Labour and Education Markets in Industry 4.0

Silvia Matúšová - Vojtech Kollár*

Abstract:
Introduction: The current development of the world economy defined as the Fourth industrial revolution (Industry 4.0) is rather determined by a larger social change caused by the interconnection of the physical, virtual, and social worlds. It affects the market of products, production factors, sectors, services, education, research, social systems, the labour market, the education, and specialization, including the legal framework, and the use of digital technologies for production and education purposes.
Purpose: The aim of the literature review will be the description and analysis of Industry 4.0, which are digitization and the application of digital technologies, associated with new emerging jobs in the circular economy, artificial intelligence, cloud computing, development, sales of products and services and the focus on human resources, as Industry 4.0 requires new standards regarding Education 4.0.
Methods: The study, analysis, evaluation and comparison of selected scientific papers and research reviews of international organizations (European Union, OECD, etc.) related to Industry 4.0 and Education 4.0 resulted in the need for a significant transformation of education and labour markets, because of newly emerging professions demanding new profiles of graduates.
Conclusions: Calls for changes in the educational structure and new qualifications will be formulated regarding the Slovak economy by 2030. A successful transition to Industry 4.0 paradigm requires the linkage between industrial policy and educational, scientific, technical and innovation policies.

Key words: Economy 4.0, Education 4.0, labour market requirements, Teacher 4.0.

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Exploring Middle School Teachers' Job Demands and Job Resources during COVID-19

Juana M. Lang - Joshua Valk[*]

Abstract:

Introduction: The study aimed to explore teachers' general working conditions, job demands and resources, and teachers' general well-being in four middle schools in the Southeastern U.S during COVID-19.

Methods: The methodology for this study was qualitative. The sampling strategy was purposeful and comprised 15 educators. The data were collected utilizing two semi-structured interviews and documentation. The data analysis consisted of thematic analysis.

Results: The study's results revealed seven themes that emerged from the data: a) Changes in working conditions; b) teachers' well-being and working conditions; c) perceived teachers' new job demands and additional workload; d) emotionally draining job demands; e) perceived available job resources; f) perceived need for job resources; and g) strategies teachers used to cope with stress.

Discussion: The lessons learned during the pandemic in these four organizations may assist leaders in designing new policies and avoid further deterioration of teachers' well-being.

Limitations: Access to the organization's documentation and the sample size were limitations.

Conclusions: The shift in job demands and job resources during the pandemic placed teachers at risk of emotional exhaustion and burnout.

Key words: job demands, job resources, personal resources, emotional exhaustion, burnout syndrome.

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The Relationship between Lifelong Learning and Attitudes towards the Teaching Profession of Pre-service Teachers

*Sultan Selen Kula**

Abstract:
Introduction: The purpose of this study was to examine the relationship between lifelong learning (LL) and attitudes towards the teaching profession (ATTP) of pre-service teachers. LL and ATTP of pre-service teachers were compared in terms of gender, perceived success level and reading frequency variables.
Methods: This correlational study was conducted with 515 pre-service teachers from a faculty of education located in Turkey's Central Anatolia Region. "Lifelong learning tendency scale" and "Attitude toward the teaching profession scale" were used as data collection tools.
Results: The results of the study showed that there was a positive and statistically significant correlation between pre-service teachers' LL and ATTP. Gender, perceived success level and reading frequency are variables that affect LL and ATTP of pre-service teachers.
Discussion: Pre-service teachers' LL and ATTP provide important tools for improving teacher quality and learning quality of students, making it an indispensable integral part of the teaching profession in developed countries.
Limitations: This study focused on pre-service teachers. A similar study can be designed with teachers and instructors. The quantitative research method was used in this study. A detailed examination with qualitative data was not carried out, which can be considered a limitation.
Conclusions: It was revealed that the LL level of pre-service teachers was high and the ATTP level was very high. Being female affects LL and ATTP levels of pre-service teachers positively. Another result of this study is that the more successful pre-service teachers perceive themselves to be, the more lifelong learning tendencies they have. The more frequently pre-service teachers read books in daily life, the more their lifelong learning tendencies and attitudes towards the teaching profession increase. The results of this study revealed that there was a moderate, positive and statistically significant correlation between LL and ATTP.

