

The Scope of Blended Learning Methodologies in Present Times

¹Prabhleen Kaur Saini, ²Deepam Gupta, ³Dheeraj Mandloi, ⁴Mariya Johar and ⁵Sapna Jain Dabade

¹BE 3rd Year, Computer Engineering, Institute of Engineering and Technology, Devi Ahilya University, Indore

²BE 4th Year, Computer Engineering, Institute of Engineering and Technology, Devi Ahilya University, Indore

³Faculty in Chemistry, Institute of Engineering and Technology, Devi Ahilya University, Indore

ORCID ID: <https://orcid.org/0000-0002-6099-5754>

⁴Data Scientist, Indore

⁵Department of Applied Science, SAGE University, Indore, & Research Scholar at School of Chemical Sciences, Devi Ahilya University, Indore

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*Corresponding Author

Email: [dmandloi\[at\]jetdavn.edu.in](mailto:dmandloi[at]jetdavn.edu.in)

ABSTRACT

Education is the cornerstone of development for mankind. It prepares the next generation to become civilized citizens of society. During the COVID-19 pandemic, our education system has fallen short and this highlights the need to refine our system. This is possible by incorporating ICT in education. In this paper, we discuss the challenges of the current offline system as well as the merits of the blended learning methodologies. We discuss various platforms that are torchbearers in blending education and technology. We also considered the challenges of the online education system like behavioural changes due to minimal interpersonal interaction amongst peers which may lead to a feeling of loneliness, anxiety and depression amongst students. Lastly, we explore the future of online education and methods to address its shortcomings.

We concluded that blended learning is the future of education but in its present shape and form, it is not a source of holistic development. We need to keep expanding the idea of blended learning and make it a more social experience so that the learners become more interactive and confident individuals. ICT is not the replacement of traditional offline education system but an aid to boost understanding that can be integrated with classroom teaching to provide a better learning experience.

1. Introduction

Education doesn't have a universal definition. According to oxford dictionary- "It is a process in which giving and taking of instructions occur in schools and universities." Education is the transfer of skills, habits, facts and social qualities required for the coming generation's social and moral conduct. It is the accruing of knowledge and experiences from those who already have them and then using this comprehension for the smooth functioning of life. It is a relationship between a teacher and their pupil. It is not limited to books. Right from one's birth to last breath, a person learns at each and every step of life; and education is the foundation on which this empire of knowledge is built.

Just like food and shelter are inevitable to survive, in the same manner, education is inevitable to live.

As Nelson Mandela said:

"Education is the most powerful weapon which can be used to change the world."

2. Education in today's scenario

The key to the development of our species is our ability to pass on our knowledge to the next generation. As our knowledge increased there was a need to develop a structured system to pass on this knowledge. Hence, the education system evolved.

The initial education system evolved from Europe. It just involved the recitation and memorization of the scientific and

non-scientific facts. There was no emphasis on understanding the real concept behind the fundamentals of the subject. This system was also corrupted by social evils like discrimination on the grounds of religion, gender, caste and race.

As time passed the system was reformed, uprooting the wrong practices, realising education as a human right and that it should be freely available to all. Teachers now understood the significance of nurturing their pupils with basic concepts and logics. Students are now allowed to ask doubts and can discuss ideas with their teacher. Importance of equality became a part of the curriculum in primary and secondary education. No harsh punishments are allowed in schools and colleges.

Though the system seems to be better than ever before, the pandemic rendered the whole system obsolete. In March 2020, the novel coronavirus, a highly infectious disease, started spreading its roots in India. In an attempt to stop the spread of the virus, a countrywide lockdown was declared. Schools, colleges and offices were shut down.

After 7 months, things came back to normal except for the education sector, which was operating remotely for the past months. In universities, more than one student shares the same hostel room, and hundreds of students use the same hostel mess and social distancing is hard to follow. In this situation, the online mode of education can be of great benefit.

3. Modern Methods (ICT)

The advancement in technology has radically changed the way we live. The interweaving of technology and education has transformed the domain both in terms of quality and quantity.

The acronym ICT stands for Information Communication Technology. It is the communication or sharing of knowledge in terms of facts, figures, moral values, scientific intellect, social discipline or academic studies via audio, video and images digitally or technologically. It has evolved to be a great method of learning desired skills. Over the past few years, the internet has reached the most remote places of the country at prices lower than ever before thus, the number of internet users has increased exponentially. Hence, ICT can be a pragmatic solution for all problems the education sector is facing today.

