

E-LEARNING DEVELOPMENT IN THE DECADE FROM 2005 TO 2014

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The word 'e-learning' has made a big career in the past 10 years. Based on conducted researches, it can be stated that the number of web pages related to this issue has increased by 200 times, and in 12 years – even by 1000 times. At the beginning of this period, an expected curve of e-learning development was determined; sometimes it is called the “e-learning hyper-cycle”. It predicted a rapid development of the subject in the initial period and then a gradual decrease in interest. The purpose of this paper is to document if it really happened and what the trends of e-learning development are in the world and in Poland. The change in frequency of the word 'e-learning' occurrence in polish and world domains will be specially analysed, as it will be done with popularity of the problem in the scientific literature.

Keywords: e-learning, e-learning history, e-learning development, e-learning development forecasts

1. Introduction

It is hard to unambiguously determine the origin of the word 'e-learning'. This term was formed at the turn of the 20th and 21st century, although its basis can be searched much earlier. As early as in 1959, the PLATO project was started at the University of Illinois; initially, it embraced mainly the analysis of potential computer application to education. The PLATO II proposed multi-station keyboard-operated systems which allowed displaying contents of education. In the PLATO III system a 100 of learning stations could function, which eventuated in emerging

of dedicated demonstration centres in 1969 (Oberle & Wessner 1998, p. 56). Even then, the creation of the first network systems could be said and next solutions consisted in increasing their technical capabilities. Unfortunately, due to the price of large computers, those ones were never popularized in their times.

A rapid increase in interest in applying computers in educational processes emerged with the widespread of microcomputers. That sudden growth was observed mainly at the beginning of the 1990s and is sometimes defined with a hiper-cycle curve (Hoppe 2005, p. 3). In that period, simulation programs, intelligent tutoring systems (ITS) and contextual library catalogues were developing quickly. Unfortunately, at the end of the 1990s, a significant slowdown in this area could be seen, which completes the hiper-cycle curve for computer-based learning.

However, the 1990s are also related to the fast development of the Internet and thus its application to education purposes. It was the creation of network infrastructure what became the basis for a new thinking of conveyance of education contents. In that time, first concepts of network-related education emerged and the network systems enabling such education were even created (Meger 1994; Meger 1995). First virtual seminars – in the contemporary meaning – were conducted in 1997-98 (Bernath & Rubin 2003, p. 10). Although the term 'e-learning' was not used officially, those kinds of actions were similar to the e-learning as we know it.

2. Beginnings of e-learning

Probably, the term 'e-learning' was formed as an analogy for a term advertised by the IBM company – 'e-management' or 'eManagement' – which refers to a management supported by electronic means. Analogically to the management, the prefix 'e-' started to define new terms related to learning supported with that kind of means. Sometimes, e-learning was then referred to learning electronics or machines, which highly diverged from its present understanding.

First reports in the literature on the e-learning matter, in the meaning similar to the current one, can be found at the turn of the 20th and 21st century. There were as much as 6 papers which subjects are related to the e-learning in the EBSCO database in 1999. In the ScienceDirect database, the first one is dated 2000. The number of publications started to increase rapidly shortly thereafter.

Also, a number of web pages in the Internet, on which the e-learning matter appeared, began to rise accordingly. In 2002, professor Peter Baumgartner noticed that there are almost a million web pages of that kind. He cited the first information received from Google after typing the word 'e-learning' in the search engine, although we know that it is only a parameter specifying at most how many times Googlebots had found that term on the web. Obviously, it never means the actual number of available web pages, although this parameter could be considered in the case of comparative researches if its manner of obtainment is comparable, e.g. in

subsequent research attempts. Therefore, the first measurement (conducted in 2002) was repeated in the following years (Figure 1).

