) (Table 3). Meanwhile, employees listed the most important dispositions in the modern labour market as being rightness ($M = 5.9$), self-confidence ($M = 5.87$), fairness ($M = 5.83$), attentiveness ($M = 5.78$), flexibility ($M = 5.73$) and accuracy ($M = 5.71$).

Table 3. Evaluation of the importance of critical thinking dispositions in the modern labour market/evaluation comparison by group.

Arithmetic Mean (M), Statements Were Evaluated on a 7-Point Scale (Where 1 Is 'Not Important at All' and 7 is 'Very Important')		Disposition	Evaluation Comparison by Group Mean Rank		
Employers	Employees		Employers	Employees	p Value
5.95	5.3	Impartiality	1535.92	1200.85	$p < 0.0001$
6.09	5.71	Accuracy	1452.44	1222.75	$p < 0.0001$
6.27	5.83	Fairness	1489.66	1212.99	$p < 0.0001$
5.9	5.53	Caring for other people	1429.10	1228.88	$p < 0.0001$
5.4	5.22	Inquisitiveness	1334.23	1253.78	$p > 0.05$
6.02	5.87	Self-confidence	1334.82	1253.62	$p > 0.05$
6.02	5.73	Flexibility	1399.37	1236.68	$p < 0.0001$
5.97	5.78	Attentiveness	1357.78	1247.60	$p < 0.0001$
5.79	5.62	Endurance	1335.63	1253.41	$p > 0.05$
5.71	5.55	Courage	1325.29	1256.12	$p > 0.05$
5.89	5.65	Perseverance	1374.77	1243.14	$p < 0.0001$
4.45	4.47	Scepticism	1243.26	1277.65	$p > 0.05$
5.32	5.13	Open-mindedness	1305.44	1261.33	$p > 0.05$
6.23	5.9	Rightness	1414.09	1232.82	$p < 0.0001$

Both employers and employees rated the same dispositions as being the least important in the modern labour market and prioritised them similarly: scepticism (employers (M = 4.45); employees (M = 4.47)), open-mindedness (employers (M = 5.32); employees (M = 5.13)), inquisitiveness (employers (M = 5.4); employees (M = 5.22)), courage (employers (M = 5.71); employees (M = 5.55)).

Statistically significant differences were found between the opinions of employers and employees regarding the importance of critical thinking dispositions in the modern labour market (Table 3). Employers were significantly more likely than employees to value the importance in the labour market of critical thinking dispositions such as impartiality ($p < 0.0001$), fairness ($p < 0.0001$), accuracy ($p < 0.0001$) and caring for others ($p < 0.0001$).

Employers were also more likely than employees to value the importance in the modern labour market of dispositions such as rightness ($p < 0.0001$), flexibility ($p < 0.0001$), perseverance ($p < 0.0001$) and attentiveness ($p < 0.0001$).

A somewhat smaller difference of opinion between employers and employees in assessing the importance of critical thinking dispositions in the labour market was found in these cases: the employers valued the importance in the modern labour market of dispositions such as endurance ($p < 0.05$), self-confidence ($p < 0.05$), inquisitiveness ($p < 0.05$) and courage ($p < 0.05$) slightly more than the employees.

The employers and the employees had the same assessment of the importance of critical thinking dispositions such as open-mindedness and scepticism in the labour market; no statistically significant difference was found.

The analysis of employers' and employees' attitudes toward the importance of critical thinking dispositions in the modern labour market revealed various correlations between all groups of important dispositions. Both employers and employees who stressed the importance of endurance disposition also emphasised the importance of courage (employers— $r_s = 0.717$, $p < 0.01$; employees— $r_s = 0.760$, $p < 0.01$). Similarly, both employers and employees who considered the disposition of courage to be important in the labour market emphasised the importance of perseverance (employers: $r_s = 0.724$, $p < 0.01$; employees: $r_s = 0.770$, $p < 0.01$).

3.3. How Employers' and Employees' Opinions Vary Regarding Critical Thinking in Professional Activities

According to both employers and employees, critical thinking primarily manifests itself in professional activities through substantiated and motivated decisions (employers (M = 3.77); employees (M = 3.74)) (Table 4).

Table 4. Variations of employers' and employees' opinions regarding critical thinking in professional activities/evaluation comparison by group.

Arithmetic Mean (M), Statements Were Evaluated on a 7-Point Scale (Where 1 Is 'Not Important at All' and 7 Is 'Very Important')		Manifestation	Evaluation Comparison by Group Mean Rank		
Employers	Employees		Employers	Employees	p Value
3.65	3.66	Independent problem-solving	1274.54	1269.44	$p > 0.05$
3.67	3.72	Expeditious problem-solving	1252.27	1275.28	$p > 0.05$
3.70	3.69	Collegial decision-making in crisis situations	1286.35	1266.34	$p > 0.05$
3.77	3.74	Substantiated and motivated decisions	1301.13	1262.46	$p > 0.05$
3.63	3.62	Verifying the reliability of information	1287.38	1266.07	$p > 0.05$
3.64	3.60	Comprehensive problem analysis	1304.45	1261.59	$p > 0.05$
3.48	3.47	Raising hypotheses and searching for alternative solutions	1294.64	1264.16	$p > 0.05$
3.39	3.55	Constant analysis of one's actions	1170.41	1296.77	$p < 0.001$
3.72	3.70	Targeted knowledge application in practice	1303.44	1261.85	$p > 0.05$
3.55	3.59	Innovative solutions	1272.21	1270.05	$p > 0.05$
3.63	3.70	The ability to spot errors and imperfections at work	1244.25	1277.39	$p > 0.05$
3.64	3.69	Personal assumption of responsibility in acting	1244.96	1277.20	$p > 0.05$
3.69	3.68	The ability to act in non-standard situations	1296.10	1263.78	$p > 0.05$

