Digital Education as a Factor of Sustainable Development during the Isolation Period

Tatyana V. Mazaeva[a] and Alsou M. Aydarova[b]

Department of Philology, Naberezhnye Chelny Institute, Kazan Federal University, 68-19 Mira Ave, Naberezhnye Chelny, Russia

Keywords: Digitization, Digital Education, Edtech, Teaching Techniques, Isolation Period.

Abstract: The article under consideration investigates various types of digital education, their resources for efficient knowledge acquisition and the transformation of teaching profession during the isolation period as a factor of sustainable development. The goal of the research is to determine the teaching strategy under new conditions and its objective is to examine the digital resources, their peculiarities and methods of their application in a particular learning situation. To meet their goal the authors resort to the method of search, sampling and systematization of the received data with a view to anticipating future strategies. The hypothesis of the conducted research: a great variety of digital resources can and should be integrated into the traditional system of education to achieve the utmost desired effect under new circumstances. The advanced hypothesis is confirmed in the course of the analysis which helps the teacher to update and adjust the procedural framework and propose further steps of development.

1 INTRODUCTION

The isolation period made the world face new challenges that were dramatically to change people's customary lifestyles as well as to affect and transform many spheres of human activity on a global scale such as politics, economy, medicine to name a few. It set sweeping goals for education in particular, as it took both teachers and students by surprise in high schools and universities. The system of education had to respond to meeting these challenges in force-majeure circumstances maintaining efficiency and quality at a high level. Cutting-edge technologies have undeniably become the indispensable part of our everyday life, education among them, but to combine them with meeting educational standards in the shortest possible time span sounded like 'Mission Impossible' for many educators. Most educational institutions were unprepared to realize e-learning programs to its full extent despite the rapid implementation of digital technologies in economic and social spheres. This forced educational experiment needs careful consideration since it has its strong and weak points.

2 METHODOLOGY

The goal of the research is to determine the teaching strategy under new conditions and its objective is to examine the digital resources, their peculiarities and methods of their application in a particular learning situation. To meet their goal the authors resort to the method of search, sampling and systematization of the received data with a view to anticipating future strategies. The hypothesis of the conducted research: a great variety of digital resources can and should be integrated into the traditional system of education to achieve the utmost desired effect. The advanced hypothesis is confirmed in the course of the analysis which helps the teacher to update and adjust the procedural framework and propose further steps of development.

[a] https://orcid.org/0000-0003-0566-1978
[b] https://orcid.org/ 0000-0003-3790-0777

3 DISTANCE LEARNING: PROS AND CONS

Digital education is a broad notion, which includes online courses as part of distance learning, application of new technologies, such as big data analysis, artificial intelligence, computer-assisted teaching, robotics achievements, etc (Bilyalova et al., 2019). In school and university education it is realized generally in the form of distance and e-learning (Bagateeva and Aydarova, 2019). These terms are often treated as equivalent, but distance learning is mainly defined as the interaction between a teacher and a student at a distance that includes all educational components (goals, methods, teaching aids, etc.) and is conducted through information and telecommunication network (Strakhova et al., 2019), while e-learning is intended to deal with information as part of data base and is to apply information technologies to process this information and transmit it among teachers and students.

On the one hand distance learning doesn't require either a teacher or a student to be attached to the place where the lesson is conducted, as long as communication occurs on a virtual platform. The student can allocate time to studies as he sees fit and keep his own pace which builds awareness and motivation. Moreover, distant technologies give opportunities to attract high quality educators and researchers who upload online seminars, master classes, so the students can tap information from different sources, have a broader outlook and multidimensional knowledge and vision in general (Makarova et al., 2018).