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Investigating Lifelong Learning Tendencies and Scientific Creativity Levels of Prospective Science Teachers

*Oğuzhan Nacaroğlu - Fatma Mutlu**

Abstract:

Introduction: Prospective science teachers must themselves first generate rather than simply using knowledge and they must be science literate must be science literate and abreas of the changes in industry if we want future generations to be and do the same. Therefore, the purpose of this study is to determine lifelong learning tendencies and scientific creativity levels of prospective science teachers and examine the correlation between these variables.

Methods: In the study, correlational survey, one of the quantitative research methods, was used. The sample of the study was composed of 201 prospective science teachers studying at the 1st, 2nd, 3rd, and 4th years in a public university in Eastern Anatolia Region within the academic year 2019/2020. "Lifelong Learning Scale" and "Scientific Creativity Test" were used as data collection tools in the study. Independent samples t-test was used to compare the scale scores of the participants in terms of gender and age and ANOVA was used to compare them in terms of class level. In addition, Pearson's Product-Moment Correlation Coefficient (r) analysis technique was used in order to examine whether or not there was a significant correlation between lifelong learning tendencies and scientific creativity levels of prospective science teachers.

Results: The results of the study indicated that the prospective science teachers had high lifelong learning tendencies. No statistically significant difference was found between the Lifelong Learning Scale (LLS) total scores of female and male prospective science teachers. However, a statistically significant difference was found between the Scientific Creativity Test (SCT) total scores of male and female prospective science teachers and this difference was observed in favor of male teachers. Additionally, there was a positive and moderate correlation between the lifelong learning tendencies and scientific creative levels of the participants.

Discussion: As a result of the study, it was observed that there was a moderate and positive correlation between lifelong learning tendencies and scientific

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creativity levels of the participants. High levels of lifelong learning were correlated with high levels of scientific creativity. Lifelong learning requires individuals to have some atypical knowledge, skills and competencies to cope with current life problems. In addition, it is recommended in the literature that individuals should have some competencies, such as searching information, accessing information and knowing the ways of reaching information in order to have lifelong learning skills. Therefore, it can be interpreted that scientific creativity skills of individuals, who integrate learning processes throughout their lives and have the mentioned competences, will also improve.

Limitations: The limitations of the study are that the study included 201 prospective science teachers studying in a public university located in Eastern Anatolia Region and the number of male participants was less than the number of female participants.

Conclusions: It is important for prospective teachers to do practices, which will improve their lifelong learning skills during their undergraduate education, in terms of scientific creativities. This is because scientific creativity and lifelong learning skills should be included in the science course in order for students to acquire sense of task, scientific perspective, and skills for controlling and regulating their learning.

Key words: lifelong learning, scientific creativity, science education, prospective science teachers, correlational survey.

Non-Formal Learning Activities – Adult Learning Initiatives

*Szilvia Simándi**

Abstract:
Introduction: The purpose of this paper is to contribute to the international history of community culture and culture-based adult learning through showing the initiatives of a Post-Socialist country through introducing some initiatives from 1950, without claim for completeness. Additions to the History of Community Culture and Culture-based Adult Education and Learning in Hungary.
Purpose: Our questions include how the political and legal environment, and the spread of the mass media influenced the cultural activities and the community culture, and what culture-based adult learning initiatives and activities can be identified in the area of culture.
Methods: To its realization we chose horizontal and vertical analysing viewpoints. The horizontal viewpoint of our investigation is the linearity of timeline, while the vertical analysing viewpoint is the characteristics of political and legal environment having influence on culture-based adult education (cf. non-formal and informal cultural learning) and showing the work of some significant personalities, through synthetizing archive sources and literature background.
Conclusions: The changing of the regime brought reform on this area, too, it basically changed the profession and the training as well: the community culture builds on local initiatives and active participation, includes the training, creating artistic, informational activity of the citizens, based on their self-activities.

Key words: adult learning, community culture, initiatives, non-formal learning.

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Online Self-Regulated Learning and Cognitive Flexibility through the Eyes of English-Major Students

Gökçe Dişlen Dağgöl[*]

Abstract:

Introduction: Assuming responsibility of learning and showing flexibility in case of changes and problems in learning could make this process more conscious and fruitful. This is significant, particularly at a time when traditional universities are increasingly moving into online education. To address the gaps in previous self-regulated learning and cognitive flexibility research, the current study examined the students' perceived online self-regulated learning and cognitive flexibility, and looked into the probable relationship between them.

Methods: The present study used mixed-research design. The data were gathered from 115 English-major students both quantitatively and qualitatively. The quantitative data were collected through two different scales as Online Self-regulated Learning Questionnaire (OSLQ) and the Cognitive Flexibility Scale. Two open-ended questions probing into both online self-regulation and coping skills of the students constituted the qualitative data.