When evaluating other manifestations of critical thinking in professional activities, the opinions of employers and employees differed. According to the employers, critical thinking manifests itself in professional activities more through targeted knowledge application in practice ($M = 3.72$), collegial decision-making in crisis situations ($M = 3.70$), the ability to act in non-standard situations ($M = 3.69$), expeditious problem-solving ($M = 3.67$) and independent problem-solving ($M = 3.65$).

According to the employees, critical thinking manifests itself in professional activities more through expeditious problem-solving ($M = 3.72$), the ability to spot errors and imperfections at work ($M = 3.70$), personal assumption of responsibility in acting ($M = 3.69$), the ability to act in non-standard situations ($M = 3.68$) and independent problem-solving ($M = 3.66$).

Employers and employees attached less importance to the manifestation of critical thinking through constant analysis of one's actions (employers ($M = 3.39$); employees ($M = 3.55$)), raising hypotheses and searching for alternative solutions (employers ($M = 3.48$); employees ($M = 3.47$)) and innovative solutions (employers ($M = 3.55$); employees ($M = 3.59$)). Employers tended to attach the least importance to the manifestation of critical thinking through the ability to spot errors and imperfections at work ($M = 3.63$).

Statistically significant differences were found between the opinions of employers and employees regarding the manifestation of critical thinking in professional activities (Table 4). Employees were more likely than employers to state that critical thinking manifests itself in their professional activities through the constant analysis of one's actions ($p < 0.001$). In other statements evaluating the manifestation of critical thinking in professional activities, no statistically significant difference was found between the opinions of employers and employees.

3.4. The Need to Improve Critical Thinking Skills

Analysis of the research data revealed that the opinions of employers and employees differed regarding the need to improve critical thinking skills (Table 5).

The critical thinking skills that the employers listed as being in most need of improvement were inference ($M = 4.95$), decision-making ($M = 4.92$), argumentation ($M = 4.87$) and self-regulation ($M = 4.85$). Meanwhile, the critical thinking skills that the employees listed as being in most need of improvement were self-regulation ($M = 5.21$), decision-making ($M = 5.13$), argumentation ($M = 5.07$), explanation ($M = 4.98$) and inference ($M = 4.98$).

Table 5. Evaluation of the need to improve critical thinking skills/evaluation comparison by group.

Arithmetic Mean (M), Statements Were Evaluated on a 7-Point Scale (Where 1 Is 'Not Important at All' and 7 Is 'Very Important')		Skill Group	Evaluation Comparison by Group Mean Rank		
Employers	Employees		Employers	Employees	<i>p</i> Value
4.92	5.13	Decision-making	1175.07	1295.54	$p < 0.001$
4.95	4.98	Inference	1250.02	1275.87	$p > 0.05$
4.78	4.98	Explanation	1178.19	1294.73	$p < 0.001$
4.75	4.73	Analysis	1282.18	1267.44	$p > 0.05$
4.85	5.21	Self-regulation	1096.81	1316.08	$p < 0.0001$
4.87	5.07	Argumentation	1180.88	1294.02	$p < 0.001$
4.72	4.70	Interpretation	1276.40	1268.95	$p > 0.05$
4.78	4.65	Evaluation	1322.88	1256.76	$p > 0.05$

Employers saw the least need to improve interpretation ($M = 4.72$), analysis ($M = 4.75$) and explanation ($M = 4.78$) skills. Employees saw the least need to improve evaluation ($M = 4.65$), interpretation ($M = 4.70$) and analysis ($M = 4.73$) skills.

Statistically significant differences were found between the opinions of employers and employees regarding the critical thinking skills in need of improvement (Table 5). Employees emphasised the need to improve self-regulation ($p < 0.0001$), decision-making ($p < 0.001$), explanation ($p < 0.001$) and argumentation ($p < 0.001$) skills much more than employers.

