

# The Digital Divide in Education in the Knowledge Society

**Almudena Moreno Mínguez**

*Universidad de Valladolid, Spain*

**Enrique Crespo Ballesteros**

*Universidad de Valladolid, Spain*

## INTRODUCTION

Information and communication technology (ICT) is playing a central role in the development of modern economies and societies. Every young person will need to use ICT in many different ways in their adult lives, in order to participate fully in a modern society. This has profound implications for education, both because ICT can facilitate new forms of learning and because it has become important for young people to master ICT in preparation for adult life. But is ICT living up to its potential in schools and in the lives of young people? To start to answer this question, the extent to which young people are exposed to and making use of such technology and whether those who do so are achieving desirable learning outcomes must be determined.

In this article we analyse the impact that the information communications technologies are having on the training of the youths. Also it will be analysed the unequal access to ICT depending on factors such as gender and family origin. To carry out the analysis, the source has been the PISA Report 2005, from the OECD.

## EQUAL OPPORTUNITIES AND THE DIGITAL GAP IN THE SOCIETY OF KNOWLEDGE

In the sixties and the eighties, many researchers published different works on the transformations that began to emerge in the so denominated “new society of knowledge” (Touraine, 2005; Bell, 1976; Giddens 1979; Castells, 1986, 2001). One of the main characteristics that defines the post-industrial society is the change that took place in the processes of social and occupational stratification. The positions occupied in the social and occupational structure are determined

partly by the unequal access to the professional and technical knowledge that are acquired in the education system and in the family environment.

In the industrial society, the high education exclusion—the fact of not entering the University—often located below their expectations or punished (in terms of the labour market access) to those that didn’t have good qualifications. That is to say, the equality of opportunities was analyzed depending on the factors that explained the scholastic failure such as the social class where people come from, the gender or the ethnos (Bourdieu & Passeron, 1980; Bowles & Gintis, 1983). The new society of information and knowledge is characterized to be a “net society” that has been defined “as the group of interconnected nodes [...]. What a node is depends on the type of nets to that we are referring to” (Castells, 2001, p. 550). The new structure of the net society is composed by nets of production, power and experience that have given place to a new culture of the global, not without contradictions. This net society means a qualitative change in the human experience. Information becomes a key factor for social organization and social stratification, to such an extent that new processes of social inequality linked with the access to the ICT are taking place.

In the post-industrial society, the training and the knowledge of ICT have entered as new forms of social inequality associated with traditional factors as social class and gender. That phenomenon has been denominated the “digital gap,” as the differential access to the ICT increases the social duality among the different social strata.

The concept of “digital gap” makes reference to the “strong inequality that arises in the post-industrial societies among those that can access to the new information communications technologies (ICT), integrating its use in the daily life, and those that are not able to or don’t know how to access” (Ballesteros, 2003, p. 1).

This new form of inequality that is taking place in the current society can even increase the social exclusion of some population's sectors in function of factors such as the social class of origin, gender, educational level, ethnoses, and so forth.

To be able to access the net it is indispensable to have a series of infrastructures and knowledge. In this work the unequal access to the ICT will be analysed through factors such as gender and economic status in the OECD countries, starting out from the analysis of data in the PISA Report 2005. This unequal access impacts in the attitudes that youths have towards the new information communications technologies as well as in their educational performance, what is therefore generating new processes of social exclusion in what has been called the "digital gap."

## **RELATIONSHIP BETWEEN ACCESS TO COMPUTERS AND STUDENT'S GENDER AND SOCIOECONOMIC BACKGROUND**

The studies carried out have shown the existence of differences in the access to the new ICT depending on factors like gender and socio-economic status of the students.

To what extent do different groups of students—males compared to females, for example, or those students with higher or lower socio-economic status—have different access to computers?

According to PISA Report 2005, gender differences in access to computers at home appear in two-thirds of the countries participating in the ICT survey. Male students are more likely to have home computers available than females in 20 countries. In nine of these countries the difference is five percentage points or below, but in Greece, Poland, and the partner countries Latvia and the Russian Federation, it is between 11 and 14 percentage points. In contrast, males and females have largely the same degree of access to computers at school, and in the only countries with a gender gap of around five or more percentage points, Belgium, Ireland and Korea, the difference is in fact in favour of females. In 17 countries, males are significantly more likely to have access to computers in places other than home or school, and this difference is as high as 20 percentage points in Turkey, 10 in Italy, and 15 and 11, respectively, in the partner countries the Russian Federation and Serbia. In

two countries, Ireland and the United States, females are more likely to have access to computers in other places than home or school.