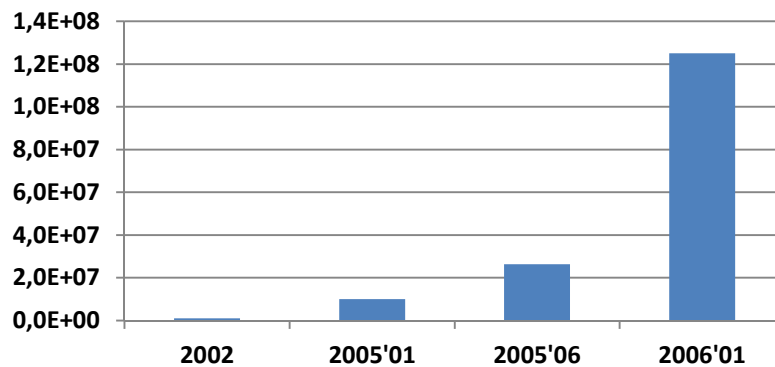


Figure 1. Number of web pages indexed by Google, on which the word 'e-learning' occurred

It transpires that the fascinating parameter of a million web pages of 2002 turned into 10 millions in three years time and into 25 millions after a half a year, and into level of 125 millions at the turn of 2005-2006. It is a significant hyperbolic increase, which obviously had to collapse at a certain moment.

A very similar process can be observed in the number of publications related to the e-learning. The LiDa database, which is conducted by the author, contains scientific publications (books and articles), concerning problems in the area of e-learning and having significant scientific importance both (Meger 2005). By the year 2000, they were sporadic ones, at most few in a year and only indicating issues related to the e-learning. It transpires that as early as in 2000, the number of such publications increased rapidly, peaking in 2004 (Figure 2).

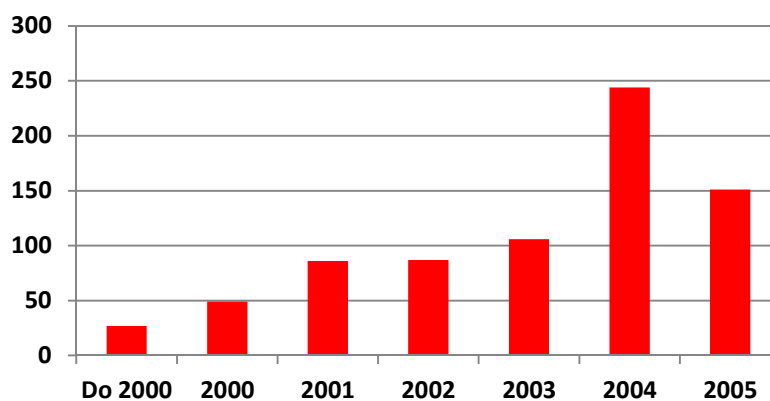


Figure 2. Number of publications related to e-learning in the author's LiDa database

Unfortunately, in 2005, the number of significant publications in the field of e-learning decreased and never came close to the previous peak. The downward trend sustained in the following years. It allowed to identify the e-learning hyper-cycle curve, which had its peak in the half of the past decade.

3. Development forecasts

Some of the reports on the e-learning hyper-cycle curve identifies its peak as early as in 2000 (Thim 2005, p. 129). The fact is that a local peak was occurring then, but it was ridiculously small compared to the one from 2005. In each case, identification of such peaks is not easy and often possible from a distance of many years.

Usually, it is easy to identify a curve of increase in interest in a given problem, which was also specified in the case of e-learning increase (Bowles 2004, p. 22). We observe (A) a slow building up, then (B) the rapid development, to finally see (C) the slowdown (Figure 3).