The analysis of employers' attitudes toward the critical thinking skills that should be developed by employees under direct authority and employees' perceptions of the critical thinking skills that they should develop revealed correlations between various groups of critical thinking skills. It was found that both employers who stated that it is most important for their employees to improve decision-making skills and employees who identified this skill as important to improve for themselves indicated that they also should improve inference (employers— $r_s = 0.780$, $p < 0.01$; employees— $r_s = 0.810$, $p < 0.01$) and explanation (employers— $r_s = 0.756$, $p < 0.01$; employees— $r_s = 0.795$, $p < 0.01$). Employers and employees were also in agreement on inference and correlated it with explanation (employers— $r_s = 0.812$, $p < 0.01$; employees— $r_s = 0.822$, $p < 0.01$), analysis (employers— $r_s = 0.804$, $p < 0.01$; employees— $r_s = 0.783$, $p < 0.01$) and argumentation (employers— $r_s = 0.778$, $p < 0.01$; employees— $r_s = 0.747$, $p < 0.01$). Both employers and employees, while stressing the importance of improving explanation, also identified analysis (employers— $r_s = 0.831$, $p < 0.01$; employees— $r_s = 0.775$, $p < 0.01$) and interpretation (employers— $r_s = 0.803$, $p < 0.01$; employees— $r_s = 0.757$, $p < 0.01$) as important skills to be improved. Both employers and employees highlighted the importance of improving analysis in correlations with argumentation (employers— $r_s = 0.800$, $p < 0.01$; employees— $r_s = 0.731$, $p < 0.01$) and argumentation in correlation with interpretation (employers— $r_s = 0.824$, $p < 0.01$; employees— $r_s = 0.800$, $p < 0.01$) and evaluation (employers— $r_s = 0.821$, $p < 0.01$; employees— $r_s = 0.762$, $p < 0.01$). However, while employees emphasised the importance of improving their interpretation skill in relation with evaluation ($r_s = 0.856$, $p < 0.01$), employers emphasised the need to improve argumentation ($r_s = 0.824$, $p < 0.01$) and explanation ($r_s = 0.803$, $p < 0.01$). It is worth mentioning that employers who identified the need for improvement of employees' evaluation skill also identified argumentation ($r_s = 0.821$, $p < 0.01$), interpretation ($r_s = 0.819$, $p < 0.01$) and analysis ($r_s = 0.796$, $p < 0.01$) as the ones that need to be improved.

Correlations between employers' attitudes toward the importance of critical thinking skills and their perception of the critical thinking skills that need to be developed for employees under direct authority were found (Table 6). Employers who believed that self-regulation skill is important in labour market also identified that it is as the most important skill to be developed in employees ($r_s = 0.293$, $p < 0.01$). Meanwhile, employers who considered analysis ($r_s = 0.268$, $p < 0.01$) and evaluation ($r_s = 0.274$, $p < 0.01$) to be the most important skills in the labour market were more likely to think that employees need to improve inference.

Table 6. Correlation between employers' attitudes toward the importance of critical thinking skills and the importance of their development for employees under direct authority.

Employers' Attitudes toward the Importance of Critical Thinking Skills	The Importance of Developing Critical Thinking Skills for Employees under Direct Authority							
	Decision-Making	Inference	Explanation	Analysis	Self-Regulation	Argumentation	Interpretation	Evaluation
Decision-making	0.147 **	0.186 **	0.147 **	0.100 **	0.156 **	0.157 **	0.122 **	0.152 **
Inference	0.181 **	0.218 **	0.145 **	0.125 **	0.137 **	0.155 **	0.126 **	0.217 **
Explanation	0.233 **	0.244 **	0.230 **	0.180 **	0.226 **	0.181 **	0.168 **	0.216 **
Analysis	0.184 *	0.268 **	0.212 **	0.239 **	0.227 *	0.180 **	0.200 **	0.238 *
Self-regulation	0.210	0.201 **	0.180 **	0.147 **	0.293 **	0.201 **	0.180 **	0.221 **
Argumentation	0.180 **	0.208 **	0.150 **	0.125 **	0.177 **	0.134 **	0.154 **	0.180 **
Interpretation	0.217 **	0.238 **	0.207 **	0.162 **	0.185 **	0.146 **	0.169 **	0.188 **
Evaluation	0.227 **	0.274 **	0.218 **	0.191 **	0.240 **	0.195 **	0.175 **	0.255 **

* $p < 0.05$; ** $p < 0.01$.

Data analysis also revealed correlations between employees' attitudes toward the importance of critical thinking skills and their views on which critical thinking skills need to be improved (Table 7).

Table 7. Correlation between employees' attitudes toward the importance of critical thinking skills and the importance of developing critical thinking skills.

Employers' Attitudes toward the Importance of Critical Thinking Skills	The Importance of Developing Critical Thinking Skills							
	Decision-Making	Inference	Explanation	Analysis	Self-Regulation	Argumentation	Interpretation	Evaluation
Decision-making	0.484 **	0.474 **	0.467 **	0.436 **	0.308 **	0.367 **	0.389 **	0.390 **
Inference	0.459 **	0.500 **	0.468 **	0.470 **	0.299 **	0.370 **	0.420 *	0.407 **
Explanation	0.488 **	0.508 *	0.531 **	0.469 **	0.343 **	0.399 **	0.438 **	0.432 **
Analysis	0.426 **	0.490 **	0.453 **	0.507 **	0.289 *	0.382 **	0.454 **	0.474 **
Self-regulation	0.456 **	0.452 **	0.424 **	0.394 **	0.452 **	0.401 **	0.376 **	0.372 **
Argumentation	0.453 **	0.453 **	0.441 **	0.448 **	0.363 **	0.423 **	0.411 **	0.421 **
Interpretation	0.404 **	0.463 **	0.420 **	0.484 **	0.264 **	0.360 **	0.459 **	0.464 **
Evaluation	0.380 **	0.436 *	0.397 **	0.480 **	0.244 **	0.351 **	0.439 **	0.468 **

* $p < 0.05$; ** $p < 0.01$.

