

Immersion in Education: State and Prospects

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The relevance of this study is associated with the need to search for new techniques and technologies for the effective development of educational processes in the dynamic, intensive and extensive growth conditions of the modern information space. The study aimed to identify an effective approach to educational processes associated with immersion practices, while focusing on a system of various modalities of information. Research methods included historical and empirical analysis of immersion processes, the neuropsychological method and the method of mathematics of fuzzy sets. Monitoring of educational immersion processes related to testing, questionnaires and surveys of students in schools, colleges, higher educational institutions in the areas of fine art and design made it possible to determine the vectors of structuring immersion information. The practical development of immersion technologies confirmed the relevance of the use of immersion in educational processes. In the process of considering educational immersions, systemic and integral signs of audio, visual, composite and simultaneous immersions were revealed. The prospects of immersion in education are justified by examples of positive historical and modern experience in its application – bilingual, medical, humanitarian, design and so on. This experience became the basis for drawing up a design model for the use of educational immersion and the theoretical transformation of actual knowledge and practices of various textual immersions into the proposed idea of an immersion educational approach, which requires methodological, methodical and technological disclosure.

Key words: *Immersion, educational immersion, immersion educational approach, educational practice, educational information.*

Introduction

The random, disorganised perception of modern information, with its volume and variety increasing exponentially, has become an urgent problem, the solution to which can only be achieved through ‘response measures’, including pedagogical influence (Peshkova & Samarina, 2020).

The type, kind, content and nature of ‘problematic information’ can vary. For example, for many years, the literary and pedagogical community has been faced with the task of including trainees (at all age levels) in the field of world and domestic literature. This task is very difficult to implement. Descriptions such as ‘well-read’, ‘literary awareness’, ‘acquaintance with literary classics’ and ‘knowledge of domestic and foreign literary sources’ are applied. These are all different designations of the same problem: children, youth and adults are barely reading. Despite all the efforts of teachers, the book has ceased to be a source of information, actively developing the subject and shaping their thinking, consciousness and worldview.

This is due to a number of factors. The first is the emergence of electronic sources of verbal-language information (e-book), which do not give the entirety of the sensations of ‘talking with a book’ (tactile, kinesthetic, audible), which are unconsciously registered by the subject as a signal to ‘remove preferences’. Second, due to its ‘unbearable information volume’, the emergence of real growth in the field of modern verbal information has led to confusion. As a result, it can be an obstacle to mastering ‘book information’. Third, the accessibility of textual information plays a role, mainly connected with computer tools rather than with the traditional book form. Fourth, the modern book has increased in value, something that is especially true for quality printed products.

A number of arguments testify to the objectivity of reducing the subject’s real attention to the modern (in the broad sense) book. One reason for the decrease in the motivation to read books lies in the methodology and methods of *pedagogical processes*, which perform the function of communication between the subject and the book.

A similar problem series arises in other information forms and ‘territories’ – visual-spatial, visual-temporal, musical, kinetic, simultaneous and so on. One relevant practice that needs to be addressed is the effective implementation of processes related to the necessary immersion of a modern person in educational information.

The development of immersions (dipping) in ‘informational territories’ is not an accidental activity for our time, but arose in an organic connection with the development of society, determined by scientific and technological progress (Kornilov & Popov, 2018). The

identification of laws and patterns of assimilation of dynamically growing information becomes one of the urgent goals of modern education, along with the task of mastering the systemic management of these phenomena. This is the prospect of mastering immersion in educational theory and practice (Blascovich et al., 2002; Dede, 2009; De Freitas & Neumann, 2009; Meyer, 2010; Mikropoulos & Natsis, 2011; Sabatier, 2016).

Literature Review

In the foreign literature, the concept ‘Immersive teaching’ (immersive learning, immersive education) is used widely (Hew & Cheung, 2010; Cummings & Bailenson, 2016; Potkonjak et al., 2016).

Publications related to bilingual education are of particular interest. This extensive series of studies, begun by the Canadian school of science and education in the mid-twentieth century, has been joined in recent years by publications that reveal various aspects of linguistic immersion. The scientific works of this direction include the works of Lewington (2011), Simashko (2015), Pribylova (2016), and Jintapitak and Meini (2019). Examples of nature conformity for humans of immersion and immersion diversity are also of interest for the education system. This is reflected in publications related both to linguistic (Marchenko & Kapustin, 2008) and other areas of immersion processes (Gullory & Wolverton, 2008; Immersive Teaching, 2019; Sergeev, 2008).

