

Analysis of the terminology used in the field of virtual learning

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ABSTRACT

The broad terminology describing possible learning ways and approaches that use various technologies in the learning process has appeared together with rapid growth of information and communication technologies. This terminology should be ordered and precisely defined. This article presents eight groups of the most widespread terms (such as computer-based learning, distance learning, e-learning, Internet-based learning, online learning, resource-based learning, technology-based learning, Web-based learning) and defines subset relationships among the groups. In addition the meaning of some terms coming from pedagogy (education, instruction, learning, teaching, training, and tutoring) and used as obligatory constituent part of other terms is clarified.

Keywords

Computer-based learning, Distance learning, E-learning, Online learning, Web-based learning

Introduction

Definitely most people using such words as “education”, “learning process”, and “learning” firstly mean some educational institution where lectures and discussions take place, some researches are carried out and a teacher plays a central role in the learning process. However, nowadays rapid growth of information and communication technologies in addition with traditional ways of learning has provided new opportunities how people can acquire knowledge allowing them to chose learning time, place, pace, and amount. Today different computer technologies are used for creating and delivering of learning materials, for supporting (partly or entirely replacing a teacher) and managing of the learning process. Researchers working in this field use different terms for referencing of possible ways and approaches of teaching and learning.

Ryan et al. (2000) basically use the term “resource-based learning” and specify that this term covers many other terms such as open learning, flexible learning, individualized learning, computer-aided learning, project-based learning, problem-based learning, student-centered learning and self-organized learning.

Picciano (2001) presents the whole list of terms that describe educational process in which a teacher and students are physically separated one from another, that is, “distance education”, “distance teaching”, “distance learning”, “open learning”, “distributed learning”, “asynchronous learning”, “telelearning”, and “flexible learning”. He points out that these terms are used interchangeably with “distance learning”.

Porter (1997) mentions such terms as “direct learning”, “assisted learning”, but in his book he uses the terms “distance learning” and “distance education”.

Kearsley (2000) operates with “online education”, Jolliffe (2001) uses the concept “Web-based learning”, but Horton (1999) mentions “Web-based training”, “Web-based instruction”, and “Web-based education”.

The whole spectrum of terms can be found within articles and glossaries, which are available in the Web, for example, “Internet-based education”, “Internet-based learning”, “Internet-based training”, “technology-based learning”, “computer-managed learning” and many others.

We chose the term “virtual learning” as an umbrella term for other terms described in this paper. We believe the word “virtual” means “different, peculiar”, so under the virtual learning we understand the learning process that differs from the traditional learning process and that has such features:

- the learning process is based on some technology partly or entirely replacing a human teacher;
- if the role of human teacher is partly replaced by some technology then a teacher and a learner can be separated by time and place, but in this case communication between them is provided;
- a learner can choose time, place, pace and amount of learning.

The offered definitions of terms are very often too vague and raise ambiguity in the applied terminology provoking the following questions:

- Why do some authors use the term “computer-enriched learning”, but the others use “computer-assisted learning” or “computer-managed learning”?
- Is the term “e-learning” a synonym for “technology-based learning”?
- Why do some terms embody the word “teaching” or “training”, but the others- “learning” or “instruction”?
- What is the difference between the terms “Internet-based learning” and “Web-based learning”?

These questions could be urgent for newcomers in the field of virtual learning such as young researchers or anyone, who searches for a kind of learning appropriated to his/ her needs. This paper identifies many of today’s widespread terms trying to clarify their meaning and differences. All the terms are viewed from the technical position giving special attention to a technology used in the learning process. The presented analysis is based on investigations of the broad set of information sources (up to 90), but not all of them are referenced in this article. The information sources include monographs, dictionaries, and Web sites of universities and developers of learning solutions. The main criteria for selecting the sources were the given definition or explanation of some term described in this paper.

While investigating the broad set of information sources it was noticed that the terms describing technologies that support the learning process consist of two parts. The second part is common for all the terms and includes one of the following pedagogical concepts: education, instruction, learning, teaching, training, and tutoring. In its turn the first part may be in two forms:

- as a word characterizing learning (for example, “distance”); thus, the scheme underlying the term is: **a word characterizing learning + an educational concept**;
- as a combination of the word pointed out a technology used in the learning process and a connective (for example, “Internet-based”); it forms the following construction scheme of terms: **a technology describing word + a connective + an educational concept**.

