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CONTENT

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EMOTIONS IN EDUCATION 2050: A FORECASTING EXERCISE

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Abstract. *Prediction on emotions in Education 2050 is both an important problem and a guiding force behind the search for the inter-connections that underlie natural and social phenomena. The aim of this work is to analyse the links and regularities between emotions and Education 2050. The present research is prognostic. The methodology in the present work is forecasting. The method of trend analysis, based on expert opinion investigation, was deployed. The research showed the trend - the emotions' shift from a psychological phenomenon to the educational category. The trend is based on the analysis of experts' opinions about the incorporation of "emotional skills" into Education 2050. The forecast for the inter-connections between emotions in Education 2050 is that emotional skills will play the key role in future education as emotions are the drivers of the educational process. During the educational process emotional skills are processed via cognitive evaluation, and, therefore emotional skills become the output/outcome/result of the educational process. Emotional skills will require further investigation of their sub-skills, structure and developmental dynamics. The novel contribution of this research is that the analysis of experts' opinions is revealed as well as trend and forecast for emotions in Education 2050 are proposed.*
Keywords*: Educations 2050, emotions, emotional skills, expert opinion, forecast, prognostic research, trend.*

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Introduction

The future comes with surprises (OECD, 2022). Therefore, already today scientists, researchers, teachers, entrepreneurs, IT specialists, futurists and many other professionals make great attempts to shape Education 2050 in order to gradually evolve trends and to abrupt systemic shocks.

Surprises in education bring challenges to educators and education policy makers (OECD, 2022). It is especially critical to be able to predict the future motions of all relevant agents in complex and dynamic environments (Tang & Salakhutdinov, 2019), e.g. Education 2050.

A challenge is the increasing role of emotions in education (Gryzunov & Gryzunov, 2022; Bachler, Segovia-Lagos, & Porras, 2023; Cristóvão, Valente, Rebelo, & Ruivo, 2023; Ahrens, & Zascerinska, 2023). This increase can be explained by a clear shift in the emotions' status changed

- from being a psychological category
- to the educational phenomenon.

Also, a challenge is that prediction of future is a human ability (Marroquín, Boyle, Nolen-Hoeksema, & Stanton, 2016). Due to this, predictions about the future are susceptible to mood-congruent influences of emotional state (Marroquín, Boyle, Nolen-Hoeksema, & Stanton, 2016).

Another challenge is that while, in the physical and biological sciences, the discovery of strong laws has enabled the prediction of future scenarios with uncanny accuracy, in the social sphere no such accurate laws are known (Chen, Fine, & Huberman, 2003). To

complicate matters further, in social groups, the information relevant to predictions is often dispersed across people, making it hard to identify and aggregate it (Chen, Fine, & Huberman, 2003). Thus, the results obtained suffer in terms of accuracy and ease of implementation (Chen, Fine, & Huberman, 2003).

Accurate predictions are essential to individuals and organizations (Chen, Fine, & Huberman, 2003).

The ability to make good predictions lies at the heart of robust and safe decision making (Tang & Salakhutdinov, 2019).

Hence, the prediction of the future outcomes of uncertain situations is both an important problem and a guiding force behind the search for the regularities that underlie natural and social phenomena (Chen, Fine, & Huberman, 2003).

The aim of this work is to analyse the links and regularities between emotions and Education 2050.

The present research is prognostic. The methodology of the analysis in the present work is forecasting. The method of trend analysis, based on expert opinion investigation, as part of the forecasting methodology was deployed.

Methodology of Forecasting

When future is discussed in a scientific community, a variety of terms appears. Already in the Introduction section of this contribution, the terms "prediction" and "forecast" have been used.

Table 1, based on the findings of Pirozhkova (2015, 2016), shows the links between the methodologies used in the prognostic research.

Table 1 ***Relationships between the methodologies used in the prognostic research*** *(the authors)*

Research	**Prognostic Research**				
Methodologies	**Prediction**	**Forecast**			**Prescription**
Sub-methodologies	**Prediction**	**Foresight**	**Forecast**	**Futurology / Future Studies**	**Plan**
A short definition of the methodology	Establish-ment of a fact (Pirozhkova, 2016)	Obtaining ideas about the future due to natural cognitive abilities (Pirozhkova, 2015)	-To fix an object in its development, - Scientifically based description (Pirozhkova, 2016)	A qualitative description of developmental possibilities (Pirozhkova, 2016)	A detailed scheme, method, etc., for attaining an objective (Baporikar, 2015)

Table 2 summarizes short descriptions of the three methodologies, namely prediction, forecast, and futurology/future studies, applied in the prognostic research.

Table 2 ***Description of methodologies used in prognostic research*** *(the authors)*

Research	**Prognostic Research**		
Methodologies	**Prediction**	**Forecast**	**Futurology / Future Studies**
A short description of the methodology	-classical natural science, -concerns closed systems, - based on the universal knowledge and exhaustive information of initial conditions and relevant factors, -realizing by calculation in mathematical or logical sense and gives descriptions of qualitatively, quantitatively, space and time specified events (Pirozhkova, 2016)	-an open system (natural or social), which future state is determined by many factors and critically depends on its values, -information about initial conditions -probabilistic estimation of some parameters, define limit of variables and by mathematical computing, -simulation and modelling produce description of system's dynamics under defined conditions (Pirozhkova, 2016)	- open systems demonstrate self-organizing behaviour, -the principles of functioning can change, - by plausible reasoning and the construction of qualitative models (images) -different ways of its development without knowledge of what will be realized (Pirozhkova, 2016)
Prevailing knowledge	Natural (Pirozhkova, 2016)	Technological (Pirozhkova, 2016)	Social (Pirozhkova, 2016)
Methods to be used	-Historical modes of prediction—speculation, deduction, extrapolation, polling, and modelling—in contemporary digital systems, -Extrapolation, -Polling, -Surveying, -Modelling (Dijck, 2021)	- Delphi method (Anderson and Holt, 1997) -Scenario -Expert knowledge -Quantitative methods (Pirozhkova, 2016) - Trend (Pirozhkova, 2017)	-Futurological scenario -Imagination -Extrapolation -Analogue -Association -Metaphor -Trend (Pirozhkova, 2016)

Forecasting is considered in the historical development (Pirozhkova, 2017):

1. from autonomous practices slightly connected with scientific knowledge as the form of explaining;
2. through activities methodologically oriented to searching for causal laws; and
3. then to activities aimed at describing of the future state of open systems and situations they characterized by uncertainty and dynamics irreducible to the sets of causal laws and initial conditions.

Consequently, the use of the trend method as part of the forecasting methodology proceeds in three phases as illustrated in Figure 1:

- Phase 1 refers to change's identification as changes reshape the world in general and education in particular. For this, expert opinion expressed in published works is analysed.
- Phase 2 aims at trend outline. Some changes become pervasive and persistent that make them a trend.
- Phase 3 relates to a scientifically based description of future. A trend helps describe the development of education in future.

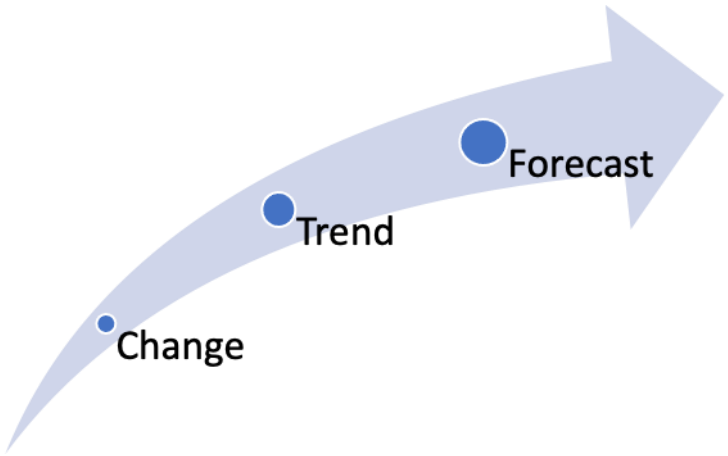

Figure 1 ***The inter-connections between change, trend, and forecast*** *(the authors)*

Research Results

Emotions are an extraordinarily complex issue (Jantzen, 2019). It is worth noting that "complexity" characterizes transforming structures oriented toward an unpredictable future while "simplicity" is inherent in systems oriented toward immutability and conservatism (Asmolov, Shehter, & Chernorizov, 2018; Asmolov, Shehter, & Chernorizov, 2020). Complexes do not offer a sequential continuum of a phenomenon, while systems are of a cyclical nature (Khoshkish, 2003).

Analysis of medical literature allows finding out the definition of emotions as a person's brain function (Singh & Singh, 2011). In order to specify the function of emotions in education, it is important to describe the difference between brain and mind. Brain is the structure that carries out the functions like thinking, emotions, problem solving, sum total of a person's personality including moral standards/judgements/reasoning etc, language/speech, hearing, vision, making sense of perceptions and regulating motor activities, balance/coordination, heartbeat/respiration/other vital functions, hormonal and related balances, mind - a collection of its functions (Singh & Singh, 2011). Brain and Mind, though connected concepts, are not synonyms (Singh & Singh, 2011). Like eye is the structure, sight its function (Singh & Singh, 2011). They should not be used interchangeably (Singh & Singh, 2011). Brain is the producer, mind its product (Singh & Singh, 2011). Without a brain, there is no mind (Singh & Singh, 2011). Mind is the product of brain activities (Singh & Singh, 2011). It is worth pointing that consciousness is one of the functions of mind (Singh & Singh, 2011). And, it is consciousness, then, that can guide or misguide us in our experiences (Singh & Singh, 2011). It is the brain and nervous system which run the rest of the body and all its activities, including thinking and action in all their forms, not the mind (Singh & Singh, 2011). Mind is just the sum total of all brain functions (Singh & Singh, 2011). The main function of emotions in education is to drive the evolution of person's consciousness and, consequently, activity of person's processes (Berman, 2019).

A biological approach considers that the innate, possibly genetic mechanisms of emotions' origin is applicable (Pyrev, 2019). According to this approach, emotions may have neurophysiological foundations and emerge from the neural processes in the reticular formation of the medulla oblongata (Pyrev, 2019). What is important for education here is that emotion itself has an involuntary effect on the cognitive apparatus of the human psyche and its motor skills (Pyrev, 2019). It means that cognitive structures do not directly invoke emotions (Pyrev, 2019). Moreover, the emergence of basic emotions triggered by innate stimuli is generally not consciously recognised by an individual (Pyrev, 2019).

In the cognitive approach, emotions are defined as "secondary" and dependent, since they act as an aftereffect of cognitive evaluation (Pyrev, 2019). The cognitive process takes significantly longer to evaluate emotions in comparison to the emotional process (Pyrev, 2019).

The psychological system approach proposes that the change in the relationship between functions is of a great importance for the individual development, and not the development of each function (Vygotsky by Leontiev, 1982).

The social approach to emotions discloses that there are socially banned negative emotions (anger, rage, etc) (Pyrev, 2019).

Analysis of literature allows finding out that the term "emotional intelligence" is used in psychology, and "emotional skills" – in education.

We are currently experiencing an emotional turn in education (Dernikos, Lesko, & McCall, 2020), a trend that, a priori, can be assessed as positive, since it breaks the historical denial of emotions in our culture (Bachler, Segovia-Lagos, & Porras, 2023), and consequently, in education.

When related to education, emotional skills are discussed from two perspectives as revealed in Table 3.

Table 3 ***Two perspectives on emotional skills*** *(the authors)*

Perspective	**Intrapersonal**	**Interpersonal**
Aspect	Socio-emotional skills (Danner, Lechner, & Spengler, 2021)	Cognition-emotion interaction (Pessoa & Pereira, 2013)

In education, the individual emotions of teachers and learners can be different and even contradictory in one and the same situation (Leont'ev, 1978; Ahrens & Zascerinska, 2022). The complexity of emotions in education is increased by different and contradictory emotions between the teacher and learners or, in other words, from the interpersonal perspective (Ahrens, Zascerinska, Filimonova, & Bikova, 2023).

Today education is required to be obtained by all people. Education is defined by Vygotsky as the artificial development of the individual (Vygotsky, 1982-84). Education and learning are the emotional processes (Ahrens & Zascerinska, 2023). And emotions are the drivers of the educational process (Leont'ev, 1978), also known as teaching, peer-learning, and learning (Zaščerinska, 2011). The emotional dimension of teaching, peer-learning and learning processes should be addressed without the biases of emotional intelligence and positive psychology (Bachler, Segovia-Lagos, & Porras, 2023).

In education, emotions are mostly linked to individual's cognition (Osika, MacMahon, Lodge, & Carroll, 2022). At the same time, emotions are closely related to creativity, communication, problem solving (Hannula, 2015), and other aspects of individual's functioning.

Since excessive emotions can block the cognitive abilities of students, lead to emotional "sticking", methods of harmonizing the cognitive and emotional components in the educational process are needed (Gryzunov & Gryzunov, 2022).

In education, four groups of academic emotions are especially relevant for students' learning (Pekrun, 2014):

- Achievement emotions relate to achievement activities and to success and failure resulting from these activities. Examples are enjoyment of learning; hope and pride related to success; and anxiety and shame related to failure. Achievement emotions are pervasive in academic settings, especially so when the importance of success and failure is made clear to students.

- Epistemic emotions are emotions triggered by cognitive problems, such as surprise about a new task; curiosity, confusion and frustration about obstacles; and delight when the problem is solved. Epistemic emotions are especially important in learning with new, non-routine tasks.
- Topic emotions pertain to the topics presented in lessons. Examples are empathy with the fate of one of the characters portrayed in a novel, anxiety and disgust when dealing with medical issues, or enjoyment of a painting discussed in an art course. Both positive and negative topic emotions can trigger students' interest in learning material.
- Social emotions relate to teachers and peers in the classroom, such as love, sympathy, compassion, admiration, contempt, envy, anger or social anxiety. These emotions are especially important in teacher/student interaction and in group learning.

When discussing Education 2050, the idea that emotional learning is as important as the development of cognitive domains is gaining traction (OECD, 2022). Emotions' functions relate to the motivational and wellbeing conditions for learning to be effective and sustainable (OECD, 2022). Therefore, emotional conditions are considered for effective teaching and learning in the frameworks for assessing students' learning outcomes (OECD, 2022).

Another function of the emotions in Education 2050 is proposed by futurist Leonhard (2023) that emotions in education, training and learning will be needed to unlock skills, minds, and bodies.

Considering our development model demonstrated in Figure 1 that proceeds from change through trend to forecast, our findings are presented in Table 4.

Table 4 ***Change, trend, and forecast related to emotions in Education 2050*** *(the authors)*

Nr.	**Phenomenon**	**Emotions in Contemporary Education**	**Emotions in Education 2050**
1	Change	Function of emotions is to mobilise the body's reserves for activity	Function of emotions is - to ensure individual's wellbeing and - to unlock individual's skills, minds, and bodies
2	Trend	Use of emotions, as a psychological phenomenon (Ahrens & Zaščerinska, 2014), defined as nerve impulses (Kriumane, 2013) and similar	The increase in leveraging of emotions as an educational category, namely emotional skills (OECD, 2019)
3	Forecast	Emotions are factors that impact the educational process	Emotions in education are - skills (OECD, 2019) and - learning outcome (OECD, 2022)

To sum up, the research interest to emotions is increasing. The scientific developments and findings in the research area on emotions facilitate the change in the role of emotions in education

- from the neglected one
- to the embedded into educational processes.

The changing role of emotions in education will impact the shift in the design and implementation of the educational practice towards ensuring individual's well-being.

Discussion

The emotional dimension of teaching and learning processes is colonized by approaches lacking the necessary scientific substantiation required by educational practices based on evidence (Bachler, Segovia-Lagos, & Porras, 2023).

There is a close interweaving between emotional and cognitive processes (Bachler, Segovia-Lagos, & Porras, 2023). The links between emotions and cognition are grounded on the assumption that the relationship between functions that is of a great importance for the individual development, and not the development of each function (Vygotsky by Леонтьев 1982).

The inter-connections between emotional and cognitive processes have recently been structured in the way that emotions at the biological level are primary in relation to cognition (Pyrev, 2019). It means that emotions are the drivers of the educational process. Emotional engagement of teachers and learners into the educational process is of a great importance for reaching the educational objectives.

The prevailing emotional culture that claims that feeling good should be always privileged (Bachler, Segovia-Lagos, & Porras, 2023) can become an obstacle to learning, generally because positive emotions hamper a slow and reflective analysis of the learning content (Anaya-Durand & Anaya-Huertas, 2010). In order to avoid any delay in learning and increase the learners' involvement into the educational process, it was opined that for learners the emotions, they experience, are not important but the crucial for learners is the emotions' change (Gryzunov & Gryzunov, 2022). "Emotional swing", a change of positive and negative emotions, was proposed (Gryzunov & Gryzunov, 2022). It should be emphasized that, although negative emotions are not pleasant to experience, negative emotions really are necessary for a healthy life (Ackerman, 2019). Based on the finding that teaching is to be started with making learners' dissatisfied with their existing experience (Stepans, 2005), learners' emotions proceed in the educational process (Zascerinska, 2023): from negative emotions in Phase 1 Teaching through neutral emotions in Phase 2 Peer-learning, and to positive emotions in Phase 3 Learning.

Conclusions

The theoretical analysis of the expert opinion expressed in their published works allows concluding that education should be grounded on the biological nature of emotions, being a brain function (Singh & Singh, 2011), in comparison to emotions as nerve impulses (Kriumane, 2013) defined by the psychological approach. The biological nature of emotions allows drawing a conclusion that, in education, emotions are primary in comparison to cognition. Due to this we conclude that emotional skills should be developed together with other brain functions. In education, emotional skills are often linked with cognitive skills and social (communication) skills. The combination of emotional, social and cognitive skills in education is important for learner's development. The educational process has to be based on the shift between negative, neutral, and positive emotions.

The trend here is the shift in the emotions' status from a psychological phenomenon to the educational category. The trend is based on the analysis of expert opinions about the deeper incorporation of "emotional skills" into Education 2050. Consequently, the forecast for the inter-connections between emotions in Education 2050 is that emotional skills will play the key role in education due to the emotions determined to be the driver of the educational process. Another aspect of the forecast for emotions in Education 2050 is that, during the educational process emotional skills are processed via cognitive evaluation, and, therefore emotional skills become the output/outcome/result of the educational process. The

forecast is that emotional skills will require further investigation of their sub-skills, structure and developmental dynamics.

The novel contribution of this research is that the analysis of experts' opinions is revealed as well as the trend and forecast proposed for emotions in Education 2050.

The present research has some limitations. The biological, psychological, social and other links between emotions and education have been set. Another limitation is the consideration of only the biological, cognitive and psychological approaches to emotions in Education 2050. A limitation is also that only theoretical methods were deployed in the present work.

Further research intends to enrich the presented forecast with the implementation of other methods, e.g. Delphi method, scenario, quantitative methods, and expert group knowledge.

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IMPLEMENTATION OF UNIVERSAL DESIGN FOR LEARNING (UDL) CONCEPTS ON LEARNING IN HIGHER EDUCATION

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Abstract. *This research aims to describe the application of the three UDL principles in higher education, the obstacles experienced and the solutions. The type of research used in this research is library research. The data in this research is in the form of previous research reports published in journals. This research uses national or international journal articles with publication years in the last 5 years (2017-2023). Overall, there were 14 journal articles studied that were relevant to the research topic. Among the 14 journal articles obtained, there were 10 journal articles indexed by Scopus. The results of the research show that (1) the application of Universal Design for Learning (UDL) in higher education is by applying the 3 principles of UDL, namely: (a) application of the principle of representation through face-to-face learning, online learning, teaching using lecture methods, discussions, sheets work, delivering material using graphics, video, text, or images, as well as using e-books, (b) applying the principles of action and expression by giving students the freedom to choose how to express their understanding, either verbally, written, hardcopy, or softcopy, (c) application of the principle of involvement by creating a comfortable learning environment, frequently interacting with students, carrying out group discussions, and using assistive applications (mind tap, clicker, moodle), (2) the obstacle faced by universities in implementing UDL is the large number of students in classes, lack of knowledge and awareness about UDL among teachers and school officials, and lack of time for teachers to apply UDL in learning, lack of interest and motivation in learning. Applying and studying UDL, (3) the solution to overcome the obstacles faced by universities in implementing UDL is to hold training on UDL for teachers and school officials, this training can be in the form of an orientation program or workshop, another solution to overcome the problem of lack of motivation for teachers To adopt and learn UDL is to provide motivation in the form of rewards to teachers who are interested in learning more about UDL.*
Keywords: *learning, higher education, Universal Design for Learning*

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Introduction

Higher education is a significant factor in obtaining employment which ultimately leads to a better quality of life. However, participation of persons with disabilities in higher education in Indonesia is still low and very limited. Data shows that only around 2.8% of people with disabilities graduated from higher education while 9.48% were non-disabled. The attitude of the academic community towards people with disabilities, a discriminatory academic culture, and the low pedagogical competence of lecturers in accommodating Students with Special Needs (MBK) are the main obstacles in the successful implementation of inclusive education in higher education.

Higher education is one of the most important institutions in educational development in Indonesia. Its birth and development cannot be separated from the needs and ideals of national development. Higher education is organized as a systematic unit with an open and multifaceted system. It builds the process of fostering and empowering higher education constituents creatively and effectively and respecting the existence of pluralism in society. One of them is the existence of students with special needs in higher education (Nursanjaya, 2019).

In 2017, UNESCO declared that quality higher education must strive to promote a culture of inclusion. To be able to do this, it is important to appreciate and respect the diversity of needs, learning experiences, and needs of each student as an individual in order to hopefully create an inclusive learning environment (Riswari et al., 2022). The reality is that there are still many people who have difficulty participating in learning activities and this is in accordance with the research results of Mujiono et al (2018). University of Malang as a higher education institution currently offers learning opportunities for students with special needs. Since the opening of the Special Education Department, every new academic year Malang State University accepts students with special needs. Several problems arise when teachers in inclusive classes have students with special needs. Teachers do not feel prepared to develop lessons that meet their specific needs. Accessibility is difficult to define and achieve because it is a subjective variable for students with special needs. This requires an environment and learning materials that suit the characteristics of students with special needs.

Apart from that, research conducted by Ningtyas et. al (2021) at the Muhammadiyah University of Jember also revealed that college semester learning plans tend to be too general without referring to the conditions of students with special skills. Specific needs and appropriate updating of learning resources are still inadequate (Ningtyas et al., 2021). This is also in line with research by Azimi et al. (2020) who also explained that at Lambung Mangkurat University (ULM), students with special needs always experience difficulties in planning and studying. These problems arise in the form of semester learning plans that have not been revised and the inadequate availability of learning materials (Azimi et al., 2020).

One solution to overcome the problem of diversity in student characteristics in an inclusive classroom is to apply the principles of Universal Design for Learning. This UDL approach gives teachers the freedom to adjust the curriculum, adjust the way of learning and delivering the material, also assess students in any way possible. UDL was initially developed in architecture and product design. It was then expanded to education (Alqarni, 2022). One of the principles that animates UDL is that the curriculum must be created to include certain alternatives so that the curriculum is accessible and suitable for students with different backgrounds, various learning styles, abilities, and those with special needs (Rosmi & Jauhari, 2023).UDL takes advantage of technological developments to accommodate learner differences. According to Edyburn in Basham, Gardner & Smith (2020), UDL has three principles, namely, *multiple means of engagement*, namely providing various ways of involvement to support learning, *multiple means of representation*, namely providing various representative means, *multiple means of action and expression*, namely providing various ways of showing understanding.

The research conducted by Dalton, Mckenzie, & Kahonde (2012) entitled Inclusion, Universal Design and Universal Design for Learning in Higher Education: South Africa and the United States discusses the implementation of UDL-based interventions in higher education in South Africa and America. Therefore, researchers will conduct a literature study regarding UDL for students with special needs so that teachers can know and design appropriate learning methods in the learning process. This research focuses on the three principles of UDL in Higher Education as well as the obstacles and solutions. Data obtained from several journal articles spanning the years 2018-2023. Based on the background that has been described, researchers are interested in conducting a literature study regarding the application of UDL in higher education.

Methodology

The type of research used in this research is Literary Study research or Library Research. According to Zed in Melfianora & Si (2019), in library research, library research is

not only the first step in preparing a research framework (research design), but also utilizes several library sources. These library sources were used to obtain research data. The data in this research is in the form of previous research reports published in journals. This research uses national or international journal articles with publication years in the last 5 years (2017-2023). Overall, there were 14 journal articles studied that were relevant to the research topic. Among the 14 journal articles obtained, there were 10 journal articles indexed by Scopus. The data collection process was carried out by filtering based on inclusive criteria determined by the author. Inclusive criteria are general characteristics of the literature to be used. Some of the inclusion criteria used in this study include:

a. International or national journal with publication year in the last 5 years;
b. Journals are preferred to be indexed by Scopus;
c. Journals contain the same keywords as the research topic;
d. Journals are full papers and are not limited to certain research methods;
e. Journals contain information or data that is appropriate to the research focus.

Results and Discussion

Table 1 ***Data Analysis Results***

No	Author's name	Publication Year	Research Title	Research result
1	Beny Hari Firmansyah	2017	The Influence of Universal Design for Learning (UDL) based on Social Learning Networks (SLN) on STKIP PGRI Situbondo Student Learning Outcomes	Universal Design for Learning (UDL) learning based on Social Learning Networks (SLN) influences student learning outcomes in curriculum review courses by looking at the comparison results between the experimental group and the control group. The UDL principles contained in this research are the principles of various means of action and expression, the use of various methods. The principle of various means of involvement, various methods of learning involvement such as group discussions. The principle of multiple means of representation provides for a wide variety of teaching methods. The obstacles experienced by universities are a lack of awareness, resources, time and technological tools so that this becomes inefficient and affects student learning outcomes. The solution to these problems is by being determined/committed, asking for support, engaging in professional development such as training,
2	Rachmita Maun Harahap, Iman Santosa, Widjaja Martokusumo	2019	The Influence of Universal Design and Usability on Public Facilities in Higher Education for Persons with Disabilities	Every public space is obliged to provide a universal design for all users, including people with disabilities, because everyone has the same rights, including the principle of means of representation, namely the use of public facilities to gain physical access as needed. Obstacles: wheelchair users and the deaf found that Universitas Muhammadiyah Banjarmasin was not yet accessible and usable because several facilities and buildings were inaccessible or difficult to access. Solution: Providing a universal design for all users including people with disabilities
3	Yoga Dwi Windy, Kusuma Ningtyas, Fitri Amilia, Nur Kamilah	2020	Universal Design Model Innovation for Special Needs Learning in Higher Education	The UDL-based learning provided to students is by applying the Universal Design-based Elearning (DUE) learning model. This learning model gives students the freedom to create a comfortable learning environment. In addition, the principles of the UDL approach will be combined with cooperative learning models.
4	Fina Riswari, Neny Yuniarti, Ediyanto and Asep Sunandar	2022	The Implementation of an Inclusive Learning Environment as a Form of Inclusive Education in Higher Education	Implementation of an inclusive learning environment as a form of inclusive education in higher education can be achieved by creating a comfortable learning environment by providing a learning environment that is acceptable to all groups, both students with disabilities and those without disabilities by applying the concept of universal

				design.
5	Jennifer Renée Kilpatrick, Suzanne Ehrlich, & Michelle Bartlett	2021	Learning from COVID-19: Universal Design for Learning Implementation Prior to and During a Pandemic	The application of learning is based on 3 UDL principles, namely, the principle of various means of action and expression, the use of various methods. The principle of various means of involvement, various methods of learning involvement such as group discussions. The principle of various means of representation, providing a wide variety of teaching methods. The obstacles experienced by universities are lack of awareness, resources, time and technological tools. The solution to these problems is by being determined/committed, asking for support, engaging in professional development such as training.
6	Lynne Murphy, Heather Panczykowski, Lindsey Fleury & Brooke Sudano	2020	Implementation of Universal Design for Learning in Occupational Therapy Education	Applying learning based on 3 UDL principles, namely, the principle of various means of action and expression, students are offered several method choices. The principle of multiple means of engagement provides feedback to students. The principle of multiple means of representation, providing a wide variety of teaching methods such as lectures, lab experiences, picture showing, etc., emphasizes the need for more comprehensive preparation for teaching and continuous professional development in the implementation of UDL. The obstacle experienced by universities is a lack of understanding of UDL. The proposed solution is the development of resources regarding UDL to address awareness and instructional use
7	Beth Oyarzun, Bryndle L. Bottoms, & Carl Westine	2021	Adopting and Applying the Universal Design for Learning Principles in Online Courses	The learning application is based on 3 UDL principles, namely the principle of various means of action and expression which allows students to present as many ideas as possible. Diverse interaction principles, using group chat to interact. Diverse interaction principles, using group chat to interact. Multimedia principles of expression and assessment of students' ability levels to determine the most appropriate learning method. The obstacles faced by universities are a lack of education and pedagogical training for professors, as well as a lack of time or motivation to explore resources. The solution to these obstacles lies in the actions of universities to encourage teachers to motivate the implementation of UDL.
8	Jennifer Renée Kilpatrick, Suzanne Ehrlich, & Michelle Bartlett	2021	Learning from COVID-19: Universal Design for Learning Implementation Prior to and During a Pandemic	The application of learning is based on 3 UDL principles, namely, the principle of various means of action and expression, the use of various methods. The principle of various means of involvement, various methods of learning involvement such as group discussions. The principle of various means of representation, providing a wide variety of teaching methods. The obstacles experienced by universities are lack of awareness, resources, time and technological tools. The solution to these problems is by being determined/committed, asking for support, engaging in professional development such as training
9	A. Sholanke, A. Adeboye, O. Alagbe, U. Ugah	2018	Universal Design for Learning: Assessment of Teaching Methods in Covenant University, Ota, Ogun State, Nigeria	The implimentation of learning is based on 3 UDL principles, namely the principle of various means of action and expression, the use of seminars and assignments to assess student knowledge, the use of question and answer techniques during the teaching of a subject. The principle of various means of involvement by applying three methods, namely lectures, seminars and assignments. Principles of various means of representation, namely the use of electronic boards, uploading lecture material to the module platform. University lecturers generally must be sufficiently trained to understand and appreciate the principles of UDL and how to apply them to benefit all students at all levels. Finally, lecturers should also be encouraged to use

				different techniques to teach the same course.
10	Peter Fenrich, Tim Carson & Mark Overgaard	2018	Comparing Traditional Learning Materials with Those Created with Instructional Design and Universal Design for Learning Attributes: The Students' Perspective	Providing teaching materials based on UDL is more effective. An example is PowerPoint teaching materials which are designed to make things easier for all parties, both in terms of font size and background color. Additionally, it also provides more detailed learning videos.
11	Yuwono, Imam., Kusumastuti, Dewi E., Suherman, Yuyus., Zainudin., Dhafiya, Farah., Rahmatika, Puteri.	2023	Development of learning applications for students with special needs using Universal Design for Learning	UDL-based applications help the learning process of students with special needs at the tertiary level. In this research, they used the ADDIE development model which consists of 5 stages, namely, analysis, design, development, implementation and evaluation. This research has used several principles from UDL itself, namely the principle of representation and the principle of involvement. As a result, the application created allows students with special needs to explore learning content that has been adapted for students with special needs and helps them understand the learning content.
12	Dalton, Elizabeth M., et all	2019	Inclusion, universal design and universal design for learning in higher education: South Africa and the United States	There are challenges and responsibilities that must be met in implementing inclusion, universal design or UDL itself for students with special needs at the tertiary level. The role of UD and UDL to strengthen the successful inclusion of people with different needs in higher education programs is presented from the literature, including national and international policies and resources. Examples are from higher education in South Africa and the United States of online discussions regarding accessibility, environmental issues, professional development, barriers to inclusion and recommendations for future development in international contexts that provide a vision for developing inclusive learning environments in higher education. Thus, the research that has been carried out has used the principles of UDL itself, namely representation, action & expression and involvement.
13	Fovet, Frederic	2020	Universal Design for Learning as a Tool for Inclusion in the College Classroom: Implementation tips for the Next Decade	This research aims to analyze UDL as a tool that can create conditions of inclusion in learning in higher education classes and analyze what principles must be fulfilled to implement UDL in the learning process. There are three principles in UDL itself, namely the principles of representation, action & expression and engagement. Therefore, this study has also explained that the principles that must be fulfilled in UDL to be effective are divided into three, namely the principle of representation, the principle of action & expression and the principle of involvement.

Implementation of Universal Design for Learning (UDL)

The application of Universal Design for Learning (UDL) in international universities is based on 3 principles, namely, the principle of representation, the principle of action and expression, and the principle of involvement.

Principle of Representation

Based on the 14 journal articles that have been analyzed, 12 journal articles show that there is an application of the principle of representation in learning in higher education. The Representation Principle recommends providing information in a variety of formats. For example, school textbooks should mostly consist of pictures. However, providing text, audio, video, and live learning aims to give all students the opportunity to access the material in a way that best suits their learning style. According to Mayer et al in Dalimunthe, Dewi &

Faadhil (2020). The principle of meaningful representation provides various means of delivering material to students to obtain, process, and integrate information and knowledge. The use of media in delivering material can encourage students to further explore content in various formats, such as delivery using graphics, video, audio, text, and images, photos and e-books which can overcome the problem of differences in the delivery of material. The learning styles of each student and teacher also provide various types and methods of learning to make it easier for students to understand learning, such as face-to-face learning, online learning, teaching through lecture methods, discussions, exercises, physical activities, and the use of articles. This is also adjusted, whether it is suitable for each student's learning style (visual, auditory or kinesthetic). This allows teachers to create documents in a variety of electronic formats (HTML, RTF, PDF, etc.) so that course material is accessible to a variety of learning needs and styles.