In this article, based on well-known materials and our own observations of the facts of immersion processes in educational practices, immersion is presented as an effective and relevant tool in the developed system of immersion training actions (in cinematographic, design, artistic, musical and other areas of education).

Materials, Methods and Methodological Framework

Factual monitoring of immersion in education provides an opportunity to use the analytical method to identify the vectors of pedagogical response to the growth and activation of modern educational immersion; it became a relevant basis for the research.

Justification for natural integration of educational immersion in the theory and practice of pedagogy became a scientific concept of Bekhtereva (2007) ‘on the property of the internal mechanism of the brain to turn information every minute, consistently, in the spatial pattern of brain storage of memory’.

The ideas of the theory of mathematics of ‘fuzzy sets’ (Lotfi, 1973) are also used methodologically as a basis for intuitive selection of the concept-vector *educational*

immersion – immersion educational approach in the conditions of relative incompleteness of information about the observed process.

Sources of methodological, methodical and factual information were associated with monitoring aimed at observing specific instances of the inclusion of immersion in educational practice (Russian State Professional Vocational University, Yekaterinburg, duration of monitoring 2005–18), as well as publications about the facts of the application of immersion in educational processes.

Results and Discussion

Consideration of educational immersion in the psychological scientific provisions of Bekhtereva (2007) revealed the effectiveness of immersion associated with design, both in the single and multiple immersion of students in the material offered by the teacher. The efficiency was also observed in the process of work with elective immersion material. At the same time, we understand the term ‘educational immersion’ to mean the organised, content-structured immersion of the subject in the information space (field, stream, array, environment) with the goals of teaching, educational and developmental nature.

For example, according to the results of control measurements, the design students immersed in visual presentations of the best world and national design samples found qualitative changes in their own competence development: acquaintance with the samples, evaluation of their qualities and characteristics, and general professional erudition. It was observed that memory (as ‘trace’ and ‘pattern’ according to Bekhtereva) and ‘competence thinking’ are realised by the subject in different modalities: activation and actualisation of memory, analysis, comparison, generalisation and synthesis, among others. It can be assumed that educational immersion, as the main ‘supplier of material’ for memory, largely affects human thinking, forming the basis of a holistic functioning structure of the brain.

It can be concluded that in the processes of educational influence, such a natural form of cognitive activity can be recognised as *educational immersion*.

Such processes may include introductory immersions in the field of visual art and design (visual immersion); immersions in musical and voiced verbal texts (auditory immersion); thematic views of multimedia and cinematic material (simultaneous immersion); and other topics and forms necessary for education. We must add a well-known example in educational practice: the effective use of immersion film reviews in the practice of cinematic education from the 1950s to the present day (VGIK named after S.A. Gerasimov, Moscow).

The scope of implementation of immersion in educational practice, although incomplete, nevertheless follows the ‘intuitive logic’ of the mathematical theory of fuzzy sets (Lotfi, 1973), so there are grounds for positioning educational immersion as a form of educational activity.

This value of educational immersion can be supported by its mandatory presence in the structure of the so-called universal design algorithm, which is used widely in the work of designers and artists: thematic immersion; search for ideas; choice of ideas; development of ideas; crystallisation of ideas; and reflection. This conclusion is also correlated with the facts of active use of immersion in the world practice of bilingual and medical education. In this regard, it is logical to extrapolate the studied part of the material into the project model of the application of educational immersion (Table 1).

Table 1: Model of possible application of educational immersion

Type of immersion	Immersion realisation
Visual	Fine art artefacts, exhibitions, multimedia spectacles, visual reproductions, computer presentations, ‘smart presentations’, architectural and design objects, visual ‘geography’, etc.
Auditory	Immersion in speaking environments including bilingual environments, music and noise texts
Kinesthetic	Dynamic space-time immersion in natural (tourism, expeditions as scientific research of nature, etc.) and cultural processes (e.g. medical-training, physical culture, sport, cultural, gaming)
Simultaneous	Simultaneous visual-audio-kinesthetic space-time immersion in natural and cultural environments, cinematic texts, synthesized multilingual performances, etc.