Results: The results revealed that online self-regulated learning and cognitive flexibility correlated positively although the relationship was found to be quite slight, and the students had online self-regulated learning and cognitive flexibility at relatively high level. Students also provided examples of online self-regulated learning strategies they used, and they presented probable solutions to their problems they experienced in improving their level of English.

Discussion: Online self-regulated learning and cognitive flexibility, which were positively correlated, are likely to feed the language learning and improving processes since both variables could enable students to take decisions multi-dimensionally, without confining them to only one type of study skill. Higher level of cognitive flexibility which is associated with adapting to new situations and problem solving could help students to better manage their online learning. However, it should be noted that both self-regulation and flexibility require time and effort, and they are not products, but processes, in the journey of learning; therefore, they could be achieved through raising awareness, providing

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opportunities for students to self-direct their own learning and to cope with their problems, and undoubtedly instructors' role-modelling. Higher self-regulation and cognitive flexibility could turn students into autonomous and lifelong learners.

Limitations: The study was conducted among undergraduate students in Turkish context. The participants were English majoring students. It could also be carried out among non-English major students because self-regulation and coping skills should be supported in every department at tertiary level. The number of participants could be increased, and students in different departments or in different years of education could be compared. Different variables such as age, gender and language proficiency levels could be included into the study to measure the influences of various elements.

Conclusions: Transition into online education at tertiary level brings both advantages and disadvantages; hence, it becomes a must to promote positive aspects and to minimize negative sides. Since online education necessitates more learner autonomy, students should be trained on how to use self-regulatory strategies in language learning. Likewise, such a change in learning setting could require students to be more cognitively flexible to be able to cope with probable difficulties and to expand their thinking skills. Thus, cognitive flexibility should be instilled into the curriculum. The last but not the least, the importance of taking responsibility of learning and seeking for alternatives in the face of problems should be reminded frequently. The study aimed to provide insights and implications for all stakeholders to consider self-regulation and cognitive flexibility in designing online courses.

Key words: online self-regulated learning, cognitive flexibility, English-major students.

Revised Bloom's Taxonomy in Reading Texts in EFL/ESL Settings

Dinçay Köksal - Ömer Gökhan Ulum - Nurcihan Yürük*

Abstract:

Introduction: Among its contemporaries, the updated Bloom's taxonomy is perhaps the most widely used cognitive process model. It is a categorization paradigm that emphasizes the cognitive levels beginning with remembering the information and progressing to more complicated levels such as producing the knowledge. Education psychologists want to assist instructors, policymakers, and curriculum creators in designing education that enables students to effectively retain, retrieve, and apply the selected content. Classifying information in a precise sequence that is durable in a person's memory can aid learners in effectively storing, retrieving, retrieving, and using facts; otherwise, the whole learning process may be impeded. Thus, it is imperative that students acquire the fundamental knowledge prior to attempting to interpret current information to develop meaningful knowledge (Darwazeh, 2017). The purpose of this research was to determine the degree to which the updated Bloom's taxonomy is included into the reading sections of EFL textbooks developed for Turkish high school students. According to the results of the research, the evaluated textbooks lacked the higher level cognitive abilities outlined in the updated Bloom's taxonomy. Consequently, based on the results, certain hypotheses have been formulated to indicate how reading sections of textbooks now being written or to be published might reference the updated Bloom's taxonomy.

Methods: The objective of this research is to determine the degree to which EFL textbooks incorporate higher and lower level questions based on the updated Bloom's taxonomy. In the study, the overall reading sections of the EFL textbooks were examined. In other words, the cognitive level of the reading passages was determined using the updated Bloom's taxonomy. Consequently, the approach used in this study is descriptive content analysis in qualitative research. The updated cognitive levels of Bloom's Taxonomy were referenced in the classification of reading questions in EFL textbooks.

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Results: The data indicate that the reading text questions did not target higher cognitive levels. Given that remembering is associated with working memory and short-term memory, it is doubtful that it can assess long-term memory. To reinforce knowledge in the long-term memory, it is necessary to engage higher cognitive processes. It is rare that learners of a foreign language would reinforce lexical, syntactical, and contextual knowledge unless they analyze or assess the corresponding information in the texts. Measuring mainly lower levels of cognition gives them with little data. Additionally, it is crucial to apply integrated activities while reading texts. Reading and writing, or speaking and listening, are examples of integrated tasks. Thus, reading text queries were unable to assist students in producing meaningful texts. Pure and concrete inquiries have just a superficial relationship to understanding.

