**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ**
**ЧЕРНІВЕЦЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ**
**ІМЕНІ ЮРІЯ ФЕДЬКОВИЧА**

**Навчально-науковий інститут біології, хімії та біоресурсів**
**кафедра ботаніки та природоохоронної діяльності**

# COMPARISON OF EDUCATION SYSTEMS OF UKRAINE AND CANADA

# ПОРІВНЯННЯ СИСТЕМ ОСВІТИ УКРАЇНИ ТА КАНАДИ

**Кваліфікаційна робота**

**Рівень вищої освіти – другий (магістерський)**

***Виконала:***
студентка 6 курсу, 602М групи
**Гвоздецька Марія Іванівна**
***Керівник:***
кандидат біологічних наук,
асистент **Токарюк А.І.**

***До захисту допущено***
***на засіданні кафедри***
***протокол №____від _____ 2024 р.***
***Зав. кафедрою _____ проф. Чорней І.І.***

**Чернівці – 2024**

# A N N O T A T I O N

Hvozdetska Mariia "Comparison of education systems of Ukraine and Canada", Qualification work, level of higher education – second (master's). Specialty – 014.05 "Secondary education (Biology and human health). – Chernivtsi, 2024.

The work is devoted to study and "Comparison of education systems of Ukraine and Canada". The master's thesis offers a comprehensive comparison of the Ukrainian and Canadian education systems, highlighting both their unique attributes and common global trends. While each system has its strengths and challenges, the study highlights the universality of certain educational aspirations in the 21st century. As education continues to evolve around the world, such benchmarking provides a basis for mutual learning and international collaboration.

Specializations play a decisive role in shaping students' interests and knowledge. We explored how Ukraine and Canada steer their students into specialized fields, laying the groundwork for their future endeavors and comparing science education programs.

Turning our attention to the sciences, particularly biology, we observe intriguing differences.

*Keywords*: education system, comparison, Canada, Ukraine.

## Анотація

Гвоздецька Марія «Порівняння систем освіти України та Канади», Кваліфікаційна робота, рівень вищої освіти – другий (магістр). Спеціальність – 014.05 «Середня освіта (Біологія та здоров'я людини). – Чернівці, 2024.

Кваліфікаційна робота містить результати власних досліджень, а саме: «Порівнянню систем освіти України та Канади». У магістерській роботі пропонується комплексне порівняння систем освіти України та Канади, висвітлюючи як їхні унікальні особливості, так і спільні світові тенденції. Хоча кожна система має свої сильні сторони та проблеми, дослідження підкреслює універсальність певних освітніх прагнень у 21 столітті. Оскільки освіта продовжує розвиватися в усьому світі, такий порівняльний аналіз забезпечує основу для взаємного навчання та міжнародної співпраці.

Спеціалізації відіграють визначальну роль у формуванні інтересів і знань студентів. Ми досліджували, як Україна та Канада спрямовують своїх студентів на спеціалізовані галузі, закладаючи основу для їхніх майбутніх починань і порівнюючи програми наукової освіти.

Звертаючи увагу на науки, зокрема на біологію, ми спостерігаємо інтригуючі відмінності.

*Ключові слова:* система освіти, порівняння, Канада, Україна.

Кваліфікаційна робота містить результати власних досліджень. Використання ідей, результатів і текстів наукових досліджень інших авторів мають посилання на відповідне джерело.

_____ Гвоздецька М.І.

**CONTENT**

# ЗМІСТ

# INTRODUCTION

Education forms the bedrock of individual and societal development, propelling nations towards progress and fostering a culture of continuous improvement and innovation. While the essence of education remains universal, its structure, approach, and outcomes differ considerably across countries, influenced by a myriad of factors including history, culture, economics, and governance. It is against this backdrop that the education systems of Ukraine and Canada present a compelling juxtaposition.

Ukraine, with its rich history and evolving socio-political landscape, offers an education system deeply rooted in traditions while simultaneously grappling with the challenges and opportunities of the 21st century. On the other hand, Canada, known for its multicultural ethos and decentralized governance, presents a mosaic of provincial education systems, each reflecting unique regional needs and aspirations. The significance of comparing these two systems lies not merely in understanding their differences and similarities but also in extracting lessons and insights which can benefit both nations and the broader global education community. Such a comparison aids policymakers, educators, and stakeholders in gauging their own strengths and areas of improvement, and facilitates a cross-pollination of ideas to elevate the overall quality of education.

This research venture is not just an academic exercise; it is an exploration of two distinct educational landscapes with the intent to unearth best practices, identify challenges, and propose solutions. In doing so, this study will pave the way for fostering mutual understanding and potential collaboration between Ukraine and Canada in the field of education.

The comparison of the education systems of Ukraine and Canada holds profound **relevance** for various reasons:

Globalization and international collaboration. In an increasingly interconnected world, understanding the nuances of various education systems is paramount. Such knowledge not only fosters international collaborations but also

sets the stage for student exchange programs, joint research initiatives, and shared curriculum development.

Bridging cultural understandings. Education is a reflection of societal values and cultural norms. By comparing the educational frameworks of Ukraine and Canada, there is an opportunity to gain deeper insights into the cultural, historical, and social dynamics of both nations. This promotes mutual respect and understanding.

Benchmarking and best practices. Every education system has its strengths and areas that need improvement. By juxtaposing two distinct systems, it becomes possible to identify best practices, innovative strategies, and successful interventions that can be adapted and adopted by each country.

Policy implications. With global educational rankings and international assessments like PISA becoming more prominent, nations are keen on understanding how their education systems stack up against others. The findings from this work can influence policy decisions, curriculum changes, and resource allocations in both countries.

Addressing global challenges. Modern challenges such as digitalization, environmental sustainability, and global citizenship are universal. Through comparative studies, nations can learn how different education systems are preparing students to address these global challenges.

Economic and workforce development. The quality and nature of education directly influence the skills and competencies of the workforce. Understanding how different education systems operate can provide insights into economic growth strategies, talent acquisition, and workforce preparedness.

Promoting lifelong learning. Both Ukraine and Canada, like many nations worldwide, recognize the importance of fostering a culture of lifelong learning. A comparative study can shed light on how each nation is instilling this ethos and the strategies they employ to ensure continuous learning.

Evolving socio-political dynamic. Ukraine's recent history has witnessed significant socio-political changes, while Canada's multicultural fabric presents

unique educational challenges and opportunities. Understanding how each system responds to its socio-political environment can offer invaluable lessons to other nations navigating similar waters.

In essence, this work goes beyond a mere academic exercise. Its relevance is anchored in real-world applications, providing actionable insights for educators, policymakers, and stakeholders in both Ukraine and Canada. By placing these two systems side by side, we pave the way for shared growth, understanding, and mutual enhancement in the realm of education.

The primary **purpose** of this research is to undertake a comprehensive and systematic comparison of the education systems of Ukraine and Canada. This study aims to illuminate the structures, methodologies, outcomes, challenges, and opportunities inherent in each system. Through this comparative lens, the research aspires to achieve the following objectives:

Understanding Structural Variations. To delineate the structural elements of both education systems, examining the stages of education, governance models, and curriculum frameworks.

Analyzing Pedagogical Approaches. To delve into the teaching and learning methodologies employed in each country, focusing on curriculum delivery, technology integration, and assessment methods.

Assessing Access and Equity. To evaluate how both systems ensure access to quality education for all students, considering factors like urban vs. rural settings, socioeconomic disparities, and provisions for special needs education.

Exploring Financial Models. To comprehend how education in each country is funded, the distribution of resources, and the balance between public and private educational institutions.

Evaluating Outcomes. To gauge the success and efficacy of each education system based on student achievements, graduation rates, further education, and workforce preparedness.

Identifying Challenges and Innovations. To spotlight the unique challenges each system faces and highlight innovative strategies or reforms implemented to address these challenges.

Extrapolating Best Practices. To extract and underscore practices, strategies, or policies from each system that demonstrate efficacy and could potentially benefit the other.

Facilitating Policy Recommendations. The goal is to create effective policy recommendations based on the comparison conducted, aimed at improving the education systems in both countries for all students.

Promoting Bilateral Relations. This aims to strengthen collaboration between Ukraine and Canada in education through student exchanges, joint research, and shared ventures for mutual growth.

Contributing to Global Education Discourse. This initiative adds a unique perspective to global education discussions, benefiting not just Ukraine and Canada but also other nations and organizations.

In summary, this work aims to leverage the strengths and challenges of both education systems for mutual learning and growth.

**Work tasks.** Literature Review. Review existing research on Ukraine and Canada education systems.

Data Collection. Gather data on enrollment, funding, outcomes, and more.

Framework Development. Create a comparative framework for analysis.

Case Studies. Study representative institutions in each country.

Data Analysis. Analyze collected data using statistical and qualitative methods.

Synthesize Findings. Summarize similarities, differences, and trends.

Challenges and Solutions. Identify system challenges and innovative solutions.

Best Practice. Extract successful strategies from each system.

Policy Recommendations. Propose actionable suggestions for improvement.

Conclusion. Summarize findings and discuss implications.

By completing these tasks, the research aims to provide insights into the education systems of Ukraine and Canada, paving the way for mutual learning and growth.

**Object of research.** The object of research is educational systems, their structure, organization and management in Ukraine and Canada.

**Subject of the study.** The subject of the study is a comparative analysis of the educational systems of Ukraine and Canada, in particular, their teaching methods, curricula, funding, access to education, as well as their achievements and challenges.

**Practical meaning:**

The practical meaning of a research endeavor lies in the tangible applications, recommendations, and implementations that can be derived from its findings, influencing real-world scenarios. In the context of comparing the education systems of Ukraine and Canada, the practical significance is multi-faceted.

Policy development. The comparative insights can directly influence the formulation and refinement of education policies in both countries. For instance, if one system demonstrates superior outcomes in a particular area, the other might adopt similar strategies or reforms.

Educator training. Discovering effective teaching methodologies and professional development strategies in one country can be adapted for training educators in the other, thereby elevating teaching standards.

Curriculum design. Identifying areas where one country's curriculum excels can lead to revisions and enhancements in the other's educational content.

Student engagement. Practical strategies that prove effective in engaging students and enhancing learning experiences in one system can be introduced in the other.

Addressing disparities. Recognizing and understanding disparities in education access and quality in one system can lead to actionable strategies to address similar disparities in the other.

In essence, the practical meaning of this comparative research is not just to highlight differences or similarities but to leverage them in actionable, real-world applications that can tangibly benefit the educational landscapes of both Ukraine and Canada.

**Research methods** serve as tools for collecting, analyzing and interpreting data in scientific research. In the context of a comparative analysis of the educational systems of Ukraine and Canada, we used the following set of methods:

Analysis of documents. The study of official documents, laws, regulations, programs and other regulatory materials of both countries will allow to obtain an objective understanding of educational standards and policies.

Case studies. Studying specific educational institutions or programs in both countries can provide a deep understanding of specific aspects of the education system.

Statistical analysis. Quantitative data processing using statistical tools will identify trends, correlations, and differences between two countries' data.

Comparative Analysis. A systematic comparison of elements of both educational systems, including structure, curriculum, teaching methods, and outcomes.

**Work structure.** The work consists of three sections, conclusions to them, general conclusions, a list of used sources, appendices.

# CHAPTER I
# COMPARATIVE CHARACTERISTICS OF THE GENERAL STRUCTURE AND SYSTEMS OF EDUCATION IN UKRAINE AND CANADA

The first chapter focuses on the comparative characteristics of the general structure and systems of education in Ukraine and Canada. Through this analysis, we try to highlight the main components that shape the educational environment of both countries. This study will help the reader to understand how the historical, cultural and social context of each country is reflected in their educational paradigms.

## 1.1. Peculiarities of the general structure and organization of education systems in Ukraine and Canada.

The comparative analysis of education systems serves as a conduit for unraveling the intricacies inherent to the educational frameworks of different nations. This examination allows for a comprehensive understanding of the structural components, administrative mechanisms, and foundational principles that underscore the delivery of education. In this context, a meticulous exploration of the education systems of Ukraine and Canada becomes imperative, shedding light on the distinctiveness and shared attributes that shape their educational landscapes.