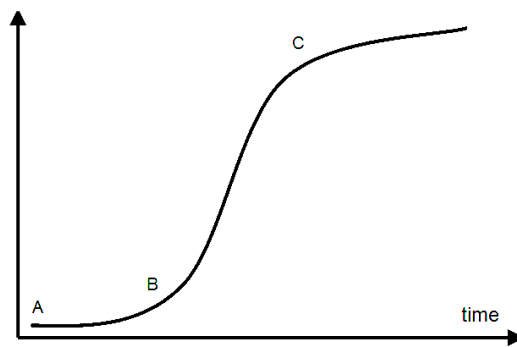


Figure 3. Development of interest in e-learning in the first years after its emergence; turning phases are marked

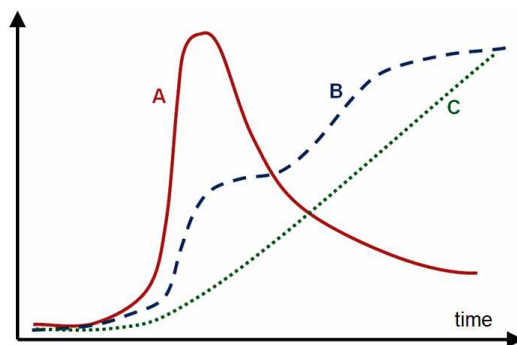


Figure 4. E-learning development forecasts after the intensive initial period of growth

Although the growth curve identification based on the existing data does not cause a problem, determining the further trend of the e-learning development was not easy nor is it today. Shortly after noticing the slowdown, speculations concerning that issue emerged (Meger 2005). Figure 4 summarizes the forecasts of such development.

In the literature, predictions started most frequently that, after the rapid increase in interest, a rapid decrease would also follow – therefore, a classic hyper-cycle curve would occur (A). However, there were also opinions forecasting further growth after a period of slight stagnation (curve B). A scenario of constant stable development (C) seemed to be the least probable. The next decade demonstrates how the interest in e-learning technology was developing. It also indicates the trends concerning the future of remote education supported by technological means.

4. Decade from 2005 to 2014

In the following years, the interest in e-learning issues was not developing so dynamically as in the first years after its emergence. Results of subsequent controls of web pages containing the word 'e-learning', which were indexed by Google, conducted annually for the last ten years can be presented (Figure 5). As in the previous one, it should be noted that it is never an actual number of pages which are reachable via this search engine. The measurement is conducted for comparison purposes only, with the use of the same technique of acquiring data from Google in the subsequent years.

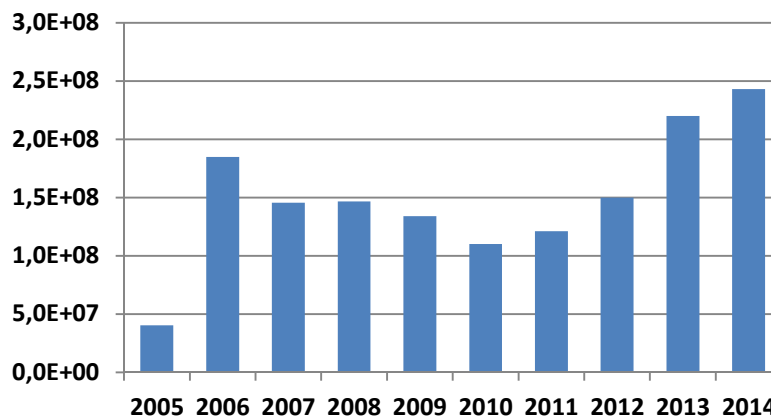


Figure 5. Development of the interest in e-learning in the last decade, based on the number of pages with the word 'e-learning' indexed by Google

It can be presumed that Figure 5 illustrates stabilization of the number of web pages related to the e-learning, although we observe a slight decrease after the rapid growth, and a slight increase in the last period. However, considering the overall fast growth of web pages in the world, it can be stated that this background is unfavourable for it, even indicating a regress if compared to other increasing areas. A research on searching the word 'e-learning', which was conducted with Google Trends, also confirms the slight downward trend. Thus, it is difficult to draw unambiguous conclusions on the development trend.

Similar examination of the 'e-learning' occurrence on the pages indexed by Google can be done for polish domains (a *site:pl* option) only. Figure 6 depicts the development of the situation in this area.