Employees who believed that inference is important in labour market also identified inference as the most important skill to improve ($r_s = 0.500$, $p < 0.01$). Those who emphasised the importance of explanation identified the most important skills to be developed as inference ($r_s = 0.508$, $p < 0.01$) and explanation ($r_s = 0.531$, $p < 0.01$), and those who identified analysis as the important skill correlated with analysis ($r_s = 0.507$, $p < 0.01$) as the most important skill to improve.

3.5. The Need to Improve Dispositions

Analysis of the research data revealed that the opinions of employers and employees differed regarding the need to improve critical thinking dispositions (Table 8).

Table 8. Evaluation of the need to improve critical thinking dispositions/evaluation comparison by group.

Arithmetic Mean (M), Statements Were Evaluated on a 7-Point Scale (Where 1 Is 'Not Important at All' and 7 Is 'Very Important')		Disposition	Evaluation Comparison by Group Mean Rank		
Employers	Employees		Employers	Employees	p Value
4.64	4.47	Impartiality	1323.62	1256.56	$p > 0.05$
4.70	4.91	Accuracy	1190.91	1291.39	$p > 0.05$
4.30	4.74	Fairness	1122.96	1309.22	$p < 0.0001$
4.40	4.80	Caring for other people	1124.31	1308.86	$p < 0.0001$
4.29	4.59	Inquisitiveness	1161.27	1299.16	$p < 0.0001$
4.77	5.21	Self-confidence	1109.77	1312.68	$p < 0.0001$
4.81	4.92	Flexibility	1216.82	1284.59	$p > 0.05$
4.64	4.92	Attentiveness	1169.16	1297.09	$p < 0.0001$
4.41	4.88	Endurance	1100.13	1315.21	$p < 0.0001$
4.47	4.96	Courage	1092.65	1317.17	$p < 0.0001$
4.57	4.96	Perseverance	1121.84	1309.51	$p < 0.0001$
3.67	4.15	Scepticism	1108.68	1312.97	$p < 0.0001$
4.39	4.56	Open-mindedness	1199.36	1289.17	$p > 0.05$
4.59	4.96	Rightness	1145.55	1303.29	$p < 0.0001$

Employers considered the critical thinking dispositions in most need of improvement to be flexibility ($M = 4.81$), self-confidence ($M = 4.77$), impartiality ($M = 4.64$), accuracy ($M = 4.70$) and rightness ($M = 4.59$). Employers singled out the following dispositions as needing improvement: perseverance ($M = 4.57$), courage ($M = 4.47$), endurance ($M = 4.41$) and caring for other people ($M = 4.40$). Employers considered scepticism ($M = 3.67$), inquisitiveness ($M = 4.29$), fairness ($M = 4.30$) and open-mindedness ($M = 4.39$) to be the dispositions in least need of improvement.

Employees listed self-confidence ($M = 5.21$), courage ($M = 4.96$), perseverance ($M = 4.96$), rightness ($M = 4.96$), flexibility ($M = 4.92$) and attentiveness ($M = 4.92$) as being the critical thinking dispositions in most need of improvement. Employees singled out the following dispositions as needing improvement: accuracy ($M = 4.91$), endurance ($M = 4.88$), caring for other people ($M = 4.80$) and fairness ($M = 4.74$). Employees saw the least need to improve the dispositions of scepticism ($M = 4.15$), impartiality ($M = 4.47$), open-mindedness ($M = 4.56$) and inquisitiveness ($M = 4.59$).

Statistically significant differences were found between the opinions of employers and employees regarding the critical thinking dispositions in need of improvement (Table 8). Employees were much more likely than employers to believe that it is important for them to improve dispositions such as courage ($p < 0.0001$), endurance ($p < 0.0001$), scepticism ($p < 0.0001$), self-confidence ($p < 0.0001$), perseverance ($p < 0.0001$), fairness ($p < 0.0001$) and caring for others ($p < 0.0001$).

Employees were more likely than employers to believe that they should improve the dispositions of open-mindedness ($p < 0.011$) and accuracy ($p < 0.004$).