The first part shows the difference among terms and this feature was used forming eight basic groups of the most widespread terms:

- | | | |
|--------------------------|------------------------|--------------------------|
| ➤ group ‘C’ (computer) | ➤ group ‘I’ (Internet) | ➤ group ‘T’ (technology) |
| ➤ group ‘D’ (distance) | ➤ group ‘O’ (online) | ➤ group ‘W’ (Web) |
| ➤ group ‘E’ (electronic) | ➤ group ‘R’ (resource) | |

The paper is organized as follows. The introduction presents various terms and discusses the need to clarify terminology used to describe technologies and software that support the learning process. The further sections explain some pedagogical concepts such as education, instruction, learning, teaching, training, and tutoring, point out the main difference between the connectives, and describe eight groups of the most widespread terms. The results of analysis define subset relationships between all previously described groups of the terms. The conclusions summarize the most important issues of this paper and outline some directions of future work.

Educational concepts

The terms that are used while speaking about the support of the learning process by different technologies typically include the following concepts, which have come from pedagogy: education, instruction, learning, teaching, training, and tutoring. Their meaning will be clarified briefly in this section as these terms are not the focus of this paper.

The meaning of the word “teaching” could be easy captured. It highlights the teacher’s role in the learning process and comprises all activities that impart knowledge, facts, ideas or skill. It is necessary to note that not only a human could play a teacher’s role, but also a computer system based on a certain technology.

It is very difficult to give a single comprehensive definition of the term “learning”, as there exists a variety of definitions (Jarvis, 1999) defining various forms of learning or reflecting different theoretical approaches to this phenomenon (Domjan, 2000). However, it is possible to list the principal features of learning. Learning causes a change in a person’s behavior, knowledge, or skill, this change is a relatively permanent change and is caused by prior experience (Domjan, 2000). Some authors believe that the term “learning” emphasizes a learner activity in the learning process, that is, a learner is free to choose what will be studied and in which sequence. It is pointed out by Karlgren (1999) discussing learning versus instruction, as well as in (Zinn, 1993).

The most specific term among all educational concepts is “training”. Training assumes a planned and systematic sequence of activities usually under the guidance of qualified supervisors (Peterson, 2000; Jarvis, 1999) which has the purpose to develop knowledge, skills and behavior pattern required by an individual in order to perform adequately and effectively his/her job. So, this term emphasizes the practical or vocational direction of the learning and typically is used on the professional or corporate level as Horton (1999) specifies or it is pointed out in the definition of computer-based training in (Illingworth, 1996) or in the definition of computer-based instruction in (Karlgrén, 1999). This term contrasts to the term “education” (Jarvis, 1999).

The term “education” is related to learning activities that have objectives to develop knowledge, attitudes, skills and values in general that are not related to specific work area as it was assumed by the term “training”. This term is more common within the academic settings as Horton (1999) points out and Karlgrén (1999) specifies describing meaning of the terms “computer-based education” and “computer-based instruction”.

The term “instruction” also implies the practical direction of the learning, but unlike the term “training” it is more common within academic settings as it is specified in (Karlgrén, 1999) defining computer-based instruction and in (Horton, 1999). This term also implies a more planned approach to the learning process and it points out to assistance component as an important aspect of the learning process. The terms “training” and “instruction” are often used as synonyms speaking about the learning with practical orientation in general. It could be seen in the definition of computer-based training in (CoursePal Learning Systems, 2003). However, these terms are distinguished emphasizing the environment, where the learning process takes place.

The word “tutoring” is used more rarely than other aforementioned terms. It has the meaning similar to “teaching”, but implies that teaching is more individually oriented as it involves two individuals, a tutor and a tutee, or a tutor and a small group of tutees, two or three tutees (Shumow, 2003). A tutor provides specialized or remedial help to the tutee, clarifying major points of a subject matter or explaining difficult concepts (Farlowe, 2003).

Connectives

The formed groups of the terms differ in the technology that is used for supporting or managing the learning process. However, the difference between the terms within the groups ‘C’, ‘I’, ‘R’, ‘T’ and ‘W’ is established by the role of this technology in the learning process. Namely the connectives show the difference among the terms within the particular group. These connectives are: administered, aided, assisted, augmented, based, delivered, directed, enabled, enhanced, extended, facilitated, managed, mediated, monitored, related, and supported.

