

Advantages and Problems of Integrated Teaching: The Role of Neurodidactics in Partnership Pedagogies

Maryna YEPIKHINA^{*1}

Vasyl SHULIAR²

Olena LISKOVYCH³

Nadiia OPUSHKO⁴

Volodimir YAKOVLIV⁵

Iryna MAKSYMCHUK⁶

¹ PhD in Pedagogy, Associate Professor, Chair of Preschool and Elementary Education, SI «Luhansk Taras Shevchenko National University», ORCID ID: <https://orcid.org/0000-0003-0199-8186>, dewdrop@ukr.net

² Doctor of Science in Pedagogy, Director of Mykolaiv In-Service Teachers Training Institute, Associate Professor of Department of Theory and Methods of Language, Literature, Art and Aesthetic Education, Mykolaiv In-Service Teachers Training Institute, ORCID ID: <https://orcid.org/0000-0001-8643-0105>, vasyl.shuliar@moippo.mk.ua

³ Candidate of pedagogical sciences, Head of the Department of Theory and Methods of Natural-Mathematical Education and Information Technology, Mykolaiv In-Service Teachers Training Institute, ORCID ID: <https://orcid.org/0000-0001-9523-8131>, olena.liskovych@moippo.mk.ua

⁴ Candidate of pedagogical sciences (Ph. D), Associate Professor of Pedagogy, Vocational Education and Management of Educational Institutions, Vinnitsia Mykhailo Kotsiubynkyi State Pedagogical University, ORCID ID: <https://orcid.org/orcid.org/0000-0002-3013-2675>, hmarka52@gmail.com

⁵ PhD, Doktor of Philosophy, Associate Professor, Department of Theory and Methodology of Physical Education, Vinnitsia Mykhailo Kotsiubynkyi State Pedagogical University, ORCID ID: <https://orcid.org/0000-0002-1762-4827>, dekykovliv576@gmail.com

⁶ Associate Professor, PhD in Pedagogy, Associate Professor of the Department of Physical Education, Sports and Human Health, Izmail State University of Humanities, ORCID ID: <https://orcid.org/0000-0002-4361-3507>, 0963113686@ukr.net

Abstract: *The article is pertinent as the approach to education in school is presently undergoing a troublesome period. Secondary education goals are evolving, with more and more new curricula and teaching approaches being developed, and activity-based education provisions being established and implemented. The quality of one's knowledge is determined by how one can use one's abilities and skills. Observed tendencies are closely connected with the creation and implementation of modern pedagogical technologies in the educational process. Non-traditional ways and forms of organizing education, including integrative ones, are beginning to be used in education. They encourage students to apprehend the world more promptly and shape an activity-based approach to learning. The objectives of integrated teaching are to generate the perfect environment for the expansion of students' thought processes throughout the teaching of different topics; to confront any disparities in the learning process; and to boost and develop students' eagerness for the referred to subjects. The article defines the purpose of integrated learning; outlines the conditions for effective integrated learning; investigates the principles on which integrated learning, its forms and models are based: the advantages and problem points of integrated learning are identified; the concept of cooperation in integrated learning is given; the role of neurodidactics in integrated learning is defined.*

Keywords: *Internalization of knowledge, principles, forms, models of integrated learning, cooperation in integrated learning, neurodidactics.*

How to cite: Yepikhina, M., Shuliar, V., Liskovych, O., Opushko, N., Yakovliv, V., & Maksymchuk, I. (2023). Advantages and problems of integrated teaching: the role of neurodidactics in partnership pedagogies. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 14(4), 579-592. <https://doi.org/10.18662/brain/14.4/522>

Introduction

The word “integration” comes to us from the Latin language and has several meanings: connection, unification, merging into a single whole of separate elements, parts; restoration, replenishment.

Integrated education is such an organization of the educational process, in which children with disabilities episodically or permanently, partially or fully enter the educational process, learn, communicate, interact with children without developmental peculiarities.