4. Why ICT in Education?

4.1. *Personalized Learning*

ICT provides a platform where students can learn at their own space. They provide flexibility by allowing students to take up courses whenever they want; may it be early morning or late at night. Moreover, recorded lectures can be viewed again and again to thoroughly understand the concepts or even for revision. The learner gets the opportunity to be in control. Online learning platforms are designed such that they can cater to the needs of learners by recognizing their strong and weak points and helping them practice more of their weaker sections.

4.2. *Reduces teacher's workload*

It is not possible for the educator to pay attention to all the students of the class as the learning pace, grasping power and level of understanding varies from student to student. Teachers need to strike a balance and deliver lectures taking into account the wide spectrum of audience. Hence, some students may find a teacher's pace fast and some may find it slow. But ICT focuses on individual learning which assists each and every student and helps them perform better. This directly reduces the workload of the teacher.

4.3. *Abysmal Knowledge*

ICT opens a whole new dimension to a world of infinite intellectuality. Any kind of information that we want is now just a few clicks away. ICT has made the dissemination of knowledge easier than ever before. Anyone can teach online, share their expertise and anyone can learn online, anything they want from savants in the field.

4.4. *Quality Education*

Highly esteemed and trusted educational institutions are providing high-quality online education by collaborating with world-renowned colleges, universities, small groups and individuals. Moreover, the intervention of the government in ICT, by introducing e-platforms such as NPTEL, NDL, SWAYAM, etc. help Indian students to learn from top-class instructors of the country and compete at the international level.

4.5. *Anytime, Anywhere*

ICT allows the learner to have access to a world-class education at the ease of a few clicks. These resources can be accessed from anywhere and anytime as per an individual's convenience. ICT has enabled education to transcend physical

boundaries; one can learn from educators around the globe about technologies which are not even available in their home country.

4.6. *Healthy Competition*

ICT gives an opportunity to become less dependent on usual classes and costly coaching institutes. It enables the student to dive deeper into a topic. Moreover, it helps understand complex things in an easier manner through visuals. This helps to maintain a healthy competition between the learners and indirectly motivates them to do much better each time hence, increasing the quality of discussion in class resulting in sharper minds.

4.7. *Develop useful skills*

Along with the academic curriculum, many learners have their talents and interests in extracurricular activities. Some like to paint, dance, sing, read, write, some love programming, graphics, etc. ICT has the ability to cater to all extracurriculars through videos and articles. These skills play a crucial role in developing one's personality and need to be nurtured.

4.8. *Fast*

Technology has exponentially increased the rate at which things are done. We can now complete multiple tasks with more efficiency in the same span of time. As exams are now conducted via online medium, checking takes minimal effort and time of teachers. Students can get their results almost instantly, which is almost impossible in the offline mode of examination.

4.9. *Learn by fun*

ICT empowers the teachers with animations and graphics, hence they can now explain complicated topics with ease. Students are no longer limited to textbooks and pictures for understanding a concept, instead, they have access to videos that can explain the entire process live. This makes studying a fun and interactive process for students. In fact, now we have 3D technology.

4.10. *Cost-Effective*

Above all, the cost concerned with education through ICT is much lower. It does not require any kind of external stationary heavy textbooks. Lectures once uploaded can be reused or updated as per need. This empowers even the underprivileged students with free and quality education.

So, in order to get most of ICT, many national and international organizations from across the globe have come up with the ideas of online education. These ideas are very creative and make full use of the world of the internet.

5. Platforms amalgamating ICT and Education

These platforms are the flag bearers of online education in today's era. Some of which are discussed below:

5.1. *E-classes/ Smart Classes*

Just like chalkboard lectures and classes in schools and colleges, the deemed universities of various places around the world came up with the video lectures of the renowned professors and teachers. These lectures are open to all no matter what age or gender or religious group you belong.

Moreover, there are a sufficient number of courses covering physics, chemistry, math, biology, computing, economics, politics, and almost every field study to date. Some of the organizations are given below: -

5.1.1. NPTEL

The National Programme on Technology Enhanced Learning (NPTEL) is an initiative taken by the MHRD i.e. Ministry of Human Resource Development of India which provides e-learning through video courses in Technology, Engineering Science, Humanities and Management. It is a combined work of seven IITs and IISc Bangalore. It provides undergraduate engineering courses according to the syllabi of AICTE (All India Council for Technical Education). It is an open e-learning site which offers 900+ courses including 500+ video courses and 400+ web courses.