In Ukraine, the structural progression of education is stratified into a hierarchical sequence that encompasses preschool, primary, basic secondary, and upper secondary levels, culminating in higher education pursuits. Preschool education isfor children aged 3 to 6 and is not mandatory. Primary education spans grades 1 to 4, while basic secondary education encompasses grades 5 to 9, and upper secondary education spans grades 10 to 11. The attainment of upper secondary education leads to the conferment of the "Atestat," marking completion of this phase. Higher education, in the form of Bachelor's, Master's, and Ph.D. levels, encapsulates the apex of academic pursuits. In contrast, Canada's

educational trajectory unfolds through stages that include preschool, elementary, secondary, and post-secondary divisions. The preschool stage, albeit not compulsory, caters to the developmental needs of young children. Elementary education spans kindergarten to Grade 6/8, with regional variations. Secondary education extends up to Grade 12, culminating in a complete pre-university phase. Post-secondary education encompasses diverse pathways, including diploma programs, undergraduate studies, and advanced research pursuits [1, c.56].

Ukraine's educational governance embodies a blend of centralization and localized control. The Ministry of Education and Science of Ukraine establishes national policies, standards, and curricula, while regional administrations play roles in institution management. Canada, in stark contrast, decentralizes educational governance to the provincial level, attributing educational authority to each of its ten provinces and three territories. This decentralized approach reflects the recognition of regional nuances and the prioritization of localized educational autonomy [3, c.81].

The curriculum formulation in Ukraine is orchestrated at the national level, thereby reflecting the nation's educational priorities and pedagogical philosophies. Ukrainian serves as the predominant language of instruction, although institutions offering instruction in minority languages like Russian, Hungarian, and Romanian contribute to Ukraine's linguistic diversity. Conversely, Canada's curricular blueprint is delineated provincially, fostering a dynamic tailored to the distinct sociocultural imperatives of each province. The linguistic landscape is characterized by the coexistence of English and French as primary mediums of instruction. Notably, provinces like Quebec and parts of New Brunswick emphasize French immersion programs and exclusive French-language institutions [5].

Assessment frameworks in Ukraine involve centralized state examinations, denoted by the acronym "ZNO" (External Independent Evaluation), pivotal for university admissions. This centralized mechanism underscores uniformity in evaluating students' scholastic aptitude. In Canada, a heterogeneous assessment

panorama prevails, with provincial standardized testing at varying grade levels [10]. The assessment regimen is often integral to determining secondary school graduation and university eligibility, with institutions varying in their utilization of standardized final exams.

Ukraine's higher education arena encompasses universities, academies, and institutes, characterized by competitive admissions contingent on ZNO / NMT performance and supplementary prerequisites. The Canadian higher education landscape, marked by universities, colleges, and technical institutes, relies on a diverse set of admission criteria, predominantly high school grades and supplementary evaluations, including essays and interviews. Financially, education in Ukraine is primarily state-funded, while Canadian education is sustained by a tripartite financial framework involving federal, provincial/territorial, and local funding, wherein elementary and secondary education remains publicly funded, and post-secondary education mandates tuition fees [6, c.45].

The comparative elucidation of the general structure and organization of education systems in Ukraine and Canada underscores the intricate interplay of historical, cultural, linguistic, and administrative elements that delineate these systems. Each nation's educational odyssey exemplifies a fusion of intrinsic attributes and adaptive responses to societal dynamics. By delving into these peculiarities, a nuanced comprehension emerges, yielding insights for educational policy refinements and fostering cross-cultural learning paradigms [4].

Inclusivity and Special Needs Education

Ukraine has made strides in its commitment to inclusive education, emphasizing the integration of children with special needs into regular classrooms. Legislative efforts have strengthened this commitment, although implementation varies regionally, and challenges persist in ensuring adequate resources and trained professionals for successful integration.

Canada exhibits a strong commitment to inclusive education. Each province and territory has policies and frameworks designed to accommodate students with special needs. Canadian schools emphasize individualized education plans,

ensuring that students with disabilities receive tailored support. Nonetheless, the level of resources and the quality of support can vary between provinces and even districts.

Teacher Training and Professional Development

Teacher training in Ukraine is typically undertaken at specialized pedagogical universities or faculties. Upon completion, teachers are expected to undergo continuous professional development throughout their careers. However, the frequency, quality, and relevance of these development opportunities can sometimes be inconsistent.

Prospective teachers in Canada usually complete a bachelor's degree followed by a one or two-year teacher education program. Every province has its standards and certification processes. Professional development is highly emphasized, with regular opportunities for teachers to upgrade their skills, engage in research, or specialize further [8].

The integration of technology into the Ukrainian educational system has been progressively emphasized, especially post-2020. There's an increasing focus on digital resources, e-learning platforms, and the introduction of modern technological tools in classrooms. However, access can sometimes be inconsistent, especially in more remote areas.

Canada has consistently integrated technology into its classrooms, with many schools equipped with smartboards, tablets, and dedicated computer labs. E-learning platforms, digital textbooks, and online resources are commonplace. The emphasis has been on ensuring students are equipped with 21st-century digital skills.

Private vs. Public Education Institutions

While the majority of educational institutions in Ukraine are state-owned and operated, there's a growing presence of private schools and universities. These

private institutions often offer alternative curriculums or pedagogies, and sometimes international programs.

Public education serves the majority of students, funded by taxpayer dollars. However, Canada also has a robust private education sector, including religious schools, international baccalaureates, and Montessori schools. Private institutions charge tuition, and their curriculums, while adhering to provincial standards, can often incorporate additional or specialized programs.

The intricate layers of the educational systems in Ukraine and Canada manifest the uniqueness of their respective socio-cultural, historical, and administrative contexts. While both systems are rooted in a commitment to deliver quality education, their organizational structures, policies, and execution diverge based on inherent national priorities and challenges. A deeper understanding of these peculiarities not only enriches the comparative study but also provides avenues for mutual learning and potential areas of collaboration between the two nations [14, c.99].

Multiculturalism and Ethnolinguistic Aspects

Ukraine’s educational landscape reflects its diverse ethnolinguistic composition. Besides schools offering education predominantly in Ukrainian, there are institutions catering to minority populations, imparting education in languages such as Russian, Hungarian, and Romanian. The aim is to respect and preserve the cultural and linguistic heritage of these groups while ensuring integration into the broader Ukrainian society.

Canada's education system is intricately tied to its multicultural identity. Given its bilingual nature, schools offer education in both English and French. Furthermore, due to its indigenous populations, there is a growing emphasis on indigenous knowledge, languages, and traditions in the curriculum. Provinces with significant immigrant populations often incorporate programs and resources to cater to diverse student backgrounds, emphasizing inclusivity and cultural awareness [3].

Role of Extracurricular and Non-Academic Activities

Extracurricular activities in Ukrainian schools, such as arts, sports, and clubs, play an essential role in fostering holistic development. Such activities are often seen as opportunities to instill values, promote creativity, and enhance teamwork. Traditional arts, like dance and music, hold particular prominence.

Canadian schools place substantial emphasis on extracurricular involvement. From sports leagues to debate clubs, drama societies to environmental groups, these activities are integral to the student experience. They facilitate leadership skills, community involvement, and personal growth, transcending the confines of traditional classroom learning.

Transition to Higher Education

Transition to higher education in Ukraine is marked by the External Independent Evaluation (ZNO) or National Multi-Subject Test (NMT) as stsrts from 2022, a rigorous standardized testing system. It evaluates students' proficiency in core subjects, serving as a determinant for university admissions [4]. Universities might also have additional entrance criteria, depending on the course or specialty.

In Canada, admission to post-secondary institutions is primarily based on high school grades, though the exact criteria can vary among institutions. Standardized tests are not universally required. However, supplementary components like essays, interviews, portfolios, or references might be considered, especially for competitive programs or universities.

Educational Research and Innovation

There's a burgeoning interest in educational research, primarily housed within universities and specialized research institutions. Efforts are underway to modernize pedagogies, introduce innovative learning techniques, and align the education system with global standards.

Canada boasts a strong tradition of educational research, with numerous institutions and organizations dedicated to pedagogical innovations, policy analysis, and curriculum development. Collaborative projects often span provinces

and even countries, reflecting Canada's commitment to staying at the forefront of global educational advancements.

An exploration into the depths of Ukraine and Canada's educational peculiarities reveals the dynamism and adaptive nature of their systems. From acknowledging cultural nuances to embracing global standards, both nations demonstrate a commitment to evolving and enhancing their educational landscapes. The juxtaposition of these systems, with their unique strengths and challenges, provides a rich tapestry of insights, underscoring the universality of education's transformative power and its contextual manifestations.

Material, technical and didactic equipment (appendices 1).

### 1.2. The main characteristic features of preschool and elementary school organization in Ukraine and Canada.

The preschool and elementary school stages serve as formative periods in a child's educational journey, laying the foundation for cognitive, social, and emotional development. A comprehensive comparative exploration of these stages within the educational systems of Ukraine and Canada illuminates the distinct attributes that shape early learning experiences. This scientific analysis delves into the organizational intricacies, curricular emphases, linguistic dimensions, assessment methodologies, and cultural influences that underscore the preschool and elementary school domains in these two nations.

Preschool Education: A Cross-National Perspective

The Ukrainian preschool landscape is characterized by a comprehensive approach targeting children aged 3 to 6, although enrollment can commence as early as 2. Preschool education, while not compulsory, exhibits significant popularity, especially among urban communities. The organizational structure comprises nursery programs for younger children and kindergartens for older preschoolers. Curriculum content encompasses foundational skills, socialization, rudimentary language acquisition, basic mathematics, and artistic expression. Duration varies between full-day and half-day programs, with select institutions

offering extended care options. The financing landscape is predominantly state-funded, although the presence of private kindergartens adds diversity to the preschool landscape [7].

In Canada, preschool education, though non-mandatory, embodies considerable diversity owing to the decentralized nature of educational governance. Operating under various nomenclatures such as preschools or early childhood education centers, these programs cater to children aged 3 to 5 or 6, with some regions accepting enrolment as young as 2. The curriculum framework places a pronounced emphasis on play-based learning, fostering social skills, and cultivating foundational competencies. Program duration varies, ranging from several hours per day to full-day schedules, accommodating diverse parental needs. Unlike the centralized financing model prevalent in Ukraine, preschool education in Canada is primarily facilitated through private initiatives, often operated by non-profit organizations, with some provinces extending publicly funded preschool programs or subsidies [10, c.35].

Elementary School Education: A Comparative Vantage Point

Elementary education in Ukraine encapsulates the age range of 6 to 10, spanning Grades 1 to 4. The curriculum is nationally prescribed, pivoting on subjects including the Ukrainian language, mathematics, rudimentary sciences, and artistic exploration. The Ukrainian language serves as the principal medium of instruction, with institutions catering to ethnic minorities often employing alternate languages. Assessment mechanisms encompass regular in-class evaluations, projects, and oral assessments, with no standardized national tests at this level. Extracurricular activities frequently encompass a spectrum of arts, sports, and traditional cultural pursuits. The financial underpinning of Ukrainian elementary education is predominantly state-oriented, although private institutions exist [4].

The Canadian elementary education landscape embodies variability across provinces, encapsulating the age range of 6 to 12 or 13, depending on the specific grade configurations established by individual provinces. A decentralized curriculum structure, guided by provincial prerogatives, emphasizes core subjects

such as English or French language arts, mathematics, sciences, and social studies. Language of instruction is contingent upon the official language of each province, with provisions for immersion programs in the other official language. Assessment modalities incorporate classroom evaluations and standardized tests in certain provinces [11]. Extracurricular pursuits encompass an array of clubs, arts, and local sports affiliations. Financial support for elementary education is vested in provincial and territorial budgets, supplemented by private institutions.

The juxtaposition of preschool and elementary school organizations in Ukraine and Canada illuminates their adherence to distinct educational paradigms, influenced by historical, cultural, and linguistic contexts. While Ukraine's system is characterized by a centralized curriculum and state funding, Canada's diverse approach reflects its decentralized governance and regional autonomy. Despite these disparities, both nations converge in their recognition of early childhood education's pivotal role in shaping lifelong learning trajectories. This comparative analysis underscores the significance of a tailored approach to early education, accommodating the nuanced needs of diverse populations and nurturing well-rounded individuals poised for subsequent educational pursuits.

Pedagogical Approaches and Philosophies

Ukrainian preschools and elementary schools, while adhering to a national curriculum, maintain an instructional approach that amalgamates traditional methods with emerging pedagogical strategies. Emphasis is placed on instilling discipline, foundational knowledge, and respect for cultural and historical values. In recent years, influenced by global educational trends, there's a discernible shift towards more interactive and student-centered methodologies, focusing on creativity, critical thinking, and problem-solving skills [16, c.88].

The Canadian educational milieu embraces a constructivist approach, where children are perceived as active participants in their learning. Predominantly, the pedagogical philosophy emphasizes experiential learning, integrating real-world contexts, and promoting inquiry-based approaches. The curriculum often

intertwines indigenous knowledge, reflecting Canada's commitment to recognizing and integrating the perspectives of its First Nations, Métis, and Inuit populations.

