

## Can E-learning break the Digital Divide?

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### Abstracts

#### English Abstract

E-learning is now quickly expanding. One of the claims of its proponents is very popular – e-Learning will provide much better education for people from developing countries. The author teaches online courses for the KIT program of the University of Liverpool. Students from all continents participate in its virtual classes. Despite the large variety of countries and the students' good study results, the author becomes more and more convinced that the Digital Divide is widening. Using statistical data and financial reasoning, the paper tries to explain why it is so and why it will likely remain unchanged for coming years.

#### Slovakian Abstract

Záujem o e-learning v súčasnosti rýchlo rastie. V jednom z populárnych hesiel jeho propagátori tvrdia, že e-learning umožní zdokonalit vzdelávanie v rozvojových krajinách. Autor vyučuje online kurzy pre magisterský program KIT Liverpoolskej univerzity. V jeho virtuálnych triedach pôsobia študenti zo všetkých kontinentov. Napriek rozmanitosti krajín a výborným výsledkom študentov, autor je coraz viac presvedčený, že Digitálna Bariéra sa neustále rozširuje a že tento stav sa ešte dlho nezmení. V článku svoj názor odôvodňuje štatistickými údajmi získanými z podkladov pre prácu vo virtuálnych triedach a finančnou analýzou nákladov na ich prevádzku.

#### Keywords:

e-learning opportunities, e-learning drawbacks, economy aspects of e-learning, Digital Divide.

### 1 Can e-Learning Break the Digital Divide?

One of big expectations tied to e-learning speaks about its ability to introduce equal education to everyone. Authors of this claim assert that the possibility of e-courses to reach any corner of our planet will lead to the opportunity of delivering same high-quality education everywhere. The biggest optimists have a vision of top-ranking universities acting over the Internet using ready-made courses for huge amounts of students in Third-World countries. In accordance to well-known practices of e-learning the students would study on their own pace by self-learning. Despite the author's conviction that that e-learning has this potential, it is not difficult to express several counterarguments against such overoptimistic conclusions.

1. **Language barrier:** The World's population speaks several thousand different languages. Teaching and learning at the K-12 level can hardly be performed in any other language but in the children's native one. They must reflect social and cultural specifics so it can hardly cover more than the particular region. Consequently, the most of materials has to be produced locally. Such geographical limitations minimize chances for applications of e-learning. On the other hand, in most of these countries, the *lingua franca* of high-schools is the language of their former colonial power. This simplifies using an international program at the university level.
2. **Absence of prerequisites:** At all education levels in countries behind the Digital Divide, the total absence of qualified teachers is much bigger problem than the distance from them. There are not enough human resources for preparing appropriate courses in any form – regardless whether on-ground or on-line. For that reasons, many students lack "standard volume of knowledge" requested for university enrolment and might struggle with problems during their study.
3. **Technology hurdles:** Still, some teaching materials can be exploited as they do not require any knowledge of the foreign language or can be understood using limited language abilities. Then another question arises: Is it there is technology capable of presenting them in a relevant form and quality? Broadband connection, high-resolution screens, and other course producers' expectations are often difficult to achieve in many countries. Slovakia for example belongs to OECD – the commonwealth of thirty World's most developed nations. Yet, a few days ago, I have watched a physician working with a 386 machine in one of the biggest Bratislava hospitals. What can one expect in remote cities of less developed countries?
4. **Difficulties with translation:** Evidently, performing the entire K-12 educational process in a foreign language is almost impossible. Very few courses do not intensive textual support. The last choice is translation of the courses. The fact, that the schools behind the Digital Divide cannot use the most progressive technology, has one advantage – authors of older teaching materials will not expect high royalties. But... Who will finance the translation? Who will make it? Is the local market big enough to reach the break-even point?

Thus, one can only expect wider applications of e-learning at the higher educational levels when the taught material is general enough and student's foreign language skills are adequate. At the same time, high schools and universities in all countries are better equipped by powerful technology. Seemingly, there is a much higher chance to overcome the above obstacles. In this paper we demonstrate another reason why delivering successful and well-designed courses is unlikely even in this cases. Crossing the Digital Divide is equal to crossing an economic barrier.

### 2 A Working Example

The author teaches three courses (Computer Structures, E-Commerce, and Databases) in the virtual classes of the University of Liverpool. A typical class is spread from Australia to Canada; the courses take eight weeks each. To complete their study, the students must complete nine different courses from a choice of fifteen.

