Historical Approach to Modern Learning Environment

Aleksander Spivakovsky[000-0001-7574-4133], Lyubov Petukhova[0000-0003-0814-2807],
Vira Kotkova[0000-0002-1537-0923] and Yuriy Yurchuk[0000-0002-1022-7079]

Kherson State University, 27, Uninersytetska Str., Kherson, 73000, Ukraine
{spivakovsky, petuhova, veras, yurchuk}@ksu.ks.ua

Abstract. The article is devoted to review system-organizing approaches and the development trends to the learning environment. Learning environment is explored according to the used information technology. Six stages of learning environment development are described. The transformation of the term 'technology in education' to 'pedagogical technology' is analyzed according its changes in content. The relationship between e-learning, Information Technology (IT) and Information and Communication Technologies (ICT) is identified. E-learning is understood as an umbrella term that covers web-based instruction, online learning, networked learning, computer-assisted learning and computer-mediated learning. The comparative characteristics of traditional and e-learning are made. Three levels (1.0, 2.0, 3.0) of the Web are analyzed. The quantitative results of the survey asked about the type of e-learning institutions use are presented. Eight trends of e-learning industry for 2019 are described. It is pointed out that the future development of technology will change the delivery modes used, the cost effectiveness and the acceptance and recognition of the new learning environment.

Keywords: Learning environment, information and learning technologies, e-learning, blended learning.

1   Introduction

Educational process is changing due to the evolution of the society all the time. Now we are witnesses of higher education transformation and adaption of student's workplace for various forms of using traditional and ICT learning tools. The advances of digital multi-tools provide wide access to various kinds of information sources, widening the walls of the educational institution.

Until recently, higher education e-learning has attracted remarkably little attention beyond the bounds of its dedicated communities and projects. For example, it has not been prominent in Bologna Process discussions and only became a focal point of EU education policy in September 2013, with the publication of the 'Opening up Education' Communication by the European Commission [5].

According to the 2030 Agenda for Sustainable Development announced in 2015 Sustainable Development Goal 4, known as Education 2030, is a single global goal for quality education, which aims to ensure inclusive and equitable quality education

and promote lifelong learning opportunities for all. Technology is a fundamental driver of that vision to create equitable, dynamic, accountable and sustainable learner-centered digital learning ecosystems that are relevant for the 21st Century. Rapid advances in technology are revolutionizing the way in which teaching and learning is conceptualized, designed, and implemented in higher education. These developments play a key role in delivering quality education for all [10].

Our ability to develop skilled workers, build competitive advantages as nations and generate growth is provided with the knowledge economy. Such invest in for children via the schools system and right through to higher education and on-going, professional development and training is a fundamental support to the rest of our economic lives. To keep developing the knowledge economy we need to ensure, as with other sectors, that we maintain a level of innovation to improve the efficacy and efficiency of our learning systems. This is the importance of EdTech [17].

EdTech or EduTech, being a shorten form for Educational technology, is a wide field. Therefore, one can find many definitions, some of which are conflicting. We consider EdTech as the practice of introducing technologies and non-standard solutions to education for better learning. In 2017, investments in the EdTech market in the world grew to a record $ 9.5 billion. And it is forecasted that by 2020 this mark will cross $ 252 billion [8].

What started as an experiment in education delivery is now being transformed by a new breed of technology entrepreneurs. Moreover EdTech is about applying digital technology to deliver a new form of learning architecture. An architecture that harnesses the social reach of the internet, that delivers personalized learning and training that can automatically adjust to an individual's learning competence and that uses big data analysis to understand the most effective ways for learners to progress. In changing the traditional architecture of education, EdTech has the power to create efficiencies, cut costs and enable new levels of standardization and democratized access. It is set to transform the future of how education is resourced, taught, consumed and, ultimately, the results that it can then yield – both for the individual and for society as a whole as we continue to build the knowledge economy [17].

That's why today teachers are allowed to create an interactive learning environment. The attention should be paid to modelling systems in education in accordance with ICT evolution from a learning tool to the educational technology. Such development can be easily explained within triangle Student – Teacher – Learning Environment.