The connectives may be organized into some categories based on their meaning:

- The words “managed”, “monitored”, and “administered” point out to the fact that some technology does not contribute directly into the teaching/learning process, but serves as a medium in the managing of the learning process. In this case the computer system based on this technology typically provides such functions as test generation, evaluation of learner performance and analysis of learner’s assessment results, record keeping on the learner progress and statistical report generation about individual or group performance, generation of recommendation for the further learning process. However, the delivering of the learning content could be fully human-oriented, not based on some technology.
- The connectives “aided” and “assisted” point out that some technology or a computer system based on this technology is used as a learning medium, that provides presentation of the learning materials, checks learner’s knowledge, guides questioning-and-answering sessions, as well as develop recommendations for further learning direction. An application based on this technology could be used as a supplement to traditional learning process with limited teacher interventions or as an independent learning medium.
- The meaning of the connective “enhanced” is similar to the meaning of the words “aided” and “assisted”, that is, it points out that some technology is used as an enabler or a supplement to the traditional learning process, but it emphasizes the teacher’s role in this process. The teacher plays the central role in the learning process and should be involved in the planning and implementation of learning activities. Thus, direct contacts between a learner and a teacher still remain determinative, but some technology is used as an enabler of the learning process.
- The connective “enriched” implies that some technology is used as a working tool in the learning process and does not provide creating and delivering of learning materials.
- The terms including the connective “based” have a broader meaning in comparison with the terms that embody all previously described connectives. This word points out that some technology plays a central role in the learning process. Its meaning is composed of variety of computer uses, including creating and

delivering of learning materials, managing of the learning process, as well as use of the computer by learners. This connective covers the meaning of three words: “managed”, “assisted”, and “enriched”.

- All the aforementioned categories of the connectives, nevertheless, limit the role of technology in the learning process. The words “mediated” and “supported” assign the broadest meaning to the terms. In this case some technology is used as a learning resource or a tool, as a tutor and as a subject to be taught.
- The meaning of the connectives “augmented”, “delivered”, “directed”, “enabled”, “extended”, “facilitated”, and “related” has not clarified yet due to the lack of definitions of the terms that have these connectives. However, basing on the context in which the terms were used within the Web sites, the following conclusions have been obtained:
 - a) the words “enabled” and “facilitated” could be assigned to the category of the connectives “aided” and “assisted”, but they are used more rarely;
 - b) the word “delivered” points out that some technology is used for accessing the course (learning materials, collaboration features, feedback), but direct contacts between a learner and a teacher either are fully eliminated or highly reduced;
 - c) the connective “related” is so broad as the words “mediated” and “supported”.

The following diagram (Figure 1) shows the degree of narrowness that is assigned to the term by a corresponding connective. In this way, for example, the term “computer-managed learning” is more specific than the term “computer-mediated learning”.

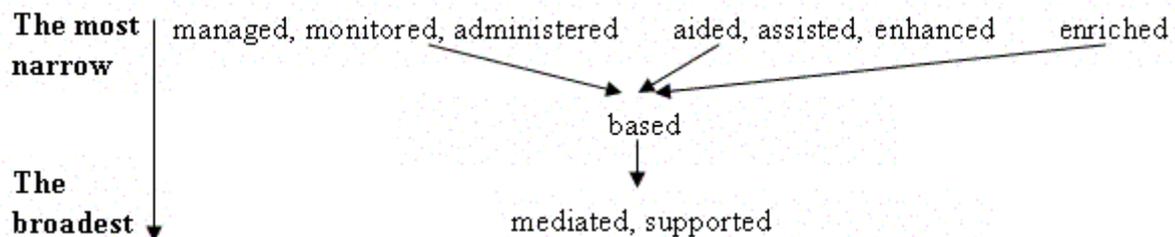


Figure 1. The degree of narrowness assigned to the term by a corresponding connective

The groups of the most widespread terms

The terms of group ‘C’

The terms of this group could be obtained by choosing one word from each column of Table 1 and taking into account given peculiarities of usage.

As 90 information sources were investigated, the fact how many sources referenced the term determines the peculiarities of usage of this term:

- almost is not used- 1-5 information sources;
- very rarely- 6-14 information sources;
- rarely- 15-29 information sources;
- widespread well enough- 30-69 information sources;
- the most widespread- 70-90 information sources.

The connectives were described in the previous section.