The most important thing that needs to be explained is that performance is a process that cannot be separated from learning. Teachers apply this principle of expression through the transmission of sound, writing, images, and body movements. For example, from the explanation of the article discussed previously, the teacher provides learning materials such as PPT software, WEB CT, and Moodle. This is one of the advantages of educational accessibility.

Principles of Action and Expression

Based on the 14 journal articles that have been analyzed, 12 journal articles show the application of the principles of various actions and expressions in learning in higher education. The principle of action and expression supports students' freedom of expression and work in carrying out academic assignments and final assessments. Freedom of expression to convey knowledge or opinions according to students' learning styles. According to Guan (2021), the difference in ways of acting and expressing refers to how to evaluate student learning outcomes. This principle is related to the ability to express the knowledge obtained by students. This is consistent with this view which requires teachers to give students the freedom to choose the expression of the skills and knowledge they acquire. Students can use various means to demonstrate their knowledge, through physical, software, oral, and written activities, developing their own final assignment by adapting individual learning styles, creating or revising their own rubrics, as well as by presenting their work on paper or electronically.

Thus, the principles of action and expression are options for expressing one's understanding using various methods that suit each learning style, whether visual, auditory, or kinesthetic. In Novianti's (2021) view, various ways of acting and demonstrating to support strategic learning can be done by providing opportunities for students to demonstrate their understanding in various ways, for example through tests and art, multimedia presentations, and digital recordings. UDL encourages lecturers to provide students with a variety of options to demonstrate understanding and engage in activities that match their strengths and abilities. UDL ensures that students can effectively demonstrate their knowledge and skills in a meaningful and relevant way to them.

Principles of Engagement

Based on the 14 journal articles that have been analyzed, 14 journal articles show the application of the principles of multiple involvement in learning in higher education. This principle emphasizes a positive learning environment in the classroom which must be created by the teacher by involving all students in learning. This means that the most important aspect of this principle is active participation between teachers and students and their engagement with each other so that communication takes place and learning also takes place smoothly. All

students are directly involved in the learning process so that this atmosphere creates enthusiasm and motivation for learning. This direct participation can involve students in group work activities and individual work, not just individual work. However, providing choices does not mean changing expectations of how students will be active and it really helps train them (Rosmi &jauhari, 2023). All students are directly involved in the learning process, thereby creating enthusiasm and motivation in learning. This direct participation can take the form of group discussions that can involve students visually, aurally, and kinesthetically. In addition, to encourage student involvement, teachers and universities can provide learning aids or learning materials that use digital technology, such as clickers and Mind taps. With this application, teachers and students can interact remotely. The university also pays attention to creating a comfortable learning environment as well as providing feedback from teachers through blog posts, emails, and after-class discussions, including the application of learning principles and participation rules.

Thus, this principle of involvement can be applied using digital-based learning materials. For example, in higher education information systems that can be accessed online through this technology, students can interact with teachers remotely. Apart from that, students can also access learning materials, and practice in various formats provided by the teacher. Through the use of this technology, students' levels of motivation and learning engagement can be increased. According to Dariyadi (2018), the use of learning media in the classroom helps teachers foster students' interest in learning because using learning media easily stimulates reflection so that students become better. In addition, learning media has the ability to provide students with a clearer picture of the material being studied.

Barriers to Implementing Universal Design for Learning (UDL) Principles in Higher Education and Solutions

Based on the overall analysis results, the obstacle faced by universities in implementing UDL is that the number of students in one class is too large so that this situation makes it difficult for teachers to implement UDL innovations. Teachers will return to traditional teaching options such as written assignments or tests due to the large number of students participating in assessments. Apart from large-scale classroom learning, another obstacle is the lack of teacher knowledge, education, and teaching training regarding the implementation of UDL principles. One other inhibiting factor in implementing UDL principles is the lack of preparation from universities to equip teachers with procedural knowledge regarding the application of UDL principles. Lecturers' knowledge, attitudes, and readiness also can be obstacles to implementing UDL. Professional development will be a key component for teachers to implement UDL.

There are several solutions to overcome obstacles to implementing UDL principles. The universities can promote new ideas or important reminders via email or seminars, can offer incentives to faculty interested in learning and applying UDL principles, such as waiving courses or paying extra to increase motivation, conducting training for teachers to use design methods universal in teaching, creating mentoring programs and workshops, collaborating with other faculties to share knowledge about UDL applications, collaborating with colleagues, and collaborating with learning designers, as well as participating in communication groups.

Social media and professional organizations are solutions to increase awareness and the knowledge of professors in providing services to students with disabilities through UDL-based learning. Thus, UDL training can increase knowledge and teaching effectiveness. Additionally, UDL training is beneficial for employment. This training can be applied to teaching and learning activities at the university level. This can help teachers work better. This is in line with the views of Malinen, Savolainen, and Xu (Dalimunthe et al., 2020) who

say that training is an action that can increase teacher knowledge, skills, and effectiveness. Christopher (2020) also argues that any level of professional development or training can have a positive impact on teachers' teaching practices to increase their understanding of the UDL framework and enhance their abilities so that instructors will use UDL in course design. This is proven by research by Hsiao et al (2019) that teachers who have received training through professional development or other specific programs in sensitive areas, disabilities, special education law, and especially universal learning design (UDL) show increased understanding, open-mindedness, and flexibility in teaching.

Conclusion

Based on the results of the article analysis, the application of UDL in higher education is carried out through the application of three UDL principles, namely: the principle of involvement, the principle of action and expression, and the principle of representation. However, there are obstacles/obstacles in implementing UDL in higher education in terms of interest, motivation, lack of awareness and knowledge, facilities, and infrastructure. The recommended solution is to train lecturers to use universal design methods in teaching; create mentoring and workshop programs, collaborate with other universities to share information about UDL applications, collaborate with colleagues, collaborate with learning designers, and participate in social groups.

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ASSESSING THE IMPLEMENTATION OF ONLINE LEARNING IN AN INSTITUTION OF HIGHER LEARNING

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Abstract. *There is a rich body of research done in online teaching and learning in the context of developing countries. However, there is a gap in research on challenges in the implementation of online learning in institutions of higher learning. Lecturers and students' readiness for this shift from classroom-based to online learning is pivotal. The implementation of online learning strategies demands lecturers' skills on integrating technology with content. This study examines the perceptions of lecturers as they transit from face-to-face to online learning in an institution of higher learning in one developing country. The study is framed theoretically by Suzuki and Keller's Five-E Model for selecting the right model and techniques for appropriate purposes in online design. It used a qualitative research methodology and employed a convenient sampling technique to select three lecturers from each of the three institutions of interest. An open-ended questionnaire was used to collect data and follow up interviews were made. The study used a thematic approach to analyse data. The findings reveal that the lecturers embrace online learning mostly because they are aware that students enjoy learning technology and thus enhance understanding. The challenge raised is the shortage of gadgets which are needed by lecturers to support blended learning. Also, some of the students do not have access to the internet due to socio-economic challenges.*

Keywords: *Online learning, assessment, higher education, transformational practices, research and innovation, teacher education*

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Introduction

Before Covid-19, most institutions of higher learning had been delivering their lessons using traditional face-to-face teaching. However, during Covid-19 many institutions turned to online learning to not miss a year. Post Covid-19 some institutions adopted blended learning as the way to go. Even though some institutions have embraced blende learning, Makumane (2021) notes that Covid-19 facilitated the transition from traditional to online teaching and learning without being prepared for the transition. Makumane elaborates further in this view when he notes that before Covid-19, online platforms were put in place but not fully utilised as many institutions of higher learning already had Learning Management Systems (LMS), an indication that there were not ready. These LMS were initially introduced as optional platforms that would facilitate blended learning (Khoza & Mpungose, 2020; Makumane, 2021). LMS is a virtual platform which promotes digitalised curriculum and allows students to have access to content at their convenience (Khoza, 2020; Khoza & Mpungose, 2020; Makumane, 2021).

The shift to online teaching and learning however, was never officialised in most institutions of higher learning (Makafane & Chere-Masopha; 2021) but was introduced as a form of emergency during the pandemic for lessons to continue in both schools and tertiary. Online teaching-learning refers to instructional settings that are sustained by the internet (Singh & Thurman, 2019). Online communication applications use include google classrooms, zoom meetings, WhatsApp platform meetings, to name a few. In a study conducted in Nigeria, on students' perceptions of online examinations initiative, Suleiman (2022) explains that apart from the teaching, examinations were also conducted online. One of the challenges of conduction online examinations was power outrage, inadequate data and internet connection

problems. We must highlight that effective online teaching presents an opportunity to students to combine the innovative technological means with content to be taught. Hence it is crucial that the teaching staff be empowered with necessary skills to enable them to integrate appropriately technology in teaching and learning to have lessons which promote active participation of students (Matee, Motlohi, & Nkiwane, 2023).

Furthermore, the benefits of online teaching also allow for cost-reduction, time efficiency, flexibility, and convenience for the user (Szadziewska & Kujawski, 2017; Makumane 2021). However, as much as online learning has its benefits, there are also concerns that it is a challenge to gauge the information load for effective teaching and learning, for example, the amount of teaching materials that is loaded by some lecturers is not enough for effective learning (Szadziewska & Kujawski, 2017). Hence, it is noteworthy to highlight that material and recordings of the lessons which are just uploaded without being explained comprehensively to students does not lead to interactive learning (Maluleka, 2021). Henceforth depriving the students and lecturers of having interactive lessons does not lead to meaningful learning as argued by Maluleka (2021). In addition to that, Maluleka points out that face-to-face-curriculum has not been adjusted to accommodate digital technologies, it was adopted as is using the same teaching strategies which do not work for online lessons. Evidence also points to another challenge where access to technology is yet another obstacle to successful implementation of online teaching (Matee et al., 2023; Makafane & Chere-Masopha, 2021; Makumane, 2021; Mpungose & Khoza, 2020; Sokhulu, 2020). For online learning to benefit students, it is important therefore to ensure that it is implemented appropriately.

Literature shows that the implementation of online teaching was not well planned as the shift was unplanned (Mpungose & Khoza, 2020; Sokhulu, 2020; Makumane, 2021) which may even be worse in developing countries. Adhola and Okungu (2022, p.227) take this argument by indicating that "t the institutions used online teaching even though facilitators and teacher educators experienced challenges that compromised quality of learning. There was unequal access to online infrastructure, affordability of internet, facilitators' incompetence in online teaching. In line with this view, Naidoo (2022, p. 241) explains "due to the inequality in opportunities and resources available to students, online pedagogy promoted disparity and epistemic injustice." As such, we find it important, to assess the online teaching strategies that have been implemented in institutions of higher learning in a developing country. We must also stress that some institutions of higher learning have challenges with implementing online learning strategies mostly because of equity and technological competencies amongst the students and the lecturers (Adedoyin & Soykan, 2020).

A study conducted in Nigeria revealed that there were many disruptions to teaching during COVID-19. As such, students could not sit for their examinations as the universities were navigating online teaching (Agbele & Oyelade, 2020). This implies that institutions had to design and develop online instructional programs to support lecturers and students on technological skills before it was rolled out. The implementation of online teaching was an emergent move to overcome the barrier of educational continuity in the time of global crisis (Agbele & Oyelade, 2020). However, this could have been done by ensuring that there are enough resources. This includes ensuring that all students have access to material that have been uploaded by their lecturers and are able to attend online lessons. The shift to online teaching should not disadvantage any students. We also argue that the move should not compromise the effectiveness of teaching in terms of lesson delivery and content coverage. Hence the transition to online teaching posed challenges to the lecturers as they struggled with skills required to make use of technology. Makumane (2021) concurs with Adedoyin and Soykan (2020) that online teaching is compromised as lecturers lack cognitive understanding of technology. Adedoyin and Soykan (2020) note that there were limited standards of quality on online lecturers and the development of online teaching material and content delivery. In

the same view, Makafane and Chere-Masopha (2021) postulate that teachers need support in terms of understanding and competencies that are advanced to allow them to design and implement online learning as well as to assist students participate during online lessons. The implication is that lectures' understanding, and competencies should also allow them to plan for lessons that are engaging and interesting to students motivating them to learn. Therefore, lack of proper skills required to successfully implement online teaching becomes an obstacle to successful learning.

Even though literature indicates that research has been conducted on online teaching and learning. However little research has been done in the context of developing countries focussing on lecturers and students. A shift to online learning has created a stir across the world. The move to online learning has a great impact on the need to change traditional ways of teaching and learning, thus, bringing a change to the role and skills required by lecturers. We find it important to investigate different challenges in using online strategies in developing countries, particularly focussing on lecturers' and students' readiness in private colleges in Eswatini. This is because online instruction requires different teaching modes k and relies on instructors' understanding and competencies (Alvarez, Guasch, & Espasa, 2009). It requires careful planning and use of accessible online technologies to accommodate different learning styles of students different backgrounds of students, and assessment modes (Rovai, 2003; Grant & Thornton, 2007). The demand and availability of competent online instructors requires careful training of instructors, which makes online instructors' readiness an important construct. Against this backdrop, the study examined lecturers' use of online teaching strategies in three private higher institution of learning in Eswatini. The study further attempted to attempted to understand lecturers' perceptions towards online learning. Finally, the study investigated the challenges that hinder lecturers from successfully implementing online learning in their lessons. This is qualitative research that employed open-ended questionnaires and individual semi-structured interviews to collect data. We employed purposive sampling to select nine lecturers from three private institutions of higher learning in Eswatini. In the next session we discuss the context of the study.

Context of the study: Eswatini

Eswatini is a land-locked country surrounded by Mozambique and South Africa. It is in Southern Africa. It has a population of about 1,189,194 million and a land area estimated to 17, 360 km^2. Eswatini is considered as one of the smallest countries in the world.

Against this background, this study examined how lecturers' use of online teaching strategies in three private higher institution of learning in Eswatini. It attempted to answer the following questions:

i. What are lecturers' perceptions towards online learning?
ii. What challenges hinder lecturers from successfully implementing online learning in their lessons?

The next section discusses related literature.

Related literature

A lot of research is done on lecturers' perceptions on their shift to online teaching strategies and the challenges faced by lecturers. Wahab Ali (2020) examined challenges faced by lecturers in Canada during lockdown from literature using a meta-analysis methodology. The findings showed that there is a challenge of resources, which include infrastructure, shortage of data and gadgets. According to Wahab Ali (2020), students' accessibility and motivation portrays an important role in technology integrated learning. Another study by

Fidalgo, Thormann, Kulyk and Lencatre (2020) explored students' perceptions, attitudes, and willingness to online teaching-learning in Portugal using a survey. Their research was informed by participants' experiences and practices as well as desktop literature review. Their findings demonstrated that students were concerned about time management, lack of motivation, limited accessibility to internet, gadgets, and lack of skills in ICT and English language. Beanoyer, Dupere and Guitton (2020) also examined students' perceptions toward online learning. The findings of the study mirror Fidalgo et al.'s (2020) study in that students have limited access to technology. The results of the two studies further pointed to internet problems and challenges with gadgets. The implication is that there are digital inequality and differences that are deeply embedded in a social, economic, and cultural context. Both studies inform the current study in that they do not only investigate lecturers' perceptions, but also students' views. Makafane and Chere-Masopha (2021) who also explored students' perceptions on online teaching and learning, concur with Fidalgo et al. (2020) and Guitton (2020) as they argue that lecturers have negative attitudes and perceptions about online teaching, especially when they are not involved in the planning stage.

Bhebhe and Maphosa (2016) examined primary teachers' computer literacy and use of information communication tools (ICTs) in teaching and learning using a mixed method approach. Data was collected using an open-ended questionnaire. The findings revealed that there was limited use of ICTs in teaching and learning due to a number of reasons which include shortage of resources and limited skills on integrating technology in teaching and learning. In Nigeria, Egielewa, Idogho, Iyalomhe and Cirella (2022) on the other hand made an analysis of online teaching. The study investigated the extent to which online teaching was carried out in the institutions, particularly looking at the challenges students faced as well as how satisfied the students were with their institutions' provision of online teaching. The study was carried out in three higher learning institutions in the form of a university, a polytechnic, and a college. A questionnaire which was sent through an email, was used collect data from 1134 students. According to Egielewa et al. (2022), the institutions mainly used Google Classroom, WhatsApp and Zoom as they are free instead of using Learning Management Systems that are paid for. The implication is that the institutions were not financially ready to migrate to online teaching. The results further revealed that students were reluctant to accept the use of digitalised learning as they encountered several challenges which included poor internet infrastructures, unreliable electricity supply and financial challenges (Egielewa et al., 2022). Their findings thus concur with Bhebhe and Maphisa (2016); Makafane and Chere-Masopha (2021); Beanoyer et al. (2020); Fidalgo et al. (2020) and Guitton (2020) who also noted similar concerns. According to Adhola and Okungu (2022), these challenges compromised the quality of education. In the following section, we discuss the theoretical framework guiding the study.

Theoretical Framework

This study used a theoretical framework which was proposed by Suzuki and Keller (2007) known as the Five-E Model. It is a student-centred hierarchical framework, which promotes active participation of students. It has five different levels of e-Learning quality. The Suzuki and Keller (2007) five levels are: Ecological e-Learning, Exact e-Learning, Easy e-Learning, Effective e-Learning and Engaging e-Learning. Level 3, known as the Easy e-Learning, is regarded as the baseline level because it is the mid-point of the Five levels. There are two levels below and above it namely, the Ecological and Exact e-Learning and Effective and Engaging e-Learning, respectively. The different levels are explained in detail below:

Layer 1: Ecological e-Learning

The learning environment is the lowest level in the Five-E Model. Level. It provides an appropriate learning environment for effective online teaching and learning. This may be through the provision of laptops, data and Wi-fi for lecturers and students. Therefore, in line with the objectives of the study, we find this framework relevant as it stresses the importance of having access to these resources to make online learning visible. The framework further stresses that the network used must be of good quality, stable and accessible to lecturers and students. According to this level, these online teaching and learning materials need to be accessible/ provided to avoid any disturbances during learning. Activities at this level also include analysing the learning environment, selecting appropriate media to be used and the technology support required. Media selection must be appropriate for the lesson, ensuring effectiveness and efficiency especially because it has various effects on learning. Hence, making suitable blending in selecting and utilising media is critical in creating an appropriate learning environment.

Layer 2: Exact e-Learning

This level refers to content analysis of the task given to students' analysis of the needs of students and challenges of online learning and teaching. Inaccurate content of the program leads to challenges in attaining engaging online learning. Hence, this level is concerned with proper developing of an effective online program. The needs analysis gives insights as to why e-Learning needs to be provided to a particular group of students. While analysis of content defines what should be covered in the course and the sequencing of the topics. Each topic should have a clearly stated learning objective. These learning objectives should also have a set of test items. Lecturers, therefore, are expected to provide correct content with correct sequencing of topics.

Layer 3: Easy e- Learning

This level explains the use of integrating technology in teaching and learning. Easy e-Learning enables students to attain their learning objectives. This allows lecturers to ascertain if students understood what was taught during an online lesson and be able to apply the knowledge in a new situation.

Layer 4: Effective e- Learning

Effective e- Learning level is concerned with strategies to make learning effective and meaningful. The purpose of this level is to make sure that both students' characteristics and task requirements in each environment meet the instructional interventions used during the lesson. Aligning instructional methods with the needs of the students, the activities give to students and the environment is critical because no single method of learning is best for all students. Hence, different kinds of learning activities require different sets of e-learning environment to be effective. This may be achieved using different test items (multiple choice, essays) or having questions that adhere to Bloom's taxonomy. It also includes using different modes such as PowerPoint presentations, videos, synchronised and asynchronized lessons. We argue that to effectively implement this, lectures must have necessary skills to manage online learning systems. Therefore, different characteristics of students call for different sets of instructional strategies to be most effective.

Layer 5: Engaging e-Learning

This layer explains students' participation in a lesson, which can be in a WhatsApp group, google class or zoom lessons. It means that students must be engaged and motivated in the lesson. For example, giving feedback to students on time can motivate them to work. This can

improve students' efforts in the lesson and encourage them to participate more in during a learning. We therefore argue that when teaching and learning were interrupted due to COVID-19 restrictions, these online platforms became very much reliable and efficient in carrying out teaching and learning activities. The section that follows features methodology of the study.

Methodology

This study used a qualitative research design approach. Mokala (2021) describes a qualitative research methodology as the type of research that relates people's experiences and describes case studies. Therefore, the researchers found this approach fitting for this study because the research focused on a case study implementation of online learning in a college. Another reason for choosing this kind of approach is that the researchers wanted to understand the experiences of the lecturers about online teaching as they present their own perspectives (Sefotho, 2013). Purposive sampling was used to select three Head of Departments from each of the three private institutions in Eswatini, making a total of nine participants. In purposive sampling "the participants are selected according to predetermined criteria relevant to a research objective" (Mokala, 2021, p. 79). It is fitting therefore to indicate that the selection of the participants was guided by the research questions and the objectives of the study as explained by Mokala (2021). An open-ended questionnaire was sent to the nine Heads of Departments. The results of the study cannot be generalised because of the sample size; however, they give an overview which can inform the institution for planning and/or guidance purposes/ to improve the implementation of blended learning. Having received the answered questionnaires, the researchers made follow up individual interviews with the participants to provide clarification where needed. According to Roopa and Satya (2012), a questionnaire comprises several questions directed to individuals to get valuable information about a given topic. When appropriately designed and responsibly administered, questionnaires are an important instrument by which statements are made about a certain topic. Based on this merit, an open-ended questionnaire was used. It did not limit the participants' response as it gave them the freedom to deliberate their views exhaustively. Following this, interviews were used for clarification from the questionnaires, thus the question asked in the interviews were not the same. The questionnaires were sent by emails to the participants, and they were given two weeks to return them. This was done after it was explained to them what the study was about and what was expected from of them. They were assured that the information collected for this study will be confidential, anonymous and that they have a right to withdraw anytime they want to.

The thematic inductive data analysis was used to analyse the collected data. Mokala (2021) explains that thematic inductive data analysis technique is beneficial in that it allows researchers to establish a link between the research objectives and the findings of the study. According to Mokala (2021), once this link is established, it is easy to link these two aspects to the existing theories. The first step we took during data analysis was to transcribe the raw data and saved it as word document. Following this, we read the transcriptions several times to understand the data better. Following Creswell's (2013) advice, we broke down large parts to smaller meaningful units, creating sentences, phrases and words and went through them to make sense out of them. through this process, we identified the themes as they emerged from the data as supported by Ebersöhn (2006) that the researchers using thematic inductive analysis look for patterns in the themes that emerge from their data. Following Machimana, Sefotho and Ebersöhn's (2018) point of view, we compared the trends that emerged and classified them as our data analysis categories. Once we reached data saturation, we moved on to the next step of comparing our findings to the existing body of knowledge. The next section presents the findings and discussions.

Findings and discussion

Two themes that emerged from the data are lecturers' perceptions towards online learning and the challenges that are faced by lecturers which hinder them from incorporating blended learning in their lessons.

Lecturers' perceptions towards online learning

The findings of the study revealed that the lecturers embrace blended learning mostly because they are aware that students have different learning styles. This is captured in the verbatim excerpt below:

> *Todays' children are born during the time of technology; we should not disadvantage them by using online strategies which do not allow active participation of the students. That way the lesson will be lively because they will love and enjoy what they do* (Lecturer A).

Lecturers also acknowledge that students learn best when they enjoy the lesson. They indicated that this can be achieved by integrating technology in their teaching. This finding concurs with Rutten, van Jooligen and van der Veen (2011) as well as Nxumalo-Dlamini and Gaigher (2019) who noted that Computer-Based Simulations (CBS) (Technology) have the potential to enhance students' understanding of abstract concepts in science education. The theoretical framework also promotes the use of different online strategies. This is reflected in the findings of the study which pointed to possessing unique characteristics which require different sets of online instructional strategies for lessons to be effective. According to Matee et al (2023) lecturers do not have sufficient skills in the use of blended learning as they have limited knowledge in technology and suitable technology teaching method. The finding resonates with Marzano and Zajac's observation (2020, p. 41) "Many also decried their own scant technical knowledge (40%) and their personal difficulties in using the online learning platform (35%)".

The lecturers also revealed that they upload material and there is minimal interaction between students and the lecturers. In line with the theoretical framework guiding the study, the findings reflected the importance of student engagement in online platforms which can be in a WhatsApp group, google class or Zoom lessons.

The lecturers also indicated that they were trained by the Instructional Technology Team on how to use Moodle. This was noted when Lecturer B said that:

> *We acknowledge that we were trained to break students into breakaway groups, about some of the security features of the Moodle system and how to safeguard data to ensure its integrity. However, we still need comprehensive training especially because some of us are not teachers.*

The excerpt above shows that there is a skill gap, implying that the lecturers have limited knowledge on the use of Moodle for effective teaching and learning. The lecturers noted that to teach using blended learning strategies requires the skill to blend technology with content and pedagogy (technological pedagogical content knowledge, TPCK), a skill which is limited to some of them. They mentioned that they need guidance in the appropriate blended learning approach and material preparation for online lessons. The findings further showed the requirement to ensure that lecturers do not overload students with work. It is worthy to note that lecturers also highlighted the principles of virtual teaching such as using strategies as important since they enhance the engagement of students in the teaching and learning process. According to Marzano and Zajac (2020), when online teaching was implemented in 2020, most participants indicated that they had limited knowledge of technology. This finding concurs with Ali's (2020) results which showed that lecturers were not ready for online teaching because they lack confidence in their use of online strategies.

Further, Lecturer A mentioned that:

We need support in administering assessment using the system provided. This is mostly because, the training was mainly operational, not how to use Moodle in teaching.

Lecturer D Added:

We have not used online teaching before. As such, from time to time, we refer to the administration staff several time. We never received any training.

From the foregoing extracts, the participants have stressed the importance of prior training for assessment purposes. Therefore, we highlight that assessment cannot be separated from teaching and learning, which means that it is expected that lecturers have to assess their students online.

Challenges which hinder lecturers from successfully implementing online learning in their lessons

One of the challenges revealed by this study was the shortage of resources; this was mentioned by Lecturer C when she said, "Gadgets are needed by lecturers to support them for blended learning. Also, some of the students do not have access to the internet". This finding concurs with Fidalgo's (2020); Beanoyer, Dupere and Guitton's (2020) findings which also noted that some students have limited access to technology and the internet. "They expressed that the main challenge which they face is that at times network becomes a problem in that it sometimes becomes too slow or even denies them a chance to submit their work" (Matee et al., 2023, p. 84). The implication is that some students are disadvantaged by the transition from face- to-face to online teaching. In line with this finding, Matee et al.'s (2023) study findings also resonate with this as they indicated that lack of resources and internet issues are some of the challenges encountered in virtual collaboration learning. One of the tenets of the theoretical framework is the emphasis on the need for provision of laptops, data and Wi-fi for online teaching and learning to be effective. Therefore, this finding resonates with the tenet of the framework guiding this study which emphasises that WIFI must be of good quality, stable and accessible to both lecturers and students.

It seems contextual factors may hinder effective online teaching-learning implementation. For example, the findings indicated that most lecturers use strategies which do not promote engagement of students. They upload mainly videos, use PowerPoint and slides, which do not promote interaction between students and lecturers. As there is a transition from traditional to blended learning, appropriate teaching methods which promote student-centred strategies have to be used. This contradicts the findings by Marzano and Zając (2020) who conducted their study on changes implemented in higher education institutions during COVID-19 in Poland. According to Marzano and Zajac (2020), lecturers were willing to participate in initiatives organized by their university.

Conclusion

In line with the findings of this study, it can be concluded that some lecturers still need support in the use of technology in teaching and learning for lessons to be effective, interactive, and engaging. Hence, it is further concluded that for the transition to be smooth, lecturers need to be supported with gadgets and accessibility to the internet. Also, it can be concluded from the study that the institutions are not ready for the integration of technology in teaching and learning. However, the findings indicated that lecturers embrace online learning mostly because they are aware that students enjoy learning when using technology, and this enhances their understanding. The study further concludes that universities should conduct more research to evaluate their online systems to enhance institutional agency.

Recommendations

Based on the findings that surfaced from this study, we recommend that universities provide proper training to lecturers in the use of online learning systems. In line with the findings of the study, we recommend that online learning programmes should be thoroughly planned for long term goals. The authors recommend that further study be conducted on a larger scale using the findings of the current study. We further recommend that a comparative study be conducted from different countries in order to find how other countries handled the use of online teaching programs and the strategies they have implemented in making education a success.

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EVALUATION OF HEALTHY LIFESTYLE HABITS AND WELLNESS OF UNIVERSITY STUDENTS IN A CROSS-SECTION OF FOUR ACADEMIC YEARS

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Abstract. *Statistics on healthy lifestyle habits of Latvian population indicate that the number of adults who engage in sufficient physical activity is decreasing, and also for university students the succession of minimum physical activity is not fully ensured. Latvian National Development and Sports Policy Guidelines (Latvijas Vēstnesis, 2022), as well as other binding health policy documents contain references towards the need to support the healthy lifestyle and wellness of university students, especially highlighting the insufficient level of physical activity and emotional wellness among Latvian population, including students. The problem issue exists in the long-term spectrum, and for various reasons it is only partially possible to implement in universities the measures stated in policy documents. The aim of the study: to analyse students' healthy lifestyle habits and wellness dynamics over four years of studies, assessing the dynamics of healthy lifestyle habits and wellness level depending on the year of study, students' age and the study programme. In each academic year, the first- and second-year students were involved in the survey, a total of N=455 respondents. Research methodology: a tailored survey (Robbins, et.al., 2011), students' self-assessment of healthy lifestyle habits and levels of physical, emotional, mental, intellectual and job wellness, 86 questions in total. The results of the study indicate a decreasing tendency for the indicators of physical activity and emotional wellness, and statistically significant differences in the indicators of mental and emotional wellness can be observed depending on the age of students. No statistically significant differences were found depending on the study programme.*
Keywords: *healthy lifestyle, physical activity, university students, wellness*

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Introduction

The Latvian National Development Plan 2021-2027 (hereinafter, Latvian NDP2021-2027), analysing the implementation of the National Development Plan 2013-2017, indicates that "...the lack of comprehensive, effective disease prevention is considered to be one of the most important reasons why the health goals, stated in Latvia's NDP2027, are not getting achieved. Experts point out that effective disease prevention and health promotion is not limited to the development of public health campaigns, but expects the implementation of evidence-based measures in order to reduce the risk factors affecting health by reducing alcohol and tobacco consumption in society, as well as supporting physical activity and healthy eating habits as a priority in those groups of population that are most exposed to the risks of a sedentary lifestyle and unhealthy diet" (Saeima, 2020). This document mentions a number of important statistics with regards to healthy lifestyle habits of the Latvian population: 1) the number of adults with sufficient physical activity (at least 30 minutes of physical activity every day) is decreasing. For example, in 2018, in Latvia, only 9.5% of adults had sufficient physical activity, while in 2010, the percentage of physically active adults was 19,7%; 2) the succession of minimum physical activities is not fully ensured for university students (Saeima, 2020).

Students form a significant part of Latvian population. In the Report on Latvian higher education in 2020 (IZM, 2021) it is stated that in the academic year 2020/21, a total of 76,000 students were studying in higher education institutions and colleges in Latvia, 55% of them studied in bachelor's study programmes. Overall, 58% of students were under 30 years of age, and the proportion of students gradually decreases with the increase of age.

Since 2003, the Latvian Sports Policy Guidelines (Latvijas Vēstnesis, 2004) emphasize support for health promoting activities for higher education students, respectively, the 1st and 2nd year students should be provided with regular health promoting physical activities, but it has not been implemented for last 20 years. Latvian Sports Policy Guidelines 2020-2027 (Latvijas Vēstnesis, 2022) has a paragraph 3.3 that requires "to financially support the implementation of sports classes for all full-time 1st and 2nd year students with or without awarding credit points or with an assessment (pass or fail)". The implementation of the provided guidelines would help a wide range of students to practice regular physical activities; also, this would be especially important for students of Teacher education study programmes, as the programmes and the Latvian Teacher Profession Standard (Valsts izglītības satura centrs, 2020), paragraph 5.4, states the teacher's health competencies – to take care of one's physical, intellectual and emotional health. However, as proven by 20 years of practice, the Latvian Sports Policy Guidelines are not being implemented in universities or higher education institutions. This is evidenced both by the findings of Latvian NDP2021-2027 and Sports Policy Guidelines (Saeima, 2020; Latvijas Vēstnesis, 2022) and by the recommendations on the promotion of physical activity for the Latvian population, elaborated for health and sports policy implementers by the Ministry of Health of the Republic of Latvia in cooperation with the World Health Organization European Regional Office (VM, 2019). An opinion statement is also issued on the responsibility of the Ministry of Health and Ministry of Education for the planning and coordination of policies for the promotion of physical activity, indicating that in this field there is a lack of leadership, cooperation and coordination between different sectors (education, health, sports, transport, regional development, municipalities, environment, etc.) and institutions at both national and local levels when implementing the basic principle of public health - "health in all policies". The continuous higher education reforms implemented in Latvia and the principles of state funding of higher education (IZM, 2022) also do not contribute to the implementation of neither Latvian NDP2021-2027 (Saeima, 2020), or the Latvian Sports Policy Guidelines (Latvijas Vēstnesis, 2022), which are aimed at changing the habits of society, striving for a higher quality of life and towards a more knowledgeable society, smarter entrepreneurship and greater sense of responsibility for the quality of Latvian environment, which develops a foundation that is formed by a high-quality, efficient and developed education system that provides lifelong education for supporting the growth of every citizen of Latvia and for the purposeful use of the knowledge acquired (Saeima, 2020).