As we can see from the examples in the table, the total area of educational immersion represents a significant volume of immersions of different types of content and structure. At the same time, all the immersion processes have a psychological and pedagogical basis.

If we consider educational immersion in terms of its perceptual characteristics, then at the initial perceptual stage of immersion communication (viewing, reading, listening, etc.) we can already find a number of individual features of textual understanding: motivation, demotivation, sympathy, antipathy, interest, indifference. These emotional contacts are associated with a certain freedom of a person in ‘communication with the text itself’, operational development of emotional and evaluative information at the implicit level and the emergence of vectors of logical research of the text, as yet unclear and devoid of in-depth states. The transition from perceptual to analytical immersion occurs naturally in the process

of moving the subject/recipient to an in-depth and multi-aspect consideration of the object (theme) of immersion.

One analytical aspect of educational immersion fits into the theoretical framework of transactional analysis as a psychological theory, which carries significant educational meaning for pedagogical processes. We can note, for example, the pedagogical relevance of the method of transactional analysis, associated with the understanding of people's behaviour in the processes of perceptual immersion in certain texts, their ability to trust themselves, think independently, make decisions, openly express their feelings (Berne, 2004). Immersion processes are thus of professional interest to pedagogy not only because they expand the information field of a person, and demonstrate and consolidate their 'visual and auditory experience', 'awareness' and so on, but they also provide an impetus and produce 'perceptual-analytical learning and education' of the subject, forming socio-psychological tools.

Transactional immersion in the scenario material – for example, literary texts – enables a special kind of formation of an individual 'image of the world' within different age periods (childhood, youth, maturity, etc.). Along with 'spontaneous', free immersion in texts, this requires a certain 'pedagogical participation' in organising the processes, analytical learning, methods of interpretation and practical application of the experience obtained in immersion processes.

Berne (2004) defines the conceptual attitude to the scenario effect: 'To understand how the script works and how to handle it in treatment, it is necessary to know the scenario apparatus as we understand it today.' We can conclude that the knowledge of 'educating transaction scenarios' and their pedagogical design should be present in the content of activity of a modern teacher who is carrying out immersion processes.

Another aspect of the analytical study of immersion processes relates to the need for theoretical and practical development of professionally oriented immersion in one or another array of information (visual, verbal, audio). This also includes pedagogical features, expressed in the specifics of the organisation, design and broadcast of 'immersion material'.

Professionally oriented organised immersions in the appropriate educational material provide the subject of the education with basic information on the content of professional activity in the framework of a wide variety of professional areas and specialisations (Deo Avasthi, 2007; Mandel, 2015; Stepanov & Stepanova, 2017; Tatur, 2004). We emphasise that these aspects do not exhaust the analysis of immersion educational processes, the disclosure of which is associated with the search, discretion and study of other pedagogical vectors and opportunities.

In modern pedagogical practice, it is understood that pedagogical development of aggregate immersion processes can only be carried out within the framework of a system of pedagogical measures that have the appropriate character, originality, goal-setting, method and so on. That is, in connection with the challenges and tasks that have arisen, a new systemic integrity of response pedagogical measures appears. This gives provides reasons to put forward the idea of an immersion educational approach as a theoretical, methodological and practical strategy for the development of modern educational information. The positioning of the immersion educational approach is due to the need to comprehend, at the pedagogical level (in theory and practice), the whole diversity of modern educational immersion, which significantly affects the formation of a person, their views, tastes, thinking, development and so on.

To a certain extent, an immersion educational approach can fulfil the function of a regulator of perception of that array of modern information that is currently becoming ‘uncontrollable’. ‘Tough targeted processing’ is required to eliminate unnecessary, insignificant and destructive information facts – a kind of pedagogical ‘fact-checking’ (as a procedure for checking certain data). The implementation in the formation of such a functional vector will help the student to avoid information overload, as well as focus on important material. In the framework of the immersion educational approach, it will be possible to generalise the synthesis of psychological, didactic, prognostic and other aspects of the development of the educational material.

The immersion educational approach is therefore positioned not as the sum of technological practices, but rather as a special kind of pedagogical vector. In this aspect, it gives the prospect of a positive assimilation of information in various fields. In addition, the concept of an immersion educational approach is not only an indicator of access to a particular area of professional immersion, but also an integral vector of immersion in various language fields – verbal, visual, audio and so on. This gives it a general, universal character, uniting the diversity of existing informational modalities.