5.1.2. SWAYAM

Swayam stands for "Study Webs of Active-Learning for Young Aspiring Minds" is a project funded by the Ministry of Human Resource Development, Government of India offering free online courses to the aspiring minds of India. It covers all the courses from class 9th to post-graduation via video lectures followed by downloadable or printable reading material, tests and quizzes related to the course. There is also an online forum for discussion. It can be accessed by anyone, anywhere and at any time.

Moreover, now the government of India is trying to add credits for these courses in colleges and universities curriculum which will encourage the learners to take e-classes.

5.2. E-labs/ Virtual Labs

E-labs or virtual labs is an initiative taken by the Ministry of Human Resource Development, Government of India, in an attempt to provide access to the Laboratories for the students of various branches till undergraduate level. Its goal is to cover all the engineering branches like electrical, chemical, mechanical, civil, biotech, computer science engineering and provide videos and web resources. These labs help students access and perform experiments remotely using their mobile phones or laptops. Moreover, these labs are completely free of cost and don't require any extra space or cost to set up. This allows access to labs even in those universities that cannot afford the state of art laboratories.

5.3. Virtual Simulation Learning

Virtual Simulation Learning is a 3D environment surrounding the subject with a view providing a self-engaging virtual learning experience. It's a replica of the real-world situation in order to give training to the learners especially in the field of aviation, medical, military and manufacturing. These virtual simulations have proved to be very effective as they are non-destructive and do not involve any kind of risks. Moreover, they are more interesting and interactive as you use your whole body in the training. These are preferred nowadays as they are scalable (can measure the level of the whole training), flexible (the environment can be changed according to the practice), portable (are easily set up), and affordable (everything is virtual so, no kind of risks are involved).

For example, AIIMS now utilizes video-based simulation to train freshers for surgical training.

5.4. E-Blogs

A blog is a platform to publish your thoughts, ideas, views, opinions on any type of topic or subject which you wish to share with the world. These blogs have a huge and positive impact in the field of education. Teachers nowadays make use of blogs to publish educational material which the students can access and may comment and ask their query, just by sitting on their computers or through their smartphones. It's not just limited to the educator, in fact, the learner i.e. the student can make their own blog and the teacher can observe the understanding as well as the progress of the student. The blogs which provide educational resources are called Edu-blogs. Some of the Edu-blogs on the World Wide Web are Journey, Skippy, Blogger, Bright Ideas, etc.

5.5. Online Forums

An online forum is a digital message platform or in simple words, these are the sites which provide the facility of online discussions. The best use of online forums in education is the discussion between teachers and pupils. Moreover, in a forum, to read the posted message, the learner need not be logged in and can remain anonymous but to post messages you have to be logged in. More than 3 billion people have access to the internet and approximately 70% of them are active on social media. Hence, online forums provide a huge opportunity to have virtual interactions. These forums are very popular currently as they allow the learners to collaborate, debate and discuss with people having similar interests. Some of the sites providing the facility of online discussion are bbPress, phpBB, Discourse, Google, Facebook, Blogger (we can make a group and invite people with similar interests), etc.

5.6. Online Exams/ e-examination System

e-examination is a way of conducting tests and exams via Internet or Intranet (within the organization). They are conducted with the help of specific software and servers. These servers are updated with the set of questions, suggested answers with their option (if the exam is MCQ based) and a particular time limit. All the answers are recorded and hence, can be evaluated afterwards or instantaneously. These exams can either be comprehensive i.e. free text-based or Multiple-Choice Question(MCQ)-based i.e. one or more than one correct. This system has proved to be very advantageous in today's scenario as it:

- Do not require any material like paper, pen, pencil.
- Saves a lot of time by auto-evaluation of the answers and providing instant results.
- These exams are completely based on specialized servers which provide a secured digital environment so that no foreign person other than the designated individual could attempt the questions.
- Students are provided with the facility to alter their answers, jump to whichever question they want, or skip the question. Moreover, the examiner can easily interchange the sequence of questions or penalize incorrect attempts.
- The online examination system requires low set-up and maintenance cost, making it economical for both the authorities and the candidates.
- Today nearly 4 billion trees (35% of total) are cut throughout the world in paper industries. Hence, e-

exams are a great, efficient and innovative way to save trees.