As international research studies show, university students need support for adequate physical activities and maintaining a healthy lifestyle as it all has a direct impact on health condition (Henshaw& Archibald, 2013; Tafireyi & Grace, 2022), self-efficacy (Zhang & Zhang, 2022), and quality of life of students (Abrantes, et al., 2022). In addition, studies indicate that there is a positive correlation between students' physical fitness and academic achievements (Elmagd et al., 2015; Kljajević, et al., 2021; Redondo-Flórez, Ramos-Campo & Clemente-Suárez, 2022; Gejalakshmi & Swaminathan, 2022, Hammoudi, Halat, 2023).

The Latvian situation and research studies confirm the need to support students' possibilities to engage in daily physical activities directly in the university environment, as some of the reasons for insufficient physical activity for students are lack of time, lack of motivation, and lack of accessible infrastructure (Silva, et al., 2022), as short-term

interventions and campaigns do not have the desired long-term outcome (Wood, & Neal, 2016).

Our study was conducted from September, 2018, and the respondents involved in the study are mostly students from the programme 'Teacher' (preschool, primary, sports and dance, and music teacher specializations), while students from other programmes represent such specialties as social worker, management sciences – tourism, business management, etc. The research method used in this study is a customized survey method (Robbins, et.al., 2011), each year involving different respondents - mostly 1st and 2nd year students, so it is not possible to track the individual dynamics of student's growth, but the general tendency of students towards developing a healthy lifestyle and wellness during their studies at the university can be determined. The aim of this study is to analyse students' healthy lifestyle habits and wellness dynamics from academic year 2018/2019 to 2021/2022.

Methodology

Concepts used in this study: 1) Healthy lifestyle (hereinafter, HLs) is a lifestyle that ensures an excellent physical and mental condition. Excellent condition means an abundance of energy, self-confidence, good mood, an exercised body, luck and success. It can be obtained by maintaining a good mood, nurturing one's body, observing the daily routine, healthy eating, abandoning habits harmful to health and frequently performing physical exercises (Rubana, 1998, Lawrence, et al., 2020); 2) Habit is an automated human activity that is strengthened through systematic exercising as part of experience accumulation process and through unifying the knowledge acquisition and practice (Špona, 2006; Gardner & Lally, 2018); 3) Wellness is the ability of a person to implement one's best potential (Robbins, Powers, and Burgess, 2011), defining it as individual's integrated and dynamic level of functioning, oriented towards the responsibility of the individual to achieve his or her maximum potential, and includes not only preventive health behaviour, but also a change in thinking and attitudes.

Research tools: Customized survey (Robbins, et.al., 2011) on healthy lifestyle habits and wellness levels, 86 questions in total (Cronbach's Alpha 0.923). 27 questions describe students' healthy lifestyle habits, Physical wellness is characterized by 10 questions, Intellectual wellness – 10 questions; Emotional wellness – 9 questions; Social wellness – 10 questions; Mental wellness – 10 questions; Job wellness – 10 questions. The questionnaire uses a 4-point scale: 1) almost always = 4 points; 2) sometimes/occasionally = 2 points; 3) very rarely = 1 point.

The study was conducted in the period from academic year 2018/2019 to 2021/2022. Research participants were students of Liepaja University, aged 18-56, 445 participants in total, of which 398 are women and 47 men. Academic year 2018/2019 - 80 students; 2019/2020 – 89 students; 2020/2021– 81 students; 2021/2022 – 195 students (see Table 1).

Table 1 ***Distribution of study participants by age and academic year***

Age	Sample	2018/2019	2019/2020	2020/2021	2021/2022
Under 25	227	50	43	33	101
26-35 years	133	27	31	28	47
36 + years	85	3	15	20	47

Respondents of this study - students of the programme 'Teacher' (Preschool, Primary school and Sports and dance teacher) and other study programmes (social worker, management sciences – tourism, business management, etc.) of Liepaja University (see Table

2). All were introduced to the ethical and personal data protection conditions. The first- and second-year students were involved in the survey each year, which means a different student group each academic year.

Table 2 ***Distribution of study participants by specialization and academic year***

Study programme	Sample	2018/2019	2019/2020	2020/2021	2021/2022
Preschool teacher	212	22	33	58	99
Primary school teacher	62	20	30	-	12
Sports and dance teacher	46	21	14	11	-
Other specialization	125	17	12	12	84

The SPSS tool has been used for statistical processing of data. The result of the Cronbach alpha (α= ,923) indicates good internal coherence, but the result of the Kolmogorov-Smirnov test (p<,05) indicates the need to use non-parametric tests in inferential statistics: Kruskal-Wallis test for detecting differences and Kolmogorov-Smirnov-Kendall correlation test for detecting interrelations. This study analysed students' healthy lifestyle habits and wellness in 2018/2019 - 2021/2022, in cross-section of four academic years, evaluating the healthy lifestyle and the wellness level dynamics depending on the year of studies, age of students and study programme.

Results

The evaluation of the criterion *HLs habits* shows statistically significant differences (p=.015) depending on the year in which the survey was conducted: self-assessment was lower in 2019 (Mean Rank 195.21), then an increase is observed in 2020 (Mean Rank 205.06) and 2021 (Mean Rank 252.81), but in 2022 – a decrease (Mean Rank 230.21) compared to 2021 (see Table 3). Assessing other criteria (age of students and study programme), no statistically significant differences were found assessing criterion *HLs habits* of students.

Table 3 ***Healthy lifestyle and wellness Mean rankings depending on the year of studies***

Criterion	Mean				
		2019	2020	2021	2022
Healthy Lifestyle Habits	2.20	2.16	2.17	2.26	2.22
Physical wellness	2.24	2.17	2.23	2.30	2.25
Intellectual wellness	2.29	2.23	2.27	2.32	2.25
Emotional wellness	2.36	2.33	2.34	2.43	2.35
Social wellness	2.33	2.31	2.29	2.38	2.33
Mental wellness	2.29	2.19	2.27	2.38	2.30
Job wellness	2.42	2.39	2.40	2.51	2.39

When evaluating the average scores, it should be noted that the lowest average scores are in the criteria characterizing most significant *HLs habits* aspects – 'physical activity' (Mean=1.7) and 'nutritional habits' (Mean=2.2). Between the indicators characterizing 'physical activity habits', one of the lowest scores is in the criterion 'I do strength exercises to develop muscle strength and endurance' (see Table 4), which means strengthening the student's muscle corset, stabilizing posture and ensuring normal daily functioning.

Table 4 ***Students' Physical Activity Habits***

Criterion *Healthy Lifestyle Habits* indicators/ **Physical activity habits**	Mean				
	Altogether	2019	2020	2021	2022
I engage in active physical activity	1.87	2.19	1.96	1.98	1.82
I do strength exercises to develop muscle strength and endurance	1.81	1.89	1/69	1.79	1.51
I do flexibility development exercises to develop muscle flexibility	1.63	1.63	1.63	1.73	1.58

In section 'dietary habits', one of the lowest scores is for characterizing the consumption of food in relation to the restriction of total fat, cholesterol, saturated fat and fatty acids, the restriction of consumption of whole grain and calcium-containing products as well as salt and sugar in the daily diet (see Table 5).

Table 5 ***Nutritional habits of students***

Criterion *Healthy Lifestyle Habits* indicators/ **Dietary habits**	Mean				
	Altogether	2019	2020	2021	2022
I maintain a healthy weight by avoiding overweight and underweight	2.44	2.33	2.47	2.42	2.47
Every day I eat a variety of foods, including enough fruit and/ or vegetables (at least 400g per day)	2.30	2.23	2.19	2.36	2.35
I limit the amount of total fat, cholesterol, saturated fat and fatty acids in my diet	1.94	1.91	1.83	2.04	1.97
I limit the amount of salt and sugar in my diet	2.17	2.09	2.15	2.28	2.17
I make a conscious effort to incorporate whole grain and dairy/ calcium products on a daily basis	2.06	2.13	1.92	2.16	2.06

In turn, higher indicators are observed in the following criteria characterizing *HLs habits*: 1) 'Alcohol and drug use habits" (Mean=2.7); 2) 'Safety compliance and disease prevention habits' (Mean=3.13); 'Socialization and stress management habits' (Mean=2.5).

In the *Students' Wellness* criteria, the lowest scores are in the section 'Physical wellness' (Mean=2.24), slightly higher result is in the criteria 'Intellectual wellness' and 'Spiritual wellness' (Mean=2.29), 'Social wellness' (Mean=2.33), but the highest scores are in the criteria characterising 'Emotional wellness' (Mean=2.36) and 'Job wellness' (Mean=2.42) (see Table 3).

Similar to *HLs* criteria, some significant individual wellness criteria have low scores, such as the Physical wellness indicator, but the lowest scores have 'I actively engage in physical activities (e.g. jogging, vigorous walking, swimming, cycling) for 20-60 minutes at least four times a week' (Mean=1.96), as well as the Emotional wellness indicator "I am able to cope with stress and tension" (Mean=2.2).

In some wellness indicators, statistically significant differences were found depending on the age of respondents: 1) for the entire sample of respondents in the assessment of the criterion *Mental* wellness (p=.010): as the age increases, the criterion score increases – the lowest is under 25 years of age (Mean Rank 206.14), followed by respondents aged 26-35 years (Mean Rank 233.13), the highest self-assessment is for respondents aged 36 and over (Mean Rank 252.18). This trend is also confirmed by Kendall's correlation results (r=.116, p=.002). If looking separately by each year, then the differences appear in year 2022 (p= .036): the tendency is the same - the lowest score is in the age under 25 years (Mean Rank 88.07), followed by respondents aged 26-35 (Mean Rank 106.48), the highest self-assessment is for respondents aged 36 and over (Mean Rank 110.86). Kendall correlation results (r=.144, p=.012). In other years, there were no statistically significant differences; 2) In the responses

gathered in 2020, statistically significant differences were found in the assessment of *Emotional Wellness* criterion (p= .026): the lowest self-assessment is for respondents aged 36 and more (Mean Rank 32.67), the highest – for respondents under 25 years of age (Mean Rank 52.00). Only in this year there is a correlation (r=.234, p = .007) between the age of the respondents and the score of the criterion Emotional Wellness. In other cases, this was not found.

Statistically significant differences were found depending on the study programme of respondents. For the whole sample of respondents: 1) criterion *Intellectual Wellness* (p= .003): the lowest self-assessment is for the students of Sports and dance teacher programme (Mean Rank 166.98), followed by Pre-school teacher programme students (Mean Rank 221.58), then students from other specializations (Mean Rank 228.46), but the highest self-assessment is for future Primary education teachers (Mean Rank 258.41). In turn, in 2019: 1) criterion *Intellectual wellness* (p=.000): the lowest self-assessment score is for Preschool teacher students (Mean Rank 25.77), followed by Sports and dance teacher students (Mean Rank 33.24) and students from other specializations (Mean Rank 51.97), but the highest self-assessment is for prospective Primary education teachers (Mean Rank 54.58). In 2021, significant differences were found only in the evaluations of the criterion *Intellectual Wellness* (p= .046): the lowest self-assessment is for the students in programs Sports and dance teacher (Mean Rank 25.32), followed by students of other specializations (Mean Rank 39.33), but the highest self-assessment for future Preschool teachers (Mean Rank 44.32). The group of prospective Primary education teachers was not surveyed this year.

In 2022, significant differences were found only in the evaluation of the criterion *Job Wellness* (p=.038): the lowest self-assessment is by students of other specializations (Mean Rank 87.12), followed by prospective primary education teachers (Mean Rank 90.92), but the highest self-assessment for future Preschool teachers (Mean Rank 108.09). The students of Sports and dance teacher programmes were not surveyed this year.

Discussion and conclusions

Analysing the obtained data, it can be concluded that overall, neither healthy lifestyle habits of students have significantly improved over four-year span nor a statistically significant decrease can be observed, however, if each healthy lifestyle criterion is analysed separately, for example, the criterion *Physical activity*, it shows that the average indicators have a tendency to decrease. Similar findings are reflected in the statistics of the Health Promotion and Disease Prevention Plan (Veselības veicināšanas un slimību profilakses plāns 2022, 15), which indicates that Latvian population as a whole has insufficient daily physical activity – only 9.5% of the adult population daily or 4-6 times a week perform 30 minutes of physical activity (up to mild shortness of breath or sweating). Almost half or 49.6% of the population engage in physical activity only a few times a year and 36.3% of the population spend their leisure time in a sedentary way. More than two-thirds of adults (64%) admit that they lack motivation and have no desire to engage in physical activity, which confirms the need to ensure the availability of physical activity in universities, as it is also stated in various Latvian policy documents (Latvijas Vēstnesis, 2004; Saeima, 2020; Veselības veicināšanas un slimību profilakses plāns, 2022).

There are statistically significant differences observed depending on age in the *Mental Wellness* criterion: as age increases, respondents note a higher level of mental wellness, while in the *Emotional Wellness* criteria there is a statistically significant difference only in year 2020: a lower level of wellness is indicated by older respondents, from 36 years and above, but for students under 25 years of age the self-assessment scores higher.

Depending on the study programme in which the students study, there are statistically significant differences only in the criterion of *Intellectual Wellness*, which, however, is a variable indicator depending on the study year, so there is no reason to argue that the students' intellectual wellness could be related to the study programme they have chosen.

It should be noted that none of the parameters shows significantly higher scores than the average, which indicates the need for supporting students both in terms of promoting a healthy lifestyle and also in all wellness criteria.

Similar problems can be observed in related international studies with regards to HLs habits of university students. For example, the study conducted by Assaf et al. (2019) indicates that the students do not follow a certain diet, do not consider their food choices healthy and would like to take more care about their health. This is mostly due to the fact that they don't exercise as much as they would like to, as during the study period students enter into employment relationships and there is no time for them to focus on their health.

An international group of researchers (Müller, El-Ansari & Ansari, 2022), in their study on HLs habits of university students, have found that students have insufficient physical activity and sleep, as well as unhealthy diet, concluding that universities need to plan and evaluate the appropriate motivational strategies for HLs, while other researchers (Tafireyi & Grace, 2022), seeing the rampant problem, call for the worldwide promotion of a unified concept of university health promotion and emphasize the need to spread it to all universities around the globe.

Our study has a limited number of respondents and was conducted within one university, but the observed rigid dynamics of a healthy lifestyle and wellness, and the declining dynamics in the particularly important components of HLs – physical activity and coping with the stress, indicate insufficient support for healthy lifestyle of students, which also influences students' academic achievements, so it is necessary not only to continue research in this field, but also to implement the activities foreseen in the policy documents of Latvia.

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THE LEVEL OF SUBJECTIVE WELL-BEING (FEELING OF HAPPINESS) OF RTA STUDENTS AND ITS INFLUENCING FACTORS

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Abstract. *This scientific article analyzes the level of subjective well-being of students of Rēzekne Academy of Technology (RTA) and the main factors affecting this phenomenon. The need for such studies is justified by the latest studies in various countries, which show that nowadays the prevalence and severity of mental problems among young people and early adulthood is increasing. Taken together, these studies show that students are increasingly experiencing symptoms of increased anxiety and stress, as well as depression. Thus, the deterioration of the subjective well-being of young students is a big challenge in modern universities.*
The purpose of the empirical study: to investigate the level of subjective well-being of students in relation to certain demographics, as well as to determine the factors that significantly influence this phenomenon in the student environment.
The analysis of scientific literature and empirical results is used as a basic method in the development of the article.
Keywords: *students, subjective well-being, adaptation, demographic factors, gender, social relations, health, material condition, stress.*

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Introduction

The concepts of subjective well-being and happiness are used interchangeably in this article. This approach was justified in 2004 by R.Emons, who treats the concept of subjective well-being as a scientific synonym of the concept of happiness (Emons, 2004).

The issue of subjective well-being (feeling of happiness) acquires special relevance in the age stages of youth and early adulthood, when a person's identity is formed, as well as the next profession is chosen and its basics are learned. High subjective well-being is associated with the optimism of young people, satisfaction with their life in general and certain aspects of it.

The need for studying the subjective well-being of young students is also supported by the latest studies conducted in different countries (Baik et al., 2015; Cvetkovski, Reavley & Jorm 2012; Eisenberg et al., 2009; Larcombe et al., 2015; Slavin et al., 2014; etc.), who show that there is a decrease in the level of emotional well-being and mental health in the student environment, which is related to the problems of professional self-determination, material security, household and social adaptation of students, as well as the prevalence of mental illnesses. The mentioned authors conclude that the symptoms of increased anxiety and stress, obsessive-compulsive disorder, as well as depression are increasingly detected in the environment of young students.

COVID-19 has left immense psychological impact on the students subjective well-being. There are a great number of studies that have been carried out with the aim to explore the relations between a mental wellbeing and distress during the pandemic (e.g. Gray et al., 2020).

The purpose of this article: to characterize the level of subjective well-being of Rēzekne Academy of Technology (RTA) students, as well as to determine the most important factors determining the happiness of young students in connection with certain demographic factors.

The analysis of scientific literature and empirical results were used as the basic methods in the creation of the article.

Treatment of subjective well-being in contemporary positive psychology

In a number of national contexts subjective wellbeing is considered as a significant aspect of individuals' life. Individuals with higher level of subjective well-being can cope better with the anxiety and difficulties at work and stressful situation at work (The World Health Organization, 2020).

The issue of subjective well-being is comprehensively studied within the framework of positive psychology. Here we can single out such authors as F. Andrews and S. Whitey (Andrews, & Whitey, 1976), E. Diener (Diener, 1984), R. Emmons (Emmons, & Diener, 1985), M. Argyle (Argyle, 2003), D. Myers (Myers, & Diener, 1996), R. Venhoven (Veenhoven, 2005), D. Kahneman (Kahneman, 2010), M. Seligman (Seligman, 2012), R. Lucas (Lucas, 2008).

In addition, the study of happiness is represented in many empirical studies (Lyubomirsky, 2005; Nix, Ryan, Manly, Deci, 1999; Diener, Seligman, 2002; Stevenson, Wolfers, 2008; Burns, Machin, 2010; etc.).

The planned empirical studies of the subjective well-being of young students will be based on the hedonistic tradition of the mentioned phenomenon. Many positive psychology paradigms were developed within this tradition. The theoretical basis of the research on the feeling of happiness of young people studied in this article is made up of Andrews, & Withey, 1976, Argyle, 2003, Seligman, 2011, Diener et.al., 1999, according to which the feeling of happiness is treated as satisfaction with life in general, dominance of positive emotions over negative ones and satisfaction with one's life in time perspective (see Fig. 1).

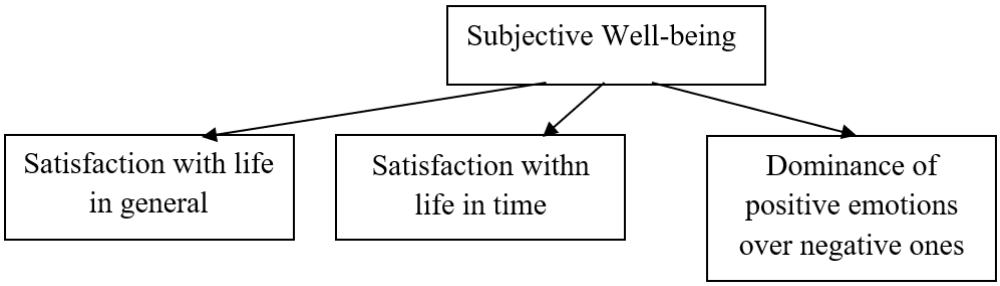

Figure 1 ***The components of happiness*** *(Argyle, 2003)*

E. Diener formulates three areas of the feeling of happiness: 14 emotional responses of individuals, satisfaction in various areas of life and global evaluation of life. Within such a structure, the author distinguishes the components of well-being contained in Table 1.

Table 1 ***The structure of the components of the feeling of happiness*** *(Diener et.al., 1999)*

Positive affects	**Negative affects**	**Satisfaction with life**	**Satisfaction in various areas of life**
Joy	Feeling of guilt and shame	Desire to change the life	Work
Delight	Sadness	Satisfaction with the life	Family
Sense of satisfaction	Anxiety and disturbance	Satisfaction with past	Leisure
Pride	Anger	Satisfaction with future	Health
Affection	Stress	Satisfaction with other people's view of a person's life	Finance
Happiness	Depression	Reluctance to change life	Individual himself
Rapture	Envy	A sense of fulfillment in life	Individual' s group

A high level of happiness reflects the predominance of positive emotions and cognitive attitudes. The cognitive component of the feeling of happiness, or life satisfaction, is based on specific sources of satisfaction, such as work, marriage and other areas. The basis of the

emotional component of subjective well-being is the positive emotional evaluation of events by individuals in the long term. On the other hand, it is typical for individuals with a low level of happiness to evaluate personal life events as unpleasant, which cause negative emotions - anxiety, depression, anger, etc. (e.g. Gray et al., 2020).

In the following, the factors affecting subjective well-being are analyzed, applying them to the study process in the higher education institution.

Analysis of demographic and social determinants of students' subjecitve well-being

According to a worldwide study (Akhtar, 2015; Baik et al., 2015; Bexley et al., 2013; Burns, Machin, 2010; Cvetkovski et al., 2012; Larcombe et al., 2015; Lerkkanen et al., 2018; Nepomuceno et al., 2016; Ryff, 2017; Sarokhani et al., 2013; etc.) meta-analysis, it is possible to establish that there is a large number of diversity of factors affecting subjective well-being. The main findings of the mentioned studies are described below.

Subjective well-being is often associated with demographic factors (Lee et al., 2016), certain personality qualities (Dangi, Nagle, 2015), and socio-economic conditions (Boyce et al., 2010; Lee et al., 2016). This article analyzes the most important factors influencing the subjective well-being of young students. The mentioned factors were classified into 2 groups.

In the following, an analysis of the factors that influence the subjective well-being of young students is carried out.

When characterizing the characteristics of subjective well-being in groups of different *genders*, it is possible to establish that women, in general, are characterized by a higher level of subjective well-being. Women are able to form an emotionally "deeper" contact with people, thus enabling the necessary emotional exchange, which positively affects the everyday emotional background. In addition, it is recognized that women are capable of feeling stronger emotions than men - thus also joy and other positive emotions, which positively affect their psychological well-being (Burns, Machin, 2010).

However, recent studies in the student environment do not find significant differences between the level of subjective well-being of men and women (Akhtar, 2015).

The correlation between an *individual's age* and their sense of happiness is moderate (Argyle, 2003). Differences in the understanding of the phenomenon of happiness of people of different ages were found, as well as in highly developed countries, a general trend related to the increase in life satisfaction with age was found. In the period between the ages of 25 and 43, positive emotions rise - people become more and more satisfied with life and happier, the proportion of negative emotions decreases (Blanchflower & Oswald, 2008). Such a tendency is explained by the fact that the gap between what a person wants and what he has achieved decreases with age.

The results of studies regarding the influence of the *place of residence* (rural or urban) on subjective well-being, conducted in different countries, are relatively contradictory. In a US study of 1,200 respondents from rural and urban areas, it was found that urban residents were characterized by a higher level of subjective well-being (Tommis et al., 2007).

On the other hand, a study conducted in Brazil involving 417 respondents from rural and urban communities determined that urban residents were characterized by higher levels of mental disorders and lower subjective well-being (Nepomuceno et al., 2016).

At the beginning and middle of the 20th century, it was a popular idea that the urban environment worsened the mental health of the population. However, empirical studies on the effects of specific urban factors on mental and physical health did not confirm a statistically significant relationship between urban living and poorer health (Shaw et al., 2002).

The status of health is treated both as a cause of well-being and as a consequence of this phenomenon. A meta-analysis by H. Roslaba and co-authors showed that the correlation

between health status and subjective well-being is within 0.32. It was found that this correlation tends to increase when subjective health criteria (subjective assessment of one's health status) are used (Roslaba et al., 2017).

There is a link between subjective well-being and the existence of certain diseases, especially if these diseases significantly limit a person's capabilities (Roslaba et al., 2017). In a student environment, it has been found that the prevalence of depression and the deterioration of subjective well-being are often associated with unhealthy behaviors such as alcohol consumption, low physical activity, poor diet, unhealthy daily routines, and high levels of stress (Schofield et al., 2016).

Social relations are a very important factor influencing the subjective well-being of students. It has been studied that the social activity of young people has a positive effect on their sense of happiness, as it develops the social competence of young people and performs social support functions (Demir, 2010; Lerkkanen et al., 2018).

The existence of social relations is also very relevant in the process of youth identity formation, as it helps to understand oneself and provides the necessary support. At this age, the sense of belonging to one's student group increases the subjective well-being of students, and the diversity and number of social groups is also important. On the other hand, social isolation and insufficient public support are associated with various diseases and even a decrease in life expectancy (Demir, 2010; Lerkkanen et al., 2018).

However, nowadays many young people do not form close social relationships with fellow students, feel socially isolated and often graduate from a higher education institution without making new friends (Baik et al., 2015).

Students' subjective well-being is also influenced by their *material condition*: to what extent the student is satisfied or dissatisfied with it. It is acknowledged that participation in higher education has never been more expensive for young people studying than it is today. For many young people, the direct and indirect costs of studying are a major source of stress (Bexley et al., 2013).

Due to poor financial security, many students are forced to work low-skilled jobs in addition to their studies. In such circumstances, there is often not enough time to prepare for seminars, tests or exams. This creates additional psychological stress, impairing subjective well-being (Bexley et al., 2013).

In the last decade, students' sense of uncertainty about the value of the education obtained at the higher educational institution in the labor market has been increasing. Students are aware that only obtaining a higher education is no longer enough to ensure a competitive remuneration for the work done. This creates additional psychological pressure and increases students' stress level (Ibrahim et al., 2013; Sarokhani et al., 2013).

It has been established that students' *living conditions* can significantly affect their subjective well-being (Larcombe et al., 2015). Those students who live in dormitories are affected by the number of fellow students in one living space, relationships with roommates, physical factors such as unwanted, uncontrollable noises, as well as the air temperature in the rooms. Too many roommates, low or too high air temperature, uncontrollable noises, unpleasant behavior of roommates were determined to be the main factors that lower the subjective well-being of students by increasing the level of neuroticism (Larcombe et al., 2015). On the other hand, reliable, friendly relations with roommates, the existence of a private room, the possibility of resolving conflict situations in a civilized manner are factors that favorably affect the subjective well-being of students in dormitories. It should be noted that living in dormitories promotes a sense of belonging to one's student community (Özdemir & Tuncay, 2008).

Those students who live in separate apartments are protected from many negative living conditions of dormitories, but they are often unable to fully integrate into their student group (Özdemir & Tuncay, 2008).

The subjective well-being of young students is also influenced by the existence and *content of free time*. Of all the ways of spending free time, belonging to certain interest groups and physical culture and sports have the most beneficial effect on the student. The positive effect of belonging to certain interest groups on the student's sense of happiness is explained by the fact that the diversity of lessons in different social groups satisfies people's social needs, during the lessons one gets pleasure from successfully performing various activities and overcoming difficulties (Molina-Garcia et al., 2011). On the other hand, sports activities increase the level of endorphins, which are responsible for the emergence of inner comfort and well-being (Havkins, Foose, Binkley, 2004).

Lack of free time, or activities imposed by fellow students, as well as negative content of free time (common use of alcohol or other psychoactive substances, frequent visits to nightclubs, or inactivity) negatively affect students' physical health, value system, as well as subjective well-being (Molina-Garcia et al., 2011).

The study process places high demands on the plasticity of the psyche and physiology of young people. Upon entering a higher education institution, a student is forced to adapt to a complex of new factors characteristic of higher education. The most important of them are studying the study program, relations with the academic staff, professional identification and relations with fellow students. These factors determine that throughout the study period young people are exposed to significant psychological stress, which is significantly higher for students than for young people of other social groups (Cvetkovski et al., 2012).

It has been established that the cognitive and emotional stress of students will increase dramatically during the knowledge test sessions, and physical health may also deteriorate (Eisenberg et al., 2009).

The subjective well-being of students is also affected by the hygienic conditions of the study process: considerable time in front of the computer monitor, being in a poorly ventilated room, a large number of students in the auditorium. The mental health and subjective well-being of young students are also negatively affected by a constant lack of time, low physical activity, violation of a rational daily routine (diet and sleep) (Slavin et al., 2014).

In addition, the first-year students' sense of happiness is also affected by experiences related to leaving the usual school environment, doubts about the correct choice of profession, insufficient skills to regulate behavior and activities, as well as the lack of skills to organize optimal academic work and leisure time (Baik et al., 2015).

Taking into account the above-mentioned findings, the following empirical studies intend to determine the influence of the study environment of RTA on the subjective well-being of students.

Research design

Respondents from RTA Faculty of Economics and Management, Engineering and Education, Languages and Design were involved in the research. Participation in the study was voluntary. The total size of the research sample: 75 respondents.

Respondents were stratified by gender and age (see Table 2).

Table 2 ***Demographic characteristics of the research sample*** *(created by the author)*

Demographic parameters		**Number of selected respondents (N)**	**Percentage of selected respondents (%)**
Gender	Men	31	42
	Women	44	58
Age	18 - 20	53	70
	21 - 35	16	22
	36 - 40	6	8

One of the most widely used methodologies for researching the level of subjective well-being is the "Oxford Happiness Questionnaire" (Hills, Argyle, 2002; adapted from: Kalvāns, Ignatjeva, 2011), which was developed by M. Argyle and P. Hills at Oxford University. This methodology was created with the aim of quantitatively assessing the overall level of an individual's feeling of happiness.

This survey was used in most of the happiness studies conducted at Oxford. The overall reliability of this methodology is very high (α=.91) (Hills, Argyle, 2002).

It should be noted that future studies are planned, in which the qualitative (content) aspects of the feeling of happiness of young students will be studied with the help of the Oxford happiness survey.

In order to identify the factors influencing the subjective well-being of young students, a survey created by the author of this article was used, in which students were offered to freely name the 5 main factors that currently significantly affect their sense of happiness. In addition, these factors were proposed to be ranked according to their importance.

The results obtained with the help of the mentioned methodologies are analyzed below.

Analysis of the research results

The research results are analyzed using the average values of the obtained empirical data. The qualitative interpretation of the results was realized according to the instructions of the Oxford happiness survey (see Table 3).

Table 3 ***Qualitative interpretation of empirical data*** *(created by the autor)*

Scored points according to the test	**Content interpretation of the obtained quantitative data**
1 – 2	Unhappy
2,1-3	A little unhappy
3,1-4	Not happy, not unhappy
4,1-5	Quite happy
5,1-6	Very happy

In the first stage of the study, the overall level of subjective well-being in the entire respondent group (n=75) was determined. According to the obtained results, the overall level of the studied phenomenon corresponds to an average value of 3.9. According to the methodology instruction, the subjective well-being level of the researched RTA student group can be interpreted as: "Not happy not unhappy", which can be interpreted as a borderline state between a reduced and sufficient level of subjective well-being.

In the next stage, the level of subjective well-being in the gender groups of the respondents is compared (see Figure 2).

Figure 2 ***The level of subjective well-being of students in different gender groups*** *(created by the autor)*

As can be seen in Figure 2, the average level of subjective well-being of men and women corresponds to values of 3.8 and 3.9, respectively. Such a level can be described as a boundary level between insufficient and sufficient subjective well-being. In addition, no significant differences were found in the level of subjective well-being between groups of different genders. A slightly higher average level of the mentioned phenomenon in the female group can be explained by the larger number of female respondents in the research sample.

More detailed content interpretation of the levels of the respondents' feeling of happiness in the groups of male and female respondents is illustrated in Figure 3.

Figure 3 ***Content interpretation of respondents' subjective well-being*** *(created by the autor)*

The lowest number of respondents was found in the "Unhappy" group, which is characterized by markedly insufficient subjective well-being.

The highest number of female respondents was found in the group "Quite happy", followed by the group "Not happy, not unhappy".

On the other hand, among male respondents there is a group characterized by a borderline state between sufficient and insufficient subjective well-being, followed by a group with a sufficient level of subjective well-being.

In the "Slightly unhappy" group, which is characterized by reduced subjective well-being, there is a slight dominance of men over female respondents.

In the next stage of the research, the factors influencing the subjective well-being of students were determined, which are summarized in Figure 4.