The word “computer” refers to the technology providing learning, but its meaning is too broad, so, it can be applied to any use of a computer in the learning process. However, when a computer is used as a learning medium or a medium for managing of the learning process (the terms containing connectives “aided”, “assisted”, “based”, “managed”, “monitored”, and “administered”), then it is understood, that:

- a computer is offline, not connected to a network as it is specified in the definition of computer-based training in (World Wide Learn, 2003) or in the definition of computer-assisted instruction in (Kaplan-Leiserson, 2000);
- learning materials are local and are delivered primarily via CD-ROM or floppy disk as it is pointed out in (Brandon-hall.com, 1997) defining computer-based training or in (Kaplan-Leiserson, 2000) describing computer-assisted instruction.

Table 1. The terms of the group 'C'

Technology describing word	Connective		Educational concept
	Word	Peculiarities of usage	
Computer-	Administered	Is used very rarely and mostly in the combinations with words "education", "instruction", and "training"	Education Instruction Learning Teaching Training Tutoring
	Aided	One of the most widespread connectives	
	Assisted	One of the most widespread connectives	
	Augmented	Is used rarely and mostly in the combinations with words "instruction" and "learning"	
	Based	One of the most widespread connectives	
	Delivered	Is used rarely and mostly in the combinations with words "instruction" and "training"	
	Directed	Is used rarely and mostly in the combinations with words "instruction", "learning" and "training"	
	Enabled	Is used rarely and mostly in the combinations with words "education" and "learning"	
	Enhanced	Is used mostly in the combinations with words "instruction" and "learning"	
	Enriched	Is used rarely and mostly in the combinations with words "instruction" and "learning"	
	Extended	Is used very rarely	
	Facilitated	Is used very rarely	
	Managed	Is used mostly in the combinations with words "instruction" and "learning"	
	Mediated	Is widespread well enough	
	Monitored	Is used very rarely	
	Related	Is widespread well enough	
Supported	Is widespread well enough		

In these situations as it is specified in (Carliner, 1999) "although computer could generically refer to any learning experience on a computer, it just typically refers to those experiences that are stand-alone- either because the computer is not connected to a network or because the learning materials do not contain links to material outside of the program. Similarly, although computer could generically imply that all types of media are included in a course, it typically implies that the course has just text, graphics, and simple animation".

A software application that is developed as a learning medium or an environment could partly or fully replace a teacher. Partly replacing a teacher it enforces learning material that has been taught by a teacher.

The terms of group 'D'

The terms of this group correspond to the word combinations from Table 2.

Table 2. The terms of the group 'D'

Word characterizing learning	Educational concept
Distance	Education
	Instruction
	Learning
	Teaching
	Training
	Tutoring

The word "distance" points out that learning is delivered at a distance, that is, a learner and a source of learning are physically separated one from another. However, this word does not specify a technology that is used for delivering of learning, so, it could be any information and communication technology that allows providing learning to remote locations: correspondence, TV, phone, audio conference, videoconference, course material on Web, radio, satellite broadcasts, videotape, facsimile, and etc. Typically learners work with learning materials on

their own, but as a rule, the presence of a teacher is assumed and his role is to provide support and tutorials. So, summarizing all above told, the main features of distance learning are:

- a teacher and a learner are separated one from another by time, place or both factors at most part of the learning process;
- a learner works with learning materials at time, place and pace convenient for him/ her;
- a teacher provides help, tutorials and evaluates learner progress;
- information and communication technologies are used to link a learner and a teacher and to provide their interaction;
- some occasional on-campus contacts or learning events between a learner and a teacher could exist.

The terms “distance education” and “distance learning” often are used as synonyms (Kaplan-Leiserson, 2000; SWAP, 2003; World Wide Learn, 2003). However, when it is necessary to point out their difference, the term “distance learning” is explained as a result of the distance education (Kaplan-Leiserson, 2000; Willis, 1997; World Wide Learn, 2003).

The typical definitions of the terms from this group can be found in (Kaplan-Leiserson, 2000; SWAP, 2003; Willis, 1997).

The terms of group ‘E’

The terms of this group are comprised into Table 3.

Table 3. The terms of the group ‘E’

Word characterizing learning	Educational concept
E-	Education
	Instruction
	Learning
	Teaching
	Training
	Tutoring

The letter “e” before the terms is the abbreviation of the word “electronic” and implies learning organized through any electronic medium or environment. These media could include offline or connected to a network (Internet, intranet, extranet) computers, audio and video devices, satellite broadcasts, CD- ROM or DVD discs, interactive TV, phones, and etc (Kaplan-Leiserson, 2000; World Wide Learn, 2003). The typical definitions of the terms from this group can be found in (Kaplan-Leiserson, 2000; OneTouch Systems, Inc., n.d.; Read, 2001).