Discussion: The revised Bloom's taxonomy is a useful and successful tool for reading classes. Therefore, EFL and ESL instructors, researchers, and textbook authors must use Bloom's higher cognitive aspects so that EFL students can reinforce texts at the lexical, syntactic, and contextual levels. Taking into account lower cognitive abilities, the most often utilized inquiry type concerned remembering, which includes definition, listing, memorization, recalling, and expressing the pertinent language and material. However, there are significant limits to memorizing dimension for language learners. This constraint may be overcome by including more cognitive elements. It is glaringly obvious that English instructors and textbook authors should include extra questions into reading texts so that foreign and second language English learners may build more productive abilities via reading text questions in line with the updated Bloom's taxonomy. Due to the relationship between Bloom's taxonomy and critical syllabus, it is possible to design a critical syllabus to obtain these competencies (Ordem, 2021).

Limitations: This research is confined to the free EFL textbooks issued by the Turkish Ministry of National Education. In other words, only locally authored EFL textbooks are included in the research, as opposed to both locally and internationally published EFL textbooks. Consequently, future research should concentrate on a larger scope. Such an approach should consider the impact of locally authored textbooks and their comparison to textbooks published by international organizations, such as the British Council or Cambridge University Press. This is an important point to consider, as international publishers are likely to bring different perspectives on language learning, which may differ from that found in locally authored textbooks. Further, the research is exclusively confined to the Revised Bloom's Taxonomy. Therefore, alternative cognitive categorization models should also be applied to assess course contents. This would provide a more comprehensive picture of the students' learning outcomes, and enable the researchers to evaluate course effectiveness from multiple perspectives. Moreover, the utilization of other cognitive categorization models, such as Anderson and Krathwohl's Taxonomy of Educational Objectives and SOLO Taxonomy, would help to provide a broader context of comparison to effectively evaluate the effectiveness of course.

Conclusions: Revised Bloom's taxonomy provides helpful and productive stages for EFL students to be creative while reading materials. Creatively approaching a text and its questions requires assembling, creating, designing, articulating, and writing. Evaluation, which involves assessing, debating, defending, judging, choosing, supporting, valuing, and evaluating, is a further step that must be examined. Analyzing is another aspect that requires discriminating between various portions of the text, evaluating, comparing, contrasting, critiquing, differentiating, scrutinizing, and asking. These higher cognitive characteristics were not detected in the assessed reading text questions from textbooks. This lack of higher-order thinking skills presented in the text questions of the assessed textbooks suggests that students are not being adequately prepared to engage in thoughtful dialogue or comprehensive analysis when responding to texts. This is an alarming discovery as these skills are essential for students to demonstrate competency in language arts, develop effective reading strategies, and build critical thinking. This trend highlights the need for teachers to supplement reading material with activities that promote higher-order thinking, such as open-ended questions, research assignments, and group discussions. By incorporating these activities into the classroom, teachers will be able to ensure that students are exposed to the kinds of higher-order thinking that can help them to become engaged, competent readers and critical thinkers.

Key words: revised Bloom's taxonomy, reading skills, reading comprehension questions.

Identifying Mathematical Literacy Demands in Turkish, Singaporean and Australian Textbooks

*Semahat Incikabi - Musa Sadak - Lutfi Incikabi**

Abstract:

Introduction: Textbook tasks are considered as tools for implementing, endorsing mathematical thinking and thereby creating chances for mathematics learning. Therefore, textbook tasks can potentially influence and structure the way students think and can serve to limit or to broaden their views of the subject matter with which they are engaged. Among the essential sources of textbook tasks include worked examples and exercises. Because these worked examples and exercises in the textbooks are mostly used by students either in the classroom or at home, they definitely affect students' conceptual understanding of mathematics and may inspire students to work individually or collaboratively with their peers. Thus, given the importance of mathematical literacy for learning and understanding of math, one should investigate the chances students can have through it. This study aims to reveal the inclusion of the mathematical literacy demands in the fifth-grade mathematics textbooks from Turkey, Singapore, and Australia.

Methods: Being qualitative in nature, the current study employed a document analysis method to examine the textbooks. The cycle of mathematical literacy processes, defined in PISA framework, was used as a framework during the analysis to investigate mathematical literacy demands.