The analysis of employers' and employees' attitudes toward the critical thinking dispositions that they should improve revealed correlations of varying strengths between groups of critical thinking dispositions. Those who stated that the most important disposition to improve was accuracy also considered as an important disposition to improve fairness (employers— $r_s = 0.743$, $p < 0.01$, employees— $r_s = 0.831$, $p < 0.01$) and rightness (employers— $r_s = 0.737$, $p < 0.01$, employees— $r_s = 0.705$, $p < 0.01$). Those employers and employees who considered the fairness to be most in need of improvement also identified the dispositions of caring for other people (employers— $r_s = 0.826$, $p < 0.01$; employees— $r_s = 0.824$, $p < 0.01$), rightness (employers— $r_s = 0.822$, $p < 0.01$; employees— $r_s = 0.778$, $p < 0.01$), accuracy (employers— $r_s = 0.737$, $p < 0.01$; employees— $r_s = 0.804$, $p < 0.01$) and perseverance (employers— $r_s = 0.710$, $p < 0.01$; employees— $r_s = 0.749$, $p < 0.01$). Those who argued that self-confidence needs to be improved also highlighted the need to improve

courage (employers— $r_s = 0.752, p < 0.01$; employees— $r_s = 0.710, p < 0.01$) and flexibility (employers— $r_s = 0.735, p < 0.01$; employees— $r_s = 0.760, p < 0.01$). Both employers and employees who perceived the most important disposition to be improved by employees is endurance correlated it with perseverance (employers— $r_s = 0.806, p < 0.01$; employees— $r_s = 0.781, p < 0.01$), courage (employers— $r_s = 0.804, p < 0.01$; employees— $r_s = 0.814, p < 0.01$), fairness (employers— $r_s = 0.722, p < 0.01$; employees— $r_s = 0.717, p < 0.01$) and open-mindedness (employers— $r_s = 0.721, p < 0.01$; employees— $r_s = 0.709, p < 0.01$) dispositions. Respondents also saw courage as a disposition to be improved in correlation with perseverance ($r_s = 0.844, p < 0.01$; $r_s = 0.817, p < 0.01$; employees— $r_s = 0.817, p < 0.01$).

However, while employees emphasised the importance of improving open-mindedness in correlation with fairness ($r_s = 0.731, p < 0.01$), employers emphasised correlation with the importance of improving the caring for other people ($r_s = 0.730, p < 0.01$) and perseverance ($r_s = 0.721, p < 0.01$) dispositions. If the employers identified caring for other people as a disposition to be improved by their employees, they also considered fairness ($r_s = 0.826, p < 0.01$), rightness ($r_s = 0.787, p < 0.01$), perseverance ($r_s = 0.739, p < 0.01$) and open-mindedness ($r_s = 0.730, p < 0.01$), while employees associated caring for other people with inquisitiveness ($r_s = 0.746, p < 0.01$) and flexibility ($r_s = 0.742, p < 0.01$). Employers who stated that it is the most important for their employees to improve the disposition of impartiality indicated that they also should improve accuracy ($r_s = 0.762, p < 0.01$) and fairness ($r_s = 0.675, p < 0.01$). It was found that employers who identified perseverance as disposition to be improved tended to think that employees also should improve courage ($r_s = 0.844, p < 0.01$), perseverance ($r_s = 0.806, p < 0.01$), flexibility ($r_s = 0.736, p < 0.01$) and rightness ($r_s = 0.730, p < 0.01$).

Correlations between employers' and employees' attitudes toward the importance of critical thinking dispositions in the labour market and their views on which critical thinking dispositions need to be improved were found. Both employers and employees considered scepticism as the disposition to be the most important in labour market and also the most important to be improved (employers: $r_s = 0.494, p < 0.01$; employees: $r_s = 0.543, p < 0.01$). Meanwhile, employees who considered open-mindedness to be important in labour market considered courage ($r_s = 0.405, p < 0.01$) and open-mindedness ($r_s = 0.477, p < 0.01$) to be the most important dispositions to improve.

4. Discussion and Conclusions

In the context of the labour market, critical thinking is undoubtedly associated with economic competitiveness and innovation development. This requires not only professional knowledge and skills, but also the ability to anticipate needs and trends, and the ability to tolerate vagueness and take personal responsibility for managing the unknown in professional activities. Therefore, in addition to specific requirements related to the profession, employers also impose broader requirements on employees related to cognitive analytical skills and dispositions requiring personal commitment and responsibility. When responding to job offers, employees, in turn, often highlight not only instrumental, but also transversal skills, as well as personal qualities such as commitment, honesty and independence, which are also identified as critical thinking dispositions.

In the study, three problematic questions were raised related to the attitude of employers and employees toward a critically thinking employee, singling out and evaluating the most important features of the manifestation of critical thinking in the labour market and the specific professional activities, as well as evaluating the skills and dispositions that need improvement.

Employers gave priority to inference, argumentation and interpretation skills—that is, the skills that are needed for making choices. Meanwhile, employees prioritised decision-making skills coupled with argumentation and self-regulation. The latter skill was considered by employers to be one of the least significant, along with evaluation, explanation and decision-making. Employees attached less importance to inference, explanation and interpretation. Interestingly, assessment of the skill of self-regulation ranged considerably,

with employees considering it to be of great significance, and employers considering it to be of little significance. These research outcomes would seem to allow an assumption to be made about differences in attitudes due to different functions and levels of responsibility. Employers are more often responsible for reasoned final decisions, while employees must regulate their actions in the work process in order to be able to make the right decision and justify them. However, the study enquired about the skills not of employers, but of employees. Hence, this assumption can be rejected. The attitude toward a critically thinking employee seems to stand out on another level. Employers valued a critically thinking employee as one who is able to draw reasoned conclusions and substantiate and interpret. Employees saw such an employee as one who is responsible and able to self-regulate and make reasoned decisions. Employers valued decision-making skills much less than the employees themselves. So, in this particular case, employers saw a critically thinking employee as being relatively autonomous: one who draws conclusions more than making decisions; one who is capable of reasoning but less so of explaining, evaluating and self-regulating. An interesting observation is that both groups attached the least importance to analysis skills. This seems a bit strange, seeing that these are directly related to inference, argumentation and interpretation skills, which were rated quite highly. Therefore, it is reasonable to question whether analytical skills were considered to have little relation to those skills, or whether they were simply not given significant importance.

