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## New trends in ICT regarding education

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### Abstract

In the 21st century and because of the exponential growth of the Internet and Information Communication Technologies (ICT), people lived in a technological age, in all areas and in all contexts, we have daily contact with technology, with access to information, linked to it, we have a constant update of technological services and tools that change the method we study, work, communicate and socialize on an unprecedented scale. These constant changes oblige everyone regardless the age, gender or profession to possess a range of functional and critical thinking skills, such as Information Literacy, Media Literacy and Technology Literacy. This evolution, forces, the promoters of education, to be always aware of changes that society is introducing outside of the classroom. Today students don't have the same role that used to, independently of age, they are very active and no longer the same introverted child that studied a few years ago in the classrooms. Also the educational environments can be created anywhere and used everywhere. According to this, students are used to seeking different forms and ways of motivation in and out of the classroom, they need that the learning and teaching process move along with the society and ICT changes. In order to ensure the success of today's students, it's important to give them the technological skills to make the correct use of ICT, to perform essential tasks for their training such as research and information selection, problems solvers and decision makers, creative and effective users of productivity tools and communicators, collaborators, publishers and producers of contents. The main purpose of this communication is, to show a part of ICT tools that can be used in educational settings to support learners, helping them to develop key skills in their training process, it's also relevant to show how these tools can help teachers to achieve these objectives on the daily activities.

**Keywords:** ICT; education; web 2.0; animaker; youtube; scratch.

### Resumo

No século XXI e por causa do crescimento exponencial da Internet e das Tecnologias de Comunicação da Informação (TIC), as pessoas vivem numa era tecnológica, em todas as áreas e em todos os contextos. Temos contacto diário com tecnologia, com acesso à informação e associado a este fenómeno existe uma constante atualização de serviços tecnológicos e ferramentas que mudam os métodos de estudo, trabalho, comunicação e socialização numa escala sem precedentes. Essas mudanças constantes obrigam a todos, independentemente da idade, sexo ou profissão, a possuir uma gama de habilidades de pensamento funcional e crítico, como literacia para a informação, literacia para os media e literacia tecnológica. Essa evolução, força os responsáveis da educação, a estarem sempre conscientes das mudanças que a sociedade está introduzindo fora da sala de aula. Hoje, os alunos não têm o mesmo papel que há uns anos atrás. As crianças são muito ativas, não revelando os comportamentos introvertidos que anteriormente evidenciavam. Além disso, os ambientes educacionais podem ser criados em qualquer lugar e usados em todo o lado. Os alunos estão habituados a procurar diferentes formas de motivação dentro e fora da sala de aula, eles precisam que o processo de ensino-aprendizagem acompanhe as mudanças da sociedade e das TIC. A fim de garantir o sucesso dos estudantes de hoje, é importante dar-lhes as habilidades tecnológicas para fazer o uso correto das TIC, para executar tarefas essenciais para sua formação, como a pesquisa e seleção de informações, aprender a solucionar

problemas e a tomar decisões a ser utilizadores efetivos das ferramentas de produtividade, comunicação e colaboração, bem como serem editores e produtores de conteúdos. O principal objetivo desta comunicação é mostrar uma parte das ferramentas de TIC que podem ser usadas em ambientes educacionais para apoiar os alunos, ajudando-os a desenvolver habilidades-chave no seu processo formativo. Pretendemos também mostrar como é que essas ferramentas podem ajudar os professores a alcançar os objetivos pedagógicos nas atividades diárias.

**Keywords:** ICT; educação; web 2.0; animaker; youtube; scratch.

## 1 ICT tools for education

The evolution of the Internet has allowed all its users to be also content authors, and has a large set of services and applications that allow everyone to create and share content in a simple way. This set of services and applications that enable the creation, editing and sharing of content can be classified as Web 2.0.

Several authors (Grosseck, 2009; Darwish & Lakhtaria, 2011; Nugultham, 2012; Sivrajah, Irani & Weerakkody, 2015; Danciu & G. Grosseck, 2011) have already analyzed the impact of Web 2.0 on society in a wide variety of contexts. Several authors have pointed out that it has substantially altered the way we communicate, learn, teach and work (Crompton, 2012).

Richardson (2009) notes that using Web 2.0 in educational contexts can create interactive educational environments that enable students to become simultaneously knowledge creators, producers, editors, and evaluators.

Web 2.0 tools are offering new opportunities for education. When used correctly, we can improve students' skills, learning, collaboration, environments, innovation, and creativity from an individual and group perspective of students (Shirley et al., 2013).

The use of internet in school can make possible to create educational environments that are more motivating, integrative, and dynamic (Gavrilakis & Sofoulis, 2002).

In the last decade the number of tools grow in all areas and enable students to access to a vast set of resources that can be used to create content, share ideas or understand educational subject.