On the other hand, only face-to-face contact enables a student to learn the information at first hand, ask questions and have a heated debate, socialize with the peers; live communication is more effective to build team spirit and feed students' imagination. There is no denying either, that distance learning calls for discipline and responsibility on the part of the student. Depending on the age group, students need to be more or less supervised by the parents, parental involvement in the process cannot be overlooked. What exacerbates the process of learning is that it's more challenging for students to concentrate on the subject under consideration working online, the atmosphere at home is not always conductive to studies and the teacher has to take more pains to keep the learners stimulated. Unsurprisingly, students need to take time to grow well-adjusted to the new form of learning, therefore education experts highly recommend to stick to the same routine they used to keep before the quarantine. The teacher also has to invest more time devising a lesson plan, integrating visual aids, presentations, interactive games into the normal class routine in order to spark excitement for learning. Lack of proper visual contact makes distance learning cumbersome so far. Besides, the bleak truth is that, unfortunately, many low-income families face the financial problem of providing the child with his own PC, laptop or tablet, so the child has to share it with other family members. This and absence of high-speed internet connection make the process of learning inconvenient and complicated (Matrusova, 2020).

The negative points seem to outweigh the positive ones, but the state of affairs only conveys public concern, anxiety and preoccupation with the challenge everyone is compelled to meet. There are some issues that still have to be examined to be rated as having either a negative or positive effect. For example, some experts argue that distant learning improves students' performance in schools as long as the workload for a day is comparatively less and children find it easier to cope with assignments. Yet, opponents of this view maintain that this is a far-ranging issue and its consequences are to be evaluated later.

4 RESULTS

All the problematic issues induced by the isolation period can be subdivided into several groups:

1. Organizational (related to the general policy of organizing educational process; means of interaction of its participants, i.e. teachers, students, parents; means of interaction of authorities of educational institution with educators.)

2. Information and competence-oriented (aimed at building information competence of the participants of educational process that will be sufficient to achieve the desired effect in teaching and learning under the given circumstances as well as the preparation and representation of the teaching aids and the course content in digital resource.)

3. Program-planning oriented (connected with the change in curriculum, the shift of industrial work placement and practical training for later periods, replacement of practical training for academic learning).

4. Content-related (the conversion of the learning material into e-form, restructuring of the contents of the academic programs and devising upgraded lesson plans to meet the goals and contribute to the effective knowledge acquisition).

5. Teaching techniques-related (the determination of the most effective ways of educational interaction in e-learning format).

6. Material and technical (providing access to computers with the Internet connection for the participants of the educational process in need).

As far as the forms of digital education are concerned, the following trends have become extremely popular in school and university education during the isolation period most notably:

a) Massive open online courses (MOOCs). During the corona virus period there was an upsurge in demand for digital educational resources both in Russia and all over the world. This format that originated in 2008 supported by international universities has got a new lease on life and proclaims the idea "Education for everyone".

The switch to distance learning helped it to become the most popular trend of the spring 2020 and the statistics suggests itself: in 2020 the number of online courses amounted to 13 000 of users, and the audience of five largest MOOCs only comprised 100 million of users. In Russia the interest in MOOCs has soared dramatically in comparison with many other countries.

b) Zoom and video platforms (for school education).

E-materials and teaching aids are not sufficient for proper knowledge acquisition: nothing compares to personal communication with a teacher to perceive and process new information. Apart from classic services with video calls virtual classrooms are gaining more and more popularity. They are specific in a way that they represent a uniform ecosystem which enables the teacher to conduct conventional group lessons in combination with one-on-one sessions. Among other things the teacher can turn on the demonstration of presentations and learning materials, homework, and make good use of a virtual pointer with the blackboard.

c) Inquiry-based learning

The framework of this trend suggests that the student takes the lead in the process: he becomes much more initiative, whereas the teacher's role shifts from "broadcasting" the knowledge to performing the function of "a conductor", the one who motivates, challenges students to delve into details and makes them leap into action. This format implies total initiative from opting for the course of study down to the learning and processing of material on one's own. It became extremely popular in quarantine because of the limited communication opportunities with the teacher. As for Russia, this type of learning was sought-after in corporate and business environment

before the isolation period. Nowadays the switch to distance learning has spurred school and university educators to implement this approach. Education experts and scholars agree on the idea that the elements of this approach can be integrated into education process for future use.

d) Mobile learning (m-learning)

This is a gadget-based approach. Most EdTech projects are trying to adapt the content for mobile phones to make it none the less comfortable to use than on a computer. Reportedly, more than 90 million Russians go on the Internet using smart phones and tablets daily. UNESCO gives special support to effective introduction of mobile technological solutions in education. They created an online collection of resources to realize school initiatives in m-learning. In international EdTech conference EdCrunch experts select the best educational mobile applications within the competitive program. VR/AR technologies, gamification and interactive approaches are used in these applications.