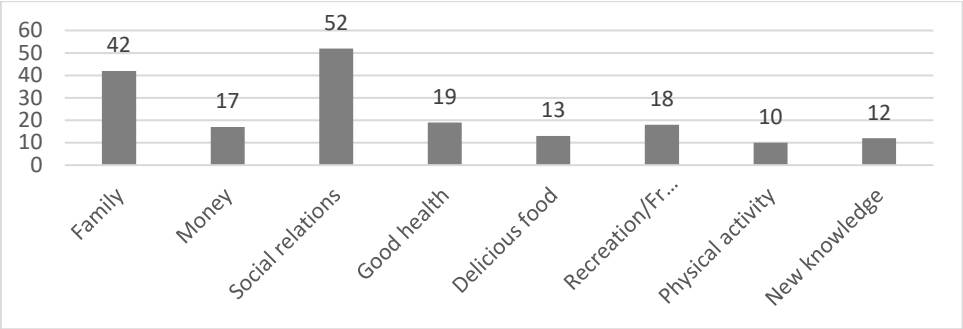

Figure 4 ***The main factors influencing the subjective well-being of students*** *(created by the autor)*

In the course of the research, it was noted that the subjective well-being of students is influenced by the following factors: family relations, material condition, social relations, good health, delicious food, availability of rest/free time, physical activity and learning new knowledge.

As the most important factor, students mention social relations, which presupposes the existence of friends, as well as involvement in diverse social activities.

The next most important factor is having family/a good family relationship.

Good health plays an important role in ensuring the subjective well-being of young students. The next most important factor is meaningful leisure time, which includes rest.

Material security is quite important in ensuring the subjective well-being of students.

Additional factors are mentioned: delicious food, opportunity to learn new knowledge and physical activity.

In the final stage of the research, the factors determining the subjective well-being of students in different gender groups were analyzed.

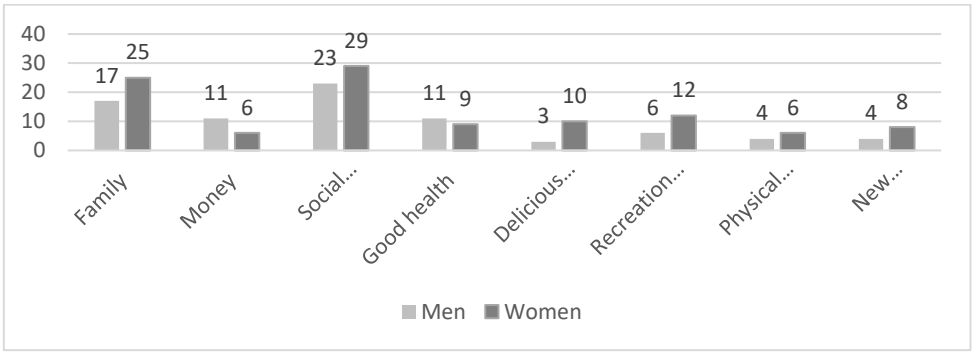

Figure 5 ***The main factors affecting the subjective well-being in the gender groups of the respondents*** *(created by the autor)*

As can be seen in Figure 5, the most important factor in the group of both women and men is social relations and their quality. Having a good family/family relationship is the next most significant factor in both gender groups.

Material condition and good health in the group of men are evaluated as the next most important factor determining subjective well-being, while women mention the factor "Recreation/free time".

It is possible to find that material condition and good health are more important for men than for women. On the other hand, women value mental nutrition, physical activity and learning new knowledge more highly.

Conclusions

In the course of the realization of scientific literature and empirical research, the author came to the following conclusions:

1. The subjective well-being of RTA students is characterized by the boundary level between sufficient and insufficient subjective well-being (51% of respondents).
2. A sufficient level of subjective well-being, according to the interpretation of the Oxford happiness questionnaire, was found in 37% of respondents.
3. The obtained results highlight necessity of conducting further research of subjective well-being and its determining factors, paying attention to the research of factors related to the study process.
4. No significant differences in the level of subjective well-being were found in the groups of female and male respondents.
5. The most important factors that determine the subjective well-being of the respondents of the study sample are: meaningful social relations, good family relations and good health.
6. Good health and material condition are evaluated as equally important in the group of male respondents.
7. Women attach more importance to the existence and quality of free time.
8. Men give the least importance to the factor "Tasty food", while women - to the factor "Material condition".

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EDUCATION. INNOVATION. DIVERSITY (EID)

A SCHOOL PRINCIPAL AS A CHANGE LEADER IN EDUCATION

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Abstract. *Successful school management, whose "comprehensive content" includes both administrative and pedagogical aspects, is a decisive factor for the implementation of change in teaching and learning, promotion of pupils' learning achievements and the improvement of the quality of education in general. However, the role of school principal as a change leader gets increasingly emphasized as opposed to traditional principal's role of administrator or manager.*
This study focuses on the personal experience of school principals and interpretation of their experience, reflecting the principals' understanding of the role, nature and essence of leadership as an aspect of school management. This is a phenomenological research study. Research sample: the principals of general education schools (N=9). The aim of the study is to explore principals' understanding of what it means to be a change leader in a school, what leadership functions are prioritized, and how school principals balance their leadership functions with those of administration and management.
The data have been gathered using semi-structured interviews. The results of the study indicate that the implementation of school principal's role as a change leader is facilitated by: 1) awareness of one's personal qualities; 2) delegation of responsibilities; 3) strengthening of the school culture and its values; 4) implementation of a personalized approach highlighting the individual abilities of each teacher in the organization; 5) strengthening of the school as a "learning organization".
Keywords: *change leader, leadership, school principal.*

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Introduction

Changes, vividly reflected in educational practice, determine a tense and professionally challenging scope of activities for the school principals, as they must be able to solve problems, develop innovations and come up with new management solutions (Msila, 2019; Saleniece et al., 2019). A school principal must be "*three, five or even seven in one"*. The school principal has to be a good manager who handles the financial matters of the school, a good diplomat who is able to resolve the conflicts of mutual relations when emotions get very intense. Also, the principal must be a good teacher who knows how to work with today's students who have different individual learning needs and thinks about the development of the school as a whole.

The multidimensionality of school principals' work is revealed in several research studies, for example, on the influence of school principals on students' learning achievements (ten Bruggencate et al., 2013; Choi & Gil, 2017), and on teachers' professional development (Hauge, 2019; Ganon – Shilon et.al., 2020). Models of school leadership have been studied, for example, what is the role of the principal in a centralized school leadership team and what is it when the leadership role is collegially delegated to a management team or to people outside the management team, primarily the teachers (Choi & Gil, 2017), which leadership styles of school principals are the most effective during the educational reforms, e.g., a conceptual decision-making style as dominant and the analytical one as a backup or the analytical leadership style as dominant and the conceptual one as a backup (Kasprzhak et. al., 2015). Globalization, technologies, rapid development as well as abundance of information require the school leader to search and find the direction in which to go.

In today's world, many education systems are implementing smaller or greater changes (Ganon-Shilon & Schechter, 2018; Kasprzhak et.al., 2015; Ganon – Shilon et al., 2020). In Latvia, the education reform was initiated in 2016, the essence of which is linked to the introduction of a new curriculum at all levels of education and to the transition to implementation of competency-based approach. This reform highlights the constructive cooperation of teachers, personalized and in-depth learning for students, as well as curriculum alignment issues and curriculum development, strengthening the cooperation between the teachers on school level while planning and implementing the process of learning and upbringing (Valsts izglītības satura centrs, 2017). A good school management is a critical factor for implementing the changes in teaching/learning approaches, ensuring the learning achievements of students and the increase of quality of education as a whole (Geske & Rečs, 2019).Therefore, the role of the school principal is stressed more and more in the educational document s and research studies. The pedagogical leadership role of the school principal is also emphasized in the *Teaching and Learning International Study* (TALIS) conducted by *Organisation for Economic Cooperation and Development* (OECD) (OECD, 2016; OECD, 2019). For a school principal, the pedagogical leadership role is highlighted as primary, opposed to the traditional roles of an administrator or manager, and it is linked to the changing approach of the school management (Schleicher, 2015; McCaffery, 2018; Rečs, 2020).

This article presents the example of Latvia, exploring the understanding of comprehensive school principals on the essence of leadership as one of the management aspects during the period of changes in education. The research questions seek to clarify how school principals explain the concept of leadership, what contributes to becoming a change leader, what leadership functions dominate in the activities of school principals, and how the functions of a leader, administrator and manager are balanced.

The aim of the study is to explore principals' understanding of what it means to be a change leader in a school, what leadership functions are prioritized, and how school principals balance their leadership functions with those of administration and management. The data have been gathered using semi-structured interviews.

The Context of Leadership

Leadership, when compared to management and administration, is considered to be a much more sophisticated and complex activity of management (Butkeviča & Zobena, 2017; Connolly et al., 2019; Rečs, 2020). Of course, when leading the educational institution, the school principal needs manager's characteristics, because as a leader he/she not only operates in order to define the strategic goals and conceptual steps for achieving them, but he/she also must be involved in, or at least understand, the daily functioning of school and its formal manifestations. Here it is appropriate to refer to a holistic vision of the understanding of the principle of reality – wholeness, which states that the whole is more than the sum of its parts, and it cannot be explained by its individual parts. The parts are harmoniously linked and can only be understood through the dynamics of the whole. No parts exist independently. Thus, the three roles of the principal – a leader, a manager and an administrator complement each other, but none of them reflects on its own all what the work of school principal implies. Administration includes the completion of day-to-day administrative tasks that are necessary for ensuring the bureaucratic procedures and activities of the school. Management means managing the day-to-day work of the school. Leadership, in turn, includes such essential modern school management functions as maintaining the school's vision and strategy, creating a culture of collaboration in the school, and promoting the professional development of the teachers. Thus, a good school principal must be a good leader, a good administrator and a good manager. However, in educational practice there is a topical question - to what extent should

the school principal fulfil each of the mentioned roles, and to which of these roles a priority should be given in the leadership practice of a principal?

The Genesis of the Concept of Leadership

Explanations of the concept of leadership can be found as early as the 19th century, with emergence of the Great Man's theory, the essence of which is expressed in the slogan "*Great leaders are born, not made*".

According to this theory, a person is either a natural-born leader or not (Halaychick, 2016).

Consequently, in the beginning of 20th century, an idea similar to the Great Man theory arose, stating that specific individuals have leadership abilities and people inherit certain characteristics and traits, which make them better suited for management/ leadership. The character traits that were often attributed to great leaders are extraversion, self-confidence and courage. This view was explained by Personality Trait theory, and it focuses on identification and analysis of specific characteristics of leaders, where the fundamental question was "who is the leader". This definition of leadership emphasized the personality traits of a leader and his/her ability to meet the goals (Northouse, 2016). It was suggested that the leader must be intelligent, confident, enthusiastic, in good health, able to take initiative, socially active (Northouse, 2016; Halaychick, 2016). However, the weak point of this explanation is the fact that many people have leadership-related personality traits, yet many of these people never turn to leadership positions.

In 1950-60's, it was recognized that it is impossible to name and create an absolute and comprehensive list of leaders' characteristics (trait approach), which would be innate, and all the leaders would have them (Halaychick, 2016). The concept of leadership emerged, focusing on the issues related to leader's behaviour and leadership style trying to find an answer to the question "what a leader must do, and how".

It was recognized that effective leadership is not only a question of leader's qualities, but also of the balance between behaviour, needs and the context. Good leaders are able to appreciate the needs of others, understand the situation and adjust their behaviour. Success depends on several variables, including leadership style, character traits of the team members and the specificities of the situation. Two types of leadership were determined:

- task-oriented leadership (leaders set the goals and clear guidelines for action);
- relationship-oriented leadership (leaders have a responsibility to support and encourage others) (Golubeva, 2010).

Another important leadership definition emphasizes the situations in which a leader operates and is able to adapt (Halaychick, 2016). This vision is explained by Situational Theory, which states that the leadership style depends on the ability and willingness of other employees involved to take on and to accomplish the particular task. Such vision allows leadership to be seen as a flexible phenomenon, the content of which varies depending on the specifics of the environment and contradicts the idea that it is possible to determine the ideal style of leadership identifying all the characteristics of a good leader.

In Situational theories, leadership is defined as a relationship between the people who opt for leadership and for those who choose to follow them, based on mutual interests and needs (Daniels et al., 2019). A Leadership is a way of affecting other people's internal motivation, which allows the leader's followers to believe that their values and interests are taken into account in the process of cooperation (Gerpott et al., 2020). Thus, leadership activities may be explained as a process of interpersonal relations between the leader and his/her followers when the leader persuades the followers to take the action to achieve certain goals.

Behavioural Theories reveal the belief that a person is not born a leader but becomes a leader by learning and observing, emphasizing the leader's activity (Halaychick, 2016).

The concept of leadership is also explained by Transactional and Transformational approaches (Halaychick, 2016). In Transactional approach, the manager-employee relations are constructed and based on the relationship of exchange, i.e., for good performance the employee receives additional remuneration, bonuses, security or other real benefits, but for a result that failed - a reprimand or punishment. The leader actually intervenes only when the required standards are not met. In turn, the Transformational approach to leadership has a strong moral dimension. In Transformational approach a leader takes risks, builds trust, and sets a vision (Daniels et al., 2019). Leader's relationship with employees is based on emotional ties, where the leader, thanks to his/her charisma, ability to persuade and inspire, is turning to the emotional side of the employees, and, obtaining the approval, ensures the smooth functioning towards the achievement of common objectives (Rečs, 2020).

The 21st-century research on leadership in schools (Northouse, 2016; McCaffery, 2018; Daniels et al., 2019; Gerpott et al., 2020; Bøje & Frederiksen, 2021) is based on modern leadership theories that state a leader is:

- a visionary leader. It is assumed that the leader will be able to perform his/her role due to certain criteria, for example, (1) behaviour, which includes good communication skills, ability to focus on the important things and to act consistently, (2) personality traits, such as confidence, long-term planning skills.
- a 'learning organization' leader. The leader drives development of organizational culture, for example, is able to develop and change the values and attitudes in the organization, to ensure the achievement of objectives and is able to manage change, and so forth.
- a liberating leader. In a competitive situation, the greatest advantage comes from the way a leader leads, directs, encourages his/her group of people/employees. If a leader acts responsibly towards his/her employees, it results in a reduction of staff absence due to illness, increase of employees' resistance, formation of stronger individual and team morale, observation of deadlines, and so forth.
- a discretionary leader. The explanation of discretionary leadership is based on A. Maslow's 'Pyramid of Needs', which reveals a hierarchy of needs and priorities. The Discretionary Effort Leadership model is based on the following priorities: safety and security, social acceptance, emotional commitment, rational alignment, authentic contribution.

Visionary leadership, Learning Organization leadership, Liberating leadership and a Discretionary Leader theories were formed in the 20th century, in response to global changes, including the increase of competition, the rapid flow of information, new organizational principles, etc. They all stress that the emphasis is not only on one person - the leader, but on efforts to promote the role of the middle-level managers in the work of the organization. This is possible by giving them greater opportunities to influence the processes in organizations ("discretionary leadership"), both by stimulating and using the leadership potential of each employee (liberating leadership) and by changing leadership roles (Golubeva, 2010; Rečs, 2020). So, on the one hand, leadership is distributed within the organization to a wider range of managers, on the other hand, the learning of individual employees and the organization as a whole is promoted (leadership in learning organizations). Thus, the concepts "leadership" and "leader" have changed over time and are supplemented with a new meaning and content.

A Leader – School Principal. An Experience of Latvia

A general portrait of Latvian school principals is provided by the results of the international survey OECD TALIS, 2018 (Izglītības Pētniecības institūts, 2019).

In Latvia, the average age of school principals is 54 years, 16% of all school principals are men and 84% - women, 25% of them are over 60, 11% have only a bachelor's degree, 27% have a recognized master's degree (in Latvia, diploma recognition takes place for HEI Diploma's obtained before December 26, 2000, when the new legal regulations in the Law on Higher Education Institutions entered into force) 58% have master's degree , 4% - doctoral degree. In Latvia, 96% of school principals work full-time. The distribution of responsibilities for full-time school principals revels that 50% of them act only as principals, but 50% combine the duties of a principal and a teacher.

The OECD TALIS 2018 research study, with participation of 136 school principals from Latvia, reveals that a wide range of leadership functions are implemented in their schools. Research data suggest that leadership in schools is directed towards promoting teachers' responsibility for the learning outcomes of pupils (indicated by 90% of school principals); ensuring that teachers take responsibility for improving the learning skills (83%); providing feedback to teachers based on observations (81%); elaborating the administrative procedures for schools and preparing the reports (71%); supporting cooperation between teachers in developing new teaching methods (70%); solving disciplinary problems in the classroom in cooperation with teachers (62%); observing the teaching/learning activities in the classroom (36%); solving problems related to the timetable (24%) (Izglītības Pētniecības institūts, 2019).

Methodology

A phenomenological study was conducted, which is useful if the phenomenon, in this case the perception of the school principal as a change leader, is not much conceptualized. The focus of the research was the personal experiences of school principals and the actions they take in relation to the research phenomenon, as well as their interpretation of these experiences. This study seeks to explore the school principals' understanding of what it means to be a change leader in a school, what leadership functions are prioritized, and how school principals balance their leadership functions with functions of administration and management.

The research sample was the principals of comprehensive education schools in which children are taught from Class 1 to 12, with the exception of one school, where the first level primary education (Class 1-3) is an autonomous unit with its own headmistress (see Tabe 1). Using the snowball method, the school principals from two largest cities of Latvia were involved in this study, and their schools had similar indicators, such as the number of students per school. The data were obtained through semi-structured interviews, without directly asking the questions about the research phenomenon. The school principals were invited to reflect on their activities, responsibilities, revealing the challenges they face in their professional work, and visualize how they see themselves as school principals in the near and distant future. The aim of the research was to explore the understanding of the comprehensive school principals' of the essence of leadership as one of the aspects of the management of the educational institution during the times of educational change.

The research questions put forward for this study: 1) how do school principals define the concept of leadership; 2) what promotes the becoming of a change leader; 3) what leadership functions dominate in the activities of school principals and how the functions of a leader, administrator and manager are balanced.

Table 1 ***The characteristics of the research sample***

Code	Gender	Length of service as principal	The size of the school (amount of children)	The workload volume as principal
P 1	man	16 years	986 (Classes 1-12)	100% principal
P 2	man	9 years	779 (Classes 4-12)	100% principal
P 3	man	1 years	714 (Classes 1-12)	90% principal 10% teacher
P 4	woman	14 years	937 (Classes 1-12)	100% principal
P 5	man	5 years	1477 (Classes 1-12)	100% principal
P 6	woman	8 years	892 (Classes 1-12)	100% principal
P 7	woman	2 year	926 (Classes 1-12)	100% principal
P 8	woman	23 years	1172 (Classes 1-12)	90 % principal, 10% teacher
P 9	woman	8 years	850 (Classes 1-12)	100% principal

Research results

Acknowledging that the roles of school principals – leader, manager and administrator complement each other and can be seen as a whole, all principals particularly highlighted the role of a leader in the description of their activities, linking it to such concepts as '*time for change in education'* (P8), "*change"* (P3), "*education reform*" (P4), using the concept "*change leader*" (P1, P6, P2) in conversations. Describing themselves as change leaders in education, the school principals suggest that a change leader is a person who inspires, creates a vision of the school, allows others to follow him/herself, is an example to others: *"A leader, standing in front of an audience, helps to set visions, goals and results to be achieved, implement the changes"* (P4); "*The principal is an originator of direction and values*" (P2); *"My main task is to be a change leader"* (P5). Describing themselves as leaders, school principals relate it to the processes of change in education, emphasizing their activities more than specific qualities characterizing them. Thus, the goal-oriented and task-oriented leadership is highlighted.

When asked how to become a 'change leader', the school principals mention that the most important aspect is to know oneself, to be aware of one's own values and beliefs, habits and virtues. It was suggested that "*Self-knowledge is the way to build relationships with other colleagues*" (P5); "*Only through self-knowledge one can know others*" (P2); or "*Being a change leader means serving – oneself and others, which takes place through self-knowledge, values, clear goals and virtues*" (P6). The following statement expresses this idea even more precisely: "*The change leader must be able to balance three aspects – self-awareness, one's vision, values and virtues, and a career (work, leisure*)" (P4).

Summarizing the views of school principals on "*to become a good change leader a person must now oneself well*" (P1), it can be concluded that the principals consider a good self-knowledge as a primary "tool" for becoming a convincing change leader. This knowledge also allows them to get to know others better, understand their knowledge, habits, value formation process, as well as build personalized relationships. The principals acknowledge that self-knowledge as an aspect of leadership is *"a deep and individual work with oneself*" (P7), although they also point in direction of professional development courses, seminars and pedagogical supervisions, which have increasingly been present in educational practice in the last six years. If initially pedagogical supervisions were the initiative of individual school principals or administrators of educational boards, then in 2021, the guidelines were designed for organizing and implementing pedagogical supervisions in schools by the Quality Assurance Department and approved by the Ministry of Education and Science.

The observations of the interviewed school principals reveal that this professional perfection will be effective only if the person him/herself takes what is needed from what is offered, without perceiving the professional development as a mandatory coercive measure. "*There is a need for analytical skills, ability to choose what is going to work in my school, and to take what I need and what my school needs. To select what is needed. In order to do that, the principal must know oneself well, know his/her colleagues, know his/her school. Only then you can take what you need, adapting it to a specific situation, to one's needs. There will be no ready-made recipes, but you must know what you need, and you must be able to take it*" (P4).

School principals, as change leaders in education, are the ones who develop and communicate the new vision and beliefs. However, in order to come to a new conviction, school principals themselves must change; change their habits, beliefs and opinions. This process marks a transformation of the way of thinking and old habits, and school principals find it difficult to implement. If a school principal changes his/ her vision and opinion, it does not mean that others will do so as well. *"On the one hand, it is closely linked to my beliefs and views as a principal. On the other hand, it is a question of how I communicate it to others. I believe that everyone has freedom of choice – also in their views. I can't ask people to think exactly the way I do. Everyone has the right to express his or her opinion and the right to be heard*" (P5). It is pointed out that, in cases of disagreement, the most important thing is to maintain mutual respect. "*When I express my actions, behavior and example, I also give others the opportunity to express their views showing them respect. Feelings of respect must be shown. I have the right to request that my opinion is respected, but for the sake of my opinion, I cannot sacrifice the views of my colleagues. That is a way to despotism*" (P5).

In this process of transformation, it is most important for the change leader to be able to keep/ maintain this subtle nuance between openness, freedom, trust and control, which characterizes a democratic leadership style. The respondents acknowledge that this can be a time-consuming process, and this way "*the changes in educational practice come more slowly and create a lot of moaners; but I find this process more understandable and acceptable because I base it on my personal leadership values which I trust and follow*" (P5).

It can be concluded that school principals believe that they can become change leaders through self-exploration, self-development and professional perfection, in other words, through self-knowledge, working with oneself and being an example to others demonstrating that change is possible.

The school principals prioritized the following leadership roles: communication at all levels of activity (horizontal and vertical cooperation), delegation of responsibilities and strengthening of partnerships. Maintaining positive communication at all organizational levels of the school contributes to the satisfaction and well-being of all parties involved. *"... It allows me not to feel alone and gives regular feedback, shows the 'temperature' of the educational institution*" (P3).

The synergy between the school principal - change leader, teachers, parents, and learners and the synergy between the principal - change leader and the management team – deputy principals, learning consultants is acknowledged. *"... A change leader works at all levels, ... and clear functions need to be defined here"* (P8).

The change leader of works not only with the vision, defining the goals of the institution, but also communicates and cooperates with all stakeholders "*... preparing the ground for students to develop a holistic personality"* (P4). When on the one hand, leadership is distributed within the organization to a wider range of school management staff members, for example, deputy principals, and on the other hand, the leadership of individual employees is promoted, we can speak of a learning organization, where delegation of responsibilities and development of partnership result in the development of organizational culture. Although school principals have clearly defined roles, duties, responsibilities and necessary competences, for example,

financial literacy, the change leadership functions are expanded with new aspects, which can no longer be overseen and implemented by the school principal alone. This gives a positive boost to the principals to delegate the leadership responsibilities to other staff members of the institution and to encourage them to take on the functions of a change leader.

In Latvia, this process became relevant after the educational reform was launched in 2016 introducing the competency-based education. The need arose for the leaders who could promote the new approach of teaching and learning in the educational process. In order for students to become proficient in the learning process, it is necessary to help the teachers to change their current attitudes about students' learning and the learning process in general, emphasizing the in-depth learning and the change of the role of the teacher in the learning process. Admitting that the school principal can no longer lead alone all ongoing multidimensional changes in education, the pedagogical leader, or a learning consultant, as it is defined in Latvia, becomes the change leader in the context of teaching and learning. The duties of a learning consultant are delegated either to the deputy principal in methodological work, or to the head of the subject area, or to a teacher who has become a learning consultant-expert by attending a certain amount of professional development courses and has demonstrated the acquired skills in practice. "*It is important that the learning consultant is not the school principal or even his/her deputy. Learning consultant is a new step for pedagogical cooperation and self-growth. A learning consultant is a confidant, which a teacher invites to his or her lesson*" (P9). "*It is important to distinguish whether the observation of lessons come from the management, which is more of a hierarchical approach, or whether it is a voluntary observation of the lesson to provide methodological assistance*" (P5). "*It is significant that the learning consultant comes from the teaching staff and not from the management. The learning consultant does not report to the management. His/her job is to support and help, not to punish*" (P5). "*Learning consultants work as pedagogical leaders in the classroom"* (P2).

In order to arrive at such level of trust, which marks new aspects in the educational environment, it is essential for the school principal, as a change leader, to delegate pedagogical leadership responsibilities by building trust, partnership and a learning organization. "*It's a matter of what culture we want to achieve*" (P1). "*The ability to be a leader is equivalent to the ability to delegate responsibility and the ability to rely on the team"* (P8).

Explaining the goals of change, working with the staff, encouraging, and supporting the teachers and other staff members to understand and accept these changes, strengthening the teamwork and personalized learning are acknowledged as dominant leadership roles in the daily lives school principals. The principals admit, "*Change does not have to be big, radical and everything does not have to be perfect. But the principal must to see what needs to be corrected, and perhaps it is more important to notice particularly the little things*" (P8). "*Change has two parts: an arrangement stated on a paper and the belief. If the majority has the belief and confidence, then it is a united force and change will take place*" (P5). *"A principal cannot talk about change if there is no order in his/her team*" (P3).

Personalized learning is associated with the school principals' conscious desire to understand the individuality, originality, and personal characteristics of their employees. The well-being of teachers and their individual goals are taken into account. In personalized learning, "*it is important to remember that change is person-cantered and that the person's individual goals are paramount*" (P8).

School principals exercise all three roles (administrator, manager and leader), recognizing that the workload of the principal depends on the size of the institution, his/her management style and personality. In smaller schools the management team is also smaller, and the role of the principal depends on the situation and the needs of the particular moment. "*Looking at the time lag, there are situations when I am 100% administrator and 0% leader or manager. And then there are days when I am a 100% leader*" (P1). In contrast, in schools with a larger

management team and with more than one deputy principal, the school principal is more of a leader. "*The bigger the institution, the more the principal can afford to do new things*" (P5). Then the leadership function comes to the fore, and the principal uses leadership for staff development and implementation of innovations. It is emphasized that the advantage of 'big schools' is a strong management team where responsibilities can be delegated, and in many situations the principal not even gets involved. "*In fact, a well-organized school can do without a principal*" (P5). "*In a well-organized environment, a principal is a generator of change. The rest is the work of the deputies*" (P7).

"It is much easier to put out a fire (and the principal has to do it) if there is a large team and if there is a possibility to delegate responsibilities for solving the problems. In small schools, on the other hand, where the management team is small, the possibilities for delegating are not so many, but the relationships then are more personalized" (P8). Thus, it can be concluded that the way a school principal builds and leads his/ her team also determines the school's culture, staff's sense of belonging and the sense of 'being involved'.

Discussion and conclusion

According to modern leadership theories, school principals identify themselves as change leaders, who create a vision for the school, new goals, who can inspire, influence and persuade others, and they are focused on constructive action and communication. "*When I have a vision, I communicate it to others, and we continue to implement it together"* (P2). However, as noted by the principals, this process is not always so smooth. Teachers do not always immediately understand, accept the vision and goals, and are not always ready for change. Significant transformations take place in each person and in the organization as a whole during this process. Self-knowledge and awareness of personal qualities help to become a change leader. In turn, self-knowledge is a way of knowing others better, and it serves as a way to know how to inspire, persuade, and interact with others. School principals positively evaluate professional development courses, seminars and pedagogical supervisions, but pointing out that, to have a positive effect, they must be voluntary, but the school principals must clearly be aware of the needs of their schools.

The influence of a principal as a change leader is related to the formation of the school's culture and values, and to the belief that the school is a learning organization. It is related to personalized learning, which highlights the abilities of each teacher within the organization and points to individual achievements and collaboration to solve problems and achieve common goals of the school. The individual contribution and participation of each employee is important for the school as a learning organization. "*I am in a favour of a networking model, not a hierarchical model*" (P5).

Delegation of responsibilities emerge as an important feature in the change leader's functions. Principals acknowledge that in order to implement the content of the planned education reforms, in the learning process the teachers need a leader from the pedagogical environment. The study showed a positive relationship between the principal – the change leader and the learning consultant, which implements a function of a pedagogical leader.

The development of a management team and the delegation of responsibilities to their deputies allow the school principals to focus more on the implementation of leadership functions, to think more about the school's vision and plan its development and growth. It is undeniable that school principals fulfil the roles of administrator, manager and leader, but the proportionality of these roles is related to the size of the school management team, as for the principals with a larger management team it is possible to delegate many tasks to their deputies, while retaining the responsibilities of a leader. It is expected that school principals, by becoming and strengthening their positions as change leaders, will contribute to the ongoing school reform

and will set an example by creating new values and a foundation for meaningful changes. A change leader is able to strengthen personalized learning and to build a school, which is a learning organization.

Thus, leadership is a gain and an opportunity for everyone, it has open borders that allows the knowledge to be disseminated in many different ways.

Further research in this area should focus on how to improve the role of the pedagogical leader (learning consultant). As it was stated, "*I don't know now if I have chosen the right person. He is a good teacher, but will he be a good pedagogical leader*?" (P3). Addressing this issue could be one of the tasks of the school as a learning organization.

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THE IMPACT OF RECESS BREAKS IN THE LEARNING PROCESS ON PRIMARY SCHOOL STUDENTS' CONCENTRATION SKILLS

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Abstract. *Nowadays one of the major problems in education is the lack of a specific strategy for the implementation of breaks (recess policy) in an educational institution. The development of such a strategy in the majority of cases is different for every school, as evaluating several factors is required, e.g., the age of students, interests, learning needs and progress, the location and specialization of the school, etc. However, students` awareness of the necessity for individual recess strategy gains importance as well. The research aim is to investigate and clarify the possibilities and necessity of recess breaks in primary school. There are theoretical research methods and empirical research methods (students', teachers' and parents' surveys), data processing and analysis methods (quantitative, graphical representation of data, data analysis using IBM SPSS v.22 predictive analytics and statistical analysis software package) used in the research. The analysis of students' survey emphasized that students more often prefer listening to music or socializing during breaks. While parents' questionnaire highlighted the necessity for their offsprings to spend more time outside in fresh air. They mean it would help their children to better concentrate in lessons. While teachers` survey analysis revealed that students concentration is better if students are more interested in a particular subject.*
Keywords: *ability to concentrate; recess break; individual recess strategy; learning process; a student*

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Introduction

One of the major problems in modern education is the lack of a specific strategy for the implementation of recess policy. The development of such a strategy is different for every school, evaluating several factors, such as the age of students, interests and learning needs, the location and specialization of the school, etc. To create such a strategy, it is also important to ask students: "*Why do you need a break*?" (Wood & Freeman-Loftis, 2015, 177).

The topicality of the recess breaks can be emphasized by the facts that:

- the course of the learning process is planned mainly for learning process in the lessons, while students most often spend their time in breaks not realizing that they are having a rest and how to recess during the breaks for everyone individually and all together. Students' interest, learning habits and style, strengths, learning goals etc. are unique and different, therefore, authentic activities during recess breaks also become especially relevant, as well as the need to integrate recess breaks into individual learning habits.
- the empirical experience of the authors of the study also allows us to conclude that, often teachers' attention is paid on the leading learning process within the lessons, but the time spent by students during the breaks is "up to the students themselves".
- there is a lack of understanding of the necessity for recess breaks, the possibilities, and opportunities to spend breaks.
- we live in an era of technological development. Smart devices are widely used both in free time and in the learning process. Also, during breaks, students often spend their free time using smart devices, which, in turn, reduces students' ability

to concentrate, which is one of the determining factors that positively affects student learning.

Thus, the research aim is to investigate and clarify the possibilities and necessity of recess breaks in primary school.

Research methodology:

- theoretical research methods (analysis of pedagogical and psychological literature to get acquainted with the possibilities of implementing recess breaks in the learning process and the need for recess breaks to promote concentration).
- empirical research methods (surveys of students, teachers, and parents), data processing and analysis methods (quantitative, graphical representation of data, data analysis using IBM SPSS v.22. predictive analytics and statistical analysis software package, Mann – Whitney U tests, Spearman's Rho correlation, Kruskal-Wallis's test).

Necessity of the recess breaks

The project "*Competence approach in the curriculum*" not only highlights the responsibility for one's own learning and its planning, monitoring and evaluating one's achievements, but also the need to "plan time for work and recess, to achieve own goals" (Skola2030, n.d., 76). Recess breaks are essential part of the learning process and their benefits are not only the psychological well-being of students. Although recess breaks are especially important for younger learners; they are also essential for improving concentration skills for older students. Murray et al. (2013) emphasizes that if a short break for recess is not possible during the lesson due to lack of time, in older classes it is useful more often to change teaching strategies during the lesson, for example, organizing group work, enriching the learning process with technologies, etc. (Murray, Ramstetter, Devore et al., 2013).