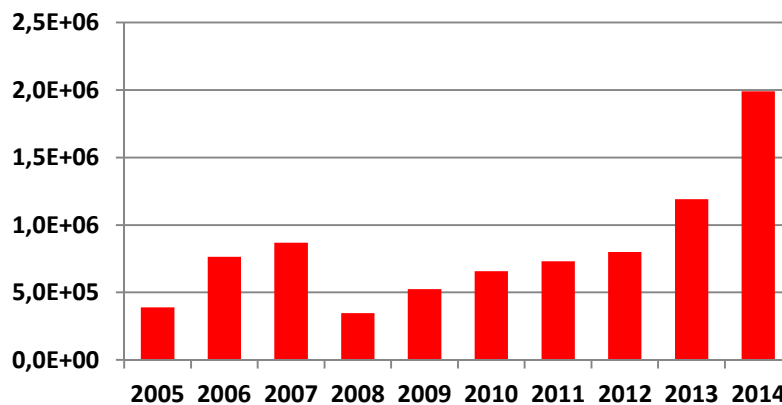


Figure 6. Interest in e-learning in Poland in the last decade, based on the number of pages with the word 'e-learning' in the .pl domain, which are indexed by Google

It is clearly visible that the number of pages develops in a more dynamic manner, especially in the last years. It should not be surprising because Poland still lacks significantly in the development of this field.

Similar researches on pages on the e-learning matter can be conducted for other keywords from this area. Figure 7 and Figure 8 illustrate the occurrence of the word 'eLearning' (without the hyphen) for the whole Internet and the .pl domain respectively. Likewise, the occurrence of the words 'eLearn' and 'e-Learn' (which are popular in the English language area) was examined, actually confirming the trends observed in the presented figures. Although the scatter of data – due to its smaller amount – is greater, a moderate increase is observed after the period of slowdown in the second half of the first decade of the 21st century. This growth is more intensive in the case of polish domains compared to the whole Internet.

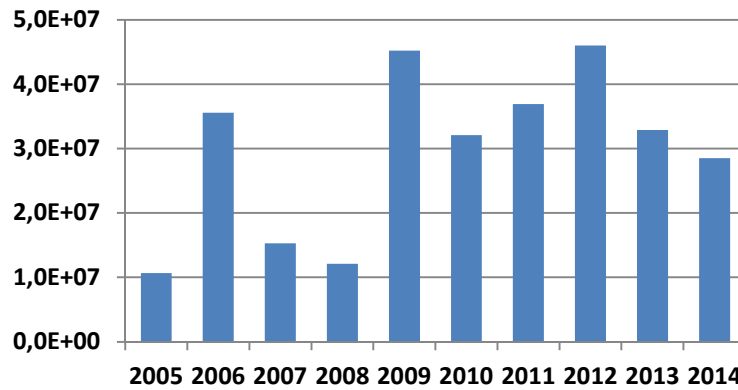


Figure 7. Development of the interest in e-learning in the last decade, based on the number of pages with the word 'eLearning' (without the hyphen) which are indexed by Google

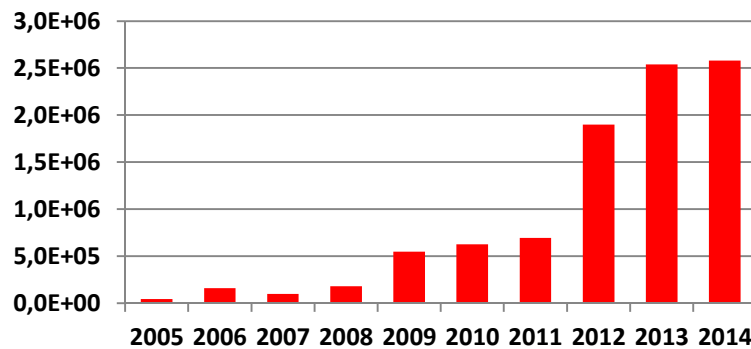


Figure 8. Interest in e-learning in Poland in the last decade, based on the number of pages with the word 'eLearning' in the .pl domain, which are indexed by Google

Examinations of Google indexing cannot be the only manner of observing the trends in the area of e-learning development. Googlebots have been modified and improved many times so far. It could affect the result of the comparisons. Therefore, alternative manners of analysing the interest in the e-learning issues should be considered.