Some of the popular online-based examinations in India are namely IIT JEE Mains & Advanced, NATA, GRE, TOEFL, CAT, University Exams during COVID-19 times etc.

5.7. Digital Library

A digital library is a special type of library having an extensive compilation of content in varied formats such as text, visual images, audio formats and video formats stored in the form of electronic media at the respective servers of the particular organization.

These servers use a special type of software which gives the convenience of storing different types of files, organize them, search the required file and retrieve them. DSpace, Eprints, Hydra, Digital Commons are some popular software packages of this type.

5.7.1. NDL

The NDL i.e. National Digital Library of India is a project sponsored by the Ministry of Human Resource Development under its National Mission on Education through Information and Communication Technology rendering enormous amounts of learning resources under a single platform that is being developed at IIT Kharagpur. A user-friendly search engine is provided to find the relevant study material. Some salient features of NDL include:

- More than 7 lakh books by 3 lakhs authors in 70 languages.
- More than 3 lakh articles by 2 lakh plus authors from varied publishers.
- More than 33,000 Question Papers from 23 sources and their solutions.
- Contains content covering every aspect from primary to graduate level.
- Is easily accessible through the NDL app on your smartphone.

5.8. MOOC

MOOC (mooc.org) is an international platform emerged as an extension of edX, the chieftain of the world of online education and learning courses. The acronym MOOC stands for Massive Open Online Courses. This organization provides high quality educational online courses that too free of cost. It offers video lectures and textual materials in the field of computer science, business management, biology and life sciences and various engineering branches. These courses are offered by more than 100 member institutions including Massachusetts Institute of Technology, Harvard University, Boston University, the Indian Institute(s) of Technology, etc. These courses are open for all and without any age limits and available in different languages.

5.9. MOODLE

MOODLE stands for Modular Object-Oriented Dynamic Learning Environment. It is a free and open-to-all learning platform to assist learners, educators and administrators providing them with an individualized learning environment. Moodle is designed for distance learning, blended education, flipped classrooms and for other e-learning projects in schools, colleges and universities. With its customization features, it is

used to build private websites for teachers and students, educator and trainee. The courses on Moodle are available in more than 60 languages. A search facility is provided to get the correct course within no time.

5.10. IWB/ SmartBoard

IWB means Interactive Whiteboard. It is an interactive tool run by a software that allows digital images to be projected onto a board using a digital projector. It is synchronized with the pointing objects and then the elements on the screen or the board can be manipulated using a finger or a digital pen as a mouse. The items on the board can be dragged, copied and even magnified throughout the screen. The lecturer can write notes just like a chalkboard and can then save them for future reference.

These IWBs have become common in schools and universities. It can be either a standalone touchscreen computer or a connected apparatus which can be used as a touchpad controlling computer via projector.

It adds interactivity in classrooms as the colour of background and writing can be changed, resulting in more engagement of students.

5.11. Video conferencing platforms

Online video conferencing platforms like Google meet and zoom enable teachers and students to mimic the offline style of teaching. Teachers and students are not physically present in a classroom but are connected virtually via a call wherein teaching takes place. Students can see each other as well as interact with the teacher. Majority of schools and colleges have opted for this as a medium to conduct classes. Most popular video conferencing platforms are Zoom, Google Meet, Microsoft Teams, etc.

5.12. Google Classroom

It is an online application developed by Google that helps to synchronize the process of assigning and submitting projects, homework or assignments in a class. The user interface is easy to use and it's completely free of cost.

5.13 BYJU'S

A blended learning platform in India, especially for primary and secondary education. It contains animations to help students understand complex topics, as well as use Artificial Intelligence and data mining to track the progress of the students. The tests are adaptive i.e. the difficulty level of questions increases if the student performs well and vice-versa. Thus making the learning experience personalized and student-centred.

6. Loopholes in the Online Education System

Although the online education system seems to be promising, there are certain problems that need to be addressed like:

6.1. Increased Screen Time

Screen Time refers to the total time spent in front of an electronic screen. As 3-4-hour long classes are now conducted via online platforms, this has drastically increased the screen time of students. This can cause many health problems especially related to eyes.