However, there is another widely used, but narrow interpretation of the terms of this group. It assumes that learning is organized via the Internet (Brandon-hall.com, 1997; ComputerUser.com, n.d.; SWAP, 2003).

The terms of group ‘I’

The terms that form this group are presented in Table 4. The scale for the peculiarities of usage was given in section “The terms of group ‘C’”. The connectives were described in section “Connectives”.

The definitions of these terms are the narrowest ones in comparison with the terms of other groups because they clearly point out a technology used in the learning process. Typically learning content is delivered via the Internet. However, intranet connected through gateway computers to the Internet or extranet that properly is the extension of intranet onto the Internet could be used too. “Internet-based training is a training delivered using TCP/IP protocol, but not necessarily HTTP; thus, Internet-based training might use proprietary protocols and applications” (Kilby, 1995, Para.2). In contradistinction to the learning that is characterized by the terms of group ‘C’ Internet-based learning allows accessing not only local materials, but also materials outside of the course.

The typical definitions of the terms can be found in (Kaplan-Leiserson, 2000; Willis, 1997).

Table 4. The terms of the group 'I'

Technology describing word	Connective		Educational concept
	Word	Peculiarities of usage	
Internet-	Administered	Almost is not used	Education Instruction Learning Teaching Training Tutoring (almost is not used)
	Aided	Is used rarely and mostly in the combinations with words "education", "instruction", and "learning"	
	Assisted	Is used rarely and mostly in the combinations with word "learning"	
	Augmented	Is used very rarely and mostly in the combinations with word "teaching"	
	Based	One of the most widespread connectives	
	Delivered	Is used mostly in the combinations with word "training"	
	Directed	Almost is not used	
	Enabled	Is used rarely and mostly in the combinations with word "learning"	
	Enhanced	Is used rarely	
	Enriched	Is used very rarely and mostly in the combinations with word "learning"	
	Extended	Almost is not used	
	Facilitated	Is used very rarely and mostly in the combinations with words "education", "instruction", and "learning"	
	Managed	Almost is not used	
	Mediated	Is used rarely and mostly in the combinations with word "learning"	
	Monitored	Almost is not used	
	Related	Is used rarely and mostly in the combinations with word "training"	
Supported	Is used rarely and mostly in the combinations with words "education", "learning", and "teaching"		

The terms of group 'O'

The terms of this group are included in Table 5. The meaning of the terms from this group depends on the interpretation of the word "online". Accordingly to (ComputerUser.com, n.d.) it has three different meanings: connected to the Internet, connected to the computer or connected to a computer network.

Table 5. The terms of the group 'O'

Word characterizing learning	Educational concept
Online	Education
	Instruction
	Learning
	Teaching
	Training
	Tutoring

The definitions of the terms mostly are based on the first and third interpretation. Thus, in the broad sense it refers to the presence of a network connection and in this case the typical definitions of the terms from this group can be found in (Dean, 2002; Kearsley, 1998). The narrower meaning of the word "online" stresses that a computer is connected to the Internet and it can be seen in the definitions of the terms in (Brandon-hall.com, 1997; CoursePal Learning Systems, 2003; SWAP, 2003; Kaplan-Leiserson, 2000). In this case the terms of this group often are used as synonyms of the terms from groups 'I' and 'W', as we can see in the definition of online training in (Kaplan-Leiserson, 2000), as well as in the definition of online learning in (Kilby, 1995; OneTouch Systems, Inc., n.d.).

The terms of group ‘R’

The terms from this group are included in Table 6. Sometimes, but very rarely, the connectives “assisted”, “delivered”, “enhanced”, “enriched”, “extended”, “mediated”, “related”, and “supported” are used in the combination with word “learning”.

In resource-based learning learners, not a teacher, have a central role in the learning process. Learners are active and use different resources to study a subject and to solve some meaningful problems. Resources include printed and electronic books, dictionaries, documents, drawings, maps, newspapers, slides, audiorecords, videorecords, computer software, games, humans, TV, models, and etc. The task of a teacher is to provide stimulus that will motivate learners to search information using different ways and in different places, as well as to facilitate the learning process. The meaningful definition of resource-based learning is given in (Ryan et al., 2000).