5. Scientific development in the field of e-learning

An observation of scientific development in the area of e-learning can be conducted by analysing the occurrence of this term in the titles of various publications. Specialized databases are helpful in this examination, especially the EBSCO and

ScienceDirect ones. Figure 9 depicts the occurrence of the word 'e-learning' in the titles of scientific papers in the EBSCO database.

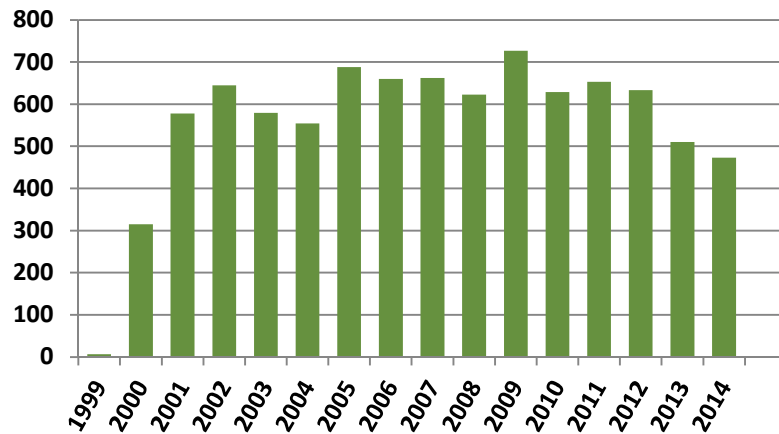


Figure 9. Occurrence of the word 'e-learning' in the titles of scientific papers, indexed in the EBSCO database

The chart indicates a significant stabilization of the titles containing the word 'e-learning' after the initial growth. Therefore, conclusions that the scientific interest is still at the same level can be drawn, although a certain decrease in 2013 is considerable. However, the last year is certainly related to incomplete data from this period.

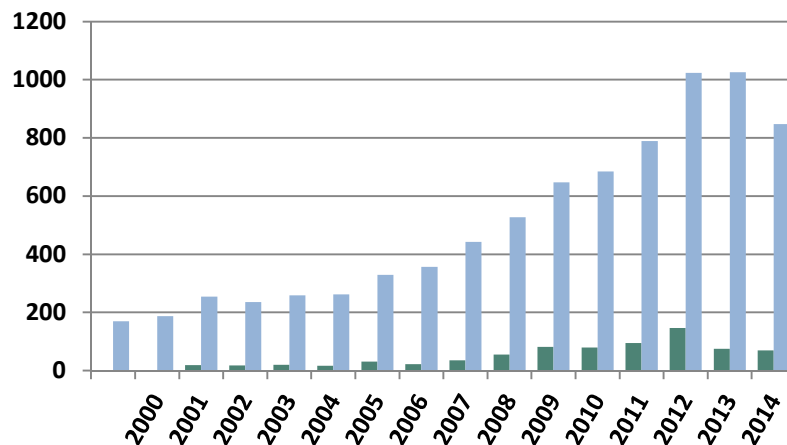


Figure 10. Occurrence of the word 'e-learning' in the titles of scientific papers (the left bar) and in abstracts (the right bar) indexed in the ScienceDirect database

A similar examination can be conducted for the ScienceDirect database (Figure 10). In this one we can observe an upward trend, although it is partly related to its development. A partial dissonance can be noticed in the last few years between occurrence of the word 'e-learning' in titles and abstracts. It can indicate that the e-learning ceases to be the main research problem and becomes more of a tool or an important supplement for some other ones.

Finally, a trend in the area of papers with the title word 'e-learning' indexed by Google Scholar is worth observing (Figure 11). There is a significant upward trend and the last decreases are presumably the results of lack of citations in the area of recently published ones.