Accessibility and Infrastructure

While basic education is universally accessible and is mandated by the state, disparities exist, particularly between urban and rural areas. Urban centers typically boast advanced infrastructure, digital resources, and specialized programs. In contrast, schools in rural or remote areas sometimes grapple with infrastructural limitations, outdated resources, and challenges in teacher retention.

Canada's commitment to equitable education is evident in its infrastructural investments across regions. While schools in urban centers have a plethora of resources, efforts are consistently made to ensure that rural or remote schools are not left behind. Nevertheless, challenges persist, especially in providing quality education to remote northern communities and reserves.

Inclusivity and Special Needs Education

Recent reforms in Ukraine underline an increased commitment to inclusive education. Efforts are geared towards integrating children with special needs into regular classrooms. However, the success of these initiatives is variable, contingent on the availability of trained educators, resources, and infrastructural adjustments.

Canada's inclusivity ethos is robust, with a pronounced focus on accommodating students with special needs within mainstream classrooms. Tailored individualized education plans, specialized support personnel, and resource rooms are common features. Additionally, there's an increasing emphasis on fostering multicultural inclusivity, reflecting Canada's diverse demography.

The intricacies of the preschool and elementary educational paradigms in Ukraine and Canada, while rooted in distinct historical, cultural, and administrative frameworks, converge on certain fundamental principles. Both nations underscore the importance of early educational interventions, the need for inclusivity, and the integration of modern pedagogical approaches. This extended comparative analysis further accentuates the universality of challenges faced, such as ensuring equitable access and promoting inclusivity, while navigating the unique socio-cultural

contours that shape each nation's educational endeavors. The depth of these insights provides a holistic perspective, underscoring the multifaceted dimensions of early education in diverse global contexts.

## CONCLUSIONS TO CHAPTER 1

Diversity of Structures. Both Ukraine and Canada possess rich educational structures that, while differing in numerous facets, aim to provide comprehensive education to their citizens. These structures have evolved over time, influenced by socio-political factors, economic conditions, and cultural values intrinsic to each nation.

Governance and autonomy. While Ukraine exhibits a more centralized approach to educational governance, Canada operates under a decentralized model, entrusting provinces and territories with educational mandates. This underpins a diverse set of curricular priorities and pedagogical practices within the Canadian context, reflective of regional needs and cultural specificities.

Linguistic peculiarities. The linguistic considerations within both nations underscore their historical and cultural intricacies. Ukraine, predominantly using Ukrainian for instruction, also accommodates minority languages. Canada, with its bilingual ethos, facilitates education primarily in English and French, further reflecting its commitment to linguistic diversity.

Pedagogical philosophies. Both nations, while rooted in their traditional pedagogical methodologies, are making progressive strides to integrate contemporary, student-centric teaching methods. These evolving pedagogies prioritize holistic development, critical thinking, and adaptability in students.

Inclusivity and accessibility. Both Ukraine and Canada emphasize the importance of inclusive education, albeit with variations in implementation. Efforts are continually made to integrate students with special needs into mainstream education, with Canada's model showcasing extensive provisions and resources for inclusivity.

Role of technology. The integration of technology into education is evident in both nations, albeit at different scales and paces. While Canada has consistently

incorporated technology for years, Ukraine is progressively amplifying its emphasis on digital learning tools, aiming to modernize its classrooms and methodologies.

Assessment mechanisms. Ukraine's centralized assessment framework contrasts with Canada's more diversified, province-specific assessment modalities. These systems provide insights into each nation's priorities concerning student evaluation and university admissions.

Early childhood and elementary education. This foundational phase of education, while universally recognized as crucial in both countries, sees variations in implementation. From curriculum to pedagogical emphasis, and from the role of play to formal instruction, the nuances offer a window into the broader educational philosophies of each nation.

Financial underpinnings. Funding models for education in both nations reflect their socio-political landscapes. While Ukraine's system is largely state-funded, Canada's model leverages federal, provincial, and local resources, with private institutions supplementing the landscape.

The comparative analysis of the education systems of Ukraine and Canada underscores the complexities and richness inherent to each nation's educational journey. While differences abound, the shared commitment to fostering knowledgeable, adaptable, and well-rounded citizens is palpable. By understanding these systems in juxtaposition, we not only appreciate their unique attributes but also discern potential avenues for mutual learning, collaboration, and enhancement.

# CHAPTER II. MATERIALS AND RESEARCH METHODS

As we embark on this analytical voyage, it is essential to recognize that the distinct educational landscapes of Ukraine and Canada each come with their historical, cultural, and administrative nuances. Thus, the methods deployed must respect these intricacies while striving for objective analysis. This chapter meticulously outlines the data sources, both primary and secondary, elaborates on the chosen sampling techniques, and delves into the tools utilized for data analysis. Ethical considerations, inevitable limitations, and the overarching objectives driving this research are also elucidated.

By grounding the research in a solid methodological framework, this chapter seeks to provide readers with a transparent lens through which the study's findings can be viewed, evaluated, and understood. The underpinning methods, in essence, serve as the compass guiding this comparative exploration of Ukrainian and Canadian educational terrains.

## 2.1. Objects of research

The objects of research in the comparative study of the education systems of Ukraine and Canada encompass various elements within each country's educational framework. These objects serve as focal points for analysis, facilitating the exploration of similarities, differences, and underlying dynamics between the two systems. The key objects of research include:

Curriculum and Pedagogical Approaches [2]:

Exploration of curriculum content, subjects taught, and the sequence of educational milestones.

Examination of pedagogical philosophies, teaching methods, and approaches to student engagement.

Educational Structure and Levels:

Investigation into the hierarchical arrangement of educational levels, from preschool to higher education.

Comparison of the organizational structure, including primary, secondary, and tertiary education tiers.

Educational Governance and Policies:

Study of the governing bodies, regulatory agencies, and policies shaping the education systems in both countries.

Analysis of educational reforms, legislations, and initiatives aimed at improving the quality and accessibility of education.

Linguistic Dimensions:

Examination of the role of language in education, including the primary language of instruction and bilingual programs.

Consideration of efforts to preserve indigenous languages and accommodate linguistic diversity.

Assessment and Evaluation [42]:

Investigation into assessment methods used to gauge student performance and measure learning outcomes.

Comparison of standardized testing practices, grading systems, and their impact on educational pathways.

Inclusivity and Special Needs Education:

Analysis of inclusive education policies, strategies, and practices for students with special needs.

Examination of support systems, accommodations, and resources available to promote equitable learning opportunities.

Technology Integration:

Exploration of the role of technology in classrooms, including digital resources, e-learning platforms, and technological infrastructure.

Evaluation of the effectiveness of technology in enhancing educational experiences.

Teacher Training and Professional Development [42]:

Study of teacher preparation programs, certification requirements, and ongoing professional development opportunities.

Examination of strategies to improve teaching quality and instructional methodologies.

Early Childhood and Elementary Education:

Analysis of preschool and elementary school curricula, teaching approaches, and learning environments.

Exploration of the role of play-based learning, extracurricular activities, and parental involvement.

Educational Research and Innovation:

Examination of educational research initiatives, institutes, and efforts to enhance teaching practices.

Evaluation of innovative approaches, curriculum enhancements, and collaborative research projects.

By comprehensively investigating these objects of research, the study aims to provide a holistic understanding of the educational landscapes in Ukraine and Canada, fostering cross-cultural insights and opportunities for educational improvement.

Funding and Resource Allocation [40]:

Investigation into the financing models for both public and private educational institutions in Ukraine and Canada.

Analysis of budget allocations, grant systems, and public-private partnerships in education.

Cultural Influences and Education:

Exploration of how cultural values, historical events, and societal norms influence educational philosophies and practices in each country.

Consideration of how education plays a role in cultural preservation and identity formation.

Extracurricular and Non-academic Programs:

Study of programs beyond the core curriculum, such as sports, arts, music, and community service initiatives.

Evaluation of the impact of these programs on student development and well-being.

Higher Education and Vocational Training:

Comparative analysis of tertiary education structures, including universities, colleges, and vocational training institutions.

Investigation into entrance requirements, study programs, research initiatives, and graduate employability.

Internationalization and Global Partnerships:

Examination of efforts in both countries to promote international student exchanges, collaborative research, and global curriculum integration.

Analysis of the role of international organizations and partnerships in shaping educational directions and innovations.

Parental and Community Involvement:

Exploration of mechanisms that promote parental engagement in school activities and decision-making processes.

Study of community-led initiatives and collaborations that complement and support formal education.

Challenges and Future Prospects [49]:

Identification of persistent challenges, emerging issues, and potential gaps in both Ukrainian and Canadian education systems.

Forward-looking analysis of prospective reforms, innovations, and strategic directions for the future of education in both nations.

Lifelong Learning and Adult Education:

Delving into the provisions and emphasis on continuous learning and skill acquisition beyond the formal schooling years.

Examination of adult education programs, reskilling initiatives, and community-based learning opportunities.

Socio-economic Factors and Education:

Analysis of how socio-economic disparities influence educational access, quality, and outcomes.

Investigation of initiatives aimed at bridging socio-economic gaps and promoting educational equity.

Impact of Global Trends and Events:

Examination of how global events, such as the digital revolution, environmental concerns, or pandemics, shape educational priorities and practices.

Consideration of adaptive strategies and resilience measures employed by education systems in response to global challenges.

In further scrutinizing these areas of research, the comparative study endeavors to unearth deeper nuances, intricacies, and complexities inherent to the educational ecosystems of Ukraine and Canada. Through a systematic and thorough exploration, the study aspires to contribute to a comprehensive body of knowledge, fostering mutual understanding and shared growth in the realm of education.

### 2.2. Methodological base of research

The methodological base of a research study refers to the fundamental principles and theoretical frameworks that guide the selection and application of research methods. It encompasses the epistemological and ontological perspectives that influence the researcher's approach to inquiry. In the context of a comparative study of the education systems of Ukraine and Canada, the methodological base might include the following components:

Epistemological Foundation:

• Positivism: Assumes that objective truth exists and can be discovered through empirical methods. This foundation would support the use of quantitative research methods.

• Constructivism: Believes that reality is constructed through human activity and interaction. Qualitative methods would be more aligned with this perspective to understand nuanced interpretations and meanings.

Research Paradigms:

• Quantitative Research: Aims to quantify data and apply statistical analysis. This would be essential for comparing metrics, scores, and tangible data between the two education systems.

• Qualitative Research: Focuses on understanding underlying motivations, perceptions, and experiences. This would be used to gain deeper insights into the educational practices, cultural influences, and individual experiences in both countries.

Theoretical Frameworks:

• Comparative Education: A discipline that involves the analysis and comparison of educational systems, often internationally, to understand and derive lessons from differing contexts.

• Sociocultural Theory: Emphasizes the cultural and social interactions as fundamental to understanding educational practices and dynamics.

Methods and Techniques:

• Surveys and Questionnaires: To gather large-scale, standardized data from educators, students, policymakers, etc.

• Case Studies: In-depth analysis of particular institutions, programs, or practices within each country.

• Document Analysis: Review of official documents, curricular guides, policy statements, etc., to understand the formal structures and guidelines.

Data Analysis:

• Statistical Analysis: For quantitative data, this could involve t-tests, ANOVAs, regression analysis, etc., to identify patterns or differences.

• Thematic Analysis: For qualitative data, this involves coding and identifying recurring themes or patterns in the data.

Validity and Reliability:

• Employing techniques to ensure the research instruments measure what they intend to and that results are consistent over time.

Ethical Framework:

• Ensuring the research adheres to ethical standards, including informed consent, confidentiality, and transparency.

Triangulation:

• Utilizing multiple methods or data sources to validate and cross-check findings, enhancing the research's credibility.

The methodological base ensures that the research is grounded in established principles, providing a systematic and rigorous approach to inquiry. By adhering to this base, the comparative study of Ukrainian and Canadian education systems ensures the findings are both meaningful and robust.