Regarding the evaluation of dispositions, the attitudes of both groups largely coincided. The same dispositions were singled out as being the most and least important—only the order of priority differed. At the top of the list were fairness, rightness, self-confidence, flexibility, accuracy and attentiveness. Given, the disposition of fairness was slightly more important for employers, and the disposition of rightness was slightly more important for employees. Both employers and employees valued scepticism the least and placed little importance on open-mindedness and courage. Scepticism is likely not understood as a healthy suspicion, asking, ‘What if?’ Rather, it probably carries the usual negative association of mistrust and suspicion.

In assessing the attitude of employers and employees toward which constituents of critical thinking competency are important in their professional activities, both groups agreed that they are substantiated and motivated decisions. It is also interesting to note that the skill of decision-making as generally important in the labour market was mentioned by employers as being less significant. In their professional field, employers saw a critically thinking employee as one who is able to purposefully apply knowledge, make collegial decisions, act in non-standard situations and make decisions independently. Employees also attached importance to expeditious decision-making, the ability to spot errors and the assumption of responsibility in acting. Thus, when enquiring about action in a specific professional field, the portrait of a critically thinking employee was different from the one that emerged in the general context of the labour market. In this case, the employee was much more autonomous—not only drawing conclusions, but also making independent, autonomous decisions. Given, employees associated a critically thinking professional with the personal ability to notice mistakes and take responsibility in acting much more than employers do. However, the representatives of both groups attached little importance to raising hypotheses and searching for alternative solutions, i.e., skills that reflect the value of the critical thinking process and not just the final result.

Opinions about the critical thinking skills and dispositions that need improvement differed slightly. Employers believed that the skills of inference, decision-making, argumentation and self-regulation needed the most improvement. Inference and argumentation were also mentioned as being the most important in the labour market, and decision-making—in the specific professional field. However, self-regulation was among the least valued skills. The employees also considered self-regulation, along with decision-making, argumentation and inference, to be in most need of improvement. In addition to evaluation skills, employees, like employers, were the least likely to work on interpretation, analysis and explanation skills. In summary, it can be said that for the most part, the desire

was to improve the same skills that are considered significant in the labour market. This partly actualises the value assigned to them once again and testifies to their significance in professional activities. The difference in the attitude of employees toward self-regulation, argumentation and decision-making was statistically different from that of employers. Employees attached higher value to these skills. In terms of dispositions, employers believed that flexibility, self-confidence and impartiality were in the most need of improvement. Employees agreed on the importance of improving self-confidence, but also considered it important to improve courage, open-mindedness, endurance, perseverance, fairness and caring for others, which employers attached less importance to. So, in this case as well, employees tended to see a critically thinking employee as potentially being able to have more autonomous powers—possessing courage and self-confidence, self-regulating, noticing and correcting their mistakes and making decisions. Employees attached much more significance to critical thinking dispositions in need of improvement than employers. Albeit, scepticism, as before, was seen by both groups as the least in need of improvement. This only reinforces the assumption that its value as an attribute of critical thinking is not fully understood.

The correlations between various skills and disposition groups were found. Those employers and employees who identified decision-making as a skill that needs to be improved also saw the need for the improvement of inference and explanation skills. Employers and employees correlated inference with the need of improvement interpretation, analysis and argumentation. Those who argued that the most important disposition to improve is accuracy emphasised the need to improve the dispositions of rightness and fairness, and those who believed that the disposition of fairness is important to improve also considered the dispositions of caring for other people and rightness as important to improve. These results show that research participants have a good ability to relate various skills and dispositions and understand them as a coherent whole.

The research outcomes allow us to answer the problematic questions raised and provide an opportunity to consider what, from the point of view of the employers and the employees, constitutes critical thinking competency—what its main components (skills and dispositions) are considered to be. Practical skills that are closer to a specific result, such as inference, were clearly singled out. Skills that notify the process received significantly less attention. Explanation and evaluation were rated relatively low, and analysis was at the bottom of the rating table in general. The research findings suggest that critical thinking is perceived primarily as a result—an end product—and not as a process leading to that result. The research outcomes also testify to the equality of critical thinking skills and dispositions. A working person is not viewed mechanically—only as a creator of added value. A working person is viewed as a person with certain virtues—fairness, rightness, self-confidence, flexibility, accuracy, attentiveness—which were also revealed by the research. In this study, another question also arose: that of an autonomously acting employee. Despite the fact that both groups recognise the value of independently made decisions, from the employees' point of view, employees who are critical thinkers also have other significant qualities that are in need of improvement and testify to their autonomy. These insights are based not only on the research data, but also on a wider context—the results of our previously conducted qualitative research and systematic literature review. Unfortunately, the purpose and scope of this article do not allow for this discussion to be expanded upon. For the same reason, we are not able to compare our research findings with other similar studies conducted in other countries. A comparative analysis was not the purpose of this article. However, the authors of this study plan to continue research on critical thinking in the labour market, vocational training and the lifelong learning process. In future research, it is also important to find the answers to the question of why the development of critical thinking skills and dispositions is crucially essential.