Dobrovolska & Chornovil (2017) and Pakhomova (2013) note that the Salamanca Declaration (UNESCO, 1994) was a great leap forward in providing all with access to schools. It was adopted at the World Conference held in Spain in June 1994, dedicated to accessible quality education for people with special needs. As stated by Sánchez Trujillo & Rodríguez Flores (2020), the notion of integrated education was founded on the fundamental principles of the declaration: every child is entitled to an education; each child should have the opportunity to attain an optimal level of skills and abilities; recognizing the distinct opportunities, abilities, needs, and interests of every child; these unique characteristics must be taken into account when formulating and executing educational programmes; all individuals, regardless of their health and developmental factors, should have access to mainstream schools, and these schools should provide suitable conditions. At the same time, the primary objective of such education is to ensure that education is available to all, facilitating the integration of children with special needs into preschool and mainstream schools, enabling them to become active members of society. This involves helping them develop social relationships with their peers and adults, acquiring knowledge, skills and abilities that will aid them in discovering their purpose and achieving success in life.

The purpose of the article is the purpose of integrated learning; defining the conditions for effective integrated learning; exploring the principles that underpin integrated learning, its forms and models; identifying the benefits and challenges of integrated learning; giving the concept of cooperation in integrated learning; defining the role of neurodidactics in integrated learning.

The Purpose of Integrated Learning

Babenko (2015) investigated the significance of establishing integrated teaching techniques. In his opinion, remedial schools, special institutions for children with disabilities only fix attention on their problems,

differences from other children, thereby reinforcing their condition, and do not provide knowledge and skills necessary for independent life.

It is essential to list the tasks that allow for the solution of integrated education:

- to create a supportive environment in which children with disabilities feel free and confident;
- to help special children learn the programme on an equal basis with everyone else without significant deviations from educational standards;
- to correct (reduce or completely eliminate) children's functional impairments (mental and/or physical);
- to create a friendly atmosphere of mutual respect and mutual assistance in the educational institution and class, to provide support for special children to make them feel more confident;
- to teach children to communicate, to build relationships with each other, not paying attention to differences;
- if necessary, to provide psychological help and support;
- to promote socialization and prevent deviant behaviour;
- to help special children change their attitudes to themselves and their lives – to form a positive attitude, to develop an active attitude.

Conditions for Effective Integrated Learning

The primary source of the idea of applying integration in education is the remedial approach to teaching special children. However, this does not mean that such inclusion in a regular school environment is indicated for all children with special needs. The decision should be made by a specialist.

It would be beneficial if the following conditions are met:

Internal conditions: 1. The child is psychologically prepared to be integrated into the school's learning process. 2. The child's level of psychophysiological and speech development, as well as mental abilities, do not pose barriers to full and timely mastery of the school curriculum, in accordance with the standards for normo-type children.

External conditions: 1. Functional impairments can be identified in the early years (within the child's first year of life), and corrective interventions are speedily launched. 2. The child's parents or guardians express a desire for the child to learn alongside typically developing peers and are prepared to provide full support and assistance. 3. A qualified specialist in correctional education will be available to support the special student integrated into a

regular classroom. 4. All necessary conditions for integrated learning are adequately prepared.

When a child's physical, emotional or mental state is drastically different, providing remedial instruction is beneficial.

The Fundamentals of Integrated Learning

Tolerant attitudes of teachers and classmates toward children with developmental disabilities are not enough. To ensure a successful transition to integrated learning, the entire school education system needs to be enhanced (Yashchenko, 2018).

Steps are needed such as:

- adaptation of the programme taking into account the individual characteristics of students;
- the use of innovative pedagogical ideas and current solutions;
- active involvement of parents;
- involvement of progressive specialists who will help “traditional” teachers to rearrange themselves to the wave of “embedded” learning, to adapt to the new conditions;
- emphasis in the educational process on the development of the cognitive, communicative, and creative abilities of children.

A detailed review of research by Mitri et al. (2009), Dzhus (2019) and Pylypiv (2020b) has made it possible to determine the fundamentals of integrated learning: a) creating a welcoming environment that fosters a positive atmosphere; b) ensuring that every child, regardless of their physical characteristics and emotional well-being, feels a sense of belonging, significance and empowerment to tackle any challenges; c) establishing an environment that facilitates productive interactions and open communication among parents, their children with special needs, teachers and special educators; d) promoting tolerance and instill a healthy appreciation of diversity, teaching children to respect and stand up against discrimination; e) highlighting each child's individuality and uniqueness while nurturing their abilities and potential.