Actually, the initiation of strategy BYOD (bring your own device) in school and university education is gaining more and more popularity all over the world, when students use their own gadgets, such as smart phones, tablets, laptops for educational purposes. It enables institutions to cut costs for equipment buying and makes education more affordable.

e) Flexible learning

This format suggests customized and tailor-made approach where the student himself can design his own educational pathway. This technique focuses on face-to-face teaching without hard and fast rules. Some Russian universities endorsed and launched projects where students can partly determine their own learning pathway. EdTech projects contribute considerably to personalized learning as well.

f) Blended learning.

Blended learning is a combination of online and offline. As a consequence the student works one-on-one with the teacher and also benefits by making use of online services. A series of face-to-face lessons is accompanied by webinars and expected to have a general chat room for students as well as enabling students to use other online platforms. Currently the focus of blended learning is believed to be shifted online, though one cannot underestimate the significant key role of traditional offline education. The perspective of further exposure of blended learning in post isolation period depends on schools and universities initiative and the steps they take to implement programs in terms of teaching techniques.

g) Flipped classroom

This format originated in 2000 by educators Jonathan Bergman and Aaron Sams. It's one of the types of blended learning mentioned above and appears to be one of the most easy-to-organize educational practices. Students master academic knowledge on their own at home, asking questions afterwards in the classroom, trying to clarify and work through difficult points, doing exercises and laboratory assignments, conducting research and practical experiments under teacher's guidance.

h) Learning management system (LMS)

This trend is going to be the major type of distance learning at schools as MOOCs imply conscientiousness, awareness and accountability of learners, more appropriate for adult students in universities. Modern LMS can embrace blended learning and allow to create customized courses, sign students up for a course or opt for the course, consider educational analytics, assess different indicators, make predictions, highlight the weak points. Owing to these technologies it is possible to conduct personalized learning which focuses on an individual according to his abilities, strong and weak points.

i) STEAM

This is a type of education based on the application of cross-subject and the applied approach where five disciplines are integrated into a single system of learning: S - science; T - technology; E - engineering ; A - art; M – mathematics. STEAM-related projects in Russia come with booming growth, where educators teach students top-notch technologies and engineering, programming and robotics based on their own methods in the form of workshop sessions. They aim at introducing project activity into the process of learning.

j) Digital teacher

The isolation period betrayed the necessity for teachers to master digital technologies in the process of education. The demand for specialists with digital skills is sure to be on the rise. According to statistics of National Center of Financial Research the index of teachers' digital literacy constitutes 87 out 100 points possible, which is a sufficiently high indicator. The lowest indicator has the sub-index of 78 related to 'the attitude to technological innovations'. It measured skills of handling modern gadgets and applications. The results also reveal that Russian teachers acutely need methodological support and counseling on how to apply modern EdTech services most efficiently.

k) Teacher significance

Despite the enhanced growth of digitalization one can hardly imagine any process of education without a teacher. The isolation period has definitely affected teaching and accelerated the creation of teaching aids and multimedia content online. According to National Center of Financial Research more than 70% of teachers faced the increase of workload particularly during the isolation period.

How can a teacher get ready for the implementation of digital education?

Firstly, to familiarize oneself with the idea of online courses, a teacher can take a course himself. This experience will allow him to get acquainted with the course format, evaluate the presentation of content and point out common mistakes to avoid them later. Secondly, it's worth investigating which platforms and devices the school or university has to offer so that the teacher can see the big picture and start devising lesson plans in advance. Thirdly, it seems only rational for the teacher to introduce elements of digital education even without its across-the-board implementation. Making good use of resources that offer role playing, games, quizzes will help to keep pace with modern life and maintain students' motivation. Finally, keeping track of the current situation in education on the state scale will make the teacher keep abreast of recent changes and use courses or programs of continuing education.