Summarising the material, one can justify the positioning of the immersion educational approach in terms of the appearance in the general information field of the social environment of specific information data related to a particular area of knowledge and human activity, as well as intensive development of information processing tools (IT technology). In interaction with each other give, these factors give rise to consequences – challenges created by the development of human beings and the social environment. Related to these are inclusion and the need for professional, professional-pedagogical, humanitarian and scientific development of information at different levels – perceptual, analytical, axiological, compositional, combinatorial. As a rule, all this is associated with various forms, and types of human productive activity.

The need for the long-term development of the methodology and technologies for working with information in the education system is obvious (Astashova et al., 2018; Gapontseva et al., 2004). In this case, it is advisable to connect these problems not only with discrete forms of pedagogical character, but also with a holistic educational approach – immersion, which is an open, dynamic, rapidly developing system.

This assumption is confirmed by the pronounced pragmatic orientation of immersion educational processes, and their practical implementation demonstrates a positive result in modern educational practice. At the same time, the implementation of immersion processes does not contradict the basic pedagogical conditions and attitudes of education.

Conclusion

The self-organisation of the system of immersion educational processes occurs within the framework of educational practices. The implementation of a systemic review of such processes makes it possible to more deeply and effectively master them, both in theory and in practical activities. This statement is based on the conclusions related to the consideration in the article of not only the theoretical vector of immersion, but also the study of specific pedagogical practices in universities, colleges and schools.

Within the framework of the material under study, the state of systemic positioning of immersion processes functioning in the educational space is specified. Moreover, the filling of the concept of educational immersion is defined as a meaningfully structured immersion of the subject in the information space with goals of a training, educational and developmental nature. This definition is related to the goal-setting, planning and structuring of the content of immersion educational material.

The growing variety of these processes, characterised by the facts of their application in bilingual and medical education, visual arts and design, cinematographic and musical education, as well as other educational fields, provides the basis for the configuration not only of individual immersion technologies, but also their educational integration.

Further development of educational immersion is associated with the implementation of the idea of an immersion educational approach, which can be an effective tool for such development at the immersion stages, which are associated with perceptual processes of contact of the educational subject with information, as well as with the analysis of the structure, content and professional use of the information involved (Davydova et al., 2018, 2019).



In the future, in terms of its theoretical, substantive and instrumental characteristics, the immersion educational approach will not only be capable not only of gaining relevance of functioning in modern educational processes, but could become one of the important topics in modern pedagogy. This is due to the need for a holistic consideration of the emerging system in various aspects – psychological, theoretical and pedagogical, methodological, technological, practical and pedagogical. In addition, the task of the targeted development of the material and technical support of immersion processes in the system of modern education can be considered relevant, as it can be correlated with the development of the technical tools of society. Thus immersion in education and its diverse aspects in the future may acquire the character of a systemic and relevant educational phenomenon.

REFERENCES

- Astashova, N.A., Bondyрева, S.K., & Smantsер, A.P. (2018). Development of the axiosphere of the future teacher in the dialogue space of modern education. *The Education and science journal*, 20(7), 32-67.
- Behtereva, N.P. (2007). *Brain magic and the labyrinths of life*. M.: AST; St. Petersburg: Sova.
- Berne, E. (2004). *Games People Play. The psychology of human relationships. People who play games, or you said 'hello', what's next? The psychology of human fate*. Yekaterinburg: LITUR.
- Blascovich, J., Loomis, J., Beall, A.C., Swinth, K.R., Hoyt, C.L., & Bailenson, J.N. (2002). Immersive virtual environment technology as a methodological tool for social psychology. *Psychological Inquiry*, 13(2), 103-124.
- Cummings, J.J., & Bailenson, J N. (2016). How immersive is enough? A meta-analysis of the effect of immersive technology on user presence. *Media Psychology*, 19(2), 272-309.
- Davydova, N. N., Dorozhkin, E. M., & Fedorov, V. A. (2019). Organizational and pedagogical basis for the development of science and education networks. In *SHS Web of Conferences* (Vol. 69, p. 00030). EDP Sciences.
- Davydova, N.N., Dorozhkin, E.M., & Fedorov V.A. (2018). Educational research networks principles of organization. *International Journal of Engineering & Technology*, 7(2.13), 24-29.
- De Freitas, S., & Neumann, T. (2009). The use of 'exploratory learning' for supporting immersive learning in virtual environments. *Computers & Education*, 52(2), 343-352.
- Dede, C. (2009). Immersive interfaces for engagement and learning. *Science*, 323(5910), 66-69.
- Deo Avasthi, L. (2007). *First Language*, 27(2), 194-196.
- Gapontseva, M.G., Fedorov, V.A., & Gapontsev, V.L. (2004). Application of the ideology of synergetics to the formation of the content of continuous science education. *Education and science*, 6, 89 - 102.
- Guillory, R.M., & Wolverton, M. (2008). It's about family: Native American student persistence in higher education. *The Journal of Higher Education*, 79(1), 58-87.