Integrated Learning: Its Forms and Models

The integration of a child with special needs into the learning process can manifest in the following ways, as outlined by Poberetska (2021):

- Inclusion of a child with special needs as a student in a regular class within a regular school.

- Placement of the special student in a designated special class within a regular school.
- Transition of the child from a special school to a general education school.
- Partial or complete integration of a student with special needs into vocational education.

Based on the research conducted by Petruk (2010) and Chournazidi (2016), this article identifies six models for integrating children with special needs into the educational process:

- **Full Permanent Integration:** This model is employed when a child has no significant mental, physical or emotional deviations, their developmental level is close to normal, and a specialized teacher is available at the school. Children with special needs attend a regular school, study alongside their typically developing peers and receive necessary assistance from a specialist when required.

- **Partial Permanent Integration:** This approach is used for children who exhibit noticeable deviations from the age norm. It may be challenging for these children to attend all classes on par with their healthy peers, and they require specialized assistance. In this model, the child studies some subjects within a regular classroom setting and others under the supervision of a remedial educator. Decisions on which subjects and how they are studied are made collaboratively by parents and teachers.

- **Private Integration:** Children under this model only attend a portion of the lessons in the regular classroom or engage with their peers after school. They study individually for the remainder of their educational time.

- **Temporary Integration:** This model involves individualized instruction based on a specially designed programme. Children with special needs “join” their peer groups only a few times each month, participating in general school activities and educational extracurricular events.

- **Intermittent Integration:** Suitable for educational institutions that cannot support full-time integrated learning, such as due to the absence of specialized educators. Intermittent integration involves periodic events designed to promote the socialization of children with special needs.

- **Combined Integration:** This model employs a combination of separate components and inclusive education techniques with ongoing support from a defectology expert. Typically used in smaller communities where full integrated education may not be feasible, this option suits children

with minimal deviations from the norm, allowing them to learn the educational programme alongside their peers effectively.

Advantages and Problems of Integrated Teaching

The integrated approach to the construction of the educational process makes it possible to reduce the distance between children with disabilities and children without developmental peculiarities. The first get an opportunity to feel a part of society, to feel their significance, importance, to realize their value. The latter learn to be tolerant, to care about other people, to be empathic, to treat each person with respect regardless of his or her peculiarities.

Pylypiv (2020a) notes that this technique has both pros and cons. The strengths of integrated education include:

- attention to the uniqueness and individuality of any child;
- the opportunity to join a collective, to feel a significant part of society, not to get hung up on one's own problems, not to withdraw into oneself;
- development of any student's abilities;
- help in adaptation, socialization and integration;
- fostering a culture of tolerance.

This approach has its drawbacks, as identified by Lambe & Bones (2006):

- **Teacher's Attention:** The presence of a child with special needs may divert the teacher's attention away from other students, resulting in less time and attention available for typically developing children.
- **Impact on Academic Performance:** Reduced attention from the teacher can potentially lead to lower academic performance among typically developing children.
- **Negative Attitudes and Bullying:** Inadequate teacher attention can contribute to negative attitudes among regular classmates toward the child with special needs, potentially resulting in bullying or social issues.
- **System-Wide Reform Needed:** Implementing inclusive education requires more than just changes within a single school. It necessitates a broader reformatting of the entire educational system to ensure its effectiveness.

- **Shortage of Qualified Specialists:** A significant challenge lies in the shortage of qualified defectologists or specialists trained to support children with disabilities within mainstream educational settings. This shortage can hinder the successful implementation of inclusive education.

The Concept of Cooperation in Integrative Learning

The concepts of “cooperation in learning” and “cooperation in education” are also important in the study. Havrysh (2011) describes cooperation in learning as “a joint effort of teachers and students founded on democratic values, intended to help participants reach their aims” (p. 17). The definition notes the importance of democratic principles in collaborative activities.