In many ways, the organization of virtual classes resembles that of "ground" ones. A group of learners studies and works on a set of problems under a teacher's supervision. There are required readings, due dates for solutions, etc. On the other hand, the students and their teacher might never meet each other as they all use the Internet for their communication. Salmon (2000) describes the method of teaching in detail. Its most important specifics are:

- *The principle method of education is self-learning.* The students are given textbooks and other study materials in advance, but they are supposed to read them and learn by themselves.
- *The class progress is coordinated.* The course is split into blocks (of a few chapters) which must be completed within a given period. Students should offer their help to others. Their support is valued and graded.
- *Intensive communication is recommended and facilitated.* To intensify critical thinking and in-depth learning, the course design should facilitate assimilation of the theory through clarifying concepts and their application. A typical method uses "discussion questions". Selected themes from the given block must be discussed by all learners. Everyone is asked to post his/her initial standpoint. Students are encouraged to express their views and criticism to their classmates' postings. Their evaluation expresses the quality of their original postings, the ability to explain errors or to add supportive arguments to other postings as well as the overall contribution to discussion.
- *The teacher's role has changed.* The centre of gravity has moved from the passive acceptance of "well-cooked" teacher's knowledge to active "self-cooked" inputs. As a result, the teachers do not need to intervene in every simple trouble. Finding discrepancies and misunderstandings is the role of the class. The instructors rather check and control a smooth run of the process and act only when it takes an apparently wrong direction as the absence of important notions, misconceptions leading to ignorance, misunderstanding or quarrels among students. For that reason they are often characterized as "moderators" or "facilitators".

Each institution sets up its own regulations to the above general principles. In our case, the discussions are done offline: the students must participate in them at least four times a week. They are requested to submit 2 original postings (each in a separate platform known as "discussion thread") and to give at least one review to their classmates' postings in each thread. The discussions are deliberately offline as this offers longer time to think over the answers. Due to that, the discussions are calm, in-depth and friendly. Often, the students demonstrate principles using their own experience and compare them with the theory.

In the practically-oriented part of the course, the students develop their individual term-long projects. Each week is devoted to a section. For example, in E-Commerce the sections cover the e-product selection, its marketing, reliability and security of payments, etc.) Students post their project drafts in a specific thread and are reviewed inside their PEG (Partner Evaluation Group). This portion of peers' grades strongly depends on help, support and involvement into their classmates' projects.

The biggest advantage of the course is enormous involvement of students into their learning. As there are always students with long experience and high skills, the study is very practically oriented. Another flavor is added by the international audience that collaborates on everyone's better results. The decreased load on the teachers (due to peer-to-peer approach) is an indirect benefit of the method.

On the other hand, such courses are not appropriate to everyone. The students must be self-disciplined, self-motivated and at least partially qualified in the field – simply "mature" in the deep sense of the word. Otherwise they fail as they are not capable of fulfilling all the above requirements in addition to their job and family duties. For these reasons many universities require 21 years as a minimum enrolment age.

Another constraint is the long preparation of the study program as a complete redesign of a traditional teaching and learning materials must precede first courses. There is also risk of cheating (e.g. using a specialist acting on behalf of the student). For that reasons some university expect the students to personally participate in final and/or closing exams. To allow efficient and effective instruction, the classes contain at most twenty students. All these factors make the program expensive – the total tuition of the University of Liverpool MSC program is about 20 000 euros.

### 3 Losing Optimism

After two years of teaching in virtual classes, the author decided to make its statistical evaluation. In 7 courses, 109 students from 18 countries participated. The biggest number comes from the United Kingdom. Nevertheless, more than one half of them live in other countries – see **Table 1**. This is a good sign as it shows the high potential of e-learning. At the same time, there are only four developing countries (China, Iran, Jamaica and Tanzania), each represented by one student. Crossing the Digital Divide is evidently difficult.

The picture substantially changes when the data show the students' nationalities – see **Table 2**. The number of citizens of practically all developed countries declines. 22 students come from developing countries – starting with 8 Indians! This not only demonstrates the existence of brain drain (as all of them live abroad) but indicates that they are not getting opportunities to attend a similar study at home. Financial reasons are likely the most important. From my personal correspondence with them the author can confirm that poor Internet access hinder them from a more intensive participation during their visits at home.

Country	Students	Country	Students
UK	50	UK	47

Canada	15
Netherlands	11
USA	9
Germany	7
UAE	3
France	2
Singapore	2
Australia	1
China	1
Cyprus	1
Hong Kong	1
Iran	1
Ireland	1
Italy	1
Jamaica	1
Malta	1
Tanzania	1

**Table 1:** Countries of residence

Canada	13
Netherlands	12
India	8
Germany	6
USA	5
South Africa	4
Lebanon	2
Australia	1
China	1
Cyprus	1
Hong Kong	1
Iran	1
Ireland	1
Jamaica	1
Malta	1
New Zealand	1
Sudan	1
Tanzania	1
Tonga	1

**Table 2:** Nationalities of students

What does it imply? Economic and organizational aspects of e-learning are often overlooked by its proponents, the necessity of building a proper infrastructure as well (Hvorecký, Rebro, 2004). The expenses generated by e-learning are high (preparation of courses, instructor training, class control, costs of supporting software, reliable mainframe as the carrier of the communication, network expenditure, etc.). The tuition must be such, too. It is naive to believe that this will change soon.

To profit from e-learning, one should live on "the right side" of the Digital Divide.

## References

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