Kohl, Cook (2013) believe that recess breaks can be an effective way to reduce disruptive behavior and promote the ability to stay on task and focus on academic work. Breaks, whether in the learning process, help to improve physical readiness, which in turn improves cognitive ability (Kohl & Cook, 2013).

Recess breaks are necessary to optimize a child's social, emotional, physical and cognitive development. Pellegrini & Bjorklund (1997) believe that the more intense the student's cognitive load has been, the more important is a break for recess after it.

However, students often spend time during breaks without thinking or realizing the need for rest, using social networks and playing games on smart devices. The use of social networks significantly increases students' stress and creates a sense of anxiety. The study "*Brief and rare mental 'breaks' keep you focused*" (2011) analyses differences between students who use and do not use smart devices during breaks. 83 % of students who actively use social networks admit that their lives are "*quite stressful*" or "*very stressful*". The results of the study also emphasize that the use of social networks reduces students' ability to concentrate and learn effectively (Atsunori & Lleras, 2011). On the other hand, in the study "*Your Brain on Facebook*" (2011) points out that when communicating with people online, we usually do not get the hormones of happiness that occur when we interact with someone in real time (Rock, 2012).

The learning process can be stressful and intense. Therefore, it is essential to evaluate and make useful, valuable time during breaks. Thus, the questions: *How would it be more meaningful to spend recess breaks at school?* and *What are the prerequisites for organizing full-fledged rest recess breaks at school?* become relevant. Murray et al. (2013) believe that such breaks should be considered as the student's personal time and recess breaks should not be spent, for example, to continue the learning process started in class. Also, Ramstetter et al.

(2010) emphasize that recess breaks during the learning process should be considered as the student's personal time. However, at the same time, it should also be highlighted that without students' understanding of individual break for recess strategy, they can choose to use smart devices non-stop, which does not contribute to the ability to concentrate. The research "*The Crucial Role of Recess in School*" (2013) states that the result of the learning process largely depends on recess breaks, their frequency and duration, which should be sufficient so that the students can concentrate for learning (Murray, et al. 2013). The research also highlights a free play method as very effective for such breaks (Murray, et al. 2013).

It must be admitted that recess breaks are highly important for every person, regardless of age and field of work. However, recess breaks are essential in the first stage of primary education (Ramstetter, Murray, & Garner, 2010; Kohl, Cook, 2013). This range of age varies in different countries from the age of 5-12, which corresponds to grades 1-3 and 4-6 of basic education stages in the Latvian education system. Thus, the focus of the research is exactly on the possibilities of the implementation of recess breaks in primary school.

Historical aspects of recess breaks in Latvia

Looking at the historical aspects of the learning process, it can be considered that recess breaks historically have not been valued. E.g., in a medieval school, the learning process could be compared to technical and professional training (Ķestere, 2005, 41). Also, the school day for students was very long- around 12, 13 hours without official holidays. During this period of history, students could have had a rest only on Cristian religious holidays. Strict discipline and orders were important in the organization of learning in schools. Studies also took place in monastery school, where students did home duties- cooking, tilling the land, herding cattle, etc., as well (Ķestere, 2005). During this time, schools emphasized discipline, and recess was not considered an important part of the learning process.

It was in the 20th century that the importance of breaks was brought up in Latvian schools. Miķelsons (1941) emphasizes that "the school regime must provide for the procedure for accompanying breaks, as well as the procedure for children's arrival and leaving the school" (Miķelsons, 1941), highlighting that "disturbing, noisy games are not recommended during breaks: they disturb the students' concentration in the class after the bell. During the long breaks, reading rooms should be opened or special corners organized for reading and quiet games, where students could find interesting activities for themselves" (Miķelsons, 1941). On the other hand, Ozols (1944) expresses his belief that "students' answers in tests are better and more reliable when tests in individual subjects take place after longer breaks that they take place immediately at the same time" (Ozols, 1944).

Miķelsons also emphasizes the need for fresh air and outdoor walks, stressing that "during long breaks, it is highly desirable for students to go outside" (Miķelsons, 1941). Also, in the teachers' conference of August 1988, a statement was made about the possibilities of spending free time emphasizing that students should go out to play in nature during breaks because good environment should be created for children, so they feel good at school (Grobiņš, 1988).

Opportunities and necessity of recess breaks

Break can be defined as the time between lessons that is regulated by school management so that students can rest by engaging in various leisure activities, including physical activities. Researchers also emphasize that these activities can also be self-directed by students (Parrish, Okely, Stanley, & Ridgers, 2013).

Breaks are critical for memory consolidation, self-reflection and goal setting, development of literacy and cognitive abilities, as well as skills to generate and understand new ideas (Immordino-Yang, Christodoulou, & Singh, 2012). Also, Müller et al. emphasizes the importance of recess breaks in promoting reading skills and also "joy of reading" (Müller, Otto, Sawitzki et al., 2012).

Whereas the American Association of Pediatrics (2013) emphasizes that moments of rest in the learning process, or breaks, are necessary to improve students' social skills, emotional and physical abilities, as well as cognitive development (The American Association of Pediatrics, 2013).

Cooperation and interaction are very important during breaks as they facilitate communication, sharing and problem solving (Murray, et al. 2013). That is why free play becomes especially useful during breaks, because by playing together, students improve cooperation skills and skills of solving conflict and problem. They also learn to self-regulate their emotions and behavior. Also, Ramstetter et al. (2010) highlights the need for students' self-selected activities during breaks, or the need for unstructured breaks. It is the time when students relax, choose the way they want to relax from learning, for example, communicate with each other, spend time alone, listen to music, engage in physical activities, etc. In the 1st-6th grades free play also becomes relevant, which provides a unique contribution to the creative, social and emotional development of the student. However, at the same time, the awareness of various recess opportunities becomes relevant, i.e., so that students can plan and meaningfully spend their time during recess breaks, the creation and improvement of own individual strategies for such breaks becomes important.

Barros, Silver, Stein (2009) research "*School Recess and Group Classroom Behavior*" summarizes the observations of teachers, which emphasize that allowing children to take a break improves attention, and the number of behavioral problems decreases (Barros, Silver, & Stein, 2009). Therefore, devoting attention only to the learning and reducing time for recess is counterproductive. Recess breaks have traditionally been an integral part of the school day. However, recently many schools have been reducing recess time (Ramstetter et al., 2010).

To organize recess breaks more productive provision of appropriate premises and equipment; update and enforcement of safety regulations and teachers` presence, with intervention only when necessary, becomes essential (The American Association of Pediatrics, 2013). While, Murray, et al. (2013) believe that the teacher's presence is essential not only in structured but also in unstructured breaks. Patrick, Kaplan, & Ryan (2011) emphasize the importance of a positive emotional background for providing a full-fledged rest, thus emphasizing the professional actions of the teacher in promoting such a background (Patrick, Kaplan, & Ryan, 2011). Properly organised recess provides positive experiences for students, e.g. social and cognitive benefits. However, if the recess time is carried out without supervision, bullying can cause obstacles to prevent positive outcomes. Therefore, students' safety becomes an important prerequisite in the process of recess implementation (Kroeker, 2022).

Amutio (2006) admits that walking, enjoying nature, sleep and regular physical activities ensure full relaxation (Amutio, 2006). Pellegrini & Smith believe that it is essential that breaks take place in the fresh air (Pellegrini & Smith, 1993, 51). Outdoor breaks are regularly implemented in Finnish schools where students have a 75-minute break every school day, most often outdoors. During these breaks students engage in both practical lessons and physical activities to promote a healthy lifestyle. Analyzing the importance of physical activities, it can also be considered that students engage in physical activities in sports and health lessons, but recess breaks cannot be replaced by sports lessons, because both breaks and sports classes promote a healthy lifestyle and improve learning habits (Ramstetter

et al., 2010). There are also educational institutions in Latvia that have planned at least one break that is longer in order to organize outdoor activities, where there are sports activities both: guided by the teacher and students` self-guided. These outdoor breaks can be also short walks to promote movement and relaxation. During outdoor breaks students can make observations about processes in nature in different seasons etc. Thus, recess breaks can become a learning environment as well (Ramstetter et al., 2010); (Parrish, Okely, Stanley, & Ridgers, 2013). Students` questionnaire analysis done within the current research (A Mann-Whitney U test) revealed that respondents who think that they are in the most of the cases able to concentrate during learning process, are more likely to agree with the statement that they want to do physical activity outdoors during breaks (Median 4, IQR 2) than respondents who quite often are unable to concentrate (Median 3, IQR 2.5, p=0.002).

Wood & Freeman -Loftis (2015) believe that it is important for students to interact with other students during the recess breaks, while emphasizing that it is essential to plan activities during recess breaks. For example, the teacher can teach the students a new game or bring up a topic during the break. Structured breaks also provide an opportunity to build a positive relationship between the student and the teacher (Wood & Freeman-Loftis, 2015). While an unstructured break greatly enhances creativity (Murray, et al. 2013). Free play (Murray, et al. 2013) and student self-directed activities (Parrish, Okely, Stanley, & Ridgers, 2013) also become particularly useful for recess during breaks.

However, if during the break students spend their time doing self-selected activities indoors or outdoors, the presence of the teacher becomes especially important. The presence of a teacher can reduce and prevent inappropriate and aggressive behavior, which can manifest as both physical and emotional abuse.

Ability to concentrate as a prerequisite for a successful learning process

The project "*School2030*" emphasizes the need for breaks in the learning process to develop students' concentration skills (Skola2030, 2018). The ability to concentrate can be described as focusing attention on the performance of a specific task to achieve a goal. The ability to concentrate promotes productivity and improves the ability to learn, remember information much faster and easier, as well as control one's own thinking processes (Jerrell, McIntyre, & Park, 2015). When a person concentrates, he directs himself towards a specific goal without thinking or focusing on external irritants. Concentration is one of the most important aspects of a successful learning process (Sampaio & Almeida, 2018). Belickis emphasizes that "concentration is primarily a mental process that takes over the child's entire personality, and at the end of this mental process, children radiate joy and happiness" (Beļickis, 2001, 82).

Sampaio and Almeida (2018) also declare that the meaningful use of technologies in the learning process, including recess breaks, increases students' motivation and their ability to concentrate. However, to achieve the goal of promoting students' ability to concentrate, cooperation between the teacher and students becomes important (Sampaio & Almeida, 2018, 1560). Zoogman, Goldberg, Hoyt, & Miller (2014) consider that activities aimed at mindfulness practice become essential during the breaks (such as breathing exercises, self-reflection, etc.) to promote concentration skills (Zoogman, Goldberg, Hoyt, & Miller, 2014). Mindfulness practices also activate students' internal resources (Zenner, Herrnleben-Kurz, & Walach, 2014). While Amutio (2016) emphasizes the need for physical activities and the influence of the social environment on developing concentration skills.

Analysis of the impact of recess breaks on students' ability to concentrate

To clarify the impact of recess breaks on students` concentration abilities, students (4th to 9th grade students were interviewed (N=107)), teachers (N=20) and parents (N=64) surveys were carried out in order to find out the respondents' opinion about the quality of breaks and presence of recess in them. Only 20 primary school teachers participated in the survey (119 primary school teachers were asked to answer the questions of the questionnaire)). Survay was carried out from 16/12/2022 till 11/01/2023.

Analysing parents` answers about opportunities to spend breaks in the best way, the most often (35 times) walks, movement and physical activities were mentioned. Also parents have mentioned interaction, talking, communicating with peers, etc. (20 times); the importance of breathing fresh air was highlighted 19 times. 13 parents admitted that they would prefer their children not to use smart devices at all during the breaks. Majority of the parents believe that the activities during the breaks should involve being active: wide variety of physical activities, while only 5 parents have mentioned that their child/children needs/need silence. Less than a half of the parents believe that a break without studying, without tension and special organization is necessary, while ¼ of the respondents have an opposite opinion: during the break students should repeat the material for the next lesson, check whether the homework has been completed and prepare for the next lesson.

Analysis of students` questionnaire (The Mann-Whitney U test) reveal that respondents who believe that time durinig the breaks is not exactly a time for recess rate their ability to concentrate in the learning process lower (Median 7, IQR 2.5) than respondents who believe that breaks should be spent only for the recess (Median 8, IQR 2.5, $p=0.009$). This confirms theoretical finding on the need for mindfulness practice (Zoogman et al. 2014) to improve students' understanding of opportunities for the most productive way to spend a break as well as about learning itself. While the Kurskal-Wallis test revealed that respondents who believe that using of smart devices are not a quality way of spending the break study at a lower grade (Median grade 7, IQR 2) than the respondents who believe that using of smart devices offers a quality time during the breaks (Median grade 8, IQR 1.5, $p=0.041$). At the same time Spearman correlation revealed a negative correlation between the respondent's class and the ability to concentrate during lessons ($\rho=-0.342$, $p<0.001$): the subjective evaluation of the ability to concentrate during lessons decreases as the respondent's class increases.

Teachers` questionnaire analysis highlights the respondents opinion that students spend too much time on their gadgets. Some respondents even admitted that their students "do not let their smartphones out of their hands during breaks" and therefore "students are unable to concentrate during the lessons. 7 respondents-teachers believe that the main reason why students are unable to concentrate during lessons is the lack of interest. 4 respondents believe that students keep thinking about the issues not related to the topic of learning (e.g., social networks, games and other issues related to using of gadgets were mentioned by the respondents). 3 respondents mentioned that students are already tired in the morning when they arrive to school and thereone of the reasons could be the lack of sleep.

Conclusions

Recess breaks can be structured or unstructured time for rest. Breaks can be spent on doing sports, playing chess, playing and socialising with peers indoors or outdoors. It must be admitted that there is a lack of understanding of the necessity for recess breaks, as well as the possibilities, and opportunities to spend breaks as teacher`s attention can be paid only on knowledge acquisition during the lessons, while the time during the breaks quite often is up to the students themselves.

Nowadays, it is becoming important for students to take responsibility and to be actively involved not only in their own learning process, but in the planning of the breaks as well Recess breaks are becoming important to enhance students' concentration and motivation. The necessity for individual recess strategy gains importance as well. It is essential to develop a range of opportunities at school for taking recess breaks, thus, integrating recess breaks into individual learning habits.

The analysis of students' survey has emphasized that students more often prefer listening to music or socializing during the recess breaks. While parents' questionnaire highlighted the necessity for their offsprings to spend more time outside in fresh air, which could help their children to better concentrate during the lessons. While teachers` survey analysis revealed that students` concentration is better if students are more interested in a particular subject.

Awareness of the different opportunities for spending time during the recess breaks, e.g. different authentic activities, becomes an important issue. Such activities include the development and improvement of individual strategies of breaks, as well as authentic activities for recess. Thus, the necessity for individual recess strategy gains importance as students' interest, learning habits and style, strengths, learning goals etc. are unique and different.

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THE POSSIBILITIES OF DEVELOPMENT OF THE CHILD'S CREATIVITY AND ENTREPRENEURSHIP IN A PRE-SCHOOL

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Abstract. *Today's rapidly changing era and the resulting demands bring into focus aspects related to children's education already from preschool, as this is the age when the basic qualities are formed and the foundations are laid for skills that are important for future development and self-fulfillment. The creativity and entrepreneurship of a preschool child is the ability to create new ideas and look for alternative solutions for their implementation, the readiness to act and finish what has been started, overcoming obstacles and showing initiative. The aim of the paper is to analyze the possibilities of development and assessment of the child's creativity and entrepreneurship in a preschool educational institution. The paper identifies the criteria and indicators for the assessment of the child's creativity and entrepreneurship, offers a model for the development of this skill in a preschool educational institution, and analyses the results of its approbation.*
Keywords: *child, creativity and entrepreneurship, preschool.*

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Introduction

Preschool age is particularly important for the development of an individual, as the significant characteristics and skills are being formed during this period of time that lay the foundation for future development and self-realization. Preschool education is one of the main factors that influence the lifepath and future direction, taking into the account that during this period a child demonstrates the highest level of learning capabilities (Sarıkaya & Coşkun, 2015). Regulations Regarding the State Guidelines for Preschool Education and the Model Preschool Education Programmes (Ministru kabinets, 2018) underline that the content of preschool education represents the values and virtues, the knowledge, understanding, and basic skills in seven study domains and six transversal skills, including creativity and entrepreneurial skills that can be successfully combined with other transversal skills. The OECD research (2020) notes the role of quality preschool education in the context of the child's future development - if a child is provided with a quality education programme from an early age, there is a greater chance that such an investment will create improved conditions for the child's future and better opportunities for growth and development as he/she grows. The trajectory of personality development has an impact on the potential of creativity – being more creative, children are more independent, have greater psychological resilience and are more capable of regulating their emotions. Therefore, it is important that the objectives chosen in the educational process and the strategies applied include aspects related to personality development and stimulation of creativity (Krumm, Lemos, & Richaud, 2018).

In line with the aim of implementing the content of preschool education, the focus is on the inquisitive, creative and joyful child who works actively and independently, learns with interest and joy, gaining experience about himself/herself, others, the surrounding world and mutual interaction in it (Ministru kabinets, 2018). The aim of the implementation of the educational content includes an essential knowledge about learning with joy and interest, which emphasizes the

importance of strengthening positive associations in a child about the learning process, as these associations have an impact on the child's future point of view; the transversal skills acquired during primary school form the basis for the child's learning habits in the future. Nowadays, learning is a lifelong journey, so it is necessary to stimulate this awareness in children and develop the transversal skills that are considered the cornerstone of preschool education and naturally complement each other; their development can take place through a diverse set of activities, and they must be skilfully integrated into the educational process.

Creativity and entrepreneurship are among the key transversal skills. They combine a set of several activities and characteristics and manifest themselves when a child invents several options how to perform regular activities, shows initiative, learns to be aware of himself/herself as an active and creative personality, wants to acquire new skills (Ministru kabinets, 2018). The competences also closely related to critical thinking, problem solving and self-directed learning. These competences continuously alternate with each other during the educational process, so it must be remembered that in order to develop creativity and entrepreneurship, other transversal skills must be improved as well.

The aim of the paper is to analyse the possibilities of development and assessment of the child's creativity and entrepreneurship in a pre-school educational institution.

Development and Assessment of the Child's Creativity and Entrepreneurship in Preschool

Creativity is a complex concept that can be viewed from the perspective of different fields. S. James et al. (2019) believe that creativity can be analysed in two ways: 1) as a social and communication dimension (thinking "outside the box", the ability to look at things from a different perspective, to be flexible in judgments, to see patterns and to do something new); 2) as an important element of mobility (social development, economic development); in the first case, it is also applicable to preschool and promotes personality development; in the second case, it is aimed at sustainability. Teachers can be the ones who recognize children's creativity (Vincent-Lancrin, González-Sancho et al., 2019).

Creativity includes the ability to demonstrate flexibility, ease (fluency), originality and elaboration, where:

- flexibility refers to the ability to switch from one approach to conceptualizing ideas and thoughts to another,
- ease (fluency) describes the individual's ability to generate multiple ideas related to the given concept or idea,
- originality refers to the ability to create new, unprecedented ideas that can essentially be perceived as a creative process,
- elaboration means the ability to generate, add to and implement ideas, hence it is in line with entrepreneurial skills in the context of the competence approach (Tafuri & Saracho, 2003).

The qualities of a creative personality are self-confidence, courage, passion, motivation for self-expression and personal growth (focus on process rather than outcome) and tolerance for the unclear and complex. In childhood, the potential for creativity is observed and identified for everyone, but it is clear that cultural norms and the environment can promote or hinder the development of creative qualities. Therefore, it is essential in preschool education to identify and assess the factors that influence the development of children's creativity and to work actively to create a safe environment and stimulating conditions that encourage children to express their creativity in as many different ways as possible (Briška & Kalēja-Gasparoviča, 2020).

Creative activity is based on three components: 1) domain-relevant skills, 2) processes related to creativity, 3) intrinsic motivation. Domain-relevant skills refer to the set of potential answers of an individual, from which the new answer is (or will be) created, as well as the amount of information available to the individual against which the new answer will be evaluated. This amount of information represents facts, principles, opinions, knowledge of models, paradigms, technical skills, and other specific domain-relevant skills. The way this information is organised plays an important role in the creative process, i.e., knowledge that is categorised according to general principles is more useful and applicable in the creative process than specific facts with narrow application (Ruscio & Amabile, 1996).

There is an important insight that should be taken into account in the context of preschool education - the processes and creativity-related elements are influenced by training or experience in generating ideas; in the case of both mentioned components, there are hereditary aspects that have an influence, but the environment also plays a significant role; the aspects of environmental impact can be developed or applied, and they need be enhanced (Ruscio & Amabile, 1996).

Finally – intrinsic motivation, which is the most important component in a creative activity, because skills are not comparable to intrinsic motivation; skills alone may not be enough to perform a creative activity (Ruscio & Amabile, 1996).

Creativity is related to imagination, which is considered one of the key abilities that contribute to the effective use of creative potential. From an early age, it is necessary to use methods and techniques that trigger activities for the development of imagination (Jankowska & Karwowski, 2015). Imagination is the ability to think of things as they might be. It is a source of invention and innovation; the ability to enrich rational thinking; the ability to think about the possible and the possibilities - not so much about the existing. Imagination is equally important in both art and science related activities, and it should be integrated throughout the curriculum (Egan & Judson, 2016).

It is concluded that creativity in preschool is a child's ability to create new ideas based on imagination and experience, as well as interaction with the environment. This process involves the ability to look "outside the box", be flexible and keep an open mind. A creative personality is characterized by self-confidence, courage and motivation. Intrinsic motivation is particularly noteworthy because it cannot be replaced or compensated for by skills. The creative process is positively influenced by training in generating ideas: this is an aspect that preschool education can provide excellently. The role of the environment is significant, and a preschool teacher can create the right conditions for the development of creativity in a child through awareness and knowledge.

The development of entrepreneurial skills at preschool age is an essential stage in the educational process. As A. do Paco and M. João Palinhas (2011) conclude in their research, entrepreneurship programs and education help children develop qualities such as a sense of responsibility, creativity, increased awareness of themselves and their environment. K. Schmidt-Hönig and G. Pröbstl (2020) claim that the improvement of entrepreneurial skills in the educational process at an early age can stimulate and promote the child's development processes. M. Lackéus (2015) states that the integration of entrepreneurial aspects into the educational process and curricula is necessary from an early age. It is mentioned that the preferred stage of education at which it should be started is the preschool and primary school age. Empowerment of entrepreneurial abilities refers to the promotion of particular characteristics, skills and behaviour patterns in a child, for example, the ability to notice one's own potential, to communicate effectively, to regulate emotions, to be flexible when making decisions (Suzanti & Maesaroh, 2017). According to M. Lackéus (2015), every child can and should develop the ability and interest in creating added value for the benefit of other people, which is ultimately the central idea of

entrepreneurship. The ability to create added value is a competence that every person needs in today's society, regardless of the particular person's career path; starting a business is just one of the ways to create added value in society. L. Suzanti and S. Maesaroh (2017) mention several qualities that are considered relevant; some of them are listed below:

- the ability to take risks, accept challenges, show courage,
- being flexible – the ability not to give up in the face of difficulties, to find alternative ways to reach the goal,
- the ability to demonstrate creativity – thinking "outside the box", the ability to come up with a new and unprecedented solution, which differs from the existing one,
- innovation, creativity – the ability to use creativity to provide solutions to problems and create opportunities and improvements,
- communication skills – the ability to communicate actively, to be sociable, to fit into a group of people, to work together with others in the same group,
- action-oriented attitude – showing initiative, the ability to act even before an undesirable event occurs, the capacity to be proactive,
- willingness to put in the work – behaviour that demonstrates the individual's ability and willingness to finish what he/she has started, to overcome the obstacles encountered during the process.

Entrepreneurship is essentially about the implementation of creative ideas; it is the ability to create and achieve something new, different and unprecedented through the process of creative thinking and innovative actions (creativity) (Suzanti, Maesaroh, 2017); it is a competence that helps to create added value to the surrounding people (Lackéus, 2015).

The analysis of definitions shows that creativity and entrepreneurship are complex concepts and that by looking at them from different perspectives and from the findings of different researchers, it is possible to get an insight into how many processes, skills, personality qualities contribute to the development and expression of creativity and entrepreneurship.

Creativity and entrepreneurship as transversal skills should be viewed in a complex way, assessing the impact of individual components while working on promoting their interaction; in this way, creativity and entrepreneurship can be fully and effectively encouraged from the stage of preschool education, during which it is important to help children unlock their creative potential. In addition, it should be remembered that the development of transversal skills does not take place separately, on the contrary, they complement each other; by investing resources in developing one of transversal skills, improvements and benefits are expected in the use and demonstration of other transversal skills. The development of creativity and entrepreneurship as transversal skills is unthinkable without self-directed learning, because self-directed learning requires that the individual is aware of his/her abilities, interests, learning needs, is able to determine the direction in which learning should be directed (targeted activity), and demonstrates motivation that results from the awareness of his/her interests. Self-directed learning as a transversal skill is a support point for even more successful development of creativity and entrepreneurship.

Several factors influence the development of creativity and entrepreneurship: teachers' characteristics, opinions, beliefs and attitude; their education, professional competences and experience; the physical and socio-emotional environment in the preschool education institution; pedagogical process aimed to implement the educational curriculum as well as the selected methods and approaches. These factors are interrelated; however, a teacher is substantially contributing to the environment and has the decision-making power on selecting the appropriate and diverse methods and approaches that correspond to the learning needs of a child and supports the development of creativity and entrepreneurial skills.

Regarding the development of creativity and entrepreneurship and its implementation in the pedagogical process, it is necessary to select the approach that corresponds to the age group, taking into account that various age groups can manifest these skills differently. Therefore, it is essential to consider the key characteristics of the particular age group and evaluate the real situation among children. The pedagogical approaches that are applied in the modern preschool education process recognize the environment as a contributing factor and emphasize the importance of creating encouraging conditions for learning. A child-centred learning process is focusing on the needs and interests of a child, as well as acknowledging the environment factor and promoting child's active participation in the educational process. The aspects of the development of creativity and entrepreneurship are aligned with the child-centred learning process; however, developing creativity and entrepreneurship through play is a complex process that can be divided in three levels; each level is crucial in order to effectively develop creativity and entrepreneurship.

The child-centred learning process can be implemented through play, ensuring that a child is an active participant (Grava, 2018). It is based on the constructivism theories, which state that it is necessary to build upon the child's zone of proximal development and previous experience, ensuring a balance between a teacher-led and child-led learning, as well as providing the possibilities of active learning and problem-solving that will establish new constructs (Powell & Kalina, 2009; Gordon 2009; Grava, 2018). This is represented by the levels below.

- 1st level consists of creativity, entrepreneurship and self-directed learning – these are the skills, competences and knowledge that help a child to establish positive habits and thinking patterns; as a child becomes the adult, the set of these skills and competences will allow the individual to apply them as the situation requires (Ho & Lim, 2020). The level of creativity, entrepreneurship and self-directed learning can differ among children; it should be taken into account when planning play activities and ensuring child-centred learning process (Grava, 2018).
- 2nd level consists of:
    - preconditions (child's curiosity, internal motivation, readiness to participate) that are closely related to the skill development level as defined in the 1st level,
    - methods and approaches selected by a teacher, based on the characteristics of the particular age group, child's interests, aspects of the preschool education process, existing preconditions,
    - assessment – a clear and understandable feedback that complies with the principles of assessment in preschool education (Skola2030, 2020) and provides an objective information that will help a child in the further learning process.
- 3rd level encompasses the physical environment (interior, the availability and diversity of materials) and the socio-emotional environment (peers, teacher's role and the quality of the teacher's performance).

The proposed model reflects cyclicality: a child gains new experience with every acquired skill in relation to entrepreneurship, creativity and self-directed learning due to the fact that a teacher has prepared the environment with new materials and selected new methods and approaches. By providing the assessment and ensuring the child's active participation, a new, objective information in a form of a feedback continues the child's journey of development, exploration and expression.

Methodology

During the approbation of the model, the pedagogical activity was purposefully implemented by organizing play-based activities in line with the curriculum following R. Gagne's 9 learning events (Gagne, 1970) for the development of creativity and entrepreneurship. Depending on the progress and results of the learning process, a teacher can conclude what has been successful, what could be added and make corrections and improvements in the next month's plan and/or within another topic to promote transfer.

In order to evaluate the effectiveness of the model and based on the findings of the literature review (Vincent-Lancrin et al., 2019; Suzanti & Maesaroh, 2017; Briška & Kalēja-Gasparoviča, 2020; James et al., 2019), a form for the assessment of children's creativity and entrepreneurship was developed according to the established criteria:

- creativity (indicators characterizing the criterion – imagination, "thinking outside the box", flexibility, fluency, originality),
- self-directed learning (indicators characterizing the criterion – awareness of individual capabilities and interests, determination, intrinsic motivation, independent action),
- entrepreneurship (indicators characterizing the criterion – acceptance of challenges, generation of innovative solutions, the ability to act, the ability to finish a task, presentation skills).

The development of creativity and entrepreneurship is based on the child's activity level during various play-based activities manifesting innovation, initiative, independence etc. The activity level is described by its intensity (Ušča & Ļubkina, 2012), and it indicates the level of the development of creativity and entrepreneurship. The following levels are identified:

1. activity is not observed,
2. passive activity: activity is expressed rarely; a continuous encouragement or help from an adult figure is needed to initiate activity,
3. fragmentary activity: an encouragement or help from an adult figure is needed occasionally,
4. regular activity in familiar situations: can be observed regularly in familiar situations; an encouragement or help is needed occasionally in new situations,
5. continuous activity: expressed regularly in various situations.

13 children aged 5 to 6 years and two preschool teachers who carried out the assessment participated in this research. The assessment took place at the beginning and at the end of the approbation. The data obtained were coded and processed in the SPSS software.

Results

The results of the Kendall correlation test demonstrate a strong correlation ($r > .7$) between the criteria (creativity, self-directed learning, entrepreneurship). These criteria are interrelated; if indicators of one criterion are improved, the others will improve as well. Self-directed learning skills are enhanced in almost any research area. Indeed, creativity might not always be in the centre of attention, however, by improving self-directed learning skills in, for example, math, the development of creativity is also supported, which is indicated by the strong correlation ($r=.770$). The strongest correlation is between creativity and entrepreneurship ($r=.901$). The results conclude that the criteria are selected correctly and are appropriate to assess the development of creativity and entrepreneurship among five and six-year-old children.

One of the key questions of the empirical part was to determine if the application of the proposed model in the practical pedagogical activity was effective. The Wilcoxon test was used for this purpose (Table 1).

Table 1 ***The assessment of creativity and entrepreneurship criteria and indicator development***

Criterion	p	Indicator	p
Creativity	.000	Imagination ("thinking outside the box")	.000
		Flexibility	.000
		Fluency	.000
		Originality	.000
Self-directed learning	.000	Awareness of individual capabilities and interests	.000
		Determination	.000
		Intrinsic motivation	.000
		Independent action	.000
Entrepreneurship	.000	Acceptance of challenges	.000
		Generation of innovative solutions	.000
		Ability to act	.000
		Ability to finish a task	.000
		Presentation skills	.003

All criteria and indicators (with the exception of *presentation skills*) have value p=.000, which indicate statistically very significant improvement. The indicator *presentation skills* (p=.003) has statistically significant improvement. The results show a positive rank: the criteria *creativity* and *entrepreneurship* show a positive rank in all 26 cases, while the criterion *self-directed learning* shows a positive rank in 25 cases. To sum up, the proposed model, including the author's developed methodological material, supports the development of creativity and entrepreneurship.

The average values of the indicators (Frequency test) at the beginning and at the end of research also show positive dynamics.

The average value has increased more for *acceptance of challenges* (from 3.08 to 3.96) and *fluency* (from 2.69 to 3.81), which proves that regular change of different techniques and methods, in which a child is the main participant, contributes to the development of the aforementioned indicators. For children, taking on challenges becomes a daily routine, and prior knowledge and skills help them to complete tasks more easily. The average value of *presentation skills* and *ability to finish a task* has not grown so fast. The progress of some indicators takes longer for the average value to grow significantly. Considering that the duration of research was one month, the results of the frequency test could increase over a longer period of time.

The results of the Kendall correlation test (Table 2) demonstrate that the relationship between all indicators is moderate (,4 < r < ,7) or strong (r < ,7), for example, *fluency* improves more rapidly in comparison to *acceptance of challenges* (r=,776) *awareness of individual capabilities and interests* (r=,692) and other indicators, which demonstrate that the development of creativity and entrepreneurial skills is a complex and ongoing process: the improvement of one indicator will cause increase in other indicators as well (Table 2).