Fil & Zhygailo (2015) argue that “the teacher’s position toward the student, seen as society, determines cooperation in education” (p. 313). This is facilitated by the teacher and student’s unified effort in the educational process. At the same time, the teacher must assume a collaborative role within the context of person-centred education, which is comprised of activities, behaviour, intellectuality and values, all of which support the self-development of the individuals involved (teachers and students).

Closely intertwined with the idea of “cooperation” is the social concept, which holds significant importance in both society and educational institutions. Social interaction is viewed as a process through which individuals, social groups, institutions or communities exert influence on each other as they pursue shared interests, forging connections among professionals from various backgrounds working in partnership. Various forms of interaction include mutual information exchange, coordination, collaborative learning and providing mutual assistance.

The pedagogy of cooperation between a teacher and a student is based on the organization of thoughtful activity both during classes and in extracurricular work, as well as in the organization of independent activity.

The collaborative pedagogy approach involves a partnership between teacher and students with the goal of fostering personal development. Collaboration is a philosophical definition that shows the common bond of all living things. The pedagogy of cooperation is based on cooperation, which is the beginning of socialization of the subjects. The result of pedagogy of cooperation meets the purpose of upbringing – personality development. Consequently, the definition highlights the evolution of the pedagogy of cooperation, which is rooted in collaboration (Kosholap et al., 2021).

The pedagogy of cooperation involves personal contact between two or more people, whether accidental or intentional, whether private or public, and whether long-term or short-term, verbal or non-verbal, bringing about changes in behaviour, relationships, activities, and attitudes.

Besides, the pedagogy of cooperation can be accomplished through partnership, when both parties achieve mutual solidarity and agreement in understanding the purposes and ways to achieve it, and through cooperation, when the success of some members stimulates or inhibits the more productive and purposeful activities of other members. A humanistic educational process can only be a process of teacher-student collaborative pedagogy when both partners act as equal participants in a collaborative pedagogy. The definition reflects the humanistic orientation of the pedagogy of cooperation of equal members.

However, it should be emphasized that the pedagogy of cooperation proves to be effective when the teacher, mindful of the psychological attributes of the students, engages in communication that arouses interest, fosters enjoyment, encourages the adoption of social and value-based stances demonstrated by the teacher, and provides every student with the opportunity to fully manifest their life perspectives.

Babenko (2015) highlights the emergence of a relatively recent field in educational science known as the pedagogy of interactions. This discipline explores the patterns, principles, and techniques of interaction and mutual influence within the educational environment of a university. It encompasses interpersonal interactions among participants in cooperative pedagogy and extends to the broader processes occurring within the global educational system. Importantly, the basic definitions of pedagogy of cooperation emphasize the difference in approaches to comprehending this phenomenon: some researchers' initial premise is the duration, procedural nature of pedagogical interactions, and others – a specific situation, contact.

In the same vein, Babenko (2015) suggests several categories of pedagogical interactions:

- **Destructive Pedagogical Interactions:** These interactions undermine the educational purpose, format, and content, causing instability among participants and elements of the educational system. They lead to irreversible negative consequences in the field of education and create conditions for the emergence of marginalized individuals.
- **Restrictive (Limiting) Pedagogical Interactions:** These interactions involve strict control over the development of individual qualities without considering a holistic approach to personality development. They are

characterized by an objective pedagogy aimed at shaping a mass of passive performers for the system.

- **Destructive (Supportive) Pedagogical Interactions:** These interactions address immediate tasks to maintain personal integrity while considering a development strategy. They may involve replacing pedagogical methods with psychology-oriented approaches.

- **Constructive (Developing) Pedagogical Interactions:** These interactions prioritize both the current situation and future prospects, fostering creative development. They create conditions for an individual's long-term, cooperative orientation and optimal adaptation to the environment.