In the previous publication we made the review of didactic model transformation. We proved the transformation of modern didactic model into three-subject one – Student – Teacher – Information and communication pedagogical environment (ICPE). It was made as a result of ICPE active components analyses, description of the requirements set to ICPE as an educational subject, comparative analyses of characteristic components of traditional and innovative teaching system, modelling subjects' behaviour at different training forms according to subject-subject or three-subject didactic system. The measurement of each three educational subjects' cogency and their significance in the process of major study operations (collection, processing, storage, transmission) at various training forms as lecture, practice and individual

work was presented [14].

The article aims to trace the development of learning environment and to predict its future. This is important to teachers, who should now share such learning environment in which a person could fully develop has or her creative potential, develop abilities, and cultivate the need for continuous self-improvement and responsibility for own upbringing and development.

According to The National Council of Teachers of English, active, successful participants in this 21st century global society must be able to:

- develop proficiency and fluency with the tools of technology;
- build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
- design and share information for global communities to meet a variety of purposes;
- manage, analyze and synthesize multiple streams of simultaneous information;
- create, critique, analyze and evaluate multimedia texts;
- attend to the ethical responsibilities required by these complex environments [16].

The state of modern education and the development trends of society require new system-organizing approaches to the development of the educational environment.

2 Development of learning environment

The informational and educational environment is a systemically organized set of data transmission means, information resources, interaction protocols, hardware-software and organizational-methodical support, focused on meeting the needs of users for information services and educational resources.

Developing a total learning environment for students in a particular course or program is probably the most creative part of teaching. While there is a tendency to focus on either physical institutional learning environments (such as classrooms, lecture theatres and labs), or on the technologies used to create online personal learning environments (PLEs), learning environments are broader than just these physical components. It is also include:

- the characteristics of the learners;
- the goals for teaching and learning;
- the activities that will best support learning;
- the assessment strategies that will best measure and drive learning
- the culture that infuses the learning environment.

Learning environment is used to be concerned with the information technology, as the technology for people to work with information. According to this approach there are 6 stages of learning environment development.

The 1-st stage (up to the second half of XIX century) was 'Hand' information technology, its tools were pen, ink pot, book. Communications were carried out in a handy way by sending information with mailing lists, packages, dispatches. The main

aim of the information technology was to provide information in necessary form.

The 2-nd stage (since the end of XIX century) was 'Mechanical' technology; its tools for delivering information were typewriters, telephone, and voice recorder. The main aim of the information technology was to provide information in necessary form in the most convenient way.

The 3-rd stage (40-60 of XX century) was 'Electric' technology; its tools were developed to electric typewriters, Xeroxes, portable Dictaphones. The emphasis of information technology started to move from the form of information presentation to making its content.

The 4-th stage (since the beginning of 70-s) was 'Electronic' technology, its tools were EOM and created on their basis automated control systems (ACS) and information retrieval systems, equipped with a wide range of basic and specialized software complexes.

The 5-th stage (from the middle of the 80-s) was 'Computer' (New) technology, the main tool of which is a personal computer with a wide range of standard software products of various purposes. At this stage there was the process of personalization of the ACS, which manifests itself in the creation of decision support systems by certain specialists.

The 6-th stage (now developing) is 'Network' technology (sometimes it is considered as a part of computer technology). Global and local computer networks are beginning to be widely used in various industries.

The transformation of the term 'technology in education' to 'pedagogical technology' corresponds to a change in its content, covering the following three periods.

The first period (40s – mid-50s) is characterized by the emergence of a variety of technical means of presenting information – recording and reproduction of sound and projection of images, united by the concept of 'audiovisual means'. The term 'technology in learning' meant the application of engineering knowledge in the learning process.

The second period (mid 50s-60s) introduction of technological approach is marked by the emergence of programmed training. Audiovisual means specially designed for educational purposes were developed: means of feedback, electronic classes, educational machines, linguaphone rooms, simulators, etc. Unlike the term 'technology learning', the same term 'technical means of learning', under the 'technology of education' meant a scientific description (a set of tools and methods) of the pedagogical process, which inevitably leads to the planed result.

For the third period (70s), three features are characteristic. First, there is an expansion of the pedagogical technology base. In addition to audiovisual education and programmable learning, the foundation of pedagogical technology was built on computer science, telecommunications theory, pedagogical qualimetry, system analysis and pedagogical sciences (psychology of teaching, theory of management of cognitive activity, organization of educational process, scientific organization of pedagogical work). Secondly, the methodical basis of pedagogical technology is changing, the transition from verbal to audiovisual training is carried out. Thirdly, the training of professional technology educators is beginning to be actively pursued [13].