Table 2 ***The results of the Kendall correlation test - indicators***

	Imagination	Flexibility	Fluency	Originality	Awareness of capabilities/ interests	Determination	Intrinsic motivation	Independent action	Acceptance of challenges	Generation of innovative solutions	Ability to act	Ability to finish a task
Flexibility	.623											
Fluency	.550	.757										
Originality	.748	.672	.552									
Awareness of individual capabilities and interests	.657	.692	.659	.694								
Determination	.558	.619	.671	.718	.790							
Intrinsic motivation	.657	.692	.659	.652	.731	.767						
Independent action	.714	.583	.571	.689	.821	.809	.767					
Acceptance of challenges	.576	.807	.776	.585	.710	.621	.614	.617				
Generation of innovative solutions	.815	.526	.525	.845	.695	.679	.690	.785	.523			
Ability to act	.678	.852	.655	.805	.780	.644	.714	.644	.675	.665		
Ability to finish a task	.597	.460	.605	.629	.606	.745	.706	.735	.530	.710	.513	
Presentation skills	.661	.636	.518	.838	.694	.707	.690	.661	.543	.683	.783	.690

The Mann-Whitney U test was used to find out whether the child's gender and age affect the results and whether there are differences in the assessments of children's creativity and entrepreneurship if two teachers conduct the assessment separately. The test was applied to analyse the results obtained both at the beginning and at the end of research.

At the beginning of research, the Mann-Whitney U test was conducted, and the statistically significant differences identified are summarized in Table 3.

Table 3 ***Results of the Mann–Whitney U test at the beginning of research***

Indicator	**Differences depending on the:**					
	Child's gender		**Child's age**		**Surveyor**	
	At the beginning	At the end	At the beginning	At the end	At the beginning	At the end
Flexibility	-	-	-	.020	.008	.024
Fluency	.034	-	.040	.045	-	-
Intrinsic motivation	-	.034	.046	-	-	-
Acceptance of challenges	-	.037	-	-	.006	-
Ability to finish a task	.042	-	-	-	-	.008

In contrast to the beginning of research, no statistically significant differences depending on the child's gender were found (p>.05) in the assessment of the indicators *fluency* and *ability to finish a task*, but they were found in two other indicators:

- *determination* (p=.034): the results show that girls are rated as more determined (Mean Rank 9.85) than boys (Mean Rank 15.78),
- *intrinsic motivation* (p=.037) is higher in girls (Mean Rank 15.75) than in boys (Mean Rank 9.90).

Girls are more creative; they like beautiful results, so they are more determined and motivated to achieve beautiful results. Boys are typically interested in specific areas, and they prefer activities with competitive elements, so a teacher may ask them not only to build a ship, but also a ship with the largest sail possible or one on which a bigger number of riders can be put. In this way, boys will be more motivated and determined to achieve results.

As at the beginning of research, statistically significant differences depending on the child's age were found in the assessment of the indicator *fluency* at the end of research, moreover, they became more significant. As before, 6-year-olds are rated higher (Mean Rank 15.33) than 5-year-olds (Mean Rank 9.38). Rapid development occurs at this age. Although children are from the same age group, 6-year-old children are still able to perceive information more easily and quickly. 5-year-old children are not yet able to perceive tasks quickly enough, there is confusion at the beginning of an activity, and their reaction is slower.

At the end of research, statistically significant differences depending on the child's age had disappeared in the assessment of the indicator *intrinsic motivation*, but they were found in the assessment of another indicator - *flexibility* (p=.020), which was not observed at the beginning of research. It is possible that at the beginning of research, surveyors thought that 5-year-old children were able to be flexible enough, but this indicator is related to fluency, therefore, when different methods and techniques for the development of creativity and entrepreneurship actively change, it is more difficult for younger children to change their way of doing things. Also, the assessment of the indicator *fluency* shows a higher rating for 6-year-old (Mean Rank 15.72) than for 5-year-old (Mean Rank 8.50) children.

Both at the beginning and at the end of research, there are statistically significant differences depending on the surveyor in the assessment of two indicators, which shows that any assessment is subjective. Although teachers work in the same group and implement the content according to the same plan, their view of the child's development is different. The results allow us to assume that the teacher's personality, competence and assessment play a significant role in the development of the child's creativity and entrepreneurship.

Conclusions

1. Creativity and entrepreneurship of a child of the preschool age can be defined as the ability to generate new ideas and look for alternative solutions to implement them, the willingness to act and finish what has been started, overcoming obstacles and showing initiative.
2. The following criteria and the indicators characterizing them can be used to assess the creativity and entrepreneurship of 5-6-year-old children: creativity (indicators – imagination, thinking "outside the box", flexibility, fluency, originality), self-directed learning (indicators – awareness of individual capabilities and interests, determination, intrinsic motivation, independent action) and entrepreneurship (indicators – acceptance of challenges, generation of innovative solutions, the ability to act, the ability to finish a task, presentation skills).
3. The basis of the development of creativity and entrepreneurship is the child's activity in various play-based activities. The intensity of the activity indicates the level of development of creativity and entrepreneurship; five levels can be applied to assess it: 1) activity is not observed, 2) passive activity, 3) fragmentary activity; 4) regular activity in familiar situations. 5) constant activity. The more often a child is active, the higher is the level of development of the child's creativity and entrepreneurship.
4. The analysis of the approbation results of the model for the development of children's creativity and entrepreneurship shows that the established criteria (creativity, entrepreneurship, self-

directed learning) and the indicators characterizing them are closely correlated, which indicates that the development of creativity and entrepreneurship takes place in a complex and continuous way, as the improvement of one component (criterion or indicator) contributes to the increase of other components.

5. The approbation results of the model for the development of children's creativity and entrepreneurship indicate positive development dynamics (the Wilcoxon test results show $p<.05$ for all criteria and indicators), which proves its effectiveness and possibilities of use in preschool education.

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LIFELONG GUIDANCE AS A TOPICALITY FOR THE PROMOTION OF THE LIFELONG AND LIFEWIDE MULTIDIMENSIONAL CAREER DEVELOPMENT NOWADAYS

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Abstract. *With the development of society and the liberalisation of the labour market, a new paradigm of lifelong guidance has entered the social sciences. Nowadays public demand for lifelong guidance services outstrips availability. The aim of the study: to substantiate the lifelong guidance nowadays, highlighting the multidimensional meaning of the concept of career, including meaning of lifelong and lifewide career. Research methods: studying, analysing and evaluating scientific literature and various types of documents; reflection on experience. The research findings allow for a conclusion to be made that the paradigm of lifelong guidance is considered a new paradigm that has gained its rapid development, popularity and relevance in the 21st century . The aim of lifelong guidance is to provide career support to people of all ages at all stages of their career development in a lifelong and continuous process. Moreover, career support is necessary on a continuous basis: in moments of career success and in moments of crisis. Provision of lifelong education is the spotlight of lifelong guidance, as it is key to successful career development and a guarantee of employment. Cooperation networks of all kinds, at both interpersonal and inter-institutional level, have an important place in the lifelong guidance system, where different types of organisations and individual support providers play their part in the overarching lifelong guidance system. The wide range of functions of a lifelong guidance system goes beyond the scope of a single career counsellor or career support specialist, emphasising collaboration between different types of professionals and different organisations as providers of career support. Lifelong guidance is a multidisciplinary and interdisciplinary process. The offer and provision of lifelong guidance, including lifelong education, take the central place in career management nowadays. In a lifelong guidance system, providers and implementers of education of all kinds are therefore seen as important parts of the system. Today, formal and non-formal education is offered by a variety of providers: different types of educational institutions (pre-schools, schools, universities, adult learning centres), non-governmental organisations, learning organisations with a high level of knowledge management, etc. Within the framework of the new lifelong guidance paradigm, it is important to respect the multidimensional meaning of the concept of career. Drawing parallels with the explanations of lifelong education and lifewide education in the social sciences, including the educational sciences, two main trends can be identified and distinguished in the explanation of the new concepts of career and in the justification of career development in the context of contemporary society: lifelong career development and lifewide career development. There may also be a third path, a combination of the both: a lifelong and lifewide career that develops throughout life.*
Keywords: *lifelong guidance, lifelong career, lifewide career, multifunctional career support, network.*

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Introduction

Nowadays, as our society evolves as an information and knowledge society, increasingly transforming into a *smart* society, there is highlighted need for *lifelong guidance*, including *lifelong education* and *lifewide education*, to be accessible to all and to every individual in society at any stage of their lives, anywhere and at any time (Doyle, 2023).

The new paradigm of lifelong guidance in the 21st century points to the fact that career development is not always linear and upward only. Career development pathways can change over a lifetime, changing occupation spheres, types, professions, ensuring the viability of each individual and the sustainability of society under conditions of continuous changes, which is

why lifelong education and lifewide education are increasingly important in a lifelong career guidance system (Barnes, Bimrose, & Brown, 2020; Jackson, 2014; Vuorinen & Watts, 2012).

Public demand for lifelong guidance services outstrips the availability. Lifelong guidance services are not available to everyone and everywhere for various reasons (physical, geographical, economic, social) and sometimes also due to a lack of awareness of the nature of lifelong guidance and of information about the existence and benefits of such services (ELGPN, 2015). By providing lifelong career guidance services, the emphasis is placed on the recognition that lifelong learning is a great value in contemporary society (Balceraite, Lubkina, & Usca, 2021).

One of the goals of lifelong career support is to promote career self-management and competitiveness of individuals in society, incl. employability under changing labor market conditions (Aylott, 2018; Soika & Vronska, 2023).

Therefore it is very important within the framework of the lifelong guidance paradigm, to respect the multidimensional meaning of the concept of career.

The publications of many authors (Guo, Restubog, Cui, Zou, & Choi, 2019; Van der Heijden & De Vos, 2015; Hirschi & Koen, 2021; Howell, Beckett, & Villablanca, 2017; Karaca-Atik, Meeuwisse, Gorgievski, & Smeets, 2023; Korna & Katane, 2017; Katane & Korna-Opincāne 2019; Michaelides, Anderson, & Vinnicombe, 2023) testify that today the meaning of the concept of career has significantly expanded, gaining a new interpretation in connection with the processes taking place in modern society and its continuous change.

The aim of the study: to substantiate the lifelong guidance nowadays, highlighting the multidimensional meaning of the concept of career, including meaning of lifelong and lifewide career.

Research methods: studying, analysing and evaluating scientific literature and various types of documents; reflection on experience.

Theoretical Research Results

The Topicality of Lifelong Career Guidance Nowadays

The lifelong guidance paradigm is considered a new paradigm in the field of career theories, which has gained its rapid development, popularity and relevance in the 21st century. The aim of lifelong guidance is to provide career support to people of all ages at all stages of their career development in a lifelong and continuous process. Moreover, career support is necessary on a continuous basis: in moments of career success and in moments of crisis. *Provision of lifelong education is the spotlight of lifelong guidance*, as it is key to successful career development and a guarantee of employment. Cooperation networks of all kinds, at both interpersonal and inter-institutional level, have an important place in the lifelong guidance system, where different types of organisations, institutions in general and individually, have their own roles to play in the overarching lifelong guidance system. The wide range of functions of a lifelong guidance system goes beyond the scope of a single career counsellor or career support specialist, emphasising collaboration between different types of professionals and different organisations as providers of career support. Lifelong guidance is a multidisciplinary and interdisciplinary process (Barnes et al., 2020; Sultana, 2008; Vuorinen & Watts, 2012).

There are some differences between the understanding of career support in the 20th century and in the 21st century (Sultana, 2008), so it is reasonable to talk about old and new paradigms of career support (Table 1).

Table 1 ***Transition from the old paradigm of career support to the new paradigm of lifelong guidance (****developed from Sultana, 2008)*

From	To
Criterion 1. The nature of career support:	
Perception of a career support as having a peripheral, secondary nature	Career support is a central and key focus, a key area for action, with responsibilities shared between government, local authorities and other cooperation partners
A set of perceptions that career support is a service industry based on applied and professional psychology	Career support has a multidisciplinary nature
Regional and national context is important in career support	Career support has an important global context in terms of cross-border activities and learner mobility across Europe and even the world
Criterion 2. Target audience for career support:	
Career support should be provided mainly to pupils, especially secondary school pupils	Career support should be provided for all lifelong learners, regardless of age, meeting the learning needs of each and every individual
Career support available for unemployed young people and adults, jobseekers	Career support should be given to all those who need to maintain (continue) their career in their chosen direction (even if successful), as well as to those who need to specify or change career direction
Career support focuses mainly on at-risk target groups in crisis situations	Career support is available to all: to society as a whole, for every individual in the career development process, including the stages of a successful career, through continuous professional development.
Criterion 3. When to provide career support:	
Career support is offered mainly at key decision points	Career support should be continuous throughout a person's life, career support has a lifelong nature
Career support has a 'curative' and compensatory function, addressing problems in career crisis situations	Lifelong learning is an important component of career support and is a prerequisite and a powerful tool for promoting career development, including supporting continuous self-directed and self-managed learning, for supporting, contributing to career self-management competences and employability skills, preparing individuals to make independent decisions throughout their lives, seeking opportunities for self-fulfilment in a changing society and a changing labour market.
Criterion 4. Where to provide career support	
Career support is offered only in institutions providing career specialist services	Career support is available in a wide range of institutions: educational institutions (e.g. schools, universities, adult learning centres), workplaces, non-governmental organisations, including leisure organisations, community and home
Career support is formally limited in time and space.	An all-encompassing, universal career support system is being created, with a wide range of career support providers and maintainers and a wide variety of their career support services, that are also accessible anywhere and anytime.

The differences between the new and old paradigms, as well as the career support available in educational institutions (e.g. adult learning centres, schools), are being explored not only by researchers but also by career support and education management professionals, including education managers and career counsellors (Kalēja & Katane, 2022; Sloka, 2022; Vāvers & Katane, 2021)

The formation and ongoing development of career self-management competences of each individual of society is one of the key objectives of lifelong guidance, so that every individual in society is able to plan and manage his or her career throughout life considering the today's changing circumstances. It is important to note that professional self-determination throughout the working life plays an important role in the self-management of career development, the results of which are as follows: 1) an individual enriches his

experience, further developing his competences in a specific field of activity; 2) or the individual decides to change the direction of his career development through lifelong learning, increasingly broadening his range of competences, which gives better chances for a non-linear, sustainable career in a context of variability (Korna & Katane, 2017; Katane & Katans, 2016; Laškova, 2016).

Several publications recognise that career support is a multifunctional process. According to the classical understanding of career support theories, there are three main core functions of career support: 1) career information, 2) career education, 3) career counselling (Jackson, 2014; Soika, 2015). Today, these three basic functions are complemented by other functions within the lifelong guidance system: 1) research (personality research, labour market research and/or other case study) and diagnostics (client profiling), 2) lifelong learning, including adult education, continuing professional development offer and its management, 3) promotion of the development of career self-directed competences, incl. promotion of the development of employability skills, promotion of the development of independent lifelong learning self-management competences; 6) coordination and 7) evaluation of career support services, 8) promotion of cooperation and supporting all kinds of networking, etc. (Barnes et al., 2020; Jaunzeme, 2013; Katane & Katans, 2016; Katane & Korna-Opincāne, 2020; Sultana, 2008; Vuorinen & Watts, 2012).

In a lifelong guidance system, several parties work in balance, each with their own tasks, goals and benefits in delivering a wide range of services. ***Lifelong guidance is therefore a multifunctional system of cooperation between several institutions and individuals***, where cooperation and networking are very important. It is particularly important to see lifelong guidance in the context of the key principles of lifelong education and the resulting challenges, as well as career support for different target groups (CEDEFOP, 2005):

- facilitating people's learning and career planning in line with their life goals, which are related to their competences, interests, *education* and labour market offers;
- supporting educational institutions to develop the skills to motivate and attract pupils, students and trainees who are *able to organise the learning process themselves*, set their own career goals and self-manage themselves to achieve these goals;
- supporting businesses and organisations to ensure a motivated and flexible workforce that can adapt to change and deliver positive results through *active and voluntary participation in the learning process*, both inside and outside *educational institutions and workplaces*;
- providing career support for policy makers, pointing the way and the means to set and achieve broader policy objectives;
- supporting society as a whole and each individual in the context of local, regional, national and European economic development, by promoting employment, career development, tailored to each individual's abilities in a changing economy;
- multifunctionality of career support as a prerequisite for society development, in which individuals actively develop their personal, social, civic and societal competences for sustainable development.

The services of career development support system are preventive, long-term measures aimed at facilitating the choice of development pathways appropriate to an individual's abilities and interests: education, professional activity, other activities to acquire and develop different types of knowledge, skills and competences. Many institutions are working in this system, and the lack of cooperation between them is seen as the major reason for the shortcomings observed in the system functionality.

The availability of lifelong education occupies the central place in the lifelong guidance system (Doyle, 2023). Lifelong education is an objective necessity for the development of individuals and society as a whole. Lifelong education is a value and an asset in today's information and knowledge society (Balceraite et al., 2021).

Given the diversity of education providers today, the range of providers of lifelong guidance could also be quite wide.

At the same time, research findings (Paipare & Stieģele, 2020) show that only 10.9% of adults aged 25-64 were engaged in lifelong learning activities in 2017, according to *Eurostat* survey. Active participation in lifelong learning was much more common for people with higher education than for those with lower levels of education. This is why lifelong guidance must become a framework in which the needs of companies and society for continuous learning and career development are growing and becoming more relevant, moreover, the technologies and methods used in lifelong guidance are also evolving and changing.

It is important to change the focus of career support, emphasising the ability of each individual in society to self-manage their career. People who have developed career self-management competence will be ready to plan, independently implement their goals and evaluate themselves: their knowledge, skills and competences, their performance in a given situation, their decision-making capacity and their ability to take responsibility for their decisions and the consequences of their actions (Katane & Korna-Opincāne, 2019). Career self-management is an important part of the competitiveness structure of the individual as a person and as a professional. In turn, promoting the development of career self-management skills and competences also contributes to the development of competitiveness (Cedere, Jurgena, & Katane, 2020, Īriste, 2018), where promoting employability, being the combination of different capabilities of an individual, plays an important role. Employability is the external manifestation of employment as an internal resource of the individual, therefore employability is a prerequisite and a guarantee of employment. In turn, employment is one of the desired outcomes of a self-managed, flexible and ever-changing career.

Employability is an individual's ability to manage, direct and change his or her career through continuous choices and decisions, as the world of work is changing rapidly: new occupations and new jobs emerge, and the need for new knowledge, skills and competences emerge along with them. These changes are inevitable, but today it is difficult to predict the exact moment when skills and competences will be most in demand on the labour market. This is why today's career self-management and employability self-development emphasise adaptability to change, flexibility, the ability to study the processes around you, the labour market, self-assess your internal resources and draw conclusions. These capacities are now beginning to emerge in the framework of employability, which could contribute to employment. Employability is thus understood as the set of abilities to find and keep a job in constantly changing and often unpredictable circumstances (Aylott, 2018; Soika & Vronska, 2023). This highlights again and again the importance of lifelong learning within a lifelong guidance framework to help each individual to self-develop and self-manage his or her career and, as a result, to promote employability as well as employment.

There are four types of employability as an individual's internal capital: human, social, cultural and psychological, which are related to career self-management and career change in response to changes around us. Psychological capital linked to self-efficacy in job search (Peeters, Nelissen, De Cuyper, Forrier, Verbruggen, & De Witte, 2017; Troshkova & Katane, 2023). In the author's view, it is one of the most important forms of internal capital, expressed in the direction of the individual as a personality and in the professional direction, which includes goals, various motives (intrinsic motivation), interests and needs, will and aspirations (ambition), which together shape employability and reflect an individual's competitiveness. In other words, the individual must want to enter the labour market, be psychologically prepared

to start work and to continuously grow and develop professionally, be psychologically prepared to face and overcome difficulties in order to find and keep a job, be able to adapt to a new environment, etc. Next is social capital: networking, knowledge, skills and competences, including social skills competences, experience of different social roles. In turn, an important component of cultural capital is the culture of work and the personal circumstances attached to the individual. This set of employability indicators becomes the basis for job search, whereas employment is the result of a job search, when a contractual relationship is established between an employer and an employee in the form of an employment contract, with job duties, remuneration, etc.

Since education is a part of a career and lifelong education is a central element of lifelong guidance, it can be concluded that ***the provision of formal and non-formal education at any stage of a person's life throughout their life is one of the manifestations of lifelong guidance. Thus, in the new lifelong guidance concept, educational institutions (pre-schools, schools, universities, adult learning centres) are among the most important providers of career support.***

The Multidimensional Concept of Career in the Context of Lifelong Guidance Nowadays

In order to be able to provide lifelong career support services according to the needs of modern society and each individual, it is important for the providers of these services to respect the multidimensional meaning of the concept of career nowadays.

Nowadays the broad, multidimensional meaning of career is linked to the many social and professional roles a person plays throughout his or her career, linking career development to the diversity of a person's life and living environment, where the focus is on career formation and development in interaction with a person's diverse life and work environment (Berlato, 2015; Hall & Chandler, 2005; Īriste, 2018).

Nowadays, the concept of ***career*** is mainly understood and interpreted in its broad sense. Some examples will follow.

- A career is the interaction between work roles and other life roles over a person's lifetime, including how these roles and related activities balance each other. A career is both paid work and unpaid voluntary work. A career is also about engaging in learning at any stage of acquiring education. (Jackson, 2014).
- A career is a set of life roles, a lifestyle, an occupation (Hansen & Gysbers, 1975; Rivera & Schaefer, 2009).
- A career is the sequence of a person's work experience over time, it is an individual's life path, his or her personal growth and development, a career is a person's individual and professional development over a lifetime. A career is an evolutionary sequence of experiences throughout a person's life (Arthur, Hall & Lawrence, 1989; Patton & McMahon, 2014).

As experience is broadly defined in contemporary definitions of careers, rather than just occupational experience, the definition implies that a career is shaped by a person's diverse experiences in different fields of human endeavour, so that careers can be viewed from different perspectives or aspects of a person's life and activities. Thus, the many dimensions of a career are also considered:

- family, including up-bringing children;
- formal and non-formal education;
- membership of various governmental and non-governmental organisations, unions and associations;
- civic participation in local and national government;

- civilian and military participation in national defence;
- spending free time in meaningful ways, taking part in different types of recreational activities (e.g. tourism, sports, motorbike clubs, artistic groups: choirs, dance groups, amateur theatre, applied arts or visual arts studios, etc.);
- other activities

that contribute to personal development, the acquisition of new social roles, the acquisition and accumulation of new experiences throughout a person's life.

As the concept of career has expanded, the notion of a ***dual career*** has entered career theories, highlighting the importance of two equally important career development lines in a person's life, which are given priority over other human activities. The broad interpretation of the concept of career allows for a wide range of combinations of pairs of human activities in the dual career framework. However, research shows that both in the early days of the dual career concept and now in contemporary interpretations, education is one of the two main strands of dual career development. This is also confirmed by one of the many definitions of a career: *a career is an individual's lifelong progression in learning and work* (Ryan & Hopkins, 2013; Watts, 2000).

Career researchers initially focused on young women raising small children in the family while also studying for their future careers. Over time, dual career research became popular in the context of athletes' ability to combine formal education in an educational institution (usually, universities have been studied) and professional development in high-performance sport, with a focus on the support of educational institutions in the development of this dual career (Amantova & Abele, 2020; Ābeļkalns, 2014; Ābeļkalns & Kravalis, 2020; Morris, Cartigny, Ryba, Wylleman, Henriksen, & Torregrossa, 2020; Wylleman, De Brandt, & Defruyt, 2020).

Experience shows that today's young people and adults try to combine their studies with other activities that are important in their lives and careers: 1) their learning and up-bringing young children in the family; 2) their learning and working; 3) their learning and succeeding in high-performance sport; 4) their learning and developing a career in the fashion industry (as a models)); 5) learning and in parallel acquiring knowledge, skills and competences in the field of national defence through practical activities in Jaunsardze (The Young Guards) or Zemessardze (The Latvian National Guard), etc.

Using transfers in dual career justification and research opens up new and broad perspectives in dual career research and the offer of dual career support services.

In relation to the above, it can be said that the broad meaning of the concept of career in contemporary career theories opens up a wide range of possibilities to study not only the dual career development of learners, but also careers in a broader perspective, thanks to new interpretations of the concept of career. In the twenty-first century, new career theories have emerged, and along with them, new career concepts, such as *multiple career*, *cross-sector career*, *hybrid career*, *spiral career*, *non-linear career*, *flexible, ever-changing career, etc*. (Arnold, 2011; Greenhaus & Callanan, 2006; Guo et al., 2019; Howell, Beckett, & Villablanca, 2017; Korna & Katane, 2017; Katane & Korna-Opincāne 2019; Michaelides et al., 2023). Let us take a look at some of these new career concepts that characterise the development of an individual's career in modern society.

- ***A multiple career*** forms when an individual develops several abilities and talents at the same time, expanding the range of competences, studying in several educational institutions or working in several professions at the same time, thus ensuring diversified personal and professional development in several workplaces, in several fields of activity. The multiple career of an individual develops in interaction with a multiple multi-contextual environment. In the context of multiple careers, a narrower interpretation of the concept has emerged, usually

referring to professional activities, i.e. ***cross-sectors career***. A cross-sectors career is more likely to be justified in terms of an individual's career in several organisations, several interrelated sectors or even completely unrelated sectors. The rationale and interpretation of this career type represents a strand of career management theory called organisational career.

- ***A hybrid career*** is also very closely related to the multiple career, where an individual has multiple activities in his or her life and is involved in multiple social groups/environments, thus having multiple social roles and social identities, as well as multiple memberships in a particular field of activity and environment. This type of career includes, for example, an individual's role as a learner in an educational institution, an individual's role as a professional in a workplace in a particular sector, and/or an entrepreneur or a company manager in another sector. In addition to all this, the individual is able to spend his or her free time in a meaningful way, and he/she is an actor performing in amateur theatre, a choir singer singing in a choir, an athlete playing sports and taking part in various amateur sports competitions, etc. It is important to mention here that, for many individuals, it is often the meaningful leisure activities or hobbies that develop their abilities and talents to a level that could already be approaching the professional level, so that their social roles in these activities become increasingly important in their careers in the perspective of a possible professional career.
- ***A flexible, continuously changing career***, which allows for combining the above career perspectives, emphasising the person's ability to be flexible and to change career paths throughout life according to one's interests and needs, thus adapting to the demands of an ever-changing labour market and to the situation in one or more specific sectors, which together ensure inclusion in today's dynamic society. Today, individuals need to be able to continuously change themselves and their careers.

The multiple interpretations of contemporary careers highlight the important insight that the sustainable development of modern societies is largely determined by the ability of individuals to be self-directed and self-managed towards their life and career goals, values and life priorities, to be mobile and flexible (Hirschi & Koen, 2021; Cedere et al., 2020), which, according to the authors, generally ensures an individual's competitiveness in today's changing environment.

Career development is nowadays interpreted and studied as a long-term, multi-stage process of self-direction and self-realisation, which can be seen in two dimensions (Katane & Katans, 2016; Katans, 2019):

- as a *lifelong* process of professional activity in *one field/sector*, with each stage of life or career development *increasing* one's *level of professional competence* through all forms of learning (formal, non-formal and informal), and possibly also increasing the *level of professional qualification* resulting from formal education; this type of professional development is closely linked to *lifelong learning*;
- as the multidimensional development of the individual as a person and as a specialist (professional development), a *multifunctional professional activity* where the individual is able to self-realise and work in *several* different professional *fields/sectors*, acquiring new social and professional roles, broadening their range of competences and acquiring several professional qualifications; this type of career development is closely linked to *lifelong education*.

Thus, two types of career development can be distinguished today: ***lifelong careers*** and ***lifewide careers***. There can also be a third path, a combination of the two, i.e. a ***career that is both lifelong and lifewide***.

In support of the above, we can refer to an important insight on the ensuring of ***sustainable career***. Sustainable career development is also a new concept in career theories, defined as the sequence of different career experiences of an individual, emphasising the cyclical nature of career development, where cycles change, ensuring continuous career development over a long-time horizon, crossing several social spaces, gaining many different experiences. Only an individual who can make decisions and take action in the face of change, who is equally capable in times of success and in times of decline or career crisis, who can give up something, who can take risks, who can start something new and unknown, can have a sustainable career. In other words, a sustainable career is a continuous process of career development that passes through different stages over time, influenced by social relationships and shaped by both personal and changing environmental conditions (Van der Heijden & De Vos, 2015; Karaca-Atik et al., 2023).

In the author's view, the explanations of sustainable career are very much in line with the notions of flexible, ever-changing careers, as well as with the notion of *a* ***non-linear career*** that emerged within *Chaos Theory of Career* with the introduction of the synergistic paradigm in the social sciences. The Chaos Theory of Career seeks and finds answers to today's global challenges. It underpins the search for new approaches to human choices in a chaotic and unpredictable *changing world.* This theory views the individual, including his thoughts and actions, in the light of unpredictable events, unusual situations and uncertainty. (Amundsons, 2016; Katane & Korna-Opincāne, 2019; Paradnike et al., 2017; Pryor, 2010; Pryor & Bright, 2007).

Influenced by the synergistic paradigm and chaos theory, the non-linear career rationale also implies that career development is not a linear process - upwards only, there can be ups and downs in career development, there can be oscillations or fluctuations between multiple career scenarios, the formation of new career branches, called bifurcation, emphasising the individual's determination and ability to find solutions even during difficult or crisis periods in their career, demonstrating the individual's competence in career self-management.

Equally important is a comprehensive career support system that is accessible to everyone, anytime and anywhere throughout a person's life. The increasing frequency of career transitions that people have to face in their lifetime creates a strong demand for lifelong guidance provision with a wide range of services to meet the needs of society. This demand is more relevant today than ever before (Vuorinen & Watts, 2012).

In order for individuals to be able to use (receive) and evaluate lifelong guidance services, as well as for organizations, including educational institutions, to be able to offer lifelong guidance services, it is important to understand the essence and multifunctionality of lifelong guidance, the multidimensional meaning of the concept of career, as well as one's place and role in the comprehensive lifelong guidance system.

Conclusions

The paradigm of lifelong guidance is considered a new paradigm that has gained its rapid development, popularity and relevance in the 21st century. The aim of lifelong guidance is to provide career support to people of all ages at all stages of their career development in a lifelong and continuous process. Moreover, career support is necessary on a continuous basis: in moments of career success and in moments of crisis. *Provision of lifelong education is the spotlight of lifelong guidance*, as it is key to successful career development and a guarantee of employment. Cooperation networks of all kinds, at both interpersonal and inter-institutional

level, have an important place in the lifelong guidance system, where different types of organisations and individual support providers play their part in the overarching lifelong guidance system. The wide range of functions of a lifelong guidance system goes beyond the scope of a single career counsellor or career support specialist, emphasising collaboration between different types of professionals and different organisations as providers of career support. Lifelong guidance is a multidisciplinary and interdisciplinary process.

The career self-management competences of individuals in society, including employability as an internal resource for job search in a constantly changing environment, are one of the key objectives of lifelong guidance, as well as the result of timely offered and accessible to everyone multidimensional career support services. Today, every individual in society must be prepared to live and pursue a career in an ever-changing world, be able to adapt to and change the environment through innovation, think independently and innovatively, make choices and decisions, and be responsible to themselves and society for the consequences of those decisions and actions. Individuals in society who have a high level of different types of competences and a wide range of experience in different social roles are more likely to be successful in today's labour market. Equally important is flexibility in thinking, communication and professional activity, as well as a willingness to continuously improve and develop as a person and as a professional, through lifelong education and lifewide education. All this determines the competitiveness of each member of society, including employability and employment as part of competitiveness, which is both a precondition and an outcome of a successful career.

The offer and provision of lifelong guidance and lifelong education take the central place in lifelong guidance. In a lifelong guidance system, providers and implementers of education of all kinds are therefore seen as important parts of the system. Today, formal and non-formal education is offered by a variety of providers: different types of educational institutions (pre-schools, schools, universities, adult learning centres), non-governmental organisations, learning organisations with a high level of knowledge management, etc.

In order to be able to provide lifelong guidance services according to the needs of modern society and each individual, it is important for the providers of these services to respect the multidimensional meaning of the concept of career nowadays.

Nowadays the meaning of career has broadened considerably. As career management theories have evolved, new career concepts and explanations have emerged that are mutually complementary and closely interlinked, objectively describing the reality of the labour market and contemporary society as a whole. New concepts are emerging in career theories: multiple career, cross-sectors career, hybrid career, flexible, ever-changing career, non-linear career, sustainable career. New career concepts highlight the importance of career self-management in the ever-changing world.

Drawing parallels with the explanations of lifelong education and lifewide education in the social sciences, including the educational sciences, two main trends can be identified and distinguished in the explanation of the new concepts of career and in the justification of career development in the context of contemporary society: lifelong career development and lifewide career development. There may also be a third path, a combination of the both: a lifelong and lifewide career that develops throughout life.

Career self-management is an important part of the competitiveness structure of the individual as a person and as a professional. In turn, promoting the development of career self-management skills and competences also contributes to the development of competitiveness, where promoting *employability*, being the combination of different capabilities of an individual, plays an important role. Employability is the external manifestation of employment as an internal resource of the individual, therefore employability

is a prerequisite and a guarantee of employment. In turn, employment is one of the desired outcomes of a self-managed, flexible and ever-changing career.

In order for individuals to be able to use (receive) and evaluate lifelong guidance services, as well as for organizations, including educational institutions, to be able to offer lifelong guidance services, it is important to understand the essence and multifunctionality of lifelong guidance, the multidimensional meaning of the concept of career, as well as one's place and role in the comprehensive lifelong guidance system.