The Role of Neurodidactics in Integrated Teaching

Traditional didactics postulates that the optimal time for learning is actually another name for the time of learning interaction, i.e., the direct communication of the teacher and the student in its usual variant. The time devoted to self-learning is already considered by default as “time number two”, which, although important, is no longer as important as contact interaction time (“time number one”). The “class-lesson system”, interspersed with periods of informal communication (the so-called “class-lesson system”) contains in its basis a physiological mechanism of development of a dynamic stereotype, the time factor in which acts as a conditional stimulus, more physical than psychological. It molds the student's individual identity to the most effective didactic communication intervals (Honchar et al., 2021).

In this case, the instructor tries to compensate for the student's lack of neuroresources by strengthening external control and by trying to organize a developmental environment aimed at maintaining a high level of activation. The main methodological mistake of such an approach consists in replacing the very concept of time. Considering the problem of optimal time periods of didactic communication we should not mean time as a physical factor or physiological stimulus, but psychological time which is included into the structure of cognitive processes of the student's personality as a full structural and functional component functioning as a complex unified system of individual's neuroorganization and living by the hour of subjective psychological time, which should be taken into account in every way when arranging educational interaction.

Summarizing the data of the research results, we can note the existing neurological research in today's didactics tends to be artificially or

superficially involved in the comprehension and solution of problems of general and inclusive education. Brain research itself, consideration of spatial and temporal factors of interaction cannot replace a psychological and pedagogical diagnosis, and corrective and other interventions cannot be based only on the results of such research. Invasive and non-invasive neurotechnologies cannot be effective unless they are utilized in a scientific and ethical manner (Pakhomova, 2013).

This is clearly evident in the comprehension of the issues of learning and optimization of educational space and time: neurotechnological developments could be addressed to this issue, including in the context of prevention and correction of problems of didactogeny in inclusive interactions. However, these developments to date lack either scientific or empirical transparency, validity. Currently, in the discussions about invasive and non-invasive neurotechnological devices – these issues are not considered as necessary, significant, and thus are not addressed. At the same time, consideration of spatiotemporal factors in human learning and education is an urgent need, awareness of which can help to prevent and correct a whole range of disorders.

However, questions of space and time, didactic relations must be considered in close connection with questions of their value and semantic content. The central question here is whether another didactic model also helps a person to receive and transmit a quality education - the question of whether it forms and develops his independence, the ability to learn and teach, in particular outside educational situations, in "global" everyday life. The key question pertains to the extent to which neurotechnology, encompassing digital technology as a whole, can address these issues without introducing further risks and challenges in the development and functioning of individuals with disabilities and their surroundings (Honchar et al., 2021).

This matter remains unresolved: neither restricting the domain of neurodigital/robotic systems to cognitive tasks, as proposed by certain social robotics researchers, nor crafting morally “literate” robots, as suggested by others, nor creating artificial intelligence that simulates and reproduces the moral and creative dimensions of human activity, as proposed by a third group of researchers, nor the most meticulous examination of spatial and temporal aspects of didactic interaction – none of these approaches appears to resolve the problem.

Conclusion

The importance of the article lies in the fact that it defines the purpose of integrated education, which allows to realize the objectives of integrated education: to create favorable conditions in which children with disabilities feel free and confident; to help special children learn the programme on an equal basis with all without significant deviations from educational standards; to teach children to communicate, to build relationships with each other, not paying attention to differences; if necessary, to provide psychological help and support.

The conditions for effective integrated instruction were also determined; the principles on which integrated instruction, its forms and models are based were studied: the child is psychologically ready for integration into the school learning process; the level of psychophysiological and speech development and mental abilities do not prevent the child from mastering the school programme in full and in time, as prescribed by standards for children without disabilities; functional disorders were identified in early childhood (in the baby's first year of life) and corrective work was promptly begun; parents or caregivers want their child to learn with healthy children and are willing to help and support them in any way possible;

The advantages and problems of integrated education are defined and it is concluded that the strengths of integrated education include: attention to the uniqueness and individuality of any child; the opportunity to be included in the team, to feel a significant part of society, not to dwell on their problems, not to withdraw into themselves; development of any student's abilities; disadvantages of this approach are as follows: the special child will draw the teacher's attention to himself, which means that the teacher will be able to give regular children much less time; lack of attention from the teacher can lead to a decrease in the performance of regular children; the high probability of a negative attitude of ordinary classmates to the special child, bullying.