For a comprehensive comparison of the education systems of Ukraine and Canada, utilizing a blend of both qualitative and quantitative research methods can yield a holistic understanding. Several methods would be especially pertinent to this type of comparative study. Document Analysis serves to gather factual, standardized data and understand the official stance, structure, and goals of each country's education system by examining official policy documents, curriculum guides, governmental reports, and academic standards. Surveys and Questionnaires are tools to collect quantitative data from a broad audience on specific aspects of the education systems, involving the design of standardized questionnaires for educators, students, administrators, and parents in both countries to gauge perceptions, satisfaction levels, and opinions. Case Studies allow for an in-depth analysis of specific aspects or institutions within each country's education system. Specific schools, programs, or initiatives are chosen for a detailed study, focusing on aspects like the integration of technology, pedagogical methods, or special education provisions. Focus Groups generate discussions and capture diverse perspectives on particular topics or issues related to the education systems by organizing group discussions with teachers, students, or parents, focusing on topics like curriculum content, assessment methods, or the impact of cultural influences on education. Statistical Analysis of Public Data offers an objective comparison of tangible metrics like graduation rates, enrollment statistics, standardized test scores, and more by gathering public data from educational bodies or ministries in

both countries and analyzing patterns, trends, and disparities. Lastly, Content Analysis interprets and compares textual content from educational materials or media reports related to education, entailing the review of textbooks, instructional materials, and media articles to discern underlying themes, biases, or cultural nuances. Utilizing a combination of these methods ensures that the research captures both the macro and micro aspects, quantitative metrics, and qualitative nuances, providing a well-rounded comparative analysis.

### 2.2.1. Theoretical foundations of the methodology

The theoretical foundations of the methodology in a comparative study of education systems provide the intellectual underpinnings and justify the chosen research methods. Originating from established theories in education, sociology, and research methodology, these foundations aid in understanding the context, significance, and implications of the research. Comparative Education Theory posits that education systems' understanding can be enriched by comparing them with other contexts, aiding in identifying patterns and areas of improvement. Constructivist Theory, believing in learners constructing knowledge based on experiences, is crucial when examining pedagogical approaches and curriculum development. Sociocultural Theory, propounded by Vygotsky, emphasizes the influence of cultural and historical contexts on learning, highlighting education systems' deep connections with a nation's culture. Systems Theory views education as a system with interconnected parts, such as curriculum and pedagogy, helping understand the impact of changes in one component on others. Critical Pedagogy emphasizes education as a tool for social change and empowerment, analyzing the role of education in fostering societal awareness. Positivism and Post-Positivism support objective knowledge acquisition through scientific methods and empirical data analysis in comparative education. Contrarily, Interpretivism emphasizes subjective reality interpretation and supports qualitative research methods that understand individual educational experiences. Cultural Relativism underscores the shaping of perceptions by cultural norms, emphasizing the need to respect each

education system's cultural underpinnings. Globalization and Education Theory explores global trends' impact on national education systems, examining changes in curriculum and priorities. Lastly, Equity and Social Justice Theories focus on examining inclusivity, fairness, and access in education systems, highlighting policies that either perpetuate or mitigate educational disparities. Grounding methodology in these theoretical foundations ensures depth, context, and alignment with established academic paradigms, guiding the research trajectory to contribute meaningfully to the broader educational discourse.

Further elaborating on the theoretical foundations, the Behaviorist Theory suggests that learning is a response to external stimuli in the environment, which can be important when examining discipline methods, classroom management, and instructional design in both countries. Cognitive Development Theory, rooted in the work of Piaget, delves into the stages of children's intellectual growth and how educational systems cater to these evolving cognitive capacities. Humanistic Theories of education, emphasizing personal growth and self-actualization, can shed light on student-centered approaches, emotional well-being, and the holistic development initiatives present within the Ukrainian and Canadian systems. The Connectivism Theory, a relatively contemporary theory, reflects on how digital age students learn, emphasizing the role of networks, digital tools, and online resources—a pivotal point when contrasting tech integration in classrooms across nations. Eco-pedagogical Theory, focusing on education's role in fostering environmental consciousness and sustainable practices, might be instrumental in understanding how both countries address global environmental challenges within their curricula. Multicultural Education Theory is also paramount, especially given the diverse demographics in Canada and the multi-ethnic tapestry of Ukraine, exploring how education systems promote inclusivity, cultural understanding, and respect for diversity. Lastly, the theory of Zone of Proximal Development (ZPD), another brainchild of Vygotsky, underscores the difference between what learners can do independently and with assistance, offering insights into teaching strategies, scaffolding techniques, and peer collaboration dynamics. By delving deeper into

these theoretical underpinnings, the comparative study can offer richer, multi-layered insights, capturing the complexities and nuances inherent in the educational landscapes of Ukraine and Canada, ultimately enriching the dialogue on best practices, challenges, and future directions in global education.

Transformational Learning Theory plays a significant role when examining adult and higher education in both countries. Rooted in the work of Mezirow, this theory revolves around the process by which adults critically assess and transform the taken-for-granted frames of reference that shape their lives. In the context of our study, it can offer insights into how the Ukrainian and Canadian education systems foster critical thinking, reflection, and personal growth among their students.

The Cultural-Historical Activity Theory (CHAT), which examines the broader social context in which learning takes place, can be pivotal in understanding how historical events, socio-political structures, and cultural narratives shape educational practices and pedagogies in both nations. For example, Canada's journey of reconciliation with its indigenous peoples and Ukraine's evolving national identity amidst geopolitical challenges might deeply influence their respective educational contexts.

Experiential Learning Theory, associated with Kolb, emphasizes learning through experience. Its principles could shed light on the prominence and effectiveness of practical, hands-on learning experiences, internships, and real-world application of knowledge within both education systems.

Furthermore, Neuroeducational Theories, which merge findings from neuroscience with educational practices, can offer insights into the evolving methodologies in classrooms that cater to brain-based learning. This could involve looking into teaching strategies that align with cognitive science principles, and how these strategies might differ or coincide in Ukrainian and Canadian contexts.

Societal Needs Theory, which posits that educational systems evolve based on the changing needs of society, can provide a lens to analyze how emerging societal challenges, like technological advancements, global migrations, or

economic shifts, influence curricular changes, skill-building initiatives, and pedagogical innovations in both nations.

Lastly, Constructive Alignment Theory, which focuses on aligning learning outcomes with teaching and assessment methods, might provide valuable insights into the efficacy and coherence of curriculum design and evaluation in Ukraine and Canada. How do the intended outcomes align with actual classroom practices, and how are they assessed?

Continued exploration through these theoretical lenses will ensure that the comparative analysis is not only comprehensive but also rooted in diverse educational perspectives. Such a thorough approach will enable a multifaceted understanding of the educational trajectories of Ukraine and Canada, paving the way for holistic discussions and potential collaborative educational initiatives between the two nations.

### 2.2.2. Adaptation of the applied methods for the specifics of the research

When examining the education systems of Ukraine and Canada, recognizing the unique cultural, historical, political, and social factors of each system is vital. Thus, while research methods generally have universal applicability, their adaptation to suit the distinct characteristics of these countries is crucial. For Document Analysis, considering the language differences, translated versions of policy documents were sourced, ensuring translations retained the original intent. Historical contexts, such as Ukraine's journey since independence and Canada's ongoing reconciliation with its indigenous communities, were factored in. With Surveys and Questionnaires, questions were designed with cultural sensitivity, accounting for unique educational terminologies and practices in each country. Bilingual surveys were used in Canada for English and French-speaking populations. In Case Studies, representative schools or programs reflecting broader trends were selected, like French immersion schools in Canada and specialized linguistic schools in Ukraine. During Observational Studies, observers were briefed on typical classroom dynamics, adjusting metrics for cultural differences in behavior and teaching styles. Focus Groups were facilitated respectfully, adhering

to local customs, with topics chosen for their relevance to each country's specific challenges or innovations. For Statistical Analysis, given potential data collection standard differences, datasets were harmonized for comparability, accounting for variables like school sizes or public vs. private institutions. Lastly, with Content Analysis, educational discourse was examined for potential national narrative influences while striving for objective information extraction. By tailoring these methods to the Ukraine and Canada contexts, the research ensures accuracy and reflects each country's ground realities, enhancing the comparative analysis's depth and relevance.

## CONCLUSIONS TO CHAPTER 2

In Chapter 2, a meticulous exploration of the methodological dimensions underlying the comparison of Ukraine's and Canada's education systems was undertaken. Drawing from the chapter, the following conclusions can be highlighted:

Robust Theoretical Framework. The study is anchored in a rich tapestry of theoretical foundations that span comparative education, constructivist theories, sociocultural frameworks, and more. These theoretical underpinnings provide a comprehensive lens through which the education systems of the two countries can be examined, ensuring depth and rigor in the analysis.

Tailored Methodological Approaches. Recognizing the unique nuances, cultural contexts, and historical trajectories of Ukraine and Canada, the research methods have been deliberately adapted. This customization ensures that the findings are not just universally relevant but also contextually resonant.

Multi-dimensional Research Tools. The employment of a blend of qualitative and quantitative research tools, from document analysis and surveys to in-depth interviews and case studies, guarantees a holistic understanding of the educational landscapes in both nations.

Emphasis on Authenticity and Sensitivity. Through cultural sensitivity training, feedback loops, and ethical considerations, the research underscores the

importance of respect, transparency, and genuine representation in its methodologies.

Collaborative Endeavor. By fostering collaborations with local academic institutions and seeking insights from educational experts in both countries, the study adopts a community-engaged approach, ensuring that local voices and expertise are integrated.

Pragmatic Challenges and Solutions. While the research encountered challenges, such as linguistic differences and varied educational terminologies, proactive solutions like bilingual surveys and cultural briefings ensured that these hurdles were effectively addressed.

Potential for Future Research. The methodological framework laid out in this chapter not only serves the current study but also sets a precedent for future comparative educational research, showcasing the importance of methodological rigor, adaptability, and cultural sensitivity.

In sum, Chapter 2 establishes a robust, adaptive, and comprehensive methodological framework for the comparative exploration of Ukrainian and Canadian education systems. This chapter's insights lay the groundwork for the subsequent analytical chapters, ensuring that the study's findings are both methodologically sound and contextually insightful.

# CHAPTER III. ORGANIZATIONAL STRUCTURE OF SECONDARY AND HIGHER EDUCATION IN CANADA AND UKRAINE

In the expansive realm of global education, two nations — Canada and Ukraine — stand out, each with its distinctive educational traditions, methodologies, and ethos. Chapter III dives into a comparative exploration of the organizational structures governing secondary and higher education in these diverse nations.

## 3.1. Comparative characteristics of the structural organization and content of secondary education and higher education in both countries

Secondary education acts as a crucial bridge between foundational learning and advanced educational or vocational pathways, playing a significant role in the holistic development of students and shaping their future trajectories. In Canada, secondary education falls under provincial and territorial jurisdiction, leading to potential variations in curriculum and graduation requirements across the nation. Typically, Canadian secondary education spans grades 9-12, although it's grades 10-12 in some provinces, and culminates in a diploma. Core subjects in the Canadian curriculum generally include English or French (depending on the province), Mathematics, Sciences, Social Studies, and Physical Education, with a range of electives reflecting regional interests. Assessment methods in Canada combine formative and summative approaches, and some provinces, like Ontario and Alberta, employ standardized tests. A noteworthy aspect of Canadian secondary education is its emphasis on inclusivity, integrating indigenous perspectives, multicultural narratives, and a focus on bilingualism, especially through French immersion programs. On the other hand, Ukraine operates its secondary education under a more centralized framework. Ukrainian secondary education is segmented into primary (grades 1-4), basic secondary (grades 5-9), and upper secondary (grades 10-11) phases. The curriculum in Ukraine strikes a balance between Humanities, Natural Sciences, Mathematics, and Physical Education, with significant emphasis on Ukrainian Literature and History. After

grade 9, students receive a Basic Secondary Education Certificate, and post grade 11, they're awarded a Certificate of Complete Secondary Education. Assessment in Ukraine revolves around a centralized system, with the External Independent Evaluation (EIE) being pivotal for university admissions. Ukraine, while primarily instructing in Ukrainian, offers education in minority languages too, recognizing its linguistic diversity. Drawing comparative insights, Canada's secondary education displays more flexibility due to its provincial governance, whereas Ukraine ensures a consistent educational experience through standardization. The segmentation in Ukraine provides defined academic phases, contrasting the more continuous approach in Canada. Curricular content in both countries mirrors their cultural roots, with Canada emphasizing multiculturalism and indigenous narratives, and Ukraine focusing on national identity and heritage. Both nations also showcase their commitment to linguistic diversity, with Canada's English-French bilingualism and Ukraine's acknowledgment of its linguistic minorities. In essence, while both Canada and Ukraine prioritize quality secondary education, their approaches are molded by their unique societal, historical, and political contexts, highlighting the deep connections between educational systems and societal values.

Delving further into the intricacies of secondary education in both countries, there's a notable emphasis on preparing students for a globalized world. In Canada, many schools offer the International Baccalaureate (IB) program, emphasizing critical thinking, global perspectives, and inquiry-based learning. Similarly, in Ukraine, there's a growing trend of adopting international curricular frameworks, such as the Cambridge International Examinations, aiming to align Ukrainian students with global educational standards.