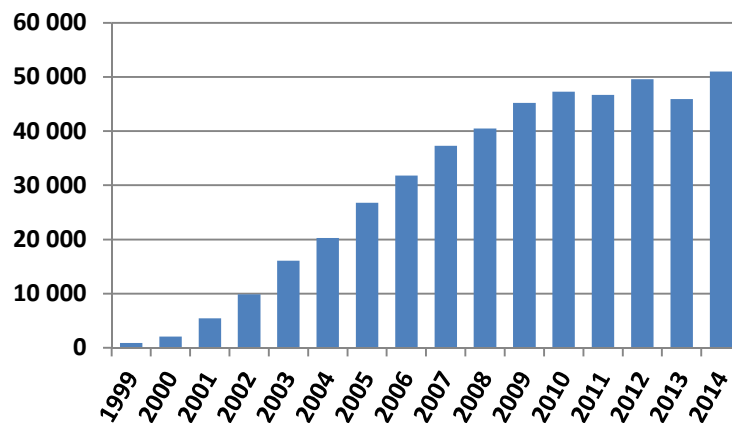


Figure 11. Occurrence of the word 'e-learning' in the papers indexed by Google Scholar

Scientific publications in the field of e-learning indicates a stabilization or – taking into consideration the size of the databases – a slightly upward trend. It means that the e-learning matter is still present in the scientific activity and sustains approximately the same or even higher level of number of publications compared to the peak period of the half of the past decade.

6. Summary and conclusions

The presented results indicates most frequently that after the period of rapid increase in interest in the e-learning in the half of the past decade, the slight decrease occurred in web activity in this area, although we observe another upward trend in the last few years. This processes can be seen especially in the polish domains.

It seems that the hyper-cycle, which was forecasted at the beginning of the century, have not occurred at all or in much smaller extent than predicted. Another effect related to a new technology lifecycle could affect the lack of a rapid collapse (Dueck 2002, p. 193). Figure 12 illustrates this cycle, also known as a product lifecycle (P), compared to the hyper-cycle.

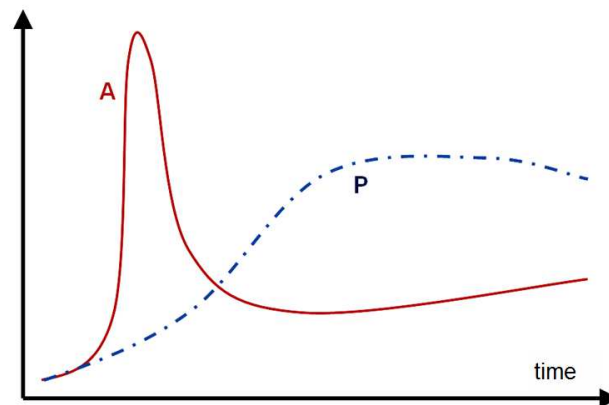


Figure 12. Hyper-cycle curve (A) and product lifecycle curve (P)

Product lifecycle is also known from other technologies. Some of them have really long lifespan, e.g. radio receiver and television set, but even in this case an end of their usage can be presumed, at least in the area of specified technologies. Other ones, e.g. video or CD-ROM, had significantly shorter lifespan, sometimes evolving into, e.g. form of a DVD or BRD. Presumably, we observe this process in the case of e-learning, and the hyper-cycle curve and the new technology lifecycle curve overlap, causing a high level of interest in this technology.

These conclusions mean that the e-learning will be present longer in our everyday life, maybe even for many decades. However, the interest in the new is turning into a significantly productive period. Therefore, a gradual increase of employment and turnovers in this field will occur, irrespective of its form, be it more or less commercial. A slowdown in the last 2-3 years, which is not so clearly visible, is considerable. It might mean a transition toward other, more promising technologies (as it was in the case of CD-DVD-BD). Certainly, many interesting issues will happen in this area.

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