Acknowledgement

Author 1 defined the goal of integrated learning; outlined the conditions for effective integrated learning.

Authors 2 and 3 investigated the principles on which integrated learning is based, its forms and models.

Author 4 defined the advantages and problem points of integrated learning.

Author 5 gave the concept of cooperation in integrated learning.

Author 6 defined the role of neurodidactics in integrated learning.

References

- Babenko, A. (2015). Sutnist i zmist poniat “intehratsiia” ta “intehratsiine zaniattia” [The essence and content of such concepts as “integration” and “integration activity”]. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Serii: Pedagogika. Sotsialna robota* [Scientific Journal of Uzhgorod National University. Series: Pedagogy, Social Work], 37, 9-12.
<https://dspace.uzhnu.edu.ua/jspui/handle/lib/10348>
- Chournazidi, A. (2016). The social framework of learning via neurodidactics. *Creative Education*, 7, 2175–2192.
https://www.scirp.org/pdf/CE_2016092014524728.pdf
- Dobrovolska, L. N., & Chornovil, V. O. (2017). *Intehratsiia navchalnykh predmetiv v pochatkovii shkoli yak efektyvna forma navchannia molodshykh shkoliariv: Materialy internet-seminaru* [Incorporating educational subjects into primary school instruction as an effective means of teaching younger students: Proceedings of the Internet Workshop]. Communal Educational Institution “Cherkasy Regional Institute for Postgraduate Education of Pedagogical Workers of Cherkasy Regional Council.
<http://library.ippro.com.ua/attachments/article/430/%D0%86%D0%BD%D1%82%D0%B5%D0%B3%D1%80%D0%B0%D1%86%D1%96%D1%8F%20%D0%BD%D0%B0%D0%B2%D1%87%D0%B0%D0%BB%D1%8C%D0%BD%D0%B8%D1%85%20%D0%BF%D1%80%D0%B5%D0%B4%D0%BC%D0%B5%D1%82%D1%96%D0%B2.pdf>
- Dzhus, O. (2019). Development of Ukrainian school and educational affair as a basis of professional preparation of the youth of Ukrainian diaspora in the second half of the 20th century [Rozbudova ukrainskoi shkilno-osvitnoi spravy yak pidgruntia profesiinoi pidhotovky molodi ukrainskoi diasporu u druhii polovyni XX st.]. *Zhurnal Prykarpatskoho natsionalnoho universytetu imeni Vasylia Stefanyka* [Journal of Vasyl Stefanyk Precarpathian National University], 6(1), 97–106. <https://doi.org/10.15330/jpnu.6.1.97-106>
- Fil, H., & Zhygailo, M. (2015). Intehrovane vyvchennia predmetiv humanitarnoho tsyklu za haluziamy znan yak vazhlyva peredumova rozvytku suchasnoi nauky [Integrated study of the humanities subjects as an important prerequisite for the modern science development]. *Aktualni pytannia humanitarnykh nauk* [Humanities Science Current Issues], 11, 310–316.
http://nbuv.gov.ua/UJRN/apgnd_2015_11_46