6.2. Minimal physical activity

Students are no longer going to school; this has led to a decrease in their physical activity. Earlier, students had sports periods to ensure regular physical activity. But as classes have shifted to an online medium, they have no motivation or time for outdoor games.

6.3. Lack of concentration

Students get easily distracted, as they have access to mobile phones and social media during their class. It's hard for teachers to teach because now they have no clue how much students are understanding which was earlier possible by reading a student's body language and facial expression. This makes the lecture to become one-way communication and monotonous.

6.4. Testing and examinations

Exams serve more than testing student's understanding of a subject, they prepare them to tackle pressure. However, it is hard to ensure a fair testing scheme on the online mode as it is effortless to cheat for the students by using their mobile phones. This poses a major challenge for teachers to assess students.

6.5. No Interpersonal bonding

In classrooms, students form a bond of a lifelong friendship with fellow classmates. Moreover, out of the class interaction with teachers, chit-chatting before and after the classes are all missing in the online mode of teaching. We all have had our favourite teachers, once we remember and cherish lifelong. This is where the offline medium goes beyond books, we meet and interact with people and form everlasting bonds with them.

Clearly, the major short-coming of the online education system is the behavioural changes associated with it. It has made us less responsible. We are hiding behind screens, and have become lazier as our attention span is lesser than ever before. Moreover, the number of cases of people feeling alone, depressed, anxious and cyber-bullying have skyrocketed over the past few years. We need to check these psychological hazards of the digital world before we integrate it into our education system.

7. Future scope

The future of online learning will focus on providing more social experience to the learners. Organizing community meet-

ups as well as conducting team-building exercises both offline and online, will provide a sense of belongingness towards the community. The drop rate of online courses is much higher than the traditional campus-based courses. Hence, the coming time will focus on making distance learning courses more engaging. There are many technologies that can help us do so.

- **Augmented reality and virtual reality:** Advancement in these technologies will enable students not just visualize but interact with what they learn. This will definitely increase students' interest and lead to a better understanding of the subject.
- **Gamification:** It is a tried and tested phenomenon used by businesses across the globe to increase engagement. Rewards and competition drive students to outperform themselves and transcend their abilities.
- **Cloud-Based learning:** Cloud-based storage will enable seamless sharing amongst peers, making content widely available at a minimal cost.
- **M-learning:** Mobile phones are ubiquitous these days. Hence, the coming time will address courses specially designed for handsets that do not require laptops or desktops maybe with a small projector.

8. Conclusion

In sum, today's era of offline education alone is obsolete. The education system must adapt and make the best possible use of available technological advancements. However, online education alone cannot provide comprehensive development to students, i.e. grooming a child in a way that they can explain their views as well as sympathize and cooperate with others. These inter-personal qualities are essential to live in a society, something the online medium fails to address. We can conclude, for now, ICT is a perfect aid to boost our understanding of a subject. Also, the education system must be reformed in ways to strike a balance between the two and provide the best learning experience to students. The future of education belongs to hybrid learning and its integration in the traditional classroom courses. Gamification of courses as well as technologies like augmented reality and virtual reality can play a vital role in transforming the education sector. These technologies can make online learning a more social experience. ICT truly has the potential to revolutionize education and make it free and accessible to all.

References

- [1]. Conijn, Rianne, and Menno van Zaanen. "Trends In Student Behavior In Online Courses". *Proceedings Of The 3Rd International Conference On Higher Education Advances*, 2017. *Universitat Politècnica València*, doi:10.4995/head17.2017.5337. Accessed 24 Oct 2020.
- [2]. de Freitas, Sara Isabella et al. "Will MOOCs Transform Learning And Teaching In Higher Education? Engagement And Course Retention In Online Learning Provision". *Br J Educ Technol*, vol 46, no. 3, 2015, pp. 455-471. *Wiley-Blackwell*, doi:10.1111/bjet.12268.
- [3]. Wright, Robert D. *Student-Teacher Interaction In Online Learning Environments*.
- [4]. Moore, Michael G, and Greg Kearsley. *Distance Education: A Systems View Of Online Learning*. Wadsworth Cengage Learning, 2012, p. 209.
- [5]. Garrison, D. R. *E-Learning In The 21St Century*. 2nd ed., London: RoutledgeFalmer., 2011, p. 84.
- [6]. Dewey, John. *Experience And Education*. Macmillan, 1938.