Thus, pedagogical technology reflects the tactics of the implementation of educational technologies and is based on the knowledge of the regularities of the functioning of the system 'Teacher – Environment – Student' in certain study conditions (individual, group, collective, mass, etc.), it shares the common features and regularities of the educational process independently from a particular educational subject.

D. Charrisony and S. Nipper first used the term 'generation' to refer to three stages of e-learning development, 'historically related to the development of production, transport and communication technologies' [12].

Table 1 presents a brief description of three generations of e-learning.

Table 1. Generations (stages) of e-learning development

Generation	Technologies	Student's activities	Learning mode	Training content	Teacher's role
Cognitive behaviourism	Television, radio, print, face-to-face communications	Reading and reviewing materials	Individual training	Developed 'from scratch'	Creator of the content
Constructivism	Audio, video and web conferencing	Discussion, development, design	Learning in groups	Constructed and developed by a teacher	Head of the discussion
Connectivism	Web 2.0: social networking, association of users	Research, connection, creation, evaluation	Network learning	Autonomic	Friend that critically evaluates

According to Table 1 each direction of pedagogy of distance education is characterized by certain features of social, cognitive component in the process of distance learning.

The first generation – 'cognitive behaviourism' – emphasizes the need to use the model of distance learning, the goals of which are clearly defined, formulated and exist separately from the students and the content of learning. The training material should be constructed in such a way as to maximize the effectiveness of mental activity. This generation is characterized by the absence of a 'social' in the process of learning. Study is considered as an individual process. A similar emphasis on individualized learning improves students' autonomy. Preferably such technologies as radio, television, postal correspondence [periods] are used. The presence of a teacher in the learning process is extremely limited. The role of the teacher is mainly in the preparation of printed material. Later, students could see and hear the teacher through audio, video, multimedia technology.

Instead, 'constructivism' as the next generation comes, the main principles of which are the following features:

- new knowledge is built on the basis of prior knowledge;
- distance learning is considered as an active rather than passive process;
- language and other social tools play a role in building knowledge;
- the purpose of cognition and evaluation is a means of developing students' abilities

to self-assess knowledge;
- the student is the core of the learning environment;
- it is necessary that the knowledge acquired in the process of distance learning is subjected to discussion by the community, verification and real use [12].

The teacher in this case is a mentor, assistant and partner, and the content of the teaching material becomes secondary to the learning process. Teacher and his experience are still the main sources of knowledge.

The next generation of pedagogy of distance education – 'connectivism' – involves unlimited access to network technologies. According to this approach, the role of the student is not to remember all the information, but to be able to find information and apply knowledge where necessary. For training with the use of distance learning technologies, students need to have a high level of information and communication competence, therefore, the primary task is to prepare students for learning with the use of special learning technologies. Teachers and students can collaborate in content development, offer ideas for improving teaching technology. The entire distance learning process is carried out on the basis of cooperation. However, this direction is characterized by the lack of pedagogical control, the structuring of educational content.

T. Anderson and D. Dron believe that each of the generations has its advantages and disadvantages. Future generation of distance learning, according to scientists, will be more subject-oriented, characterized by an increase in student activity in the learning process, learning virtualization [2].

Today we can speak about information and learning technology, that is a collection of fundamentally new tools and methods for processing data that ensure the purposeful creation, transmission, storage, and display of an information product, with the least possible cost, in accordance with the laws of the social environment in which the new information technology develops.

Generally, e-learning has been used to describe learning that is supported by technologies through various types of delivery modes.

Since 2002, e-learning has become an umbrella term that covers web-based instruction, online learning, networked learning, computer-assisted learning and computer-mediated learning [11]. All of these terms refer to the use of information and communications technologies in learning. The relationship between e-learning, Information Technology (IT) and Information and Communication Technologies (ICT) is identified in the eclipse diagram by Markos Tiris. Figure 1 shows that e-learning is based on Information Communications Technologies, which is derived from Information Technologies, to offer learning.

E-learning often refers to technology or designs used in distance teaching, but it also is used to describe any sort of technology use in education. As of 2019, e-learning has been replaced by the word 'digital learning' or sometimes EdTech [6]. We prefer continue using 'educational technology', although the term 'digital learning' is more open to the idea that technology has become a general omnipresent tool, i.e. encompasses any sort of technology use in education.