- Havrysh, N. (2011). Intehratsiini protsesy v systemi doshkilnoi osvity [Integration processes in the system of preschool education]. *Visnyk Dnipropetrovskoho universytetu ekonomiky ta prava imeni Alfreda Nobelja. Seriia "Pedahohika i Psykholohiia"* [Journal of Dnipropetrovsk Alfred Nobel University of Economics and Law. Series: Pedagogy and Psychology], 1(1), 16–20. <https://pedpsy.duan.edu.ua/images/PDF/2011/1/4.pdf>
- Honchar, L., Derkachova, O., Shakhrai, V., Saienko, V., Hladoshchuk, O., & Voropayeva, T. (2021). Formation of psychological readiness of the teacher to implement information and communication technologies in professional activities. *International Journal of Education and Information Technologies*, 15(38), 364–371. <https://www.sciencegate.app/document/10.46300/9109.2021.15.38>
- Kosholap, A., Maksymchuk, B., Branitska, T., Martynets, L., Boichenko, A., Stoliarenko, O., Matsuk, L., Surovov, O., Stoliarenko, O., & Maksymchuk, I. (2021). Neuropsychological bases of self-improvement of own physical health of future teachers in the course of university education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 12(3), 171–190. <https://doi.org/10.18662/brain/12.3/226>
- Lambe, J., & Bones, R. (2006). Student teachers' attitudes to inclusion: Implications for initial teacher education in Northern Ireland. *International Journal of Inclusive Education*, 10(2), 511–527. <https://doi.org/10.1080/13603110500173225>
- Mitri, S., Floreano, D. & Keller, L. (2009). The evolution of information suppression in communicating robots with conflicting interests. *Proceedings of the National Academy of the United States of America*, 106(37), 15786–15790. <https://www.pnas.org/doi/10.1073/pnas.0903152106>
- Pakhomova, N. (2013). Intehratsiia yak providna tendentsiia rozvytku suspilstva ta osvity: istoryko-pedahohichnyy aspekt [Integration as the leading trend of social development and education: Historical and pedagogical aspect]. *Vytoky pedahohichnoyi maysternosti* [The Origins of Pedagogical Excellence], 11, 250–256. <http://dspace.pnpu.edu.ua/bitstream/123456789/2322/1/Pahomova.pdf>
- Petruk, O. M. (2010). Problema intehrovanoho pidkhodu do protsesu navchannia v naukovi literaturi [The problem of the integrated approach to the learning process in the scientific literature]. *Pedahohichnyi dyskurs* [Pedagogical Discourse], 8, 176–180. http://nbuv.gov.ua/UJRN/peddysk_2010_8_45
- Poberetska, V. V. (2021). *Pidhotovka maibutnikh uchyteliv pochatkovykh klasiv u pedahohichnykh koledz'hakh do intehrovanoho navchannia uchniv* [Preparing future primary school teachers in pedagogical colleges for an integrated education of students] [Unpublished doctoral dissertation]. The Institute for Higher Education of the National Academy of Educational Sciences of Ukraine. https://ihed.org.ua/wp-content/uploads/2021/12/Poberetska_V_2022_disertac.pdf

- Pylypiv, O. (2020a). Integrovanyi pidkhid do navchannia (na prykladi pryvatnoho navchalnoho zakladu I stupenia “Shkoly vilnykh ta neбайдужykh”) [Integrated approach to learning (On the example of a private institution “School of the Free and Responsive”). *Zhurnal Prykarpatskoho natsionalnoho universytetu imeni Vasylia Stefanyka* [Journal of Vasyl Stefanyk Precarpathian National University], 7(1), 214–222.
<https://doi.org/10.15330/jpnu.7.1.214-222>
- Pylypiv, O. (2020b). Transformatsiia profesiinykh vymoh do vchyteliv pryvatnykh pochatkovykh shkil v Ukraini (1990-2010-i roky) [Transformation of professional requirements for teachers of private primary schools in Ukraine (1990-2010)]. *KELM (Knowledge, Education, Law, Management)*, 5(33), 14–18. <https://kelmczasopisma.com/viewpdf/2063>
- Sánchez Trujillo, M. de los Ángeles, & Rodríguez Flores, E. A. (2020). Diseño y aplicación de estrategias neuropsicopedagógicas en estudiantes universitarios [Design and application of neuropsychopedagogical strategies among university students]. *REOP – Revista Española De Orientación Y Psicopedagogía* [Spanish Journal of Guidance and Psychopedagogy], 31(1), 113–130.
<https://doi.org/10.5944/reop.vol.31.num.1.2020.27293>
- UNESCO. (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. UNESCO.
<https://unesdoc.unesco.org/ark:/48223/pf0000098427>
- Yashchenko, L. (2018). Intehratsiia navchalnykh predmetiv yak efektyvna forma navchannia molodshykh shkolariv [Integrating educational subjects as an effective form of teaching younger students]. *Pochatkova osvita* [Primary Education], 1, 6–9. http://www.lesia-yaschenko.ck.sch.in.ua/pro_shkolu/dopovidi/integraciya_navchalnih_predmetiv/