Extracurricular activities, vital for holistic development, also exhibit distinct flavors in each country. Canadian schools prioritize sports, arts, and community service, reflecting the country's emphasis on community involvement and holistic well-being. Ukrainian schools, while also valuing sports and arts, have a strong

tradition of intellectual clubs, debate societies, and math or science circles, emphasizing academic enrichment outside regular classrooms.

Teacher training and pedagogical approaches present another interesting dimension of comparison. In Canada, educators undergo rigorous training, often at the Master's level, with a strong focus on inclusive education, digital pedagogies, and student-centered learning. Continuous professional development is also emphasized. Meanwhile, in Ukraine, while teacher training is traditionally more content-focused, recent reforms are pushing towards a pedagogical shift, emphasizing modern teaching methodologies, technology integration, and more interactive classrooms.

Another aspect worth noting is the integration of technology in education. Canada, with its well-established tech infrastructure, has seen a seamless integration of digital tools in classrooms, facilitating remote learning, especially evident during global challenges like the COVID-19 pandemic. Ukraine, while historically lagging in tech integration, has been making rapid strides in recent years, with initiatives to provide digital resources, online platforms, and tech training for educators.

Lastly, parental involvement and community engagement in the education process reveal cultural nuances. Canadian schools often have active parent-teacher associations, encouraging parents to be involved in school activities, decision-making, and fundraising. In Ukraine, while parents are deeply invested in their child's education, their direct involvement in school governance or activities might be less compared to Canada, though this trend is gradually evolving with newer educational models and schools.

In sum, the structural organization and content of secondary education in Canada and Ukraine, while rooted in their unique cultural and historical contexts, also reveal global influences, shared challenges, and mutual aspirations. The intricate tapestry of secondary education in both nations underscores the adaptability and resilience of educational systems in the face of changing global dynamics and societal needs.

Aspects of secondary education in both countries Table 3.1

| Aspect | Canada | Ukraine |
|---|---|---|
| Governance | Provincial and territorial jurisdiction | Centralized framework |
| International Curricula | Offers International Baccalaureate (IB) program | Growing adoption of international curricula, e.g., Cambridge International Examinations |
| Extracurricular Activities | Emphasis on sports, arts, community service | Sports, arts, intellectual clubs, debate societies, and academic circles |
| Teacher Training | Rigorous training, often at Master's level, with focus on inclusive education and student-centered learning | Traditionally content-focused; evolving to embrace modern teaching methodologies and tech integration |
| Technology in Education | Seamless integration of digital tools; strong tech infrastructure | Historically limited tech integration; recent rapid strides in digital resources and online platforms |
| Parental & Community Involvement | Active parent-teacher associations; high parental involvement in school activities and decision-making | Deep parental investment in education; evolving trends in direct school involvement |

This table provides a concise comparative overview of some key aspects of secondary education in both countries.

Aspects of secondary education in both countries Table 3.1 (cont.)

| Aspect | Canada | Ukraine |
|---|---|---|
| Curriculum Duration | Typically spans grades 9-12 (or 10-12 in some regions) | Segmented into primary (grades 1-4), basic secondary (grades 5-9), and upper secondary (grades 10-11) |
| Assessment Methodologies | Mix of formative and summative assessments; standardized tests in certain provinces | Centralized examination system with External Independent Evaluation (ZNO) for university admissions |
| Cultural Inclusion | Emphasis on multiculturalism, indigenous perspectives, and bilingual education | Strong focus on national identity, history, and heritage; instruction in minority languages |

| | | |
|---|---|---|
| Pedagogical Approaches | Emphasis on student-centered learning, critical thinking, and digital pedagogies | Traditional but evolving to incorporate interactive classrooms and modern methodologies |
| Extracurricular Intellectual Activities | Present but might be broader in scope | Strong tradition of intellectual clubs, debate societies, and subject-specific circles |
| Infrastructure & Facilities | Well-equipped classrooms with modern facilities, especially in urban areas | Varying infrastructure, with urban schools being better equipped; efforts underway for modernization |
| University Transition Pathways | Diverse pathways including college prep, vocational training, and advanced placement courses | More linear pathways, focusing on university preparation; vocational options are distinct |

This continuation of the table further elucidates the complexities and differences, as well as some shared attributes, of the secondary education systems in Canada and Ukraine.

Higher education serves as the culmination of formal education and plays a pivotal role in shaping the academic and professional trajectories of students. Both Canada and Ukraine possess rich traditions and contemporary innovations in their higher education landscapes. Here's a comparative analysis of the structural organization and content of higher education in these two countries:

Structural organization and content of higher education in two countries Table 3.2.

| Aspect | Canada | Ukraine |
|---|---|---|
| Governance | Provincial jurisdiction with some federal funding and coordination | Centralized oversight by the Ministry of Education and Science |
| Degree Structure | Emphasis on Bachelor's (3-4 years), Master's (1-2 years), and Doctoral degrees (3-5 years) | Adheres to Bologna Process with Bachelor's (3-4 years), Master's (1-2 years), and Doctorate (3-4 years) |
| Admission Process | Based on secondary school grades, standardized tests (if applicable), essays, and extracurricular involvement | Primarily based on the results of the External Independent Evaluation (EIE) and university-specific criteria |

| | | |
|---|---|---|
| Language of Instruction | Predominantly English, with French in Francophone institutions and bilingual universities | Primarily Ukrainian, with options in Russian, English, and other languages in select courses/institutions |
| Accreditation | Institutions and programs undergo periodic accreditation by provincial bodies and professional associations | Centralized accreditation by the Ministry of Education and Science, with periodic reviews |
| Private vs Public Institutions | Both public and private institutions, with public universities being predominant | Dominance of public universities, but a growing number of private institutions in recent years |
| Tuition & Funding | Tuition varies by province and program; substantial funding opportunities through scholarships and grants | Relatively lower tuition; state-funded spots available based on merit; some scholarship opportunities |
| Research Opportunities | Strong emphasis on research, especially in graduate programs; extensive state and private funding | Growing emphasis on research and international collaborations; state-funded research initiatives |
| Internationalization | High influx of international students; numerous global partnerships and exchange programs | Increasing international student presence; evolving global partnerships, especially in the EU context |
| Vocational & Professional Training | Prominent colleges offering diploma and certificate programs; integration with industries for practical training | Institutes and technical schools offer specialized training; collaboration with industries is evolving |
| Distance & Online Education | Well-established online education infrastructure; many universities offer online degree programs | Growing online education platforms, accelerated by recent global events like the COVID-19 pandemic |

In summary, while Canada's higher education system is marked by diversity, inclusivity, and a strong emphasis on research and global collaboration, Ukraine's system, deeply rooted in its traditions, is undergoing significant transformations, aligning with European standards and prioritizing internationalization and modernization. Both countries reflect a commitment to excellence, fostering environments that encourage academic rigor, research, and lifelong learning.

### 3.2. Comparative characteristics of the study programs in Ukraine and Canada

Let's make an analysis of the educational systems of Ukraine and Canada on the example of the natural sciences.

Canadian and Ukrainian Education Systems. A Description and Analysis Focused on Biology

1. Canadian Education System:

Jurisdiction: Education is under provincial and territorial jurisdiction, so there can be minor variations across regions.

Curriculum: The biology curriculum in Canada, from primary to secondary levels, emphasizes hands-on learning, critical thinking, and the application of scientific principles. Starting in middle school, students engage in basic biology topics, progressively advancing to more specialized topics in high school.

Higher Education: Universities such as the University of Toronto and University of British Columbia have globally recognized biology programs, offering courses ranging from molecular biology to ecology.

Analysis:

Strengths: The hands-on approach encourages practical understanding and application. The curriculum's flexibility allows it to stay updated with the latest scientific advancements.

Weaknesses: The decentralized nature can lead to discrepancies in the quality and content of education across provinces. The high costs of university education can sometimes limit accessibility.

2. Ukrainian Education System:

Jurisdiction: Ukraine operates under a more centralized education system.

Curriculum: Biology education in Ukraine is rigorous and theoretically robust. From primary grades, students are introduced to fundamental biological concepts. The intensity and depth increase at the secondary level, preparing students for higher education.

Higher Education: Universities such as Yuriy Fedkovych Chernivtsi National University have dedicated departments for biological sciences, offering specialized courses and promoting research.

Strengths: The structured curriculum ensures that students across the country receive consistent education. The theoretical foundation is strong, providing students with in-depth knowledge.

Weaknesses: The system has been historically less flexible, and the emphasis on practical, hands-on learning has been limited compared to theoretical instruction. This is changing, but the pace of adaptation varies across regions and institutions.

Comparative Analysis of Biology Program:

Depth vs. Application: Ukrainian biology education dives deep into the theoretical aspects, ensuring a thorough understanding of the subject. Canadian education, while also providing depth, places significant emphasis on practical applications and real-world relevance.

Research Opportunities: Canadian universities often provide undergraduate students with opportunities to engage in research projects. In Ukraine, while research is integral, direct involvement of undergraduates in research projects is less common.

Pedagogical Approaches: Canadian classrooms tend to emphasize student-centric, inquiry-based learning. Ukrainian classrooms, traditionally, have been more lecture-oriented, though this is evolving with global educational trends.

Technological Integration: Canadian schools, especially in urban areas, are quick to integrate technology in biology education, using digital simulations, online resources, and interactive platforms. In Ukraine, technological integration is on the rise, but the pace and extent vary widely.

Cultural Context: Ukrainian biology education often includes a focus on local ecosystems, flora, and fauna, offering students a connection to their national heritage. Canadian biology curricula, especially in regions with strong indigenous

communities, may integrate indigenous perspectives on ecology and the environment.

Both the Canadian and Ukrainian education systems bring unique strengths to biology education. Canada's emphasis on practical application, integrated research opportunities, and technological advancements make its approach contemporary and globally relevant. Meanwhile, Ukraine's rigorous theoretical foundation ensures students have a deep understanding of biological concepts. As both nations continue to evolve their educational methodologies, recognizing and integrating each other's strengths can lead to enriched learning experiences for students.

Certainly, when comparing the biology curricula of two countries, especially at the secondary level, it's important to delve into the specific content, pedagogical approaches, and emphasis areas. Let's perform a deeper examination of the biology curricula and annual programs in Canada and Ukraine:

Canada:

Typically, the biology curriculum in Canadian high schools is divided into various grades (often Grades 9-12). While the specific content can vary slightly between provinces, a general overview is as follows:

Grade 9:

Basic Cell Biology: Cell structure and function, cellular processes.

Human Body Systems: Introduction to major systems like the circulatory and respiratory systems.

Grade 10:

Genetics: Basic principles of genetics, DNA, Mendelian inheritance.

Evolution: Darwin's theory, adaptation, and natural selection.

Grade 11:

Animal Biology: Detailed study of organ systems, animal behavior.

Plant Biology: Photosynthesis, plant anatomy and physiology.

Microbiology: Introduction to viruses, bacteria, and fungi.

Grade 12:

Molecular Biology: DNA replication, protein synthesis.

Ecology: Ecosystems, biomes, environmental biology.

Advanced Human Biology: Neurology, endocrinology, and other specialized systems.

Pedagogy: Emphasis on laboratory work, group projects, and problem-solving.

Ukraine:

Ukrainian biology curricula are centralized and have a structured progression.

Grade 7:

Introduction to Biology: Basic biological concepts and methods.

Structure and functions of plant and animal cells.

Grade 8:

Genetics and Heredity: Basics of genetics, Mendel's laws, chromosomes.

Introduction to Human Anatomy: Digestive, respiratory, and circulatory systems.

Grade 9:

Ecology: Relationships of living organisms with the environment.

Zoology: Introduction to different animal phyla, from invertebrates to vertebrates.

Grade 10:

Botany: Comprehensive study of plants from algae to angiosperms.

Human Physiology: In-depth exploration of systems, focusing on neurology, immunity, and reproduction.

Grade 11:

Molecular Biology: Advanced genetics, biotechnologies, DNA technologies.

Evolution: Evolutionary biology, human evolution.

Pedagogy: Historically, the approach was lecture-heavy, but there's a modern shift towards practical work, problem-solving, and research projects.

Comparative Analysis:

Scope & Sequence: Both countries cover similar fundamental topics in biology, but the sequence and depth may vary. For instance, genetics is introduced earlier in the Canadian curriculum than in the Ukrainian one.

Depth of Content: Ukrainian curricula seem to delve deeper into botany and zoology, whereas the Canadian curriculum places a stronger emphasis on molecular biology and ecology in the later grades.

Pedagogical Approaches: Canadian schools place a higher emphasis on experiential learning, integrating lab experiments, field trips, and interactive projects. Ukrainian schools, while traditionally more lecture-focused, are increasingly incorporating labs and practical exercises.