Applicability of the research could be highlighted by recommendation for the employers to pay more attention to discussing the process of product or service development and the way to achieve the final result.

Author Contributions: Conceptualization, V.I., V.J., O.M., D.P., J.P., A.R. and J.S.; Methodology, V.I., V.J., O.M., J.P., A.R. and J.S.; Software, D.P.; Formal analysis, V.I., V.J., O.M., D.P., J.P., A.R. and J.S.; Investigation, V.I., V.J., O.M., D.P., J.P., A.R. and J.S.; Writing—review and editing, V.I., V.J., O.M., D.P., J.P., A.R. and J.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the European Social Fund (project No (09.3.3-LMT-K-712-01-0068)) under a grant agreement with the Research Council of Lithuania (LMTLT).

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of the Institute of Educational Sciences and Social Work at Mykolas Romeris University, Lithuania. Permission date: 12 December 2019, No ESDI-12/02.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data sharing is not applicable to this article. No new data were created or analysed in this study.

Conflicts of Interest: The authors declare that there is no conflict of interest. The funders had no role in developing the study, collecting, analysing or interpreting the data; writing the manuscript; or deciding to publish the results.

References

- Bangali, Marcelline. 2021. Les Acquis De La Formation Doctorale: Perceptions Des compétences développées. *CJHE* 51: 15–27. [\[CrossRef\]](#)
- Barnett, Ronald. 1997. *Higher Education: A Critical Business*. Buckingham: Open University Press.
- Bekbayeva, Zhanar Sabyrovna, Temir Tlekovich Galiyev, Nazymgul Albytova, Zhazira Meirhanovna Zhazykbayeva, and Assem Bolatbekovna Mussatayeva. 2021. Fostering Post-Secondary Vocational Students' Critical Thinking through Multi-Level Tasks in Learning Environments. *World Journal on Educational Technology: Current Issues* 13: 397–406. [\[CrossRef\]](#)
- Beyer, Barry K. 1987. *Practical Strategies for the Teaching of Thinking*. Boston: Allyn and Bacon.
- Brzinsky-Fay, Christian. 2017. The Interplay of Educational and Labour Market Institutions and Links to Relative Youth Unemployment. *Journal of European Social Policy* 27: 346–59. [\[CrossRef\]](#)
- Creswell, John W., and Timothy C. Guetterman. 2019. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. London: Pearson.
- Creswell, John W., and J. David Creswell. 2021. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks: SAGE Publishing.
- Elder, Linda, and Richard Paul. 2001. *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. Upper Saddle River: Prentice Hall.
- Ennis, Robert H. 1987. A taxonomy of critical thinking dispositions and abilities. In *Teaching Thinking Skills: Theory and Practice*. Edited by Joan Baron and Robert Sternberg. New York: Freeman, pp. 9–26.
- Facione, Peter A. 1990. *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction. Research Findings and Recommendations*. Fullerton: California State University.
- Green, Paul. 2016. Teaching Critical Thinking for Lifelong Learning. In *The Palgrave Handbook of Critical Thinking in Higher Education*. Edited by Martin Davies and Ronald Barnett. New York: Palgrave Macmillan, pp. 107–21. [\[CrossRef\]](#)
- Gruzdev, Mikhail V., Irina V. Kuznetsova, Irina Yu Tarkhanova, and Elena I. Kazakova. 2018. University Graduates' Soft Skills: The Employers' Opinion. *European Journal of Contemporary Education* 7: 690–98.
- Habets, Omar, Jol Stoffers, Beatrice Van der Heijden, and Pascale Peters. 2020. Am I Fit for Tomorrow's Labor Market? The Effect of Graduates' Skills Development during Higher Education for the 21st Century's Labor Market. *Sustainability* 12: 7746. [\[CrossRef\]](#)
- Halpern, Diane F. 1998. Teaching critical thinking for transfer across domains: Dispositions, skills, structure training, and metacognitive monitoring. *American Psychologist* 53: 449–55. [\[CrossRef\]](#)
- Homayounzadeh, Maryam. 2015. Reinvestigating the Determinants of Lifelong Learning: Can Pedagogy for Critical Thinking Contribute to Developing Lifelong Learners? *Journal of Pedagogy and Psychology "Signum Temporis"* 7: 1–14. [\[CrossRef\]](#)
- Indrašienė, Valdonė, Violeta Jegelevičienė, Odeta Merfeldaitė, Daiva Penkauskienė, Jolanta Pivorienė, Asta Railienė, Justinas Sadauskas, and Natalija Valavičienė. 2021. The Value of Critical Thinking in Higher Education and the Labour Market: The Voice of Stakeholders. *Social Sciences* 10: 286. [\[CrossRef\]](#)
- Jiang, Jing, Ang Gao, and Baiyin Yang. 2018. Employees' Critical Thinking, Leaders' Inspirational Motivation, and Voice Behavior. *Journal of Personnel Psychology* 17: 33–41. [\[CrossRef\]](#)
- Jones, Julie Scott. 2015. *Research Ethics. Context and Practice*. Thousand Oaks: SAGE Publishing.
- Jugembayeva, Bakytgul, Aliya Murzagaliyeva, and Gita Revalde. 2022. Pedagogical Model for Raising Students' Readiness for the Transition to University 4.0. *Sustainability* 14: 8970. [\[CrossRef\]](#)