Table 6. The terms of the group ‘R’

Word describing learning	Educational concept
Resource-based	Education
	Instruction
	Learning
	Teaching
	Training
	Tutoring

The terms of group ‘T’

The word combinations from Table 7 form the terms of this group. The scale for the peculiarities of usage was given in section “The terms of group ‘C’”. The connectives were described in section “Connectives”.

Table 7. The terms of the group ‘T’

Technology describing word	Connective		Educational concept
	Word	Peculiarities of usage	
Technology-	Administered	Almost is not used	Education Instruction Learning Teaching Training Tutoring (almost is not used)
	Aided	Is used rarely	
	Assisted	Is widespread well enough	
	Augmented	Is used very rarely and mostly in the combinations with word “learning”	
	Based	The most widespread connective	
	Delivered	Is widespread well enough, but rarely is used in combinations with word “teaching”	
	Directed	Is used very rarely	
	Enabled	Is widespread well enough	
	Enhanced	Is widespread well enough	
	Enriched	Is used mostly in the combinations with word “learning”	
	Extended	Is used very rarely and mostly in the combinations with words “education” and “learning”	
	Facilitated	Is used rarely and mostly in the combinations with word “learning”	
	Managed	Is used very rarely and mostly in the combinations with word “learning”	
	Mediated	Is widespread well enough	
	Monitored	Almost is not used	
	Related	Is widespread well enough	
Supported	Is widespread well enough		

The terms of this group have the broadest meaning among the terms from the other groups. They emphasize that some technology used for delivering of learning content and developing of skills and knowledge has the primary role in the learning process. However, these terms do not describe the technology itself and as a consequence it

can be any: computer (also connected to the Internet, intranet or extranet), TV, audiotape, videotape, DVD discs, CD, satellite broadcast, phones, facsimile, and etc.

The typical definitions of the terms from this group can be found in (Brandon-hall.com, 1997; Kaplan-Leiserson, 2000).

The terms of group ‘W’

The terms of this group like the terms of the group ‘I’ have the narrowest meaning as they clearly describe a technology that is used to provide the learning, namely, Web technology. Thus, learning content is delivered over the public or private computer network using a Web browser. Typically learning materials contain the links to the resources outside the course. The terms are presented in Table 8. The scale for the peculiarities of usage was given in section “The terms of group ‘C’”. The connectives were described in section “Connectives”.

Table 8. The terms of the group ‘W’

A technology describing word	A connective		Educational concept
	Word	Peculiarities of usage	
Web-	Administered	Almost is not used	Education Instruction Learning Teaching Training Tutoring (almost is not used)
	Aided	Is used very rarely	
	Assisted	Is widespread wide enough and mostly in the combinations with words “learning” and “instruction”	
	Augmented	Is used very rarely and mostly in the combinations with word “learning”	
	Based	The most widespread connective	
	Delivered	Is widespread well enough	
	Directed	Almost is not used	
	Enabled	Is widespread well enough, but rarely is used in combinations with word “instruction”	
	Enhanced	Is widespread well enough	
	Enriched	Is used very rarely	
	Extended	Almost is not used	
	Facilitated	Is used very rarely	
	Managed	Is used very rarely	
	Mediated	Is used very rarely	
	Monitored	Almost is not used	
Related	Is used mostly in the combinations with word “training”		
Supported	Is widespread well enough		

The typical definitions of the terms from this group can be found in (Jolliffe, 2001; Kaplan-Leiserson, 2000; Kilby, 1995; World Wide Learn, 2003).

Results of analysis

Now, when the essence of the terms that are used speaking about teaching and learning support with different technologies has been explained it is necessary to clarify relationships among the terms both within each group and among the terms from different groups.

Within the groups whose terms embody connectives (section “Connectives”), that is, groups ‘C’, ‘I’, ‘R’, ‘T’ and ‘W’, synonyms are the terms that contain the connectives from the same category. For example, “computer-managed instruction” and “computer-monitored instruction” are synonyms.

The terms without connectives within each of the groups ‘D’, ‘E’ or ‘O’ are synonyms on their merits, but the use of education concepts (section “Educational concepts”) brings some little nuances. For example, “distance learning” and “distance teaching” both imply that a learner and a teacher are separated one from another by time,

place or both factors, however, “distance learning” highlights the learner activity in the learning process, while “distance teaching” stresses the teacher activity.