We can classify the tools into four main categories:

- Instructional Tools - this category includes tools such as e-learning authoring tools, quizzing tools, web course platforms, LMS and Learning Platforms.
- Content Development Tools - in this category are considered tools that allow the development of content, such as office tools, blogging and website tools, content development tools, screen capture and screencasting tools, forms and survey tools.
- Social Tools - this category groups email tools, messaging apps, social networks, file sharing tools, webinar and meeting tools, team and enterprise collaboration tools.
- Personal Tools - in this category we can find tools like mindmapping tools, web resources tools, personal information / learning systems and productivity tools and apps.

In each category, it is possible to find a large number of tools that can be used in the most diverse educational context (Table 1).

In school is possible to use tools in different ways and context for example to deepen and share knowledge, work in a group, promote skills, and do some kind of activities:

- Make search activities in Web through a web search;
- Use online resources to deepen and share knowledge;
- Use social networks as a sharing and collaboration environment;
- Create and share content with Content Management System (CMS);
- Developing platforms, editing documents and multimedia contents;
- Gamification to deepen knowledge.

Table 1: Educational Category tools.

Category	Tools
Instructional Tools	Course authoring tools: Camtasia <sup>1</sup> , Articulate 1, and EasyGenerator <sup>2</sup> ; Learning Management Systems (LMS) and Learning Platforms: Moodle <sup>3</sup> , Canvas <sup>2</sup> and Google Classroom <sup>4</sup> ; Portfolio platforms: Mahara <sup>3</sup> and Pathbrite <sup>2</sup> ; Webinar tools: WebEx <sup>2</sup> Adobe Connect <sup>1</sup> and GoToMeeting <sup>1</sup> ; Classroom and audience response tools: Kahoot <sup>4</sup> , Socrative <sup>4</sup> and Poll Everywhere <sup>4</sup> ; Educational tools: Quizlet <sup>2</sup> , Turnitin <sup>5</sup> and Grammarly <sup>4</sup> .
Content Development Tools	Documentation tools: Google Docs <sup>4</sup> , Pixton <sup>1</sup> , and Scrivener <sup>1</sup> ; Presentation tools: Canva <sup>1</sup> , Google Slides <sup>4</sup> , Prezi <sup>2</sup> and Slideshare <sup>4</sup> ; Animated explainers: Powtoon <sup>2</sup> , GoAnimate <sup>1</sup> and Moovly <sup>2</sup> ; Video mashup tools: TED-Ed <sup>4</sup> , EdPuzzle <sup>4</sup> , and ThingLink <sup>2</sup> ; Video/Moviemaking/editing/platform: YouTube <sup>4</sup> , Vimeo <sup>2</sup> , Animoto <sup>2</sup> , and WeVideo <sup>2</sup> ; Screen capture and screencasting tools: Screencast-O-Matic <sup>2</sup> and Clarify <sup>2</sup> ; Graphics and diagramming tools: Canva <sup>2</sup> and Piktochart <sup>2</sup> ; Blogging and website tools: WordPress <sup>3</sup> , Blogger <sup>2</sup> , and Weebly <sup>2</sup> ; Survey forms: Google Forms <sup>4</sup> and SurveyMonkey <sup>2</sup> .
Social Tools	Team/group messaging apps: Skype <sup>2</sup> and WhatsApp <sup>4</sup> ; Group Video tools: Skype <sup>2</sup> and Google Hangouts <sup>4</sup> ; Collaboration tools: Google Docs <sup>4</sup> and Padlet <sup>4</sup> ; File synchronization, and sharing: Google Drive <sup>4</sup> and Dropbox <sup>4</sup> ; Public social networks: Twitter <sup>4</sup> , Facebook <sup>4</sup> , and LinkedIn <sup>4</sup> .
Personal Tools	Online resource collections: YouTube, Slideshare <sup>4</sup> , TED Talks <sup>4</sup> and Vimeo <sup>2</sup> ; Online courses/learning platforms: Coursera <sup>4</sup> , Khan Academy <sup>4</sup> , and Duolingo <sup>4</sup> ; Bookmarking and curation tools: Pinterest <sup>4</sup> , Diigo <sup>2</sup> , and Scoopit <sup>2</sup> ; Search & research tools: Google Search <sup>4</sup> , Wikipedia <sup>4</sup> and Google Scholar; Mind mapping tools: MindManager <sup>1</sup> and XMind <sup>2</sup> ; Note-taking: Evernote <sup>2</sup> and OneNote <sup>4</sup> ; Personal productivity tools: Pocket <sup>4</sup> and Google Translate <sup>4</sup> .

1 – Commercial, Free trial | 2 - Free and Premium versions | 3 – Free, Open source | 4 – Free | 5 – Commercial

## 2 Tools that promote new education environments

In all fields of education and in different contexts it is possible to include ICT tools in educational activities. Our selection was based on the use and implementation for elementary education.

This paper describes an approach we use in several workshops to teach children in learning mathematics with ICT.

The activity was planned to be implemented in the classroom for the primary school.