- Kovalchuk, Vasyi, Ivan Prylepa, Oleksandra Chubrei, Inna Marynchenko, Vitalii Opanasenko, and Yevhenii Marynchenko. 2022. Development of Emotional Intelligence of Future Teachers of Professional Training. *International Journal of Early Childhood Special Education* 14: 39–51. [CrossRef]
- Lauder, Hugh, and Ken Mayhew. 2020. Higher Education and the Labour Market: An Introduction. *Oxford Review of Education* 46: 1–9. [CrossRef]
- Li, Ling. 2022. Reskilling and Upskilling the Future-Ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers*. [CrossRef]
- Mabić, Mirela, and Dražena Gašpar. 2020. Critical Thinking at Universities in BiH: Are They on the Right Track? *Managing Global Transitions* 18: 67–81. [CrossRef]
- Panter, Abigail T., and Sonya K. Sterba. 2011. *Handbook of Ethics in Quantitative Methodology*. London: Routledge.
- Paul, Richard W. 1992. *Critical Thinking What Every Person Needs to Survive in a Rapidly Changing World*. Santa Rosa: CA Foundation for Critical Thinking.
- Pérez Rave, Jorge Iván, Rafael Fernandez Guerrero, and Juan Carlos Correa Morales. 2020. Critical Thinking and Continuous Improvement: A Scientific Text Mining Approach. *Total Quality Management & Business Excellence* 33: 1–27. [CrossRef]
- Phillips, Denis Charles, and Nicholas C. Burbules. 2000. *Postpositivism and Educational Research*. Lanham: Rowman & Littlefield.
- Rarita, Mihail. 2022. The Relevance of Critical Thinking from the Perspective of Professional Training. *Postmodern Openings* 13: 499–513. [CrossRef]
- Schober, Patrick, Christa Boer, and Lothar A. Schwarte. 2018. Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia* 126: 1763–68. [CrossRef]
- Siegel, Harvey. 1988. *Educating Reason: Rationality, Critical Thinking and Education*. New York: Routledge.
- Sky4.0. 2019. Soft Skills in Industry4.0 towards Success—Critical Thinking Industry 4.0 Soft Skills Work & Text Book. Available online: https://sky-project.eu/wp-content/uploads/2021/01/ACA_CRITICAL_THINKING_WTBOOK_EN.pdf (accessed on 3 April 2023).
- Tang, Dunbing, Renmiao Zhu, Jicheng Tang, Ronghua Xu, and Rui He. 2010. Product Design Knowledge Management Based on Design Structure Matrix. *Advanced Engineering Informatics* 24: 159–66. [CrossRef]
- Tripathy, Mitashree. 2020. Dimensions of Critical Thinking in Workplace Management & Personal Development: A Conceptual Analysis. *Multidisciplinary Journal for Education, Social and Technological Sciences* 7: 1–19. [CrossRef]
- Vincent-Lancrin, Stéphan. 2021. Skills for Life: Fostering Critical Thinking. Inter-American Development Bank. Available online: <https://publications.iadb.org/publications/english/document/Skills-for-Life-Fostering-Critical-Thinking.pdf> (accessed on 3 April 2023).
- Voinea, Mihaela. 2019. The Development of Future Competences—A Challenge for the Educational System. *Revista Romaneasca pentru Educatie Multidimensionala* 11: 328–36. [CrossRef]
- Wei, Tan Tai. 2020. Critical Thinking and Lifelong Learning. Available online: https://www.macaup.com/aepmacau/theme/doce_09.htm (accessed on 3 April 2023).
- Whiting, Kate. 2020. These Are the Top 10 Job Skills of Tomorrow—And How Long It Takes to Learn Them. Available online: <https://www.weforum.org/agenda/2020/10/top-10-work-skills-of-tomorrow-how-long-it-takes-to-learn-them/> (accessed on 3 April 2023).
- Wicht, Alexandra, Nora Müller, Simone Haasler, and Alexandra Nonnenmacher. 2019. The Interplay between Education, Skills, and Job Quality. *Social Inclusion* 7: 254. [CrossRef]
- World Economic Forum. 2020. The Future of Jobs Report 2020. Available online: http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf (accessed on 3 April 2023).

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.