More design-oriented educational technologists rather look a cross-section of

several phenomena, i.e., they adopt an interdisciplinary approach that will ultimately lead to better pedagogical designs in a given area (Figure 2).

IT	Information Technology	The computer infrastructure, hardware and software used to process data and deliver information.
ICT	Information and communication technologies	The combination of computing and communication technologies (including computer networks and telephone systems) that connect and enable some of today's most exciting systems, e.g. the Internet.
E-learning	Electronic learning	E-learning is learning supported or enhanced through the application of information and communications technology.
ILT[*]	Information and learning technologies[*]	This was used in further education colleges, to refer to the use of information and communication technologies to support the core business of colleges: the delivery and management of learning.

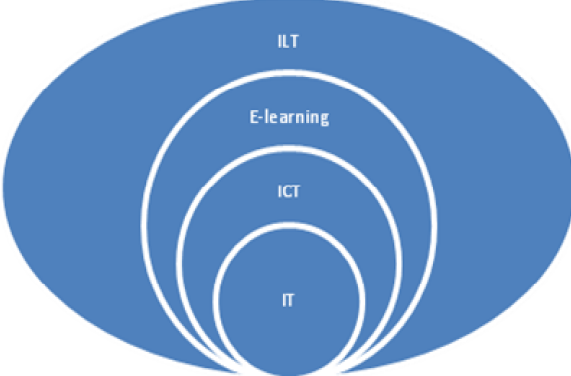[*] The current term is e-learning and technology

Fig. 1. The Eclipse Diagram by Markos Tiris and the Definitions Used in the Centre of Excellence in Leaderships Report [4]

Educational technology can be considered as a design science and as such, it has developed some specific research methodology like 'Design-based research'. However, since it addresses also all fundamental issues of learning, teaching and social organization, educational technology makes use of the full range of modern social science and life sciences methodology.

3 The Future of learning environment

It is known that within the ICPS during the preparation and implementation of training each student has the opportunity to choose the goals, content, method, place and time of training, and in educational organizations – the opportunity to go in different ways in the provision of educational services that meet the requirements of the labor market and social needs. Table 2 shows the comparative characteristics of traditional and e-learning [15].
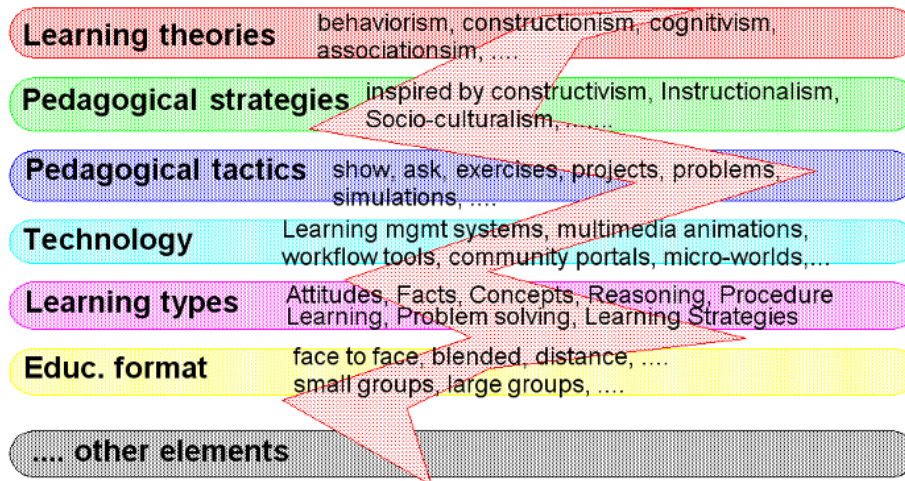
Fig. 2. Interdisciplinary approach for EdTech

Table 2. Comparative characteristics of traditional and e-learning

Traditional learning	E-learning
Training begins and ends in accordance with established dates.	The student decides when to begin and complete the study program.
The student faces a restriction on the freedom of access to the learning and teaching process.	Student has greater access to programming
The student must attend classes at school or in the workplace	The student decides for himself where to study
The objectives and content of the programs are determined by the institution.	The student, after consulting with the tutors (teacher-consultant), determines the goals and content of training in accordance with his needs and interests.
The sequence of training is determined by the program or teacher - consultant (tutor)	The student, together with the tutors develops a work plan and schedule of classes
The speed of learning is dictated by the program, teacher and group of studies.	The student, together with the tutor, agrees on his own pace.
The teacher provides support mainly through lectures	The tutors and the learner agree on a form of support that can be provided in the form of full-time study or remotely
The student learns by attending lectures and seminars or studying the scientific and methodological literature	Training is carried out with the help of educational materials, which necessarily include: goals, the actual content, methods of self-assessment and other information for independent work