Results: Findings of the analysis of mathematical literacy demand in real life problems indicated that textbooks from all three countries had provided more opportunities for the competencies of two mathematical literacy processes, formulating and employing, while a small portion of these problems requires higher level cognitive skills to interpret/evaluate their mathematical solutions and make decisions for real life, which is the third process in the cycle; therefore, most of the real-life problems in the textbooks could not provide the chances for

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completing the whole mathematical literacy cycle. Moreover, textbooks from all three countries provided more chances for experiencing mathematical literacy processes in to-be-solved questions rather than worked examples.

Discussion: In general, textbooks from all three countries have included a small portion of the problems relating real life. Related literature also proves evidence for lack of real-life opportunities in the mathematics textbook tasks. Moreover, textbooks from all countries had provided more opportunities for the competencies of formulating and employing while a small portion of these problems requires higher level cognitive skills to interpret/evaluate their mathematical solutions and make decisions for real life. These results are not in accordance with the mathematics education calls voiced in national and international standards of mathematics education: Raising individuals with both mathematical thinking and reasoning skills and a useful foundation of mathematical knowledge and skills needed in all areas of life. Most of the real-life questions in the textbooks could not provide the chances for completing the whole mathematical literacy cycle. Textbooks' weaknesses in their inclusion of MLP may also cause impediments in the development of students' skills of handling the problems that they confronted in daily life.

Limitations: The present study only included one textbook from each country while these textbooks were representing the authenticity of the other textbooks in these countries. Moreover, this study examined the opportunities of mathematical literacy only provided in the textbooks while the actual implications of these opportunities may differ across classrooms in these countries.

Conclusions: Students' inappropriate practices with the real-life problems may cause them to not successfully solving these kinds of problems. Instead, employing more real-life problems in the classroom activities may result in higher student understanding. Moreover, examples and tasks from daily life are helpful to provide students with meaningful contexts and enable students to relate to their familiar experiences. The absence of providing necessary problem-solving opportunities in a range of different types in the textbooks may cause students to not solve specific types of problems. Moreover, textbooks should also include these problem-solving opportunities to construct students' conceptual appreciations of problem structures. Thus, one implication this study can make is that Singaporean and Australian textbook creators should include more sufficient practices of the whole MLP cycle in their problems to make sure students acquire the principal latent components of the problems.

Key words: mathematical literacy competencies, mathematics textbooks, comparative education.

Rethinking Happiness at School after COVID-19 and Some Implications for Future Research

*Fatma Kesik - Aslı Yurttaş - Murat Taşdan** *

Abstract:

Introduction: This research aims to determine what makes children feel happy and unhapy at school, the determinants of their subjective well-being, and by using this information it attempts to develop recommendations for the ongoing process which is characterized by uncertainty and stress and for education due to the crisis created by COVID-19 and some implications for future research.

Methods: This is a qualitative study using a phenomenological approach. The study group of the research consists of 34 primary school students in the 3rd and 4th grades (between the ages of 8-11) during the first term of 2019-2020 school year. A semi-structured interview form including three open-ended questions was used as data collection instrument. The data were analysed with descriptive analysis technique.

Results: As a result of the study, the main determinants of children's happiness were found as the relationships which they established with their friends and teachers and their academic achievement. Also, it was revealed that students made references to creating more time for courses such as physical education, music, art, etc. and more free time at school and renewal of school fixtures in order to contribute to their happiness.

Discussion: Considering the students' opinions about what makes them happy/unhappy at school and the factors that can contribute to their happiness, it can be argued that what is important for children's happiness at school is their relationships with their friends and teachers. This finding of the research has itself an utmost importance in the current process which the children experience either limited or no relationship with their peers and teachers due to the COVID-19 crisis. Accordingly, this research discusses the children's happiness within the framework of the researches that prompt us to rethink about students' happiness in an atmosphere of stress and uncertainty.

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Limitations: Although the qualitative method used in this study provided a profound picture of the views of students about what makes them happy/unhappy at the school, its limited sample constitutes an impediment to generalize it to all students in Turkey and the whole participants of the research.

Conclusions: Considering what makes students happy and unhappy in schools in that research, we can argue that even the existence of schools alone, as the main grounds of social relationships, can be considered as a means of happiness in the current process. Nevertheless, future research should aim to determine what makes children happy in a process which the students are deprived of all facilities which the schools provided.

Key words: happiness, happiness at school, COVID-19.