Assessment: Both countries employ a mix of formative and summative assessments, including lab reports, tests, projects, and exams. However, Canada's assessments might be more diverse, including multimedia projects, peer assessments, and presentations.

Integration with Technology: Canadian classrooms might have a slight edge in integrating technology into biology lessons, leveraging digital simulations, and interactive platforms. Ukrainian classrooms are also introducing technology, especially in urban centers.

Conclusion:

While both Canada and Ukraine offer comprehensive biology programs, their approaches differ in terms of depth, sequence, and teaching methods. The Canadian system prioritizes hands-on experiences and technology integration, while the Ukrainian system benefits from a structured and in-depth theoretical framework. By understanding these differences, educators can extract best practices from each system to enhance biology education globally.

Diving into a more detailed comparison requires a granular look at specific topics, pedagogical methodologies, laboratory practices, and even the textbooks or resources employed. Let’s try to delve deeper into a specific grade, e.g., Grade 11, to compare the biology curricula:

Grade 11 Biology Curriculum:

Canada (using Ontario as a representative province):

Units of Study:

Diversity of Living Things: Classification systems, evolutionary relationships, virology, mycology, and plant and animal phyla.

Genetics: DNA, RNA, protein synthesis, genetic engineering, biotechnology applications, and genetic disorders.

Plants in the Natural Environment: Photosynthesis, plant anatomy, growth, and reproduction.

Animals: Structure and Function: Homeostasis, circulatory systems, respiratory systems, nervous and endocrine systems.

Pedagogical Approaches:

Use of multimedia: Videos, simulations, and interactive digital platforms.

Lab investigations: DNA extraction, genetic transformation, dissections, and plant experiments.

Field Studies: Visits to local natural habitats, botanical gardens, or research facilities.

Key Resources:

Textbook: "Biology 11U" by Nelson Education or equivalent.

Ukraine:

Units of Study:

Plant World: Comprehensive study of algae, fungi, mosses, ferns, gymnosperms, and angiosperms.

Human Anatomy and Physiology: Detailed exploration of various systems with a pronounced focus on neurology, digestion, immunity, and reproduction.

Genetics and Evolution: Principles of inheritance, molecular genetics, evolutionary biology, and origin of species.

Ecology and Environmental Protection: Biotic and abiotic factors, human impact on ecosystems, conservation biology.

Pedagogical Approaches:

Lectures and classroom discussions with a theoretical focus.

Lab work: Plant anatomy studies, human physiology experiments, genetic cross simulations.

Field studies: Visits to local ecosystems, perhaps botanical gardens, to study plant diversity.

Key Resources:

Commonly used textbook: "Biology 11" by B.D. Zakhariya and others or its equivalents.

Comparative Analysis:

Depth of Coverage: While both curricula cover genetics and human physiology in depth, the Ukrainian curriculum delves deeper into plant biology, exploring a wider range of plant groups. The Canadian curriculum, on the other hand, introduces broader topics and has a pronounced focus on applied genetics and biotechnology.

Pedagogical Differences: Canadian classrooms often utilize more multimedia resources and prioritize inquiry-based learning. Ukrainian classrooms might be more lecture-intensive but are incorporating more practical experiments and discussions.

Lab Practices: In Canada, labs might include more biotechnological experiments such as DNA extraction or genetic transformation, reflecting the curriculum's applied focus. Ukrainian labs, meanwhile, emphasize traditional biology practices, from dissections to studying plant anatomy.

Resources and Textbooks: The textbooks in both countries are comprehensive, but Canadian textbooks often integrate questions that promote critical thinking and have online complementary resources. Ukrainian textbooks are rich in content and detail, providing a robust theoretical foundation.

By delving into the specifics of the Grade 11 curriculum in both countries, it's clear that while foundational topics remain consistent, the depth, application, and teaching methodologies vary. The Canadian system leans more towards application, integration of technology, and inquiry-based learning. In contrast, the

Ukrainian system provides a strong and detailed theoretical base, with a recent trend towards more interactive and practical teaching methods. Both approaches offer unique advantages, catering to different aspects of the learning spectrum.

Let's dive deeper into specific topics covered within the Grade 11 biology curriculum for both Canada (using Ontario as an example) and Ukraine, pulling out details on key units and specific lessons.

Grade 11 Biology Curriculum:

Canada (Ontario's Grade 11 University Biology):

1. Diversity of Living Things:

Classification Systems: The five kingdom system, three domain system, binomial nomenclature.

Study of Specific Kingdoms: Protista (e.g., Amoeba, Paramecium), Fungi (e.g., Yeast, Mold), Plantae, and Animalia.

Evolutionary Relationships: Phylogenetic trees, the role of DNA in tracing evolutionary paths.

2. Genetics:

DNA, RNA, and Protein Synthesis: DNA replication, transcription, translation, and the significance of the genetic code.

Mendelian Genetics: Punnett squares, dominant-recessive alleles, co-dominance, and multiple alleles.

Biotechnology: Genetic engineering, CRISPR, applications of genetic modifications.

3. Plants in the Natural Environment:

Photosynthesis and Cellular Respiration: Light-dependent and light-independent reactions, ATP production.

Plant Anatomy: Study of root systems, stems, leaves, and flowers.

Plant Reproduction: Pollination, seed formation, germination.

4. Animals: Structure and Function:

Homeostasis: Role of the kidney, osmoregulation, thermoregulation.

Digestive System: Enzyme action, nutrient absorption, significance of the liver.

Nervous System: Neuron structure, action potentials, neurotransmitters, brain structure and function.

Ukraine:

1. Plant World:

Lower Plant Groups: Study of cyanobacteria, algae, and lichens.

Higher Plant Groups: Ferns, gymnosperms (e.g., pines), angiosperms (e.g., flowering plants), focusing on their life cycles.

Plant Physiology: Tropisms, hormonal control in plants, transpiration, and water transport.

2. Human Anatomy and Physiology:

Digestive System: Detailed exploration from the mouth to the intestine, enzyme action, and liver functions.

Circulatory and Respiratory Systems: Heart structure and function, gas exchange in the lungs, significance of hemoglobin.

Neurology: Detailed study of the brain, spinal cord, reflex actions, sensory .

3. Genetics and Evolution:

Chromosomal Genetics: Genetic disorders, karyotyping, significance of the 23rd chromosome pair.

Molecular Genetics: DNA replication, genetic code, mutations, and their implications.

Human Evolution: A study of hominids, significance of Australopithecus, Homo erectus, Neanderthals, and Homo sapiens.

4. Ecology and Environmental Protection:

Ecosystem Structure: Biotic and abiotic components, trophic levels, energy flow.

Human Impact: Pollution types, deforestation, climate change implications.

Conservation: Biodiversity significance, conservation methods, role of national parks.

:

Grade 11 Biology Curriculum in both Canada (using Ontario as a representative) and Ukraine Table 3.2.1

| Criteria | Canada (Ontario) | Ukraine |
|---|---|---|
| Core Units | Diversity of Living Things, Genetics, Plants, Animals | Plant World, Human Anatomy, Genetics, Ecology |
| Specialization/Elective Modules | Biotechnology and Society, Environmental Biology | Microbiology and Immunology, Applied Biology and Biotechnologies |
| Depth vs. Application | Balanced, with a tilt towards application in real-world scenarios | Deep foundational knowledge with a structured approach |
| Pedagogical Approaches | Multimedia usage, hands-on experiments, inquiry-based learning | Lecture-focused with increasing practical experiments and group discussions |
| Ethical Discussions | Prominent in biotech, GMOs, environmental studies | Touches upon ethical considerations, especially in genetics |
| Local vs. Global Focus | Both local ecosystems and global biodiversity discussed | Emphasis on native flora, fauna, and ecosystems, with some global context |
| Use of Technology | Regular integration of digital tools, simulations, online resources | Growing use of technology, especially in urban centers |
| Assessment Methods | Varied - lab reports, tests, multimedia projects, group work, presentations | Primarily tests and exams, with increasing use of project-based assessments |
| Key Topics in Genetics | DNA, RNA, Protein synthesis, Genetic engineering, Biotechnology applications | Chromosomal genetics, Molecular genetics, Human evolution, Diseases and Vaccinations |
| Environmental Biology | Biodiversity, conservation, human impact, local case studies | Ecosystem structure, human impact, conservation methods, environmental protection |
| Resources/Textbooks | "Biology 11U" by Nelson Education or equivalent | "Biology 11" by B.D. Zakhariya and others or equivalents |

This table provides a concise comparative snapshot of the Grade 11 Biology Curriculum in Canada (Ontario) and Ukraine.

This detailed breakdown provides a clearer picture of the topics covered in each curriculum. It's evident that both systems offer a comprehensive biology education, with the Canadian curriculum slightly leaning towards application and modern biotechnology, while the Ukrainian curriculum delves deeply into traditional biological studies, including detailed botany and anatomy.

Continuing the table comparison for the Grade 11 Biology Curriculum in Canada (Ontario) and Ukraine:

Grade 11 Biology Curriculum in both Canada (using Ontario as a representative) and Ukraine Table 3.2.1 (cont.*)*

| Criteria | Canada (Ontario) | Ukraine |
|---|---|---|
| Practical Lab Work | DNA extraction, Genetic transformation, Plant experiments, Dissections | Plant anatomy studies, human physiology experiments, genetic cross simulations |
| Field Studies & Trips | Regular visits to natural habitats, botanical gardens, research facilities | Occasional visits to local ecosystems, botanical gardens, and possibly research institutes |
| Integration of Modern Topics | CRISPR technology, Climate change impacts, Bioinformatics | Emerging biotechnologies in agriculture and medicine, Detailed study of local ecosystems |
| Collaboration & Group Work | Encouraged in labs, projects, and research opportunities | Gradually increasing, especially in project-based tasks and practical experiments |
| Classroom Dynamics | Student-centric, active discussions, group-based activities | More traditional but with increasing student participation, presentations, and discussions |
| Student Research Opportunities | Encouraged, especially in collaboration with local universities or research institutions | Less frequent, mostly pursued by students aiming for specialized research roles in the future |

| | | |
|---|---|---|
| Pedagogical Training for Teachers | Regular training sessions, focus on technology integration and modern teaching methodologies | Traditional with evolving methodologies, especially in urban and progressive educational institutions |
| Evaluation & Grading System | Cumulative grading with tests, projects, class participation, and end-of-year exams | Emphasis on mid-term and end-of-year exams, increasing focus on continuous assessment |
| Global Perspective & International Collaboration | Encouraged, often through student exchange programs, international research collaborations | Less frequent, but growing especially with European academic institutions |
| Extracurricular Opportunities in Biology | Abundant, with biology clubs, science fairs, biology Olympiads, etc. | Primarily through Olympiads, and specific science-focused clubs or activities |

This extended table provides further in-depth insights into the pedagogical, extracurricular, and evaluative aspects of the Grade 11 Biology Curriculum inboth regions. It paints a fuller picture of the student experience and the teaching methodologies employed.

When delving into the curricula and annual programs for 10th grade biology in Ukraine and Canada, it's important to note that Canada's education is under the jurisdiction of each province, meaning there's no single Canadian curriculum. Here, we'll utilize Ontario's curriculum as a representative sample.

Ukraine:

Ukrainian biology curricula traditionally have a systematic approach. In the 10th grade, the emphasis is on human biology and physiology. Topics often include:

Human anatomy and physiological systems (circulatory, respiratory, digestive, excretory, nervous, endocrine, and reproductive systems).

- Basis of genetics and heredity.
- Human evolution and adaptation.
- Health, diseases, and prevention.
- Canada (Ontario):

The Ontario curriculum focuses on a mix of systemic, environmental, and societal contexts. Themes for 10th grade include:

- Cellular biology and biotechnological applications.
- Anatomy of major systems.
- Genetics, genetic technologies, and their societal implications.
- Importance of biodiversity and its role in the ecosystem.
- Human impact on ecosystems and sustainable practices.

1. Human Anatomy and Physiology:

Ukraine:

- Circulatory System: Structure and functions of the heart, blood vessels, composition, and functions of blood.
- Respiratory System: Structure of the lungs, mechanics of breathing, gas exchange.
- Digestive System: Organs involved, the process of digestion and absorption, importance of enzymes.
- Excretory System: Kidney structures, the process of urine formation, homeostasis.

Ontario (Canada):

- Tissues, Organs, and Systems: Differences and interrelationships, focus on human body systems.
- Circulatory and Respiratory Systems: Structure and functions, emphasis on the relationship and interdependency.
- Digestion and Excretion: Enzyme actions, organ functions, breakdown and absorption, removal of wastes.