It is expected that the type of technologies for learning and the way they will be used will change the future of education. Nowadays, the common online tool used in blended learning is called Web 1.0. In Web 1.0, information is delivered to users while in Web 2.0 information is created and edited by users. Web 1.0 is a read-only

environment, while Web 2.0 is a read and write environment which facilitates social activities. Blogs, Wikis, Twitter, YouTube, Facebook, and Flicker are examples of the most common Web 2.0 tools. Globally, the number of users of Web 2.0 has increased dramatically [1].

At the same time, e-learning 2.0 promotes collaboration in knowledge construction. The rapid innovations in e-learning urges for research about the impact of these innovations on blended learning. Recently, research has started to explore the effectiveness of using Web 2.0 in blended learning. With the continuous development of the use of web-based applications and 3D virtual worlds like Second Life, which can be called e-learning 3.0 (see Figure 3), there are even more opportunities to create a better engagement blend. The future development of technology will change the delivery modes used, the cost effectiveness and the acceptance and recognition of the new educational environment [1].
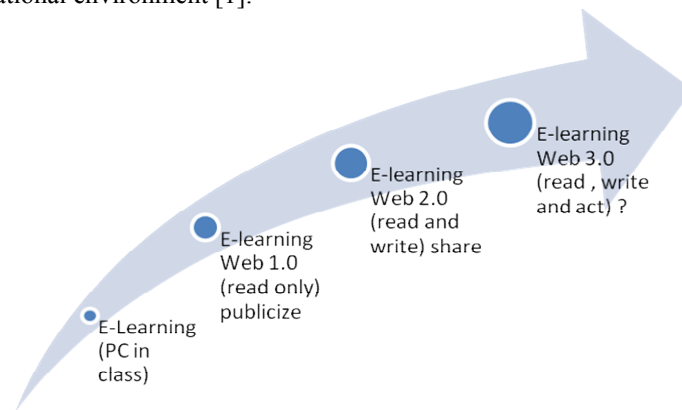

Fig. 3. The Development of E-learning

Web 1.0 is a linear model 'site to user', one-dimensional interaction. The owner of a site is the source of information; the readers are its users. There is no feedback between the site and the users, as if you can write a letter to the editor or call (like the readers of a newspaper).

Web 2.0 is a social web of two-dimensional interaction. The owner of a site manages the information provided by users in accordance with own rules. Users themselves make publications, write comments, and communicate with each other (social networks). Feedback between the site and users is also absent, because users do not formulate rules. Unlike Web 1.0 the owners do not have to fill the site with information as the users do it.

Web 3.0 is a social space, three-dimensional self-organization. The higher level of the Web is a condition where the users of a site are its owners and themselves fill in their information according to their own rules. To manage this information resource they knowingly and voluntarily choose the authorities and, if necessary, update them promptly. The defining features of Web 3.0 are self-financing, self-organization and self-control. Additional features of the third Web are mobility (can be used with Smartphone), scalability (easy expansion) and gamification (elements of gaming

competition). Social 3D networks, formed on the model Web 3.0, acquire features of the collective mind, so they are also called social neural networks, or ecological networks. As the users can communicate with each other, they have an illusion that these conversations have impact on the website.

Moreover, Bonk et al. [3] state that understanding emerging technologies that will influence online learning helps in predicting promising technologies for blended learning. Bonk et al. conducted a survey to explore the perceptions of Higher Education educators of technologies that would most impact the delivery of online education during the next few years. Out of the 14 technologies listed, reusable learning objects, were predicted to have the most significant impact. Some of the other tools were: wireless technologies, collaboration tools, digital libraries and games with simulations.