Socio-economic background is a stronger predictor of whether a student had access to a computer at home than is gender, and here again the differences at school and in other places tend to be much smaller than socio-economic differences at home. The data of PISA Report (2005) shows these differences by dividing the student population of each country into four equal-sized groups, according to their ranking on PISA's index of economic, social and cultural status (ESCS). In most countries, students from the least privileged quarter of the population by socio-economic background are significantly less likely to have a computer available at home than those in the most privileged quarter. This socioeconomic digital divide is starkest in countries where the fewest students overall had home computers access, such as Mexico and Turkey, and the partner countries of the Russian Federation and Thailand, where 11% or fewer students in the bottom quarter by socio-economic status can access home computers, compared to at least 70% in the top quarter. However, even in some countries with high overall rates of access, this disguises wide socio-economic differences. For example, 87% of students in Italy have computers available at home, but 33% of those in the bottom quarter by socio-economic background lack this resource, compared to just 2% in the top quarter. On the other hand, some countries have near-universal access in all socio-economic groups: at least 90% of students across the socio-economic spectrum have computers at home in Austria, Denmark, Iceland, Korea, Sweden and Switzerland, and the partner country Liechtenstein.

In many countries, there are no large differences in access to a computer at school among students from different socio-economic backgrounds. However, in Mexico and the Slovak Republic, and the partner countries the Russian Federation, Tunisia and Uruguay, the percentages of students from the bottom quarter having access to a computer at school are more than 10% lower than those from the top quarter. This variable pattern across countries also applies to access to computers in places other than home or school, although here some countries have more substantial differences by background. In the partner country Tunisia, such computers are available to 81% in the top quarter, but only 28% in the bottom quarter. The gap between the top and the bottom quarters is between 20 and 35

4 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/digital-divide-education-knowledge-society/17643](http://www.igi-global.com/chapter/digital-divide-education-knowledge-society/17643)

## Related Content

---

### A Proposed Grayscale Face Image Colorization System using Particle Swarm Optimization

Abul Hasnat, Santanu Halder, Debotosh Bhattacharjee and Mita Nasipuri (2017). *International Journal of Virtual and Augmented Reality* (pp. 72-89).

[www.irma-international.org/article/a-proposed-grayscale-face-image-colorization-system-using-particle-swarm-optimization/169936](http://www.irma-international.org/article/a-proposed-grayscale-face-image-colorization-system-using-particle-swarm-optimization/169936)

### VR and AR Technologies Integrated Intelligent Transport System

Sarika Ghanshyam Jadhav, N. Zahira Jahan, S. Karthiga, A. Punitha, K. Neeraja and Ravi Kannan (2025). *Virtual and Augmented Reality Applications in the Automobile Industry* (pp. 111-136).

[www.irma-international.org/chapter/vr-and-ar-technologies-integrated-intelligent-transport-system/378008](http://www.irma-international.org/chapter/vr-and-ar-technologies-integrated-intelligent-transport-system/378008)

### Virtual Analysis of Airflow in Automobile Engines Using Computational Fluid Dynamics (CFD) Simulations: Integrating Fine Mesh for Enhanced Intake Efficiency

Mahesh Argade, Sandeep Gangaram Thorat, Sandeep Ohol, Kaustubh Saka and Ritesh Joshi (2025). *Virtual and Augmented Reality Applications in the Automobile Industry* (pp. 407-434).

[www.irma-international.org/chapter/virtual-analysis-of-airflow-in-automobile-engines-using-computational-fluid-dynamics-cfd-simulations/378019](http://www.irma-international.org/chapter/virtual-analysis-of-airflow-in-automobile-engines-using-computational-fluid-dynamics-cfd-simulations/378019)

### Teaching and Learning Abstract Concepts by Means of Social Virtual Worlds

David Grioland Zoraida Callejas (2017). *International Journal of Virtual and Augmented Reality* (pp. 29-42).

[www.irma-international.org/article/teaching-and-learning-abstract-concepts-by-means-of-social-virtual-worlds/169933](http://www.irma-international.org/article/teaching-and-learning-abstract-concepts-by-means-of-social-virtual-worlds/169933)

### An Exploratory Study Examining Group Dynamics in a Hackathon

Alana Pulayand Tutaleni I. Asino (2019). *International Journal of Virtual and Augmented Reality* (pp. 1-10).

[www.irma-international.org/article/an-exploratory-study-examining-group-dynamics-in-a-hackathon/239894](http://www.irma-international.org/article/an-exploratory-study-examining-group-dynamics-in-a-hackathon/239894)