The information presented in the previous sections clearly points out that each group of the terms has its own nuances of meaning. Thus, it is not right to say, that the terms from different groups have the same meaning, rather subset relationships exist between them. These relationships are shown at the Figure 2 operating only with the terms “computer-based learning”, “distance learning”, “e-learning”, “Internet-based learning”, “online learning”, “resource-based learning”, “technology-based learning”, and “Web-based learning”.

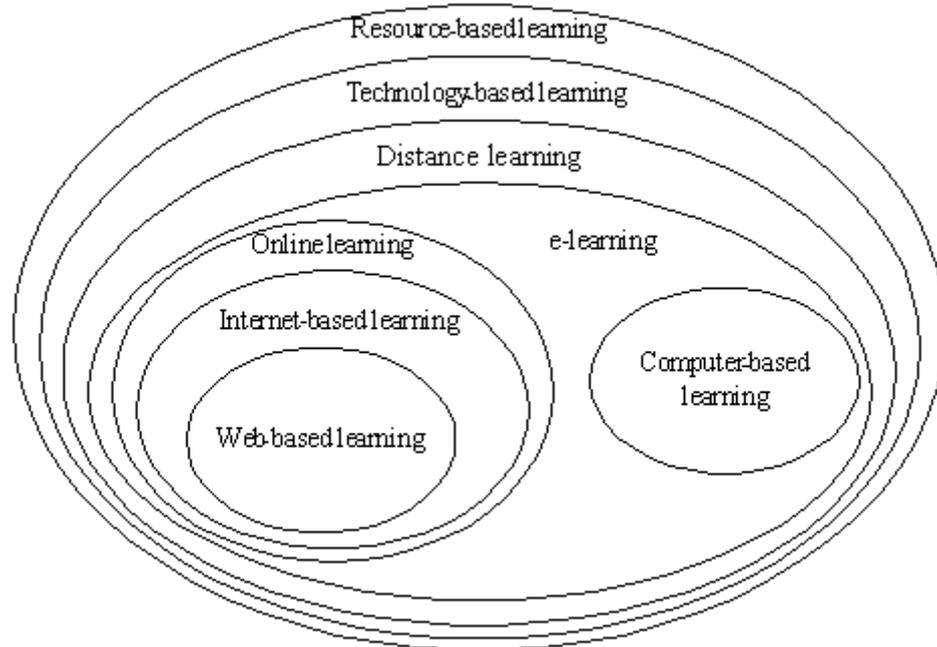


Figure 2. The subset relationships between the groups of the terms

The concept of Internet-based learning is broader than Web-based learning. Web is only one of the Internet services that uses unified document format (HTML), browsers, hypertext, and unified resource locator (URL) and is based on the HTTP protocol. The Internet is the biggest network in the world that is comprised of thousands of the interconnected computer networks (national, regional, commercial, and organizational). It offers many services not only Web, but also e-mail, file transfer facilities, and etc. So, learning could be organized not only on the Web basis, but also for example as a correspondence via e-mail. Furthermore the Internet uses not only HTTP protocol, but the proprietary protocols as well.

Online learning could be organized through any network, so, Internet-based learning is only subset of online learning. Computer-based learning implies that computer is not connected to a network, but learning materials are local, so, computer-based learning is not subset of online learning.

E-learning takes places via any electronic medium, so, online learning and computer-based learning (non-networked learning) are subsets of e-learning.

Distance learning is broader than e-learning, as it covers both non-electronic (e.g. written correspondence) and technology-based delivering of learning.

Technology-based learning is delivered via any technology, so, it entails distance learning too.

Resource-based learning is the broadest term because any technology could be used as a resource in the learning process, where learners are active.

Conclusions

This paper presents an attempt to order and categorize the broad terminology describing different kinds of learning based on various technologies. It offers eight groups of terms covering such widespread terms as computer-based learning, distance learning, e-learning, Internet-based learning, online learning, technology-based learning, and Web-based learning. Each possible constituent part of terms, that is, educational concepts (education, instruction, learning, teaching, training, tutoring), connectives (such as aided, augmented, based, managed), words characterizing learning (such as distance, online) or technology describing words (such as computer, Internet) is analyzed. The obtained results of analysis are used to define subset relationships between the groups of terms and could serve as a handy reference for newcomers in the field of virtual learning.

However, not all terms are described in this article. Some other terms such as networked learning, computer supported collaborative learning, distributed learning, etc. could be investigated in future. One more direction of further research could be investigation of the usage of terms within different contexts and taking into account the ideological specificities of the users (educational vs. corporate, post secondary vs. secondary, academic vs. vocational).