Furthermore, the predicted expansion of blended learning is likely to be linked to ten trends which are presented in the survey of Bonk et al. [3]. These trends are listed in Table 3. The first trend is the increasing use of mobile and wireless technologies, which foster learning anytime and from anywhere. The second trend indicates that mobile blended learning leads to individualization. Bonk et al. introduce the fourth trend were learners self-regulate their own learning and decide about the design of their own degrees or programs. Global connectedness is also predicted as a feature of blended learning. Looking into the future, Bonk et al. perceive blended learning as a means for building shared cultural understanding on a global basis. For example, with blended learning, courses from various contexts will share similar online Learning Objects such as those provided in the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) website.

Moreover, Bonk et al. [3] predict that blended learning will grow in universities because it reduces class room meeting or seat-time which then decreases the brick and mortar needs but at the same time it can increase learning outcomes. Bonk et al. raise the issue of how course designation in Higher Education might differ according to the percentage of the blend and how courses with one-third credit of online learning might become more respected in the near future than blended courses with only one or two face-to-face meetings.

In addition, Bonk et al. [3] predict the emergence of specialist certificates and even master's degrees for blended learning lecturers. They also state that blended learning lecturers must have the skills that enable them to integrate new activities that meet learners' interests. Certainly, understanding the abilities of the current and future students is the key.

Most of Bonk's predictions were proved by quantitative results of a Mapping Survey conducted in October-December 2013 by the European University Association [7]. 249 answers from higher education institutions, in their majority universities, from 38 European systems (EU and wider Europe), were received. The survey asked about the type of e-learning institutions use, their experiences in this area and their expectations for the future.

The results of the survey show – with very few exceptions – that practically all higher education institutions of the sample have started to embrace e-learning. Most of the surveyed institutions are using blended learning (91%), integrating e-learning

into conventional teaching, but surprisingly 82% of institutions also indicate that they offer online learning courses. Less frequent, but seemingly also on the rise, are other forms of provision such as joint inter-institutional collaboration and online degree courses. Online examinations are likely to become more widely used for all students in all or most disciplines, also for conventionally taught courses. Besides pedagogical and economic motives, the institutions refer to a growing need for flexibility of time and place, and better use of resources, benefiting both residential students and a wider range of professional and other lifelong learners [7, p. 7].

Table 3. Trends and Predictions Related to Blended Learning [3]

Mobile Blended Learning	Increasing use of mobile and handheld will create rich and exciting new avenues for blended learning.
Greater Visualization, Individualization, and Hands-on Learning	Blended learning environments will increasingly become individualized; in particular, emphasizing visual and hands-on activities.
Self-Determined Blended Learning	Blended learning will foster greater student responsibility for learning. Decisions about the type and format of blended learning will be made by students instead of instructors or instructional designers. Learners will be designing their own programs and degrees.
Increased Connectedness, Community, and Collaboration	Blended learning will open new avenues for collaboration, community building, and global connectedness. It will become used as a tool for global understanding and appreciation.
Increased Authenticity and On-Demand Learning	Blended learning will focus on authenticity and real world experiences to supplement, extend, enhance, and replace formal learning. As this occurs, blended learning will fuel advancements in the creation and use of online case-learning, scenarios, simulations and role play, and problem-based learning.
Linking Work and Learning	As blended learning proliferates, the lines between workplace learning and formal learning will increasingly blur. Higher education degrees will have credits from the workplace and even credit for work performed.
Changed Calendaring	The calendar system or time scheduling of learning will be less appropriate and pre-definable.
Blended Learning Course Designations	Courses and programs will be increasingly designated as blended learning paths or options.
Changed Instructor Roles	The role of an instructor or trainer in a blended environment will shift to one of mentor, coach, and counsellor.
The Emergence of Blended Learning Specialists	There will emerge specialist teaching certificates, degree programs, and resources or portals related to blended learning courses and programs.

The vast majority of institutions offer blended learning and online learning courses (91% and 82% respectively). While blended learning degree programs (55%), online degree programs (39%) and online learning organized jointly with other institutions (40%) are still less common, 10-14% of respondents said they plan to develop them (Figure 4) [7, p. 26].