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EDUCATION. INNOVATION. DIVERSITY (EID)

SELF-ASSESSMENT OF PROSPECTIVE ENGINEERS' CAREER MANAGEMENT IN THE CONTEXT OF QUANTUM TRANSITION THEORY IN SOCIAL SCIENCES

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Abstract. *We live in a changing and complex world open for potential personal development. At the same time, the Earth is moving to a new level, from a 3-dimensional to a 5-dimensional level. This process is called the quantum transition. Nowadays career management theories are developing and changing under the influence of the quantum transition paradigm, thus the perception of career and the understanding of career have also changed. A career covers the whole life of a person and is individually driven. So, we can speak of a self-directed personal career, which is connected with finding one's mission in life, one's vocation. So, moving into the fourth and fifth dimensions opens up more possibilities for finding your purpose: 1) motivated individual choice; 2) career management based on that choice; 3) transition from survival to mission; 4) access to the information field of the Universe; 5) discovery of new abilities – telekinesis, teleportation, clairvoyance, clairaudience, etc. The article considers the notion of the quantum transition, career, career management and the characteristics of the Generation Z from the perspective of various authors. The analysis is carried out by assessing the data acquired on the specific features of the existent career management and the possibilities which provides the current situation for the engineers-to-be. The research aim is to study the specific features of the career management of the prospective engineers in the perspective of the quantum transition. The obtained high-level results testify that engineering students have sufficient employability potential, which largely indicates their competitiveness. The obtained low-level results indicate that the students are not yet ready to lifelong learn and develop professionally throughout his life, is not ready for changes in his chosen career, which indicates a certain inflexibility in thinking and acting. It is precisely these qualities that are very necessary in self-management of a sustainable career. This means that career support services should continue to be offered to promote career self-development and self-management under changing conditions (closely related to quantum transition theory). During the formative (pedagogical) experiment, significant and very significant changes occurred in students' self-assessments according to the following criteria: students' internal and external resources, competitiveness in the chosen profession (p value = 0.005 ... 0.018). This means that during the survey, the self-assessment of internal resources according to these indicators was influenced by the information obtained during the survey from the content of the questionnaire, which allowed for a more adequate self-assessment at the end of the experiment.*
Keywords: *career, career management, career self-assessment, quantum transition, Z generation.*

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Introduction

We live in a changing and complex world, which is opened to the development of personal potential (quantum transition) on the one hand, and the same time which is threatened by Covid pandemic and the wars in the world on the other.

Latvian scientist, physicist M. Auzins (Auziņš, 2023) points, that quantum physics has its origins in ancient Greece (Thales, Democritus, Zeno). The development of modern quantum physics is linked to the work of Max Karl Ernst Ludwig Planck (the study of radiation from heated bodies). Later, the understanding was extended to quantum states of the atom, quantization of energy, i.e. discrete states of particles and radiation.

The term *quantum jump* was originally used after being introduced by N. Bohr (Haravifard, Yamani, & Gaulin, 2015), but nowadays the concept used is 'the quantum

transition phase'. Because it is believed that it is no longer possible to rationally grasp it within the framework of physical theory. The quantum transition has been occurring since 2008-2009, but was detected by scientists in the nuclear domain in 2013. Working with a particle of the hydrogen atom, the proton, they saw changes in mass, diameter and rotation speed. This affected the density of matter and the pre-existing laws of physics, which ceased to operate under the new conditions. The quantum transition is a gradual process. There are changes in the Earth's magnetic field, in the human body and in the overall development of both Earth and humans, including career management (Blackman, 2020; Boyle, 2020; Dumé, 2021).

Modern sciences are characterized by interdisciplinary and transdisciplinary research, using the transfer approach, when the phenomena, laws, causations and correlations discovered in one science are transferred and applied to research conducted in other sciences. The authors are aware of several examples when natural and exact sciences paradigms and approaches are used in social sciences, including new directions and trends of psychology. In this study, the authors, using the transfer of quantum physics in social sciences, investigated university students as prospective engineers' understanding of their career, career self-direction and self-management and future intentions in the context of a changing world. The detailed theoretical justification of the transfer approach will follow in the next section of the article.

Nowadays career management theories are developing and changing under the influence of the quantum transition paradigm, thus the perception of career and the understanding of career have also changed. A career covers the whole life of a person and is individually driven. So, we can speak of a self-directed personal career, which is connected with finding one's mission in life, one's vocation. So, accordance with quantum transition theory nowadays opens up more possibilities for finding own purpose: 1) motivated individual choice; 2) career management based on that choice; 3) transition from survival to mission; 4) access to the information field of the Universe; 5) discovery of new abilities – telekinesis, teleportation, clairvoyance, clairaudience, etc.

The research aim: to study the specific features of the career management of the prospective engineers in the perspective of the quantum transition.

Research methods 1) theoretical research methods: studying, analysis and synthesis of scientific literature and various documents; 2) empirical research methods: formative (pedagogical) experiment and reflection of personal experience.

Philosophically methodological basis of research: literature review

The philosophical-methodological basis of the study was the transfer interpretations of the Quantum Transition Theory in social sciences, presented in several scientific publications (Compagne, 2020; Goswami, 2013; Höne, 2017; Maldonado, 2019; Wendt & Mershon, 2014; Zohar, 1995; Zohar, 2021). The results of the theoretical studies collected by the authors, which were used in the preparation of the survey questionnaire to conduct the formative experiment, will follow.

The quantum physics has defined as a subfield of the physical sciences. It studies the processes of interaction of small particles – atoms and molecules – with each other and with external radiation (Auziņš, 2023).

The foundations of quantum physics in the 20th century were laid by M.Planck, A.Einstein, E.Rutherford, H.Geiger, E.Marsden, L. de Broglie, E.Schrödinger, P.Dirac, W.Heisenberg, A. Einstein - B. Podolsky - N.Rosen, N.Bohr, D.Bell etc. (Auziņš, 2023; Auzinsh, Budker, & Rochester, 2010). Quantum theory is currently the best experimentally tested in the field of physics. The main insights and research in quantum theory are reflected

in the work of scientists from different countries (Auzinsh et al., 2010; Fischer, Anders, & Saalfrank, 2022; Haravifard, Yamani, & Gaulin, 2015; Lai, 2006; Haller, Xu, Liu, & Pollmann, 2023; Serwatka, Melko, Burkov, & Roy, 2023). The quantum transition manifests at all levels (Earth, individual). The quantum transition has been identified in iron at a depth of 1000 km in the Earth's mantle (Dumè, 2021). A quantum transition is the jump from one state to another of a quantum system (atom, molecule, atomic nucleus, solid body) (Auzinsh et al., 2010). There are certain developments in the sciences that have an impact on the development and content of other sciences, including the development of society. This also applies to quantum physics (the quantum technologies we use every day). At the beginning of this century, theoretical and empirical research by scientists from different countries on the transfer of knowledge from quantum physics to the social sciences (pedagogy, psychology, community management, etc.) emerged. Other theories began to emerge around quantum physics, such as synergetic and chaos theories, which became the basis for new research in the social sciences and for extending the frontiers of quantum physics to the study of other sciences. This raises questions about the status and limits of the social sciences (Höne, 2017; Maldonado, 2019; Rigolot, 2020; Wendt & Mershon, 2014; Zohar, 1999; Zohar, 2021). The use of quantum theory ideas opens up new possibilities for social science content. Scientists also use the term 'quantum social science' (Höne, 2017; Lai, 2006; Maldonado, 2019).

One of such opportunities for using the transfer approach is the application of quantum physics discoveries, the Quantum Transition Theory, to social processes (Chang, 2009; Guts, 2021). According to the authors, the theory of quantum transition, which has already acquired the name *Quantumsociology* in the social sciences, allows to characterize the transition of society to a new quality, emphasizing the well-developed ability of young generations to forecast and predict.

Researchers emphasize the role of quantum theory in shaping relationships at different levels (human-human, human-society, human-world, human-Universe), creating new models of relationships. Quantum theory changed the understanding of the concept of reality, expanded the understanding of the content of consciousness (quantum consciousness can be applied to the whole level of society), the understanding of decision-making processes and outcomes, etc. In recent years, a large body of research in the field of neuroscience has demonstrated the link between the quantum aspect and consciousness (Campagne, 2020; Goswami, 2013; Steinberg, 2023; Schwartz, Stapp, & Beauregard, 2005). In general, quantum physics is being intensively integrated into management and communication theories, pedagogy and psychology. The social sciences transfer the following quantum physics phenomena into their fields of study: the Heisenberg Uncertainty Principle, the Bohr Complementarity Principle, discreteness, quantization, the influence of the observer on the observed (Goswami, 2013; Zohar, 2021).

The analysis of the theoretical insights into human characteristics led to the conclusion that a person's belonging to a certain level is determined by the quality of his vibrations. The higher they are, the higher the level to which the individual belongs. Of course, there will also be 3D features, as the transition is gradual and people will have features from 3D, 4D and 5D levels (Blackman, 2020; Boyle, 2020; Davies, 2017).

People focus on living the best life to enhance the vibration of the planet; they understand their mission; they are dedicated, responsible and ready to serve people and the Universe. People notice environmental changes as they move to the 5D level (it becomes more positive). We can live in any or all of these states (Davies, 2017; Settembre, 2020).

If we talk about human evolution, the quantum transition laws are at work, apart from the Universal laws. *The quantum transition* is based on the ***following laws****: the law of existence of threshold, the law of purposeful energy flow, the law of sufficient energy potential, the law of the amount of energy required, the law of sudden (instant) transition.* The

law of existence of threshold - there is an energy threshold between the different levels (the most common barrier is the "comfort zone"). To overcome this threshold, a strong internal or external impulse is needed; the energy of an internal decision or the push of external circumstances. Law of purposeful energy flow - the energy to overcome the threshold between levels must be focused, moving towards what the individual wants. You have to consciously focus your energy in the areas of your life that are important (mindfulness is the formation of consciousness). The law of sufficient energy potential - you cannot use more energy than you have in your potential. That is why we need to discover and develop our potential. The law of the amount of energy required - a quantum leap is a quantum shift in quality. Constant progress towards the top enables you to accumulate enough energy to not only make the quantum leap itself, but also to live on the next level. The law of sudden (instant) transition - if there is an impulse, a potential and a focused movement, then overcoming the threshold is independent of time. A quantum leap happens when all the factors come together at one point: strong impulse, developed potential, the right amount of energy and focused attention at the right point. The quantum leap occurs at the point when the individual is fully ready (Galceva, 2021). So, the essential thing that quantum physics brings to the social sciences is consciousness change, expansion and awareness.

Individuals need to be aware of the nature of change when managing their careers. Career management includes knowing yourself and your career options, career decision-making, career planning and the process of aligning and implementing your career. Career management skills include self-awareness, career exploration and creation skills, career planning skills, decision-making skills, coping with uncertainty (Mackay, Morris, Hooley, & Neary, 2015; Shenoy, 2020; Smith, 2022; Potgieter, Ferreira, & Coetzee, 2019). Career management is a self-directed lifelong process (Katane, Katans, & Baltusite, 2016).

Certain career management characteristics are determined by the age of the respondents. Our respondents are on average 22-23 years old. In recent years, much research has been carried out on young people within the framework of intergenerational theory. Our respondents belong to Generation Z, which was born between 1997 and 2012 (Dimock, 2019). This is the generation that is gradually entering the labour market. They are college and university graduates. There are 71 million Generation Z people in the world. They are the first generation to grow up in the digital age, so they have high expectations in relation to technology (Rubene, 2018; Meola, 2023). Researchers studying the career trends of Generation Z concluded that despite salary being one of the determinants of job choice, young people prefer interesting work (Gomez, Mawhinney, & Betts, 2020). This is in line with the dimensional characteristics stating that work is chosen according to the vocation of the heart. The key word for Generation Z is diversity, which reflects in terms of identity, values, talent and development of abilities. In future, work will require people with multiple abilities, interests and areas of expertise. The key competences highlighted are: digital tools and technology skills, entrepreneurship skills, creative skills and foreign language skills. Greater personalisation of career paths can be highlighted as a characteristic feature of a career of Generation Z. Another characteristic feature of Generation Z in search of perspective job relates to the organisations' contribution to the world, addressing important societal issues (sustainability, climate, hunger, etc.) (Gomez, Mawhinney, & Betts, 2020; De Vite, 2022). Thus, it is important for employers to highlight the attractiveness of their sector and cooperation with educational institutions; to develop diversified career development strategies and training programmes; and to match the employee to a role in the organisation. Consequently, the entry of Generation Z into the labour market is a challenge for organisations and employers.

Methodology

The methodology for self-assessment of career development and career readiness developed by the authors is based on the results of theoretical research as well as personal experience (reflexion of personal experience). Theoretical research directions, which are closely interrelated:

- application of quantum physics, including quantum theory transfers in social sciences, including personality psychology, to explain the ongoing changes in society, linking it to the beginning of a new phase in human development (Auzinsh et al., 2010; Compagne, 2020; Goswami, 2013; Haravijard, Yamani, & Gaulin, 2015; Lai, 2006; Maldonado, 2019; Scholz, Wessnigk, & Weber 2020).
- new trends in the new generations of society (theories of generational development and transformation) (Dimock, 2019; Gomez, Mawhinney, & Betts, 2020; Meola, 2023; Potgieter, Ferreira, & Coetzee, 2019).

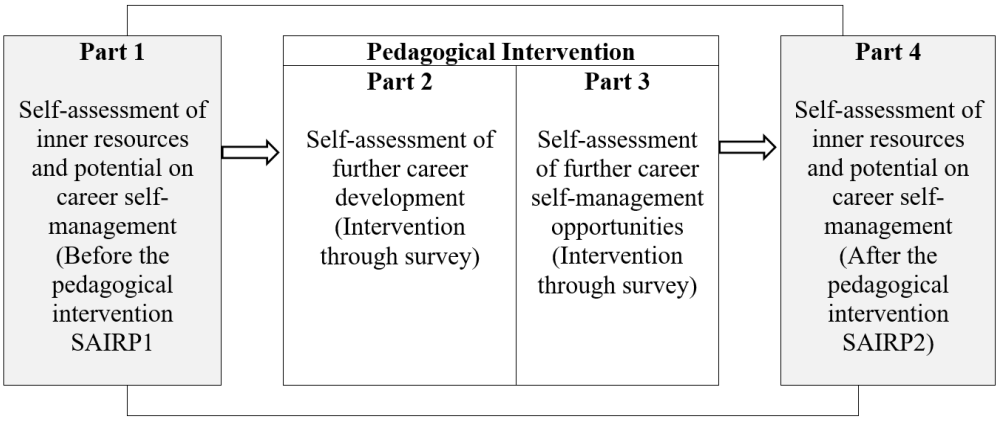
Methods of Research

To achieve the aim of the article, the following *research methods* were used: 1) theoretical research methods: studying, analysis and synthesis of scientific literature and various documents; 2) empirical research methods: formative (pedagogical) experiment and reflection of personal experience.

Data obtaining methods: questionnaire survey, but data processing method: descriptive statistics methods (Proportion coefficient, Min, Max, A, Me, Mo, Sum, values) and conclusive statistics methods (Binomial Test, Wilcoxon Test, using SPSS software).

Research period: 2022 - 2023. The 3rd study year students (prospective engineers, in total 19 respondents) participated in the research. A questionnaire developed by the authors was used for obtaining student's self-assessments in the area of career management.

The process of survey was planned as a pedagogical experiment which consisted of four parts (Figure 1). The information contained in parts 2 and 3 of the survey, in the form of formulated questions, was planned as a pedagogical intervention that affects the respondents' opinion on career self-management and its self-assessment. Therefore, the important career self-assessment questions were placed in parts 1 and 4 of the survey, which were identical because comparison of results was planned.



SAIRP1: Self-assessment of inner resources and potential before the pedagogical intervention
SAIRP2: Self-assessment of inner resources and potential after the pedagogical intervention

Figure 1 ***Structure of survey as a pedagogical experiment*** (*Created by the authors)*

The first and last (fourth) part of the questionnaire includes six self-assessment criteria: 1) my career management skills; 2) my goal orientation; 3) my readiness for unexpected

changes in my life; 4) my inner potential to achieve what I want (motivation, will, persistence, resilience, work capacity, etc.); 5) resources for my career development, incl. for my professional activity (internal mental resources: knowledge, skills, abilities, talents, competences, responsibility, experience; external resources: the demand for my profession on the labour market and a wide range of employment opportunities; financial resources, etc.); 6) my competitiveness in my chosen profession, which respondents rated on a 10-point scale (1 - very low, 10 - very high).

The second part of the questionnaire gives eight sets of alternative statements related to an individual's career. For each set of alternative statements, students had to choose only one statement from the 2 or 3 given (the one that matched their career aspirations).

The third part of the questionnaire contained 14 statements on different aspects of career and the impact of the quantum transition on career management. Each statement was rated: *yes; rather yes than no; rather no than yes; no.*

The fourth part of the questionnaire contains same criteria to the first part of the questionnaire, to be able to compare with the results obtained at the beginning of the experiment because the assessment may differ at the end of the questionnaire after the impact of the survey content on self-assessment.

Research results

At the beginning of the analysis of the results, we will present the results of the second and third parts of the pedagogical experiment (Figure 1).

● **Further career development: self-assessment of engineering students (Part 2).** As part of the developed self-assessment methodology of career self-management, engineering students self-assessed their future career development from different perspectives. The obtained results are summarized in Table 1.

Table 1 ***Results of self-evaluation of further career development of engineering students***

N	Self-Assessment Criteria	Self-Assessment Indicators	Number of choices	Proportion coefficient
1.	Necessity of career planning	You have to plan your career.	16	0.84
		You don't need to plan your career (let things happen as they will).	3	0.16
2.	Career planning competence	A student can plan his/her career.	14	0.74
		A student needs help in planning his/her career.	5	0.26
3.	Workplace status in future	State institution/enterprise.	2	0.11
		Private company.	17	0.89
4.	Planned employment status when building your career	Employer.	15	0.79
		Employee.	4	0.21
5.	Planned job location after graduation	Latvia	10	0.53
		Outside Latvia (abroad)	9	0.47
6.	Career intentions after graduation	To work in the profession chosen.	6	0.32
		Want to change your profession (you are ready to change anything in professional activities)	1	0.05
		Will work in your chosen profession, but do not rule out the possibility of changing your chosen profession at some point in your life.	12	0.63
7.	Type of job listing and payment	Fixed working hours.	6	0.32
		Piecework (willing to plan their own working hours).	13	0.68
8.	Continuing education after graduation	Will continue studies for a Master's degree.	3	0.16
		Will not continue studies for a Master's degree.	16	0.84

Source: Authors' research results
n=19

When it comes to career planning, 16 respondents (prop. coeff. = 0.84) believe that they should plan their career, and 14 respondents (prop. coeff. = 0.74) have competence in career planning. In turn, 5 respondents (prop. coeff. = 0.26) need support in building career planning competences. Today, the status of the workplace has changed. Only 2 respondents (prop. coeff. = 0.11) would like to continue working for a public institution or company, compared to 17 respondents (prop. coeff. = 0.89) for a private company. The type of employment planned for their career is also predominantly as an employer (15 choices, prop. coeff. = 0.79), compared with as an employee (4 choices, prop. coeff. = 0.21). This suggests that the trend that emerged in research on the preference of Generation Z for entrepreneurship is also reflected in the authors' research. Finding a job after graduation is another aspect of a career. Students had options - in Latvia or abroad. The data show that respondents will look for jobs both: in Latvia (10 choices, prop. coeff. = 0.53) and abroad (9 choices, prop. coeff. = 0.47). However, engineers-to-be do not rule out the possibility that they may at some point work in Latvia and then look for a job abroad. A university's ranking is driven by the future professionals who will work in their chosen profession. Only one respondent said he wanted to change profession (prop. coeff. = 0.05); 6 respondents (prop. coeff. = 0.32) think they will work in their chosen profession. In turns, 12 respondents (prop. coeff. = 0.63) will work in their chosen profession, but do not rule out the possibility of changing careers in their lifetime. Another labour market trend that emerges from the authors' study is the need to plan one's own working hours (13 choices, prop. coeff. = 0.68), and 6 respondents (prop. coeff. = 0.32) consider a job with strict limits on working hours. Every profession requires professional development, but only 3 respondents (prop. coeff. = 0.16) consider pursuing a Master's degree. This shows that young people want to be financially independent from their parents, but also to assess the relevance of the offered Master's programmes to today's labour market and the opportunities for creative activity influenced by the use of the power of thought.

● **Further career self-management opportunities: self-assessment of engineering students (Part 3).** During next step of experiment the students as prospective engineers assessed the career self-management various opportunities (Table 2).

Table 2 ***Self-evaluation of engineering students' career self-management: Binomial test results (Test Proportion: 0.5)***

N	Indicators	Groups	N	Observed Prop.	Exact Sig (2-tailed) p-value
1.	I have enough information to plan my career	Yes	15	0.79	0.019
		No	4	0.21	
2.	I think about using my skills and talents in my professional life	Yes	17	0.89	0.001
		No	2	0.11	
3.	I know the requirements applicable to a representative of my chosen profession	Yes	18	0.95	0.000
		No	1	0.05	
4.	I have the knowledge, skills and abilities required for a representative of my chosen profession	Yes	16	0.84	0.004
		No	3	0.16	
5.	I know what I want to achieve in my professional activity	Yes	16	0.84	0.004
		No	3	0.16	
6.	I know what I want to achieve in my life	Yes	18	0.95	0.000
		No	1	0.05	
7.	I like to be independent and self-reliant	Yes	17	0.89	0.001
		No	2	0.11	
8.	I try to do everything better than others	Yes	3	0.16	0.004
		No	16	0.84	
9.	After graduation, I will participate in volunteering	Yes	2	0.11	0.001
		No	17	0.89	

N	Indicators	Groups	N	Observed Prop.	Exact Sig (2-tailed) p-value
10.	I can set goals for 1-2 years according to my resources (including energy)	Yes	12	0.63	0.359
		No	7	0.37	
11.	I always achieve my goals	Yes	3	0.16	0.004
		No	16	0.84	
12.	Whatever I do, I think about saving my energy	Yes	12	0.63	0.359
		No	7	0.37	
13.	I have heard of the quantum transition in career management	Yes	16	0.84	0.004
		No	3	0.16	
14.	I know how the quantum transition affects personal career management	Yes	17	0.89	0.001
		No	2	0.11	

Source: Authors' research results
n=19

The results of the binominal test indicate that 15 respondents (prop. coeff. = 0.79; p =0.019) have sufficient information for career planning. However, 4 respondents (prop. coeff. = 0.21) lack it. In the field of careers, it is important to put your skills and talents to work: 17 respondents (prop. coeff. = 0.89; p =0.001) understand their importance, but 18 respondents (prop. coeff. = 0.95; p =0.000) also know the requirements of their chosen profession. The majority of respondents (16 choices, prop. coeff. = 0.84; p =0.004) believe that they have the knowledge, skills and abilities needed to enter the engineering profession. People move forward when they are aware of what they want to achieve in their professional activity (16 choices, prop. coeff. = 0.84; p =0.004) and in life in general (18 choices, prop. coeff. = 0.95; p =0.000). This shows that future engineers are thinking about what they want and need to achieve in their careers and in life. In the twenty-first century, the personality must be independent and autonomous. Respondents (17 choices, prop. coeff. = 0.79; p =0.001) also like to be independent and self-reliant. Only 3 respondents (prop. coeff. = 0.16; p =0.004) try to do everything better than others. Two students are currently considering volunteering. When setting goals, one should be aware of his resources, including the amount of energy needed to achieve them. Twelve of future engineers (prop. coeff. = 0.63; p = 0.359) can do this, setting goals for 1-2 years. Sixteen respondents (prop. coeff. = 0.63; p =0.004) say that they do not always achieve their goals, and that they need the knowledge and skills to achieve their goals. In scientific papers on Generation Z, the idea of saving energy came up. In a study by the authors, 16 respondents (prop. coeff. = 0.63; p =0.359) also think about saving energy when doing any work. The quantum transition is a 21st century phenomenon that affects both the individual as a whole and their career management. The have heard of quantum transitions in career management (16 choices, prop. coeff. = 0.84; p =0.004) and are aware of the impact of quantum transitions on an individual's career management (17 choices, prop. coeff. = 0.89; p =0.001). Thus, career issues are relevant to young people and they need support on career management in the new conditions.

● ***Results of formative (pedagogical) experiment (Part 1 and Part 4 and comparing their results).*** The survey based on the developed methodology served not only as a tool for data collection, but also as a measure of pedagogical influence, as the questions in the questionnaire both informed and educated, and allowed to self-assess their knowledge and skills in career management, including career planning. Before and after the approbation of the developed methodology, engineering students self-assessed inner resources and potential on career self-managementaccording 6 criteria (Table 3).

The aim of the pedagogical intervention was to influence students' self-assessment according to these 6 assessment criteria during the survey, which essence was a pedagogical experiment, by measuring the differences between self-assessment at the beginning and at the end of the experiment (Figure 1). Before and after the survey participants rated their inner

resources and potential on career self-management: career management skills, resources, ambition, motivation, competitiveness, etc., on a 10-point scale, with '1' being very low and '10' being very high.

The primary processing of data obtained in the pedagogical experiment resulted in descriptive statistics (Table 3).

Table 3 ***Results of self-assessment of inner resources and potential on career self-management before and after the pedagogical intervention: Descriptive statistics***

N	Self-assessment criteria	Time	Min	Max	A	Me	Mo	Σ
1.	Students' career management skills	Before	3	10	7	7.00	7	134
		After	5	9	4	7.00	8	132
2.	Students determination	Before	5	10	5	8.00	7	145
		After	5	10	5	8.00	8	150
3.	Students' readiness for unexpected changes in their lives	Before	2	1 0	8	8.00	8	137
		After	4	10	6	8.00	8	139
4.	Students' inner potential to achieve what they want (motivation, will, resilience, perseverance, work capacity, etc.)	Before	4	10	6	7.00	6	138
		After	6	9	3	7.00	7	143
5.	Students' resources for their career development, including professional activities	Before	3	10	7	7.00	7	134
		After	5	10	5	8.00	8	145
6.	Students' competitiveness in their chosen profession	Before	1	10	9	7.00	7	132
		After	6	10	4	8.00	7	149

Source: Authors' research results
n=19

The results of the descriptive statistics show that for all six evaluation criteria, there were changes in the students' self-assessments during the pedagogical experiment (as a result of the validation of the developed methodology).

It was important to find out how significant these changes are. Therefore, secondary data processing was performed to obtain inferential statistics (Table 4).

Table 4 ***Wilcoxon Test Results: Conclusive Statistics***

N	Two sets of features to be compared	Differences	Results achieved	Conclusions
1.	Students' career management skills (Before - After)	Negative=4 Positive=5 Ties=10	p-value = 0.952 > α=0.05	Good coincidence
2.	Students' determination (Before - After)	Negative=3 Positive=6 Ties=10	p-value = 0.509 > α=0.05	Good coincidence
3.	Students' readiness for unexpected changes in their lives (Before - After)	Negative=7 Positive=7 Ties=7	p-value = 0.680 > α=0.05	Good coincidence
4.	Students' inner potential to achieve what they want (motivation, will, resilience, perseverance, work capacity, etc.) (Before - After)	Negative=5 Positive=8 Ties=6	p-value = 0.244 > α=0.05	Weak coincidence
5.	Students' resources for their career development, including professional activities (Before - After)	Negative=1 Positive=8 Ties=10	p-value = 0.018 < α=0.05	Substantial differences
6.	Students' competitiveness in their chosen profession (Before - After)	Negative=0 Positive=9 Ties=10	p-value = 0.005 < α=0.01	Highly substantial differences

Source: Authors' research results
n=19

The results of the research show (Table 4) that for criteria 1-3 (career management skills, goal orientation, readiness for change) there were no significant changes in students' self-assessments, as the p-value=0.509 ...0.952, which means that there is a good coincidence between self-assessments before and after validation of the authors' methodology during the questionnaire. The self-assessment of the internal potential after the methodology validation differs from the self-assessment before the validation (criterion 4), but the p-value=0.244 shows that these differences are not significant, but the coincidence is already weak, so there are differences.

Substantial and highly substantial changes during the pedagogical experiment occurred in students' self-assessments according to criteria 5-6: students' internal and external resources and competitiveness in the chosen profession (p-value = 0.005 ... 0.018).

Based on the results of the study, the authors developed a course on *Quantum Transition and Individual Development* (course amount 2 credit points (CP). The aim of the course is to promote understanding of the quantum transition theory transfers using they in the career self-development and self-management and show the possibilities for human, each member of society development under nowadays changeable conditions. The course covers topics such as: the impact of the quantum transition on the human being; what is the transcendent personality; personality characteristics at each level (3D to 5D); the mission and the career of women and men; matter, the power of thought; the evolution of energy and human bodies; unconditional love; unity and overcoming duality etc. This choice course is the part of career guidance and will be implemented using a variety of methods - gallery, zigzag, cube, insert methods, Phillips method, role play, free association method, visualisation, practical exercises. The study course is delivered through a mix of lectures and practical sessions.

Conclusions

Modern sciences are characterized by interdisciplinary and transdisciplinary research, using the transfer approach, when the phenomena, laws, causations, and correlations discovered in one science are transferred and applied to research conducted in other sciences. The authors are aware of several examples when natural and exact sciences paradigms and approaches are used in social sciences, including new directions and trends of psychology. In this study, the authors, using the transfer of quantum physics in social sciences, investigated university students as prospective engineers' understanding of their career, career self-direction and self-management and future intentions in the context of a changing world.

The foundations of quantum physics can be traced back to the ancient world, but the fundamental ideas of modern quantum physics were formulated in the 20th century (M. Planck, E. Schrödinger, N. Bohr, A. Einstein, etc.). Quantum physics studies the interactions of small particles (atoms, molecules), including electrons, protons, neurons, exotic quarks and gluons. Quantum physics, chemistry and biology have been the subject of much experimental research in this century and are now more philosophically fundamental. Research in quantum physics has influenced the development of new technologies (smartphones, 5G internet, computers, etc.).

Today, quantum physics has an impact not only on the development of new technologies, but also on other areas of science, including the social sciences (pedagogy, psychology, communication, etc.). Quantum theory first changes the understanding of consciousness and its role, because consciousness determines human existence. In the social sciences, quantum physics research is becoming more integrated into neuroscience and psychology. Quantum phenomena are used to understand certain concepts (Heisenberg Uncertainty Principle, Bohr Complementarity Principle, quantization, discreteness, the influence of the observer on the observed).

Today, the concept of career covers the whole of a person's life (work, family, civic competence, leisure and spirituality), while career management is a lifelong process. In the 21st century, we talk about self-managed careers. Students need experience in career management. In the absence of career centres in high schools, you can gain this knowledge and experience in a number of courses (Engineering, Engineering Psychology, Fundamentals of Professional Activity, Internship, etc.). In turn, the quantum transition will reveal the human capacity, the availability of information from the information field of the Universe, the ability to make decisions with the soul, in general the evolution of the soul and arriving at one's own mission.

Quantum transition is a process that takes place at all levels (physical, material and spiritual). It is the transition from today's 3D reality to the 5D level, where the 4D level is a 'gateway' to the higher 5D level. There are also higher levels - 6D, 7D, etc - but at the moment the more significant changes are happening at these levels. This means that the process will affect all areas of life - economics, education, politics, medicine, information technology, etc. Of course, the changes also affect people, whose potential will evolve according to how high their spiritual vibrations are.

Nowadays career management theories are developing and changing under the influence of the quantum transition paradigm, the synergetic paradigm, thus the perception of career and the understanding of career have also changed. A career covers the whole life of a person and is individually driven. So, we can speak of a self-directed personal career, which is connected with finding one's mission in life, one's vocation. So, moving into the fourth and fifth dimensions opens up more possibilities for finding your purpose: 1) motivated individual choice; 2) career management based on that choice; 3) transition from survival to mission; 4) access to the information field of the Universe; 5) discovery of new abilities – telekinesis, teleportation, clairvoyance, clairaudience, etc.

Results of *Self-evaluation of further career development of engineering students* testify that the following criteria and indicators had the largest number of choices: 1) criteria *Workplace status in future*: indicator *Private company* - 17 choices (prop. coeff. = 0.89); 2) criteria *Necessity of career planning*: indicator *You have to plan your career* - 16 choices (prop. coeff. = 0.84); 3) criteria *Continuing education after graduation:* indicator *Will not continue studies for a Master's degree* – 16 choices (prop. coeff. = 0.84); 4) criteria *Planned employment status when building your career*: indicator *Employer* - 15 choices (prop. coeff. = 0.79); 5) criteria's *Career planning competence* indicator: *A student can plan his/her career* - 14 choices (prop. coeff. = 0.74).

Results of *Self-evaluation of engineering students' career self-management* testify that the following indicators had the largest number of choices: 1) *I know the requirements applicable to a representative of my chosen profession* – 18 choices ((prop. coeff. = 0.95); 2) *I know what I want to achieve in my life* – 18 choices (prop. coeff. = 0.95); 3) *I think about using my skills and talents in my professional life* – 17 choices (prop. coeff. = 0.89); 4) *I have the knowledge, skills and abilities required for a representative of my chosen profession* – 16 choices (prop. coeff. = 0.84); 5) *I know what I want to achieve in my professional activity* – 16 choices (prop. coeff. = 0.89).

The obtained high-level results testify that students have sufficient employability potential, which largely indicates their competitiveness.