- [7]. Brockbank, Anne, and Ian McGill. *Facilitating Reflective Learning In Higher Education*. Mcgraw Hill/Society For Research Into Higher Education And Open University Press, 2007.
- [8]. Choi, Hee Jun, and Scott D. Johnson. "The Effect Of Context-Based Video Instruction On Learning And Motivation In Online Courses". *American Journal Of Distance Education*, vol 19, no. 4, 2005, pp. 215-227. Informa UK Limited, doi:10.1207/s15389286ajde1904_3.
- [9]. Brockbank, Anne, and Ian McGill. *Facilitating Reflective Learning In Higher Education*. Mcgraw Hill/Society For Research Into Higher Education And Open University Press, 2007.
- [10]. Ward, Michael E. et al. "Student And Faculty Perceptions Of The Quality Of Online Learning Experiences". *The International Review Of Research In Open And Distance Learning*, vol 11, no. 3, 2010. Irrodl, <http://www.irrodl.org/index.php/irrodl/article/view/867/1610>.
- [11]. "Advantages And Disadvantages – Why Choose Distance Learning?". *Thecompleteuniversityguide.Co.Uk*, 2019, <https://www.thecompleteuniversityguide.co.uk/distance-learning/advantages-and-disadvantages-%E2%80%93-why-choose-distance-learning/>.
- [12]. Bakalevu, Salanieta, and Neelam Narayan. *Why Blended Learning?*. University Of The South Pacific, Accessed 7 Sept 2019.
- [13]. Madden, Amanda G. et al., ed. by. *Blended Learning In Practice*. The MIT Press, 2019.
- [14]. Caulfield, Jay. *How To Design And Teach A Hybrid Course*. Stylus Pub., 2011.
- [15]. Cross, K.P. "Our Changing Students And Their Impact On Colleges: Prospects For A True Learning Society". *The Phi Delta Kappan*, vol 61, no. 9, 1980, pp. 627-630., <https://files.eric.ed.gov/fulltext/EJ1101356.pdf>.
- [16]. Ferri, Bonnie et al. "Three Models For Blending Classes In A Multisection Course". *Blended Learning In Practice: A Guide For Practitioners And Researchers*, Amanda G. Madden et al., The MIT Press, Cambridge, Massachusetts, 2019, pp. 17-45,
- [17]. Levine, Arthur. *Shaping Higher Education's Future*. Jossey-Bass, 1990.
- [18]. Stein, Jared, and Charles R Graham. *Essentials For Blended Learning*. Routledge, 2014.
- [19]. Tucker, Catlin R. et al. *Blended Learning In Action: A Practical Guide Toward Sustainable Change*. Corwin, 2017.
- [20]. Maarop, AmrienHamila, and Mohamed Amin Embi. "Implementation Of Blended Learning In Higher Learning Institutions: A Review Of Literature". *International Education Studies*, vol 9, no. 3, 2016, p. 41. *Canadian Center Of Science And Education*, doi:10.5539/ies.v9n3p41.
- [21]. Sahagun, Linda. "Shifting From A Teacher-Centered Classroom To A Student-Centered Classroom - Reading Horizons". *Readinghorizons.Com*, 2017, <http://www.readinghorizons.com/blog-roll/shifting-from-a-teacher-centered-classroom-to-a-student-centered-classroom>.
- [22]. Garrison, D.Randy, and Heather Kanuka. "Blended Learning: Uncovering Its Transformative Potential In Higher Education". *The Internet And Higher Education*, vol 7, no. 2, 2004, pp. 95-105. Elsevier BV.
- [23]. Bonk, Curtis J, and Charles R Graham. *The Handbook Of Blended Learning*. 1st ed., Wiley, 2012.
- [24]. Abeysekera, Lakmal, and Phillip Dawson. "Motivation And Cognitive Load In The Flipped Classroom: Definition, Rationale And A Call For Research". *Higher Education Research & Development*, vol 34, no. 1, 2014, pp. 1-14. Informa UK Limited, doi:10.1080/07294360.2014.934336.
- [25]. Hammond, Julie. "The Role Of Teachers In A Blended Learning Environment - Reading Horizons". *Readinghorizons.Com*, 2017, <http://www.readinghorizons.com/blog-roll/the-role-of-teachers-in-a-blended-learning-environment>.