5 CONCLUSIONS

Thus, the growth of digitalization in educational sphere appears to be the most notable. The implementation of modern technologies that enable to learn and teach online as efficiently as in a conventional classroom is what the future has in store for us. Blended learning and inquiry-based learning are supposed to become the most popular. The question whether technologies will be able to substitute for a human teacher seems to be rhetorical. The advocates of traditional education prefer to deal with a human who passes on knowledge and experience to the child. In the post quarantine world the profession of a teacher will still maintain its importance, although it will undergo some changes. Individual educational pathway will be of paramount importance in future. Teachers will go on mastering new tools more actively after the quarantine, they have to become students themselves to some degree and upgrade their digital skills, while the teacher's role in educational process is going to transform as well: the significance of a teacher as a mentor will gain momentum and his function is going to be to challenge students, guide the process of learning, instruct learners to process information, search for and find new solutions. As far as online educational platforms are concerned, education officials admit

that before the quarantine they were mainly technically designed and projected by programmers without regard to teachers' technical skills. The given situation makes specialists reconsider this attitude and create the platform for students and teachers to cooperate effectively rather than create an IT-solution. The involvement of methodologists, school and university counselors and content specialists is mandatory under the circumstances. Meanwhile, educational services have an opportunity to restructure current formats and put to test new ones and win larger audiences. Even if public involvement decreases after the quarantine, the registered users will still stay on a platform. All things considered, big reforms are under way in all spheres of social life and if history repeats itself, tried and tested methods will come in handy, if it hopefully does not – the technologies of distant learning will be in demand with some groups of students or even schools.

ACKNOWLEDGEMENTS

REFERENCES

Aydarova, A. M., Vildanova, E. M. and Ilina, M. S. (2017). Continuity of Communicative Culture Forming in Foreign Language Teaching (School-Technical School-University). *Modern Journal of Language Teaching Methods*, 9(7): 102-106.

Bagateeva, A.O. and Aydarova, A.M. (2019). Computer Linguodidactics in Foreign Language Training of Technical University Students. *Ioab Journal*, 10(1): 134-137.

Bilyalova, A., Sharypova, N., Akhmetshina, A. and Islamova, A. (2018). Electronic Educational Resources in Foreign Languages Teaching. In Advances in Social Science Education and Humanities Research. *Proceedings of The International Conference on the Theory and Practice of Personality Formation In Modern Society (ICTPPFMS 2018)*, 198: 173-177.

Bilyalova, A. A., Salimova, D. A. and Zelenina, T. I. (2019). Digital Transformation in Education. *International Conference on Integrated Science in Digital Age (ICIS)*, 78: 265-270.

Kajumova, D.F., Sadykova, A.G., Davletbaeva, D.N., Aleeva, G.K., Vildanova, E.M., Valiullina, G.F., Gafiatullina, N.R. and Aydarova, A.M. (2020). Using of phraseological units of the concept "the fate of man" in the lessons of Foreign languages. *International Journal of Psychosocial Rehabilitation*, 24(3): 1863-1870.

Makarova, I., Shubenkova, K., Bagateeva, A. and Pashkevich, A. (2018). Digitalization of Education as a New Destination of E-Learning. *Proceedings of Elmar-2018: 60th International Symposium ELMAR-2018*, pages 31-34.

Matrusova, A. (2020). "Eto besposchadny psevdooflain". Kakie mify ob obrazovanii razrushila samoizoljazija. Available at: https://www.pravmir.ru/eto-besposhhadnyj-psevdooflajn-kakie-mify-ob-obrazovanii-razrushila-samoizolyacziya

Sokolova, I.I., Ilina, M.S., Vildanova, E.M., Aydarova A.M. and Strakhova I.V. (2017). The Social and Pedagogical Qualities of Modern Vocational Training Teachers. *Czech-Polish Historical and Pedagogical Journal*, 9(2): 77-83.

Strakhova I.V., Aydarova A.M. and Mazaeva T.V. (2019). O komplimentarnosti v ispolzovanii elementov informazionnyh technologiy i jazikovoi animazii na sovremennom etape obuchenija inostrannim jazikam. *Globalny nauchny potentzial*, 4(97): 44-46.

Zoom i zifrovoi uchitel: desat trendov shkolnogo obuchenija posle pandemii. (2020). Available at: https://trends.rbc.ru/trends/education/5f0c9e549a794701ee47d369