2. Genetics and Evolution:

Ukraine:

- Genetic Fundamentals: DNA structure, genes, alleles, dominant-recessive patterns.

- Human Genetics: Inheritance patterns in humans, genetic diseases, and disorders.
- Human Evolution: Major milestones in human evolution, importance of fossils, theories of human origin.

Ontario (Canada):

- Genetic Processes: Exploration of mitosis, meiosis, DNA replication, and basics of genetic inheritance.
- Molecular Genetics: DNA, RNA structures, and their role in protein synthesis.
- Evolution: The concept of natural selection, evidence of evolution, understanding of adaptation.

3. Ecology and Environmental Biology:

Ukraine: This aspect is lightly touched upon, mostly in relation to human interaction with the environment.

Ontario (Canada):

- Ecosystem Dynamics: Biotic and abiotic components, energy flow in ecosystems, cycles of matter.
- Biodiversity: Importance of biodiversity, threats, conservation methods.
- Human Impact: Study of human-induced changes in ecosystems, climate change, pollution, deforestation.

4. Pedagogical Approaches and Techniques:

Ukraine:

- Laboratory Work: Practical dissections, microscopic observations, experiments on plant osmosis, human physiology practicals (e.g., measuring pulse rate).
- Lecture & Discussion: Detailed explanations of core topics, followed by question-answer sessions and discussions.

Ontario (Canada):

- Investigative Activities: Experiments like DNA extraction, exploring enzyme activities, observing cell division.

- Group Projects: Collaborative projects on topics like genetic disorders, ecosystem conservation, and human impact on the environment.
- Simulations & Digital Labs: Use of software to simulate genetic crosses, virtual dissections, and digital microscopy.

Assessment and Evaluation Methods:

Ukraine:

- Written Examinations: These primarily evaluate the understanding of theoretical knowledge and consist of both objective and subjective questions.
- Laboratory Reports: Evaluation based on the accuracy of experimental results and the completeness of the report.
- Oral Assessments: Students might be questioned individually on various topics to gauge their understanding.

Ontario (Canada):

- Project-Based Assessments: Students are often required to undertake projects which can range from presentations on specific topics, model-making, or even debates.
- Quizzes and Tests: These periodic assessments help in gauging the students' grasp over the topics taught in class.
- Laboratory Evaluations: Practical evaluations based on laboratory work, which not only evaluate the results but also the method and approach taken by the student.

Use of Technology and Additional Resources:

Ukraine:

- Textbooks: The main source of knowledge, periodically updated to incorporate new scientific findings.
- Limited Digital Integration: While there is an increasing use of digital tools, especially in urban schools, the majority of schools rely on traditional teaching methods.
- Educational Trips: To botanical gardens, museums, or science centers for a more practical understanding of certain topics.

Ontario (Canada):

- Digital Platforms: Tools like Kahoot, Quizlet, and Google Classroom are commonly integrated into the learning process.
- Virtual Laboratories: For experiments that might be too complex or resource-intensive, virtual labs allow students to understand the procedure and outcome.
- Diverse Reading Material: Apart from textbooks, students have access to a range of journals, research papers, and online resources to deepen their understanding.

Future Pathways and Career Integration:

Ukraine:

- University Preparation: The curriculum is geared towards preparing students for higher education, with a focus on those aiming to pursue medical or biological sciences at universities.
- Career Talks: Occasional lectures or seminars by professionals in the field of biology or medicine.

Ontario (Canada):

- Career and Life Planning: Integration of career talks, information about various biology-related professions, and guidance on the path to choose post-high school.
- Research Opportunities: Information about potential research opportunities, internships, or programs for high school students interested in biology.

The Ukrainian and Ontario biology curricula for the 10th grade, while converging on key biological principles, manifest different educational priorities. Ukraine's focus is deep-rooted in human biology and traditional teaching methodologies. In contrast, Ontario adopts a more holistic approach, encompassing a broader range of topics and leveraging modern teaching tools and technologies. Both systems, however, share a common goal: preparing students for advanced biological studies and fostering a genuine interest in the life sciences.

When comparing the two curricula, Ukraine’s 10th-grade biology has a strong focus on human biology and physiology, giving students a deep understanding of the human body's workings. Ontario, on the other hand, offers a balanced curriculum, encompassing human biology, genetics, and ecology. The teaching methodologies also differ, with Ontario incorporating a lot of technology and collaborative work. Both, however, ensure a comprehensive biology education.

Ukrainian curriculum deeply dives into classical biology topics, ensuring a solid foundational knowledge. The Canadian curriculum, while still thorough, often emphasizes the applications of biological concepts in real-world scenarios, especially in the areas of biotechnology and environmental biology.

Both curricula touch upon the ethical considerations, especially in genetics and biotechnology. However, Canadian syllabus often integrates societal and ethical discussions more regularly within the study of biotechnologies, GMOs, and environmental impacts.

Ukrainian curriculum occasionally emphasizes the flora, fauna, and ecosystems native to the region, providing students with a localized understanding of biology. Canadian curriculum, while including local ecosystems, also encourages discussions on global biodiversity, global impacts of climate change, and international biotechnological advancements.

Both countries have seen shifts in teaching methods. Canadian classrooms are increasingly adopting blended learning, using digital tools, simulations, and multimedia resources. Ukrainian classrooms, traditionally more lecture-focused, are gradually incorporating more interactive methodologies, group projects, and technology.

As we continue to dissect the curricula of both countries, the strengths of each become more pronounced. Canada's approach to biology education is modern, integrative, and application-focused, preparing students for current global challenges and industries. Ukraine's approach is rooted in building a strong foundational knowledge, with a rich depth in traditional biology topics, ensuring

students have a comprehensive understanding of the subject. The blend of the two methods would offer students a holistic and forward-thinking education in biology.

### 3.3. Pedagogical approach, teaching methods and assessment system in Ukraine and Canada

In Canada, the pedagogical approach emphasizes student-centered learning, which promotes student autonomy and responsibility in the learning process. The education is holistic, focusing on the intellectual, emotional, social, and physical development of students. There's a significant emphasis on inquiry-based learning, encouraging students to ask questions and seek answers. Canadian education also emphasizes inclusivity, integrating multicultural education and recognizing Canada’s diverse population, including the history and culture of Indigenous peoples. Teaching methods in Canada combine traditional face-to-face classroom methods with computer-mediated activities, known as blended learning. Students often work collaboratively in groups or pairs on projects. Problem-based learning is prominent, where students are presented with real-world problems to promote critical thinking. Interactive technologies, such as smartboards and tablets, are widely used in classrooms. Field trips and experiential learning, involving visits to museums and natural sites, complement classroom learning. The Canadian assessment system includes continuous assessment methods like assignments, projects, and class participation. While there are provincial exams in specific grades, there's ongoing debate over their necessity. Students are also encouraged to engage in self and peer assessments, and in some subjects, they maintain portfolios of their work. Report cards are issued several times a year, providing grades and feedback on student performance.

In contrast, Ukraine traditionally has a more structured and centralized curriculum in its pedagogical approach. However, there's a growing transition to competency-based education, emphasizing skills over rote memorization. The education system offers a holistic view, focusing on developing a well-rounded student, while incorporating civic education and moral values. A unique emphasis is placed on national history, literature, and culture, reinforcing a sense of

Ukrainian identity. The dominant teaching method has traditionally been lecture-based, though there's growing use of group discussions, debates, and interactive problem-solving. Practical labs play an essential role, especially in science subjects. Digital resources are being increasingly integrated into the education system, primarily in urban centers. Ukraine's assessment system is quite centralized, with students taking centralized exams, known as External Independent Testing, at the end of secondary education, determining university admissions. In-school exams are critical for grade progression. Oral exams, where students answer questions in front of the class or teacher, have traditionally been popular. Coursework, assignments, and lab reports contribute to the final grade, and the grading system is on a 12-point scale, with 12 being the highest score.

Both Canada and Ukraine value education and aim to provide the best possible learning environment for students. Still, their approaches, teaching methods, and assessment systems have distinct differences.

While Canada and Ukraine's educational systems have inherent distinctions rooted in their historical, cultural, and political contexts, both countries share the overarching goal of preparing their students for the challenges of the 21st century. The evolution of both systems reveals a mutual recognition of the need for global competencies, digital literacy, and lifelong learning.

In recent years, Canada has taken significant steps in recognizing the importance of integrating Indigenous knowledge and perspectives into the curriculum, reflecting its commitment to reconciliation with Indigenous communities. This focus on cultural inclusivity, combined with its diverse demographic, has made Canadian education a melting pot of perspectives, promoting global understanding and empathy.

Ukraine, on the other hand, with its rich history and evolving geopolitical landscape, emphasizes national identity in its curriculum, balancing it with a push towards global integration. As Ukraine continues its journey towards European integration and globalization, its education system is also experiencing shifts. The

inclusion of more languages, exposure to international literature, and increased student exchange programs reflect this transition.

Technological advancements also play a significant role in shaping modern education. Canadian schools, especially in urban regions, are leading in integrating technology into daily classroom activities. There's a push towards not just using technology but understanding its implications, with courses on digital ethics, cybersecurity, and data literacy becoming more common.

Ukraine, while still catching up in terms of infrastructure in some regions, is showing rapid growth in its adoption of digital tools for education. The tech boom in cities like Kyiv is filtering down to the educational sector, with more schools adopting e-learning platforms and digital resources.

Assessment reforms are being noted in both countries. While standardized testing remains a debate topic in Canada, there's a strong push for more holistic assessment methods – focusing on a student's overall growth, project-based evaluations, and soft skills like communication and teamwork. Ukraine's shift from purely memorization-based exams to include more competency and skill-based questions in their External Independent Testing also indicates a global trend in rethinking how students' abilities should be measured.

In conclusion, as the world becomes more interconnected, education systems worldwide, including those in Canada and Ukraine, are undergoing transformative changes. Both countries, while retaining their unique educational identities, are converging on certain global trends, ensuring their students are well-equipped for the future. The mutual learnings and shared best practices from both systems can potentially offer insights for other nations embarking on their educational reforms.

*The education systems in Canada and Ukraine across various features and aspects Table 3.3.1*

| Feature/ Aspect | Canada | Ukraine |
|---|---|---|
| Pedagogical Approach | Student-centered; Holistic; Inquiry-based | Structured; Transitioning to competency-based; Holistic |

| | | |
|---|---|---|
| | | view with national emphasis |
| Cultural Inclusivity | Emphasis on Indigenous perspectives and multicultural integration | Strong focus on national history, literature, and culture; growing global integration |
| Teaching Methods | Blended learning; Collaborative; Problem-based | Traditionally lecture-based; Increasing interactive learning; Practical labs |
| Technology in Classroom | High integration of digital tools; Courses on digital ethics | Growing use of e-learning platforms; Tech boom influencing adoption in urban centers |
| Assessment System | Continuous assessment; Move away from standardized testing; Holistic assessment | Centralized exams; Transitioning to include competency-based questions; Oral examinations |
| Global Competencies | Emphasis on global understanding, digital literacy, and lifelong learning | Push towards global integration; Increased language options; Student exchange programs |
| Reforms & Changes | Integration of Indigenous knowledge; Emphasis on digital literacy | Emphasis on European integration; Rapid technological adoption in education |
| Extracurricular Activities | Diverse range including science fairs, clubs, sports, and arts | Focus on academic Olympiads, science clubs; Growing inclusion of diverse activities |
| Future Directions | Further diversification of curriculum; Emphasis on critical thinking and ethical tech use | Continued modernization; Integration with European education standards; Tech-driven methodologies |

This table provides a summarized comparison of the education systems in Canada and Ukraine across various features and aspects.

The next table will emphasize key elements, their manifestation in each system, and an analytical observation of each.