References

- Brandon-hall.com (1997). *Glossary of E-learning terms*, retrieved March 14, 2005 from <http://www.brandonhall.com/public/glossary/index.htm>.
- Carliner, S. (1999). *Overview of online learning*. Amherst, MA: Human Resource Development Press.
- ComputerUser.com (n.d.). *High-tech dictionary*, retrieved April 06, 2005 from <http://www.computeruser.com/resources/dictionary/index.html>.
- CoursePal Learning Systems (2003). *Online Learning Glossary*, retrieved April 14, 2005 from <http://www.coursepal.com/learning/glossary.htm>.
- Dean, C. (2002). *Technology Based Training & On-line Learning: An overview of Authoring Systems & Learning Management Systems available in the UK*, retrieved November 21, 2004 from <http://www.peak.co.uk/AuthoringSystem.pdf>.
- Domjan, M. (2000). Learning: an overview. In Kazdin, A. E. (Ed.), *Encyclopedia of psychology* (vol.5), Oxford: Oxford University Press, 1-3.
- Farlowe, A. (2003). Tutoring: higher education. In Guthrie, J. W. (Ed.), *Encyclopedia of education* (vol.7), New York: Macmillan Reference USA, 2583-2585.
- Horton, W. K. (1999). *Designing Web-based training: how to teach anyone anything anywhere anytime*, New York: Wiley.
- Illingworth, V. (1996). *Dictionary of computing*, Oxford: Oxford University Press.
- Jarvis, P. (1999). *International dictionary of adult and continuing education*, London: Kogan page.
- Jolliffe, A. (2001). *The online learning handbook: developing and using Web-based learning*, London: Kogan Page.
- Kaplan-Leiserson, E. (2000). *Glossary*, retrieved March 10, 2005 from <http://www.learningcircuits.org/glossary.html>.
- Karlgren, K. (1999). *E-learning acronyms*, retrieved April 14, 2005 from <http://www.dsv.su.se/~klas/Learn/index.html>.
- Kearsley, G. (1998). *A Guide to Online Education*, retrieved April 29, 2005 from <http://home.sprynet.com/~gkearsley/online.htm>.

- Kearsley, G. (2000). *Online education: learning and teaching in cyberspace*, Belmont, Calif.: Wadsworth Thomson Learning.
- Kilby, T. (1995). *Frequently Asked Questions*, retrieved April 7, 2005 from <http://www.wbtic.com/faq.aspx>.
- OneTouch Systems, Inc (n.d.). *FAQ: About e-learning*, retrieved April 6, 2005 from <http://www.onetouch.com/aboutel.html>.
- Peterson, D. R. (2000). Training: an overview. In Kazdin, A.E. (Ed.) *Encyclopedia of psychology* (vol.8), Oxford: Oxford University Press, 102-105.
- Picciano, A. G. (2001). *Distance learning: making connections across virtual space and time*, Upper Saddle River, N.J.: Merrill.
- Porter, L. R. (1997). *Creating the virtual classroom: distance learning with the Internet*, New York: J. Wiley & Sons.
- Read R. (2001). *E-education: overview*, retrieved April 6, 2005 from http://www.scit.wlv.ac.uk/~jphb/cp3349/Hall_Of_Fame/education2/overview.htm.
- Ryan, S., Scott, B., Freeman, H., & Patel, D. (2000). *The virtual university: the Internet and resource-based learning*, London: Kogan Page.
- Shumow, L. (2003). Tutoring: school. In Guthrie, J.W. (Ed.), *Encyclopedia of education* (vol. 7), New York: Macmillan Reference USA, 2580-2583.
- SWAP Subject Centre Social Policy and Social Work HE Academy (2003). *Glossary of learning and teaching terms*, retrieved March 3, 2005 from <http://www.swap.ac.uk/Learning/glossary.asp?initial=All>.
- Willis, B. (1997). *Glossary of Distance Education Terminology*, retrieved April 14, 2005 from <http://www.uidaho.edu/eo/dist13.html>.
- World Wide Learn (2003). *E-learning and technical terms*, retrieved March 14, 2005 from <http://www.worldwidelearn.com/elearning/elearning-glossary.htm>.
- Zinn, K. L. (1993). Computer-assisted learning and teaching. In Ralston, A. & Reilly, E. D. (Eds.), *Encyclopedia of computer science*, New York: Van Nostrand Reinhold, 262-269.