The fact that blended learning, the most widespread form of provision, occurs

throughout only one in every four institutions, indicates the very modest level of mainstreaming in e-learning and its huge potential for further development.
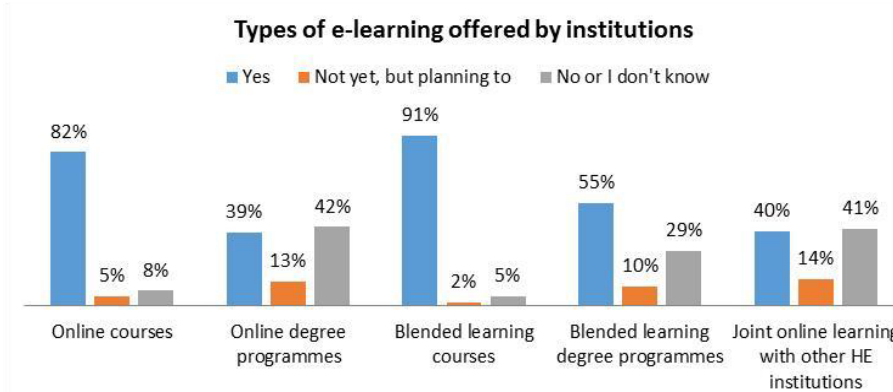

Fig. 4. Does your institution offer any of the following?

The trends that will affect the learning industry, specifically the e-learning landscape, for 2019 are the following:

1. Adaptive Learning Going To The Next Level. Adaptive learning will make further strides in the eLearning marketplace. Organizations and learners will benefit as organizations ensure that there are better competition rates, and learners will enjoy the learning process as they get to see only that content that is personalized to them. Using effective assessments, learners can skip the content that they are completely confident about.
2. Microlearning. It is a great method of implementing learning in small chunks that are objective driven and can be easily and quickly deployed within organizations. Learners benefit as they get through the modules quickly and can repeat the learning many times as well. Microlearning can be implemented as videos, small games, quizzes, and infographics. The great advantage of microlearning is that it can be implemented on any device.
3. Artificial Intelligence and Learner Assistance. Artificial Intelligence will be used to predict learner behaviour, as well as help personalize the learning. Based on the modules that were taken by learners and the difficulties or challenges faced, better personalization will be brought about. Voice-guided bots will also help learners to search for key content in modules. Added to the mix is the use of robots for helping kids and people with special needs to learn new skills, and help them in the moment of need.
4. Gamification and Game-Based Learning. Organizations will look to implement more game-based solutions, as they see them as value adders for the organization-wide learning. Games that are well thought out, well designed and address the needs of learners engage them effectively. It has been proven through numerous implementations that games help in releasing happy hormones, such as dopamine and serotonin.

5. Augmented Reality AR / Virtual Reality VR / Mixed Reality MR. The great thing about Augmented Reality is that it can augment the existing content through interesting overlays of graphics and images that can pop out and thrill the learners. More than the thrill, it is the experience itself that helps learners connect to the content better. Organizations are now looking at Virtual Reality as an important solution, as eLearning companies use effective Instructional Design strategies to enhance the VR experience. Using a mixture of 360-degree photographs, interactions, and many more elements, VR is becoming a useful experience. Organizations are also investing in cognitive learning products that are augmented by VR especially for children and people with special needs. Already big players are making investments in MR which combines AR and VR to a great effect.

6. Video-Based Learning. Videos are one of the hottest modes of training right now. The popularity of video-based sites (like YouTube) has forced organizations to adopt more videos into their training. Be it Instructor-Led Training that is interspersed with anecdotal or contextual videos, or eLearning where videos play an integral part in disseminating information, videos are here to stay.

7. Social Learning. It involves collaboration between individuals at the workplace through various modes, such as forums, informal chat sessions, sharing sessions, and learning circles.

8. Content Curation. It is a method of curating information and providing the learners with just-in-time information. Learning management systems will continue to grow and offer content curation as an important method of sharing information, and provide the right experience to the learners [9].

4   Conclusions

The principle difference between today learning environment and the previous one is its ability to react at student's learning activities and needs providing personalized local learning environment. The proliferation of virtual forms for education is a natural stage in education evolution. It covers the whole system from chalkboard to smart board, from a usual library to electronic one, from small training groups to virtual classrooms of any scale, etc. Virtual and traditional forms of education should not be perceived as mutually exclusive. A good education today is a synthesis of various forms acquiring knowledge and modern technologies, the optimal combination of which only the student himself can determine for himself. Hybrid learning environment entered the XXI century as the most promising, synthetic and integral part of education. Historical analysis of the patterns of the most effective approaches in the field of education is extremely important for determining the best ways to improve education today. An essential element of the article is to consider the connection of modern learning environment with the development of information and communication technologies (ICT). It is shown that the future of learning environment will be based on EdTech.

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