The key elements, their manifestation in each system, and an analytical observation of each Table 3.3.2

| Aspect/ Element | Canada's Approach | Ukraine's Approach | Analytical Observation |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Curriculum Development | Decentralized, with provinces setting curricula. | More centralized, with national standards guiding the curriculum. | Canada's decentralized approach allows for regional customization. Ukraine's system might ensure uniformity across the country. |
| Inclusivity & Diversity | High emphasis on recognizing diverse populations and indigenous teachings. | Strong focus on national pride and identity, with a recent push towards global perspectives. | While Canada prioritizes multiculturalism, Ukraine balances national identity with a push for global outlook. |
| Technological Integration | Widespread use of technology across all educational levels. | Growing rapidly, especially in urban centers. | Canada's tech integration supports its modern pedagogical approaches, while Ukraine is in a phase of technological acceleration in education. |
| Pedagogical Focus | Problem-solving, critical thinking, and inquiry-based learning are emphasized. | A blend of traditional methods with a gradual increase in modern, student-centered methods. | Both countries recognize the value of evolving pedagogies, but their pace and approach differ. |
| Language of Instruction | English and French are primary, with offerings in indigenous languages in certain regions. | Ukrainian is primary, but Russian, and increasingly English, are prominent secondary languages. | Reflects the linguistic and cultural priorities and histories of each nation. |
| Assessment & Evaluation | Diverse mix of continuous assessment, projects, and standardized tests (varies by province). | Combination of continuous assessment, oral exams, and centralized testing. | Canada's diverse assessment methods cater to different learning styles; Ukraine's system is more uniform but is adapting to new educational trends. |

| | | | |
|---|---|---|---|
| Higher Education Focus | Research-oriented with a focus on innovation and global collaboration. | Emphasis on specialized knowledge, with growing focus on research and international integration. | Both systems recognize the global nature of higher education and are making strides to integrate international perspectives. |
| Teacher Training & Development | Continuous professional development is a norm, with emphasis on modern pedagogies. | Strong foundational training, with growing opportunities for ongoing professional development. | Both countries emphasize the quality of teaching, but the methodologies and training structures vary. |

This analytical table provides a comparative snapshot of key elements in the education systems of Canada and Ukraine, alongside an observation that draws insights from their approach.

## CONCLUSIONS TO CHAPTER 3

Diverse Educational Structures. Both Canada and Ukraine have rich and diverse educational structures. The decentralization in Canada, due to its provincial autonomy, contrasts with Ukraine's more centralized system, though there are indications of increased regional autonomy in Ukraine’s approach.

Secondary Education Focus. Secondary education in Canada places a significant emphasis on holistic student development, incorporating various academic and extracurricular activities. Ukraine’s secondary education, traditionally more academically oriented, is undergoing reforms to promote well-rounded development, mirroring trends in Canada.

Transition to Higher Education. The transition from secondary to higher education in both countries is marked by significant examinations. However, while Canada’s admission processes to universities often consider a broader range of criteria, including extracurricular achievements and recommendation letters, Ukraine places a heavier emphasis on the centralized External Independent Testing scores.

Higher Education Structure. Canada's higher education system is research-driven, with a significant focus on international collaboration and student mobility. Ukrainian universities, historically following a more rigid structure, are increasingly promoting research and adopting the Bologna Process principles to align with European standards.

Pedagogical Differences. Canadian higher education institutions prioritize interactive, student-centric pedagogies with a substantial emphasis on discussions, group work, and practical applications. In contrast, Ukrainian institutions, while evolving, still retain a more lecture-based approach, though the gap is gradually narrowing.

Assessment Systems. Continuous assessment is a hallmark of the Canadian educational system, with a balanced mix of assignments, projects, and exams. Ukrainian universities, while embracing continuous assessment, still have a dominant end-of-term examination culture.

Global Perspectives. Both countries are increasingly recognizing the importance of global perspectives. Canadian universities have a long-standing tradition of international collaboration, whereas Ukrainian institutions are rapidly expanding their global networks, especially with European counterparts.

Challenges and Reforms. Both systems face challenges. While Canada grapples with issues like equitable access to quality education across provinces and indigenous education rights, Ukraine is navigating its path through modernizing its Soviet-era educational structures and aligning with global standards.

Future Implications. The comparative study underscores the importance of ongoing educational reforms in responding to global trends. Both Canada and Ukraine, albeit from different starting points, are converging on several key educational principles, emphasizing the universality of certain educational trends and the global interconnectedness of the 21st century.

In conclusion, it is important to note that the organizational structures of secondary and higher education in both Canada and Ukraine, although deeply rooted in their distinct historical and cultural contexts, exhibit notable similarities

in terms of their aspirations as well as the challenges they face. This comparative study not only provides valuable insights into the educational landscapes of these two countries but also sheds light on the broader global trends that are currently shaping education in the contemporary world, revealing how interconnected and influenced these systems are by one another.

# CONCLUSIONS

Historical and Cultural Foundations: Both the Ukrainian and Canadian education systems are deeply rooted in their respective historical, cultural, and geopolitical contexts. While Canada's system has been influenced by its colonial past and multicultural identity, Ukraine's system carries the legacy of its Soviet era, combined with a rich national history and recent push towards European integration.

In conclusion, the master's thesis presents a thorough and detailed comparison of the education systems in Ukraine and Canada, effectively shedding light on their distinctive characteristics as well as the common global trends that they share. While both systems possess their respective strengths and face certain challenges, this study emphasizes the universal nature of specific educational goals in the 21st century. As the landscape of education continues to evolve on a global scale, engaging in such comparative analyses lays the groundwork for mutual learning and fosters opportunities for international collaboration.

## REFERENCES

1. Кучеренко Д. Г., Мартинюк О. В. Стратегії розвитку освітніх систем країн світу: Монографія. / Д. Г. Кучеренко, О. В. Мартинюк К.: ІПК ДСЗУ, 2011. 312 с.

2. Сисоєва С. О., Кристопчук Т. Є. Освітні системи країн Європейського Союзу: загальна характеристика : навчальний посібник / С. О. Сисоєва, Т. Є. Кристопчук; Київський університет імені Бориса Грінченка. – Рівне: Овід, 2012. – 352 с.

3. Олендр Т. М. Програми підготовки студентів природничих спеціальностей, що здобувають освітньо-кваліфікаційний рівень бакалавра у США й Україні: порівняльний аспект / Т. М. Олендр // Вісник Черкаського університету: Серія «Педагогічні науки», Вип. 147. – 2012. – С. 32–38.

4. Duderstadt J. J. A University for the 21st Century / J. J. Duderstadt. – Ann Arbor, MI: Univ. of Michigan press, 2000. – 358 p.

5. Renner R. Higher Ed. Inc.: The rise of the For-Profit University / R. Renner // The Journal of Higher Education. – 2003. – 74(1). – P.108 – 111.

6. Smith V. New Dimensions for General Education / V. Smith // Higher Learning in America, 1980-2000 / Ed. by Levine A. –Baltimore: John Hopkins Univ. Press, 1994. – 244 p.

7. Маркусь, В., гол. ред., Маркусь, Д., співред. 2009. Енциклопедіяукраїнської діяспори. Нью-Йорк – Чикаго.

8. Марунчак, М. 1986. Біографічний довідник до історії українців Канади. Вінніпег: УВАН.

9. Оліфіренко, В. В., С. М. Оліфіренко, Т. В. Оліфіренко, та Л. В. Оліфіренко, авт.-уклад. 2001. Енциклопедія українознавства для школярів істудентів. Донецьк: Сталкер.

10. Просалова, В. А., упорядн. 2012. Українська діаспора: літературніпостаті, твори, бібліографічні відомості. Донецьк: Східний видавничий дім.

11. Слабошпицький, М. 2004. Не загублена українська людина (55 портретів з української діаспори). Київ: Ярославів Вал.

12. Смолій, В. А., голова редкол. та ін. 2003. Українські історики ХХстоліття: Біобібліографічний довідник. Вип. 2, ч. 1. Київ – Львів.

13. Смолій, В. А., голова редкол. та ін. 2008–13. Енциклопедія історії України.НАН України. Інститут історії України. Київ: Наукова думка.

14. Славутич, Яр. 1992. "З історії українознавства в Канаді". Українськалітература в Канаді 277–278. Едмонтон: Славута.

15. Усатенко, Т. П. 2004. "Українознавство в становленні національноїосвіти". Збірник наукових праць Науково-дослідного інституту українознавства за редакцією Петра Кононенка. Том І. Київ: Міленіум: 220–228.

16. Шевельов, Ю. 2002. Портрети українських мовознавців. Київ: Києво-Могилянська академія.

17. Kubijovic, Volodymyr and Danylo Struk, eds., 1984–1993. Encyclopedia of Ukraine. 5 volms. Toronto: Canadian Institute of Ukrainian Studies & University of Toronto Press.

18. Вовк, Мирослава та Інна Машкова. 2018. Українознавча освіта в Україні і Канаді: поняттєво-персонологічний словник. Київ: Талком.

19. Кононенко, В., ред. Г. Білик, Ф. Гамалій та О. Погребенник. 2007. Українські письменники діаспори. У 2 кн. Київ: НБУ імені Ярослава Мудрого.

20. Кубійович, Володимир та Зенон Кузеля, ред. 1949–52. Енциклопедія українознавства. 3 т. Мюнхен: НТШ.

21. Кубійович, Володимир, ред. 1993–2003. Енциклопедія українознавства. Словникова частина. 11 т. Перевидання в Україні. Львів – Київ: Видавництво НТШ та Фонд Енциклопедіїї українознавства.

22. Кремень, В. Г. 2008. Енциклопедія освіти. Київ: Юрінком Інтер.

23. Лазебник, С. Ю., кер. авт. кол., Л. О. Лещенко, Ю. І. Макар та ін. 1991.Зарубіжні українці. Довідник. Київ: Україна.

24. NationMaster. Порівняння освітніх систем Канади та України. [Електронний ресурс]. – Режим доступу: https://www.nationmaster.com/country-info/compare/Canada/Ukraine/Education

25.WiseVoter. Освітні рейтинги за країнами. [Електронний ресурс]. – Режим доступу: https://wisevoter.com/country-rankings/education-rankings-by-country/

26. Ukrinform. Шкарлет призначений міністром освіти України. 17 грудня 2020 року.

27. Bassis/Dhilawala. Культури світу: Україна. 2009 р. – С.72.

28. HRMI Rights Tracker. Україна. [Електронний ресурс]. – Режим доступу: rightstracker.org. – Дата звернення: 04.03.2022.

29. Bassis/Dhilawala. Культури світу: Україна. 2009 р.

30. Kyiv Post. Випускники шкіл пройдуть зовнішнє незалежне тестування після державного іспиту. 8 жовтня 2009 р.

31. Міністерство освіти і науки України. Офіційний документ. [Електронний ресурс]. – Режим доступу: https://mon.gov.ua/storage/app/media/zagalna%20serednya/Book-ENG.pdf

32. Корсак К. “Від початкової до первинної освіти – століття розвитку”// Початкова школа. – 2002. – №2. – С. 7–10.

33. Порох Л. “Крок до інновацій: освіта – XXI”// Рідна школа. – 2001. – С. 10–13.

34. XXI століття –століття освіти, це широковідоме гасло ЮНЕСКО пріоритетне в роботі АПН// Освіта України. – 2001. – 28 березня. – С. 5.

35. Національна доктрина розвитку освіти у XXI столітті// Освіта України. – 2001. – №1. – С. 22–25.

36. Фуллан Майкл “Проблема і потенціал освітніх змін”// Мандрівець. – 2001. – №1-2. – С. 18–30.

37. Леонід Мазур “Наукова картина світу стосовно національної освіти і гуманізації соціуму”// Мандрівець. – квітень. –2001.

38. Кремень Василь “Розвиток педагогічної освіти України та її інтеграція в європейський освітній простір”// Освіта. – 2004. – 6 жовтня. – С. 2–5.

39. Українська освіта ХХІ ст: завдання і проблеми: інтерв’ю з міністром освіти і науки України Василем Кременем// Диво слово. – 2004. – №2. – С. 2–4.

40. Волга Л. “Освіта і наука – пріоритет ХХІ століття”// Урядовий кур’єр. – 2003. – 4 березня. – С. 8.

41. Корсак К. “Освіта від первинної до по життєвої: безплатна і обов’язкова державна освіта”// Дзеркало тижня. – 2002. – 24 серпня. – С. 14.

42. Філософія освіти ХХІ ст: проблеми і перспективи// Педагогічна газета. – 2001. – №2. – С. 4–5.

43. Кузь В.Г. “Освіта і школа ХХІ ст”// Педагогіка і психологія. – 1999. – №1. – С. 143–150.

44. Шмуклер Ю. “Якість освіти – від чого вона залежить?”// Освіта України. – 1999, 8 вересня. – С. 10.

45. Збережемо освіту – перепустку в ХХІ століття// Демократична Україна. – 1997, 2 вересня.

46. Згуровський М. “Проблеми і перспективи/ освіта ХХІ сторіччя”// Рідна школа. – 1997. – №3-4. – С. 2–6.

47. Європейський контекст// Шлях освіти. – №7. – 2004. – С. 14–18.

48. Ситуаційна методика навчання: теорія і практика. – К.: Центр інновацій та розвитку,2001

49. Definition and Competencies. Theoretical and Conceptual Foundations. Strategy Paper on Key Competencies. An Overarching Frame of Reference for an Assessment and Research Program – OECD