- Hew, K.F., & Cheung, W.S. (2010). Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings: A review of the research. *British journal of educational technology*, 41(1), 33-55.
- Immersive Teaching (2019) Retrieved from <http://www.indire.it/en/progetto/immersive-teaching>
- Jintapitak, M., & Meini, D. Designing a Questionnaire for English Teachers, Morejoy Education, Chongqing, China to Figure out Teachers' Need of Training. In *2019 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT-NCON)* (pp. 364-368). IEEE.
- Kornilov, Yu.V., & Popov, A.A. (2018). Augmented Reality: Application of AR-technologies in training. *Meridian*, 4(15), 264-266.
- Lewington, J. (2011). In Canada, new strategies to help a fast-growing Aboriginal student sector. *Chronicle of higher education*, 58(14), A15-A16.
- Lotfi, A.-Z. (1976). *The concept of a linguistic variable and its application to making approximate decisions*. M.: Mir.
- Mandel, B.R. (2015). *Psychological and pedagogical support of the educational process in a modern university: a textbook*. Moscow-Berlin: Direct Media.
- Marchenko, A.I., & Kapustin, I.B. (2008). The principle of nature conformity in the bilingual and immersion training system. *Bulletin of the Federal State Educational Institution of Higher Professional Education 'Moscow State Agroengineering University named after V.P. Goryachkin'*, 6(31), 54-57.
- Meyer, O. (2010). Introducing the CLIL-pyramid: key strategies and principles for quality CLIL planning and teaching. *Basic issues in EFL-Teaching and Learning*, 11-29.
- Mikropoulos, T. A., & Natsis, A. (2011). Educational virtual environments: A ten-year review of empirical research (1999–2009). *Computers & Education*, 56(3), 769-780.
- Peshkova, G.Y., & Samarina, A.Y. (2020). Digital economy and recruitment potential: strategic interconnection and prospects. *The Education and science journal*, 20(10), 50-75.
- Potkonjak, V., Gardner, M., Callaghan, V., Mattila, P., Guetl, C., Petrović, V.M., & Jovanović, K. (2016). Virtual laboratories for education in science, technology, and engineering: A review. *Computers & Education*, 95, 309-327.



- Pribylova, N.G. (2016). Immersion teaching of a foreign language in foreign countries. *Psychology of education in multicultural spaces*, 34(2), 95-100.
- Sabatier, C., Moore, D., & Sinclair, N. (2016). Interactions et films de classe pour réfléchir la formation à l'enseignement des Mathématiques en Français langue seconde. Décrire pour mieux former?. *Recherches en didactique des langues et des cultures. Les cahiers de l'Acedle*, 13(13-1), 1-25.
- Sergeev, S.F. (2008). *Educational and professional immersive environments*. M.: Public education.
- Simashko, T.V. (2015). *Problems of conceptualizing reality and modeling the linguistic picture of the world: Collection of scientific papers* (vol. 7, pp. 308). M.: BIBCOM.
- Stepanov, A.V., & Stepanova, T.M. (2017). *Immersion approach to the development of visual culture. In the collection: Visual Images of Modern Culture: Secular and Religious Constructions of the Living World*. Collection of scientific art. based on IV All-Russ. scientific - practical conf. Omsk.
- Tatur, Yu.G. (2006). *Higher education: methodology and design experience: teaching aid*. Moscow: Logos.