The obtained low-level results indicate that the students are not yet ready to lifelong learn and develop professionally throughout his life, is not ready for changes in his chosen career, which indicates a certain inflexibility in thinking and acting. It is precisely these qualities that are very necessary in self-management of a sustainable career. This means that career support services should continue to be offered to promote career self-development and self-management under changing conditions (closely related to quantum transition theory).

The results of the study show that there have been no significant changes in students' self-assessments of career management skills, goal orientation, readiness for change (p-value = 0.509 ... 0.952). This means a good coincidence between the self-assessments before and after the approbation of the authors' methodology during the survey. This means that the previously provided student career support at the university has given good results, the students already at the beginning of the experiment had quite high and high self-esteem in several indicators, so the effect of the pedagogical intervention during the experiment was not so effective.

Self-assessment of internal potential after methodology approval differs from self-assessment before approbation, but not significantly, as p-value = 0.244 shows that the coincidence is weak, and the differences are marked. During the formative (pedagogical) experiment, significant and very significant changes occurred in students' self-assessments according to the following criteria: students' internal and external resources, competitiveness in the chosen profession (p value = 0.005 ... 0.018). This means that during the survey, the self-assessment of internal resources according to these indicators was influenced by the information obtained during the survey from the content of the questionnaire, which allowed for a more adequate self-assessment at the end of the experiment.

As the quantum transition is happening very fast, it would be useful to introduce students to what is happening in the Universe as a whole and in humans. This will be done through the course *Quantum Transition and Individual Development* elaborated by the authors. It will help future engineers to better understand what is going on in the Universe, in humans and what resources can be discovered by moving to higher levels and how to use these resources in real life.

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SIGN LANGUAGE OF THE DEAF PEOPLE: A STUDY ON PUBLIC UNDERSTANDING

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Abstract. *Today, when various regulatory documents support sign language research, there is a lack of both teaching materials and research on deaf sign language and public understanding. The study aims to determine the public's proficiency or competence in the Latvian sign language. The research revealed people's basic knowledge of Latvian sign language grammar, their ability to communicate and understand deaf people, their attitudes and opinions about the process, and the necessity of learning sign language. Information was studied in four blocks of questions: society's attitude towards deaf sign language, society's knowledge of deaf sign language, communication skills with a deaf person, and opinion on the development of deaf sign language and its necessity. The sample of the study is 500 respondents, who represent the opinion of the population between the ages of 16 and 60, observing the socio-demographic parameters of the target group of the study. An empirical research method was used in the study; to collect data, an electronic survey was conducted. In general, the study confirms that society shows a positive attitude towards Latvian sign language as a means of communication for deaf people. At the same time, the data reveal poor knowledge of sign language and its grammar. It was concluded that not only sociological research is needed on public perceptions of deaf sign language, but also various educational events for the rest of society should be promoted, including seminars, courses, and conferences.*
Keywords: *communication, interpreter, knowledge, sign language of the deaf, society.*

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Introduction

Support for sign language development and research is encouraged by the law and other legal acts. The development of the Latvian sign language, as well as its use for communication with deaf people, is ensured by the State Language Law (Valsts valodas likums, 1999). Also, the regulatory document "On the State Language Policy Guidelines for 2021-2027" supports developing and learning the Latvian sign language (Par valsts valodas politikas pamatnostādnēm 2021.–2027. gadam, 2021). It is important in order to promote knowledge of the Latvian sign language and strengthen qualitative changes. As Daniel L. Everett acknowledges, "the languages of the world are a source of linguistic and cultural diversity" (Everets, 2022, 246); similarly, sign language is the basis of the cultural diversity of deaf people. By promoting the development of sign language (e.g. developing the Latvian deaf sign language corpus), the opportunities to learn deaf sign language for anyone would definitely improve.

The study aims to determine the public's proficiency or competence in the Latvian sign language. Its basis is formed (or not formed) by people's basic knowledge of the grammar of Latvian sign language, their ability to communicate with deaf people, their attitude and beliefs about the process of learning sign language, and the need and necessity of it. It is essential to find out whether society as a whole shows a positive attitude towards the Latvian sign language and the culture of people who speak sign language and if society is empathetic, aware of its role, is ready to get involved in the creation of an inclusive society and solving current issues. Therefore, a study of the opinions and experiences of the wider society, Latvian residents, related to the understanding and knowledge of deaf sign language was carried out, which would allow conclusions to be drawn about the participation of the Latvian society in promoting inclusive processes. An empirical research method was used in the work, an electronic survey

was conducted for data collection. Considering that different stories of experiences related to deaf sign language are possible, four study blocks were created.

The following set of information was studied:

1) society's attitude towards deaf sign language,
2) public knowledge of deaf sign language,
3) communication skills with a deaf person,
4) opinion on the development of deaf sign language and its necessity.

Literature review

Until now, extensive studies have not been conducted in Latvia on the public's proficiency or attitude towards the Latvian sign language. Journalistic or popular science articles are mainly available, providing a general insight. Since 2007, every resident of Latvia has had the opportunity to get acquainted with the native language of deaf people – sign language – on the Internet (see www.zimjuvaloda.lv). Deaf people who use sign language daily can get relevant information on the website. Also, this website provides an opportunity to educate anyone interested in sign language or who needs it in communication with fellow deaf people.

Although Latvia is one of the 41 European countries where the Latvian sign language is legally recognised (World Federation of the Deaf, 2016), in a 2021 interview at the Latvian Ministry of Education and Science, it was recognised that the state did not support the development of sign language for many years. In order to promote public understanding of sign language and the learning of sign language, it is planned to create language learning courses and develop teaching aids (*Z*īmju valoda attīstās līdzi laikam, 2021).

The youth organisation, "Efraims", within the framework of various projects, also activates the guidelines developed in the European Union to reduce discrimination and promote equality in the attitude towards the employment and integration of deaf young people in the labour market, education, and profession choices in Latvia and the European Union, explaining the principle of equal treatment and recognising discrimination in the attitude towards people with disabilities, creating reasonable workplaces, for example, interpreting in sign language, providing specific telecommunications equipment, telephone sound amplifiers, light signalling, and special listening systems. The guidelines were developed for employers to explain how to work with a deaf person and how to use the help of a sign language interpreter (ES vadlīnijas nedzirdīgu cilvēku nediskriminācijai (vienlīdzībai) sabiedrībā, 2006). Because using public agencies' services often means one-on-one meetings, those unfamiliar with the workings of a sign language interpreter assume that the interpreter participates in the meeting. However, a sign language interpreter is meant to facilitate communication and does not directly participate in the conversation (Sign language interpreting in public service settings, 1995).

As seen in the reviewed sources, the public's understanding of the use and the users of sign language is very narrow. In the Latvian language, no measures have been taken in recent years to promote public education and understanding of sign language and its users.

Methodology

In order to answer the research questions, a quantitative survey of the population of Latvia was chosen. An online survey was used as the data collection technique. The survey included the following questions:

1. How do Latvian residents understand the concept of sign language for the deaf?
2. What is the general attitude of Latvian residents towards sign language for the deaf?
3. What is the personal participation self-assessment of Latvian residents in relation to deaf sign language?

4. What is the general participation self-assessment of Latvian citizens in relation to deaf sign language?

5. What is the level of awareness (including sources of information) and knowledge of deaf sign language among Latvian residents?

6. What is the general awareness of Latvian residents about support for the development of sign language for the deaf?

7. What is the degree of participation of a resident of Latvia to be able to communicate with a deaf person?

8. What is the attitude of Latvian residents regarding state support for the development of sign language for the deaf?

9. What are the perceptions of Latvian residents about who should take responsibility for the development of sign language for the deaf?

10. What are the threats to the development of deaf sign language, according to the opinion of the population?

A total of 872 residents from all cultural and historical regions participated in the survey. The sample of the study is 500 respondents, representing the opinion of the population aged from 16 to 60 years. The socio-demographic parameters of the research target group – gender, nationality, age, district, and type of settlement – were observed, ensuring their even sampling. This was done to ensure the objectivity of the study, assuming that the characteristics of the target group may be related to their opinion or experiences.

Characteristics that were studied with the help of questionnaire questions about deaf sign language were measured for the first time in Latvia, for example, society's attitude, knowledge, communication skills with a deaf person, and understanding of the reasons for the threats to sign language.

Research results

Public attitudes towards sign language for the deaf

Before researching the opinions of Latvian residents on issues related to specific knowledge, the survey clarified the respondents' ideas about the concept of sign language for the deaf. The data show that a large part of the population of Latvia has a concrete idea about the concept of sign language for the deaf. The Latvian residents most often associate deaf sign language with gestures, less with body movements and lip shapes. Positive discourse in relation to deaf sign language prevails in Latvian society, and no negative actions are highlighted. When looking at the data in correlation with the respondents' age group, place of residence and nationality, a slight difference is noticeable – the respondents who live in cities and are of an economically active age (around 20–50 years old) are more positive, but the differences between these parameters are small.

Public knowledge of sign language for the deaf

When studying the awareness and knowledge of Latvian residents about sign language for the deaf, questions were asked that require more detailed knowledge and experience. Answers to questions, "Does sign language have certain grammar rules? Is a sentence in sign language made according to special rules? Are only non-verbal communication gestures used in deaf sign language? Are there several types of Latvian sign language for deaf people?", show the lack in respondents' knowledge. Almost everyone has heard about sign language, but not everyone knows how it differs from oral language with its specific use of signs and certain grammatical structures. The deaf sign language lexicon consists of manual signs. They cannot be equated with gestures of non-verbal communication because the means of non-verbal communication are mainly used to express the emotional aspect of information. In addition, the stock of manual signs is wide and varied. It is also supplemented and refined depending on the

culture and level of knowledge of the deaf sign language user. In general, "people who have been using sign language since childhood can communicate with it as quickly and effectively as those who use a voice machine". (Everets, 2022, 146) It is believed that in the Latvian deaf sign language, signs have 56 types of hand shapes. The hand position is the position of the palm and fingertips in relation to the speaker's body. Accordingly, the site of sign formation is a limited space in front of the speaker. Often, respondents do not know that manual signs are made in different places: above the speaker's head, at the nape of the neck, forehead, temples, nose, cheeks, ears, mouth, lower jaw, chin, neck, shoulders, arms, stomach, legs, etc. Also, the movement in the structure of the manual sign can have different variants: straight, wave-like, angular, spiral, cross movements, etc. Therefore, the place of making signs and the movement of hands are important for full-fledged communication. The nature and type of sign movement are denoted by arrows in special sign language dictionaries. The creators of these dictionaries, experts from the Latvian Association of the Deaf, have so far identified at least 11 of the most characteristic movement types (Bethere, 2023).

There is a misconception that there is only one sign language. In fact, each language has its own official sign language and has a certain nationality. "Each language contains a history of the symbiosis of grammar, mind, and culture" (Everets, 2022, 23). Also, there are regional dialects or dialects of different social groups within the structure of each national sign language. As in other countries, Latvia also has diverse regional and social group sign language dialects. Latvian sign language also uses jargon, international words, borrowings, and barbarisms. The use of signs varies in different parts of Latvia, and people of different generations also use different signs. Therefore, it can be said that "language is a repository of the riches of a unique cultural experience" (Everets, 2022, 247).

Also, the respondents' replies indicate a lack of knowledge about the syntax of deaf sign language. Latvian sign language of deaf people has its own rules for creating a sentence – hence its own syntax. For example, a noun that names a subject will be mentioned first. The signs denoting action or property are not at the beginning of the utterance. The property designation is placed after the sign to which it refers. Action markers are placed at the end of the utterance. The means of expressing modality, such as negation or address, are at the end of the utterance (Bethere, 2023).

Deaf sign language also has word classes (noun, verb, adjective) and their possible grammatical categories, such as gender and number. For example, the meaning of a grammatical number in the Latvian deaf sign language is expressed in various ways, i.e. repeating a manual sign multiple times or connecting the relevant nominative sign with a number designation. In this case, the number sign is placed before the nominative sign, which in turn is used in the singular.

Here, some facts are mentioned that are the basis of deaf sign language. It would be necessary to find solutions so that deaf sign language learning and information are available to everyone interested.

Communication skills with a deaf person

Human communication almost always involves the transmission and interpretation of signs (Everets, 2022, 106), however, communication with a deaf person requires other knowledge and skills. In order to evaluate the public's communication skills with a deaf person, several additional questions were asked. To the question, "Are you ready to communicate with a deaf person in simple situations?", most respondents answered affirmatively. 50% are ready to communicate with a deaf person in simple situations, 30% are not sure about the quality of communication, and 20% would avoid communication with a deaf person. Of course, learning sign language can improve communication with a deaf person, but it is also important to educate

society about basic elements of communication, for example, you can use written communication, and gesture and body language, and you need to speak slowly and maintain eye contact when talking. When evaluating the multiple-choice options, the respondents had the opportunity to mark, in their opinion, the most important activity in communication with a deaf person (see Table 1).

Table 1. ***Personal self-assessment of participation in communication with a deaf person***

Answers	Number of respondents
would use gestures of non-verbal communication	121
would use sign language for the deaf	11
would use written language	96
would use gestures and speak slowly	272

To the question, "Do you know how to communicate with a deaf person?", most respondents, i.e. 79% answered in the negative, while 20% were not sure about the quality of their communication. The respondents state the lack of information on where to learn sign language for the deaf and the lack of time as the biggest excuses. Only 1% of respondents answered affirmatively, most often additionally indicating that they are either related to a deaf person and have learned communication skills, or work as deaf language interpreters.

Likewise, in measuring citizens' participation, it is important to know the individual's personal participation and involvement in the process of creating an inclusive society. To the question, "Would you learn sign language?", the majority of respondents replied that they were not ready to learn sign language (70%). On the other hand, one quarter of the respondents, or 25%, did not clearly express their position, pointing to the lack of necessity, and unimportance. Only 5% of society members express a desire to learn sign language for the deaf. It is little enough.

Opinion on the development of deaf sign language and its necessity

It is also important to investigate the public's opinion on the development of sign language for the deaf, and state support for the provision of various functions. In their answers to the question, "Who should take responsibility for the development of sign language for the deaf?", respondents, firstly, mention the state, secondly, the institutions that represent the deaf community. At the same time, most respondents have no information about specific state support for the development of sign language for the deaf. In fact, sign language is recognized and supported in Latvia, as it is in other countries. This is ensured by the State Language Law. Article 3, paragraph 3 of the State Language Law stipulates that "the state ensures the development and use of Latvian sign language for communication with deaf people" (Valsts valodas likums, 1999). The document "On the State Language Policy Guidelines for 2021-2027" emphasises and notes such values as the standardisation, learning, and popularisation of Latvian sign language for the deaf, and development of sign language resources. Sign language is mentioned six times in this document. Sign language is identified here as an important issue for the management of Latvian language policy. Several positions are highlighted here, such as the need to educate teachers, create training programs for sign language interpreters, create new types of teaching aids, including digital ones, and develop the Latvian sign language.

In response to the question, "What are the threats to the development of deaf sign language?", the lack of funding for both the development of electronic resources and the development of inventions and technologies that would ensure successful communication and information circulation is most often mentioned. Deaf sign language development can have a variety of challenges. Successful communication also requires public support.

Conclusions

In general, the study confirms that society shows a positive attitude towards Latvian sign language as a means of communication for deaf people. Only 5% of the respondents have had direct contact with a deaf person, but only 1% know how to communicate with these people, i.e. they know the sign language. A large number of respondents, i.e. 50%, would be ready to communicate with a deaf person. It means that promoting public interest and knowledge about the Latvian sign language is necessary.

Also, the survey data show that 50% of respondents would like to learn sign language, but only 5% know where to find information about lessons or training.

Similar data are available on the desired state and the current situation: 50% believe that the surrounding society should know sign language for the deaf, but only 5% are ready to learn sign language. Self-motivation, lack of time, and personality are essential here.

At the same time, the data reveal poor knowledge of sign language and its grammar. Not only sociological research on public perceptions of deaf sign language is needed, but various educational events for the rest of society, including seminars, courses, and conferences, should be promoted. In order for the surrounding community to be informed about deaf sign language, its research must expand the field of information and expand the dialogue with society. It is necessary to promote public interest and knowledge about the Latvian sign language, the need for its development, as well as the possibility of using it for communication with deaf people.

It would also be necessary to continue research on children who are deaf or hard of hearing and their opportunities to learn the Latvian sign language at an early age to promote their cognitive, academic, social and emotional development.

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THE ROLE OF THERAPEUTIC CHESS IN EDUCATION TRAUMAS AND PEDAGOGY

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Abstract: *In this article as a result of the "Therapeutic Chess" project, which is a new teaching technique designed with an interdisciplinary method on kindergarten-primary school children, the increase in children's interest in chess lesson and expressing themselves in mathematics, music, painting, puzzle solving, board games and philosophical level. It has been observed that the students' ability to learn how to act has increased, and it is aimed to contribute to the socialization, normalization process of children who have experienced trauma, to introduce this technique to more widespread use and to transfer it to teachers.*
Keywords: *Chess, Lesson Design, Pedagogy, Philosophy for Children*

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Introduction

What is Therapeutic Chess?

It is an interdisciplinary new generation course design that makes learning inclusive with participatory and joyful principles through the use of philosophy to pose questions, wonder, and seek answers to the questions asked, and chess to learn through games by exploring and that teaches critical and creative thinking, allowing the information to be used for drug-free treatment in life and trauma situations. It can also be called “Chess Philosophy” to put it briefly.

Sessions of therapeutic chess for school-aged children who rarely use their critical-creative thinking skills to comprehend the real world can be considered an educational revolution.

The Therapeutic Chess Project: Why It Started and Why It is Important:

In this project, the term “therapeutic” which is commonly used in the field of medicine is used in the sense of “healing”. The question “Is someone sick?” may emerge. Yes, indeed. Screen addiction, caused by factors such as algorithms, stimuli, and virtual games that surround us in the age of digital transformation, has a negative impact on focusing and thinking. Children of Generation Z who encounter the virtual world without comprehending reality may develop an addiction to virtual happiness in the real world. Especially in children, this can contribute to a lack of attention, loneliness, and anxiety. When evaluating the new generation on a cognitive level, it is simple to recognize that their “different” response to us is truly a “request for assistance” that reveals their needs.

Project – Research Content
The Purpose of Using Chess in Therapeutic Chess Lessons and Its Achievements

Expressing themselves through talking and playing games appears to be the most fundamental need of children.

Children love learning while they play. This is a highly effective way of learning and teaching. Chess, on the other hand, is a very suitable game for this idea, a wonderful simulator. You start on an adventure and dive into an exciting discovery during the chess

lesson. Chess trains children to use critical thinking skills and focus. It provides the ability to discover solutions by providing tenacity. Academically, it contributes significantly to the growth of mathematical reasoning.

Many skills can be applied in both chess and life. Personal characteristics such as patience, response management in win-or-loss circumstances, and stamina (Struggling to go back from a loss in a chess match), are skills that can be used in both chess and life. This method, which is unique as a teaching technique, is a very useful instrument for acquiring life skills and supporting this process.

While chess as a sport includes tournaments, competition, and prizes, therapeutic chess is an entirely distinct challenge with different dynamics, stakeholders, objectives, and outcomes. In therapeutic chess, chess is a tool whereas, in sportive chess, the educational environment is the tool. We prefer therapeutic chess over sportive chess as a technique because it allows us to work in a non-competitive environment with feelings of solidarity and trust.

What do we want to teach students? The answer is not "We want to teach you how to play chess", because teaching the rules of chess takes only five minutes. The rules are much simpler than those of football. "To be good at anything, you must know how to apply the basic principles" said world chess champion Kasparov. "To be great at this work, you must understand when to violate these principles." (Kasparov, 2018)

Fisher Chess (The name given to the chess variant game invented by Bobby Fisher, one of the American former world chess champions) is a great example of this. Children who encounter Fisher chess for the first time in lessons experience a great surprise when all of their memorizations are shattered and every opening theory they have been taught up until that point is flipped upside down. They even acquire a completely new perspective just by asking, "Can I start over again?" In contrast to classical chess, the position of all pieces, with the exception of the pawn, is determined by randomness, and all opening theory known in chess history is obsolete. The attempt to discover creative solutions alters the game's entire philosophy. Fisher's game-changing, creative, and surprising chess teaches children in a fun manner that the rules can always change.

Reasons and Benefits of Using Philosophy in Therapeutic Chess Lessons

We observe in children's lessons a high degree of curiosity, as well as creative and original approaches to the subjects. The objective of the lessons is not only to pose questions but also to provide answers. Although it may appear to be a disadvantage that children become bored or lose interest rapidly, philosophy is beneficial for children. When chess is added, these positive effects become even more evident.

Curiosity and motivation must be maintained across all age groups for the intended information to be comprehended, internalized, and transformed into a behavior change by the learner. Gaining good questioning skills is a crucial aspect of teaching. Given the lack of questioning in the world of education, this may be even more essential than most other acquired skills. Is it possible to pose better questions, make better decisions, and be a happier individual as a result? Why not? This path is made possible by therapeutic chess.

The results that follow thought with "reflective thinking" that is, the critical thinking technique, are carefully assessed, especially when analyzing chess positions or questions. If you are unable to use your imagination to consider more carefully, it is also difficult to think critically. The reason why we use philosophy in chess class is to help children learn to think freely. This should be viewed as a step in gaining the ability for critical thought.

*"*People will forget what you said or did, but they will never forget how you made them feel*."* (Angelou, 2016)

Students/participants unknowingly benefit from the healing effects of chess and philosophy in the discovery process provided by the workshop provided by the community they are a part of when using the method of interdisciplinary therapeutic course design. After the age of ten, when the brain starts to form, this spontaneous questioning-learning process becomes an automatic part of their lives. As a result, therapeutic chess can be viewed as a long-term investment that paves the way for natural growth.

The Reason, Applications and Benefits of Creative Thinking in Therapeutic Chess Lessons

Creativity and creative thinking are among the general curriculum goals of many countries.The concept of creativity is derived from the Latin word creare, which means "to create, to give birth, or to bring into existence." In the dictionary, it is also defined as "the state of being creative, the capacity to create, and the predisposition that is assumed to exist in every individual and compels them to create something" (TDK, Turkish Language Society, 2023).

Creativity as "a lifetime talent", "having the capacity to express oneself, using intelligence and imagination*."* (Craft 2003).

Because a new idea is often a combination of known ideas or a freshly formulated version of an old idea, creativity isn't just about creating something out of nothing. In this context, creativity can also be described as the activity of giving new identities to old ideas and synthesizing new ones from old ones. (Bessis & Jaqui, 1972).

Creativity is a concept whose scope is difficult to define due to the wide variety of its definitions. Creativity has a place not only in literature and fine arts but also in all spheres and stages of life.

Bogoyavlenskaya (2013) examined the changes in the creativity of kindergarten and elementary school students and revealed in her study that the creativity of six-year-olds decreased when they began elementary school.

Similarly, when children start school, their creativity either remains constant or starts to decline due to academic expectations and authority. This decline is attributable to environmental factors. When children begin school and join a new environment, they recognize rules and authority. There is a pause and regression in creativity if the environment contains negative conditions (Toyran, 2015).

To develop creativity or encourage its emergence, children must be given the chance to make mistakes and put ideas into action. Organizing creative activities makes it easier to discover and express one's current potential (Kovalenko-Smirnova, 2015).

The learning process that emphasizes critical thinking and students' interests, an environment equipped with rich stimuli, open-ended questions, acceptance of differences, and encouragement to attempt new things are regarded as crucial factors in supporting creative thinking. (Freedman, 2010).

The purpose of creative thinking in education is to encourage curiosity as well as to guide the design of creative ways to solve complex problems. This is only possible with an education that follows a pedagogical approach. Despite the fact that every individual possesses some degree of creativity, it is the responsibility of education to help them discover in which areas they can apply it. In this case, the students' abilities and interests also determine their tendency for creative thinking (Rawat & Qazi- Hamid, 2012; Shaheen, 2010).

What are the benefits of using creative thinking in therapeutic chess lessons?

Chess is an excellent tool for teaching high -level thinking skills by using the combination of both Critical Thinking and Creative Thinking. Analysis, evaluation and creativity are at every step of chess game. When these 3 high -level thinking skills are used,

things are very different and chess provides a simple and direct way to improve the three sub - row thinking skills: application, understanding, remembering (memory).

Applications Used in Therapeutic Chess Sessions:

- International Chess Federation FIDE-Chess applications in education and european Chess Union (ECU) :https://edu.fide.com/materials/ https://projects.europechess.org/
- European Chess Union, Champs Chess and Mathematics in Primary Schools - Erasmus + *"50 chess and Mathematics Exercises for Schools"* A (chess) game-based approach to problem solving.
- Chess and Math Puzzles, Classroom Chess and Strategy Games: https://chessplus.net/chess-and-math-puzzles/
- Chess.com/lichess Derivative Chess Applications : https://www.chess.com/home https://lichess.org/
- Rebus, Analogy, Video and cartoon chess position analysis, Scamper, Brainstorm, Combinatoric game theory, Workshop group work, Mind and board games, Motivation with monthly rewarded questions.
- Pooble 365 https://app.pobble.com/auth/
- Cocology (Isamu Saito and Tadahiko Nagao-Self-discovery game).
- P4C (Philosophy for Children - should be done by an expert or by a trained person).
- Kahoot (General ability, puzzle, memory, pattern, chess topics.) Family and group competitions and individual competitions.
- Homework and follow-up of these studies with families on social media groups
- Book applications (problem solving).
- Meditopia (Comforting stories before bedtime): https://meditopia.com/en/
- Gymchess https://gymchess.com/en/
- Logiqboard https://logiqboard.com/boards/bQNg1dUzOx

Who Is Therapeutic Chess Appropriate For?

- Individuals of all ages who have encountered or are experiencing trauma,
- Children who are gifted,
- Students (kindergarten, primary, intermediate, high school, and university)
- Adults, parents
- Although it is appropriate for those suffering from behavioral disorders as well as problems such as loss anxiety, perfectionism, ADHD (Attention deficit-hyperactivity disorder), and dyscalculia (difficulty learning mathematics), it is primarily considered to be used in the field of education.

The encouraging feedback received from children, parents, guidance services, and school administrations regarding this new course design, which was implemented on approximately 1000 children at the kindergarten and primary school level in some kindergartens, private primary schools, secondary schools, and high schools throughout Istanbul, was the primary driving force in the emerge of this project.

The Use of Therapeutic Chess in the Treatment of Trauma - Attention Deficit - Focus - Digital Addiction Conditions

We must know why we want to protect children. In the face of the feeling that they are incomplete without their tablet-phone, which has become an addiction, directing them to the

therapeutic chess experience, which is also a game and where they spend time with joy, is a healing option to fill this gap.

The majority of patients need long-term treatments. Until recently, pharmacotherapy (drug therapy) was regarded as one of the most effective treatments for addiction and panic disorder. Toys and play have been shown in studies to help children cope with circumstances during disasters and post-traumatic recovery. Regardless of the source, traumatized individuals are anticipated to exhibit meaning-seeking, insecurity, and depressive reactions. Furthermore, chess can be used to avoid problems such as anxiety disorder and insecurity.

There are also studies on the internet that show that practicing chess can help with panic disorder. This effect is stated in a section of the study titled "Chess Therapy: A New Approach to Panic Disorder Treatment" by Kazem Barzegar and Somayeh Barzegar, which was published in Asian Journal of Psychiatry in 2017:

> *I am a lecturer at a medical university in Iran. I was born in 1971, and in 1998, I got married. A month before our wedding, I lost my wife in a car accident. She resided in another city 450 kilometers away from my workplace. I was shocked when they told me the bad news late at night. After that, I felt like I was having a panic attack because from that moment on, at that hour at night when I got the bad news, I was always in shock. The symptoms gave the sensation of a sudden surge. Chess on a mobile phone first weakened the impacts of these attacks, and then the attacks ceased entirely.*

Playing chess on a mobile phone (with apps like chess.com, lichess) can prevent and heal a panic attack from occurring. It is only necessary to know and enjoy playing chess for this. Chess therapy, at the appropriate degree of difficulty, can be tried as a very effective non-drug treatment method for panic disorder.

Personal skills acquired in response to trauma are applicable in both chess and life. The fact that they can win chess match even if they lose the pieces instills the idea in the children that they can recover from their losses. It makes one think that while there may be losses in life, a solution can be found by continuing and not giving up.

With the formation of a pedagogical committee comprised of expert psychologists and academicians, it is planned therapeutic chess sessions and activities will be organized to assist children, students, and adults in reducing post-traumatic effects. For instance, the practice of "loser chess" for helping overcome the sensation of loss.

Loser Chess: In this chess game, the objective is to lose all of your pieces except the king. When one player loses all of the pieces, or when the player runs out of moves, the game is over. In this situation, the person with the fewest stones is considered to be the winner. While children who have been raised with winning-oriented thinking may perceive this result as total destruction, it does provide a chance for them to internalize loss and face their fears through a game.

Its use in education as a method that provides the opportunity to teach by discovering creativity: Teaching models, methods, and techniques are the main factors in the development of creativity and creative thinking abilities among students in educational systems. It is important to identify and implement methods that enable students to think creatively.

It is now essential to revise the curriculum in order to re-teach students to think critically and creatively. School life has shown us that: Education systems are insufficient for critical and creative thinking. They failed to teach children the philosophy of thinking, asking the right questions, and learning. In this age of digital transformation, where many occupations are on the brink of extinction, children who have acquired critical thinking skills will be able to turn into individuals who will make a difference in the future.

Lesson Example for Kindergarten Preparatory and Primary School 1st - 2nd Grades

It is a workshop using the video *"The road to success: Yoann Bourgeois performance".* A philosophical speech is made (for children) on the topic of losing and they are invited to reflect on the question: "Are you afraid of failing and making mistakes?" After that, a 2-minute video performance is shown, and then, it is time for free questions and responses, and the students are asked what they want to say in the video. Then we have a discussion about what should we do if we lose a chess match. We discuss how we should analyze chess games here as well as how we should learn from our mistakes. The content of the course intertwines music, philosophy and chess. Working on the queen sacrifice -that is, how can you win the match by losing your queen- with a child who is sensitive about losing can help them cope with the feeling of losing while performing a position analysis in chess. Children are treated with their own sentences during these analyses when coping with circumstances such as fear of loss.

Lesson Example for 9 Years and Above

First we start with rebus. They watch Mozart's Turkish March by Fazıl Say for 3 minutes as a clue before answering an example question. Using this clue, they find the word "piano" which is the answer to rebus. The subsequent move of the Italian opening "piano" which is the name of one of the chess openings with the word piano, is followed, and the opening's details are explained. Starting with the word "piano" it is discussed what the quiet move is and what emotions a musical instrument like the piano can express. Music, rebus, and chess intertwine in this interdisciplinary course style, allowing for the internalization of the life experience.

Lesson Example for High School Level

While describing the time when one of the world's greatest chess players and famous composer of the "Opéra Comique" François André Danican Philidor lived for nearly half a century until his death in 1795, the French Revolution is storified in all its details through this biography. Philidor's games contain traces of the period's romance. Based on Philidor's words, "Pawns are the soul of chess", it can be inferred the ideas that were intended to be said that among the main causes of the revolution were the rise in bread prices and the hunger of the peasants, which appeared as a result of harsh weather conditions and successively poor harvests. In addition, through examining the innovations Philidor introduced to the history of chess and his playing style, a brainstorming session is conducted on the following statement: "My main goal is to get to know myself through a new idea that hat no one has thought of or perhaps hasn't been able to put into action. That is, pawns play well. They are the soul of chess; they alone determine the offense and defense. Winning or losing the game is entirely dependent on their good or bad order."

Therapeutic applications in the world

Club Magic Extremadura (a region in southwestern Spain) is the most well-known and probably most advanced reference in the field of the use of therapeutic chess in trauma and treatment, led by psychologist Juan Antonio Montero, who has 14 years of experience in such varied fields as aging (Alzheimer's, brain aging), drug addiction rehabilitation, children detention centers, down syndrome, cerebral palsy, severe mental disorder, ADHD, autism, etc. They are currently conducting a scientific study in collaboration with a hospital in Germany. For many years, they have been conducted online (Spanish) courses for a large number of students via their website: https://ajedrezmagic.es/cursos-que-ofertamos/

In the field of specific chess and ADHD, the world's foremost expert is psychiatrist Hilario Blasco (Madrid-Hierro Hospital), who has prescribed daily chess in his office in

Puertade for many years. His assistant is the clinical psychologist and chess player Maria Rodrigo Yanguas, author of a doctoral dissertation on the subject.
GymChess Application: With the GYMCHESS application, which can be downloaded for free on phones with Montero and AsierRufino (an international start-up specialist), chess can be used as a mental gymnastics tool.

The project's final objective

A. Redesigning education systems to include therapeutic chess as a main-compulsory course at the kindergarten, primary school, and secondary school levels to help students obtain critical and creative thinking, problem-solving, communication, cooperation, and creativity skills.
B. Ensuring that studies and research are conducted through an independent foundation that brings together the sponsors, academics, teachers, medical institutions, and physicians in the fields of pedagogy and psychology who are the parties involved in this project, which will be implemented for the first time in the world, on the use of chess and philosophy together for educational purposes, under the roof of the Therapeutic Chess Academy.
C. Ensuring the use of therapeutic chess sessions as an alternative drug-free treatment method in areas of trauma, attention deficit, etc.

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