In the area of mathematics, a set of activities were designed that allowed students to address the following topics:

- addition and subtraction:
  - One-step or two-step problems involving adding, subtracting, and comparing.
- multiplication:
  - tables;
  - One-step or two-step problems involving multiplicative situations in the additive and combinatorial directions.
- Money:
  - Money bill in euros and cents involving numbers;
  - One-step or two-step problems involving measures of different magnitudes.

### 2.1 YouTube

Using online resources, like video or animation contents is a powerful tool in educational environments (Arvanitidou et al., 2015). Platforms like Youtube can be used as tools for discovery, understanding, or knowing different approaches, facilitating communication, collaboration and the sharing of ideas.

Through YouTube videos, it is possible to deepen knowledge, to discover new methodologies and approaches, encouraging teamwork activities by sharing videos among the group of students.

In this case, we use some videos to introduce a new subject, multiplication table (Figure 1), so teachers present in the workshop verified how the students actively participated and integrate the multiplication table in a different way. They even mentioned that it was the first time they addressed the subject in classroom and students show a completely different attitude, more focused and motivated.



Figure 1: YouTube video example 1.

## 2.2 Animaker

Animaker tool enables students and teachers to create animated videos with cartoons. With animation is possible to improve a new way to encourage children to communicate stories, ideas, and concepts.

With its animated presentations, students can comprehend the complex concepts (Dalacosta et al., 2009). Since it is an analogy to cartoons, students will get hooked to it. The animated videos allow teachers to transform the contents that are usually annoying for students or difficult to teach in interesting content.

We agree to use Animaker because enables to improve a create environments where is possible the convergence of education and entertainment. The content produce in Animaker engage students in the process of learning, is possible to use interactive training materials that grabs the attention of the students.

In our workshops, we use Animaker (Figures 2 and 3) to introduce complex problems in the area of mathematics and explain how to use math concepts to solve and use in situations that we all deal in our daily lives.

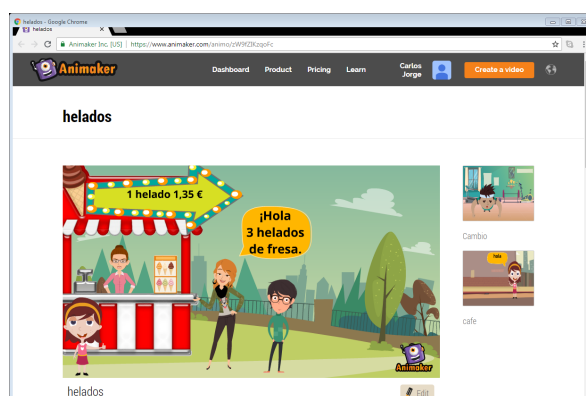


Figure 2: Animaker video example 1.

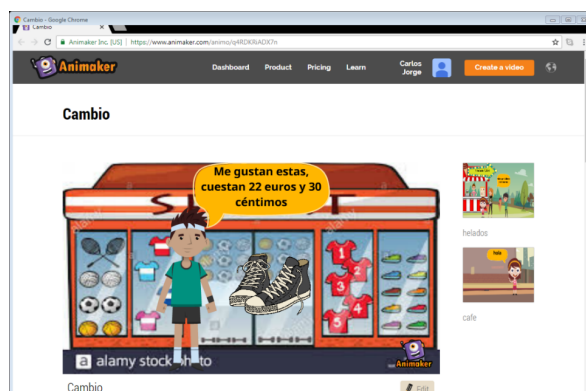


Figure 3: Animaker video example 2.

## 2.3 Scratch

Scratch is a programming environment, based upon LOGO, which allows teachers and students to easily create multimedia applications like games, animations, videos, presentations or quiz style application (Monroy-Hernández and Resnick 2008).

Scratch applications are designed and can be shared on the Scratch website, is also possible to find thousands of applications created by others users which can be downloaded and remixed into new Scratch application.

To use in workshops we create applications (Figure 4 and Figure 5) in the area of mathematics that allowed students to apply the following topics:



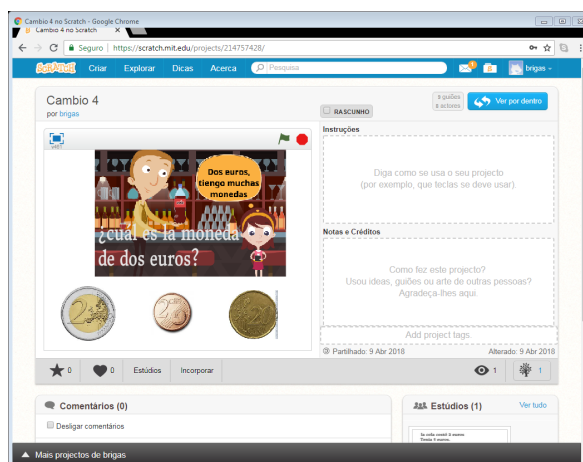


Figure 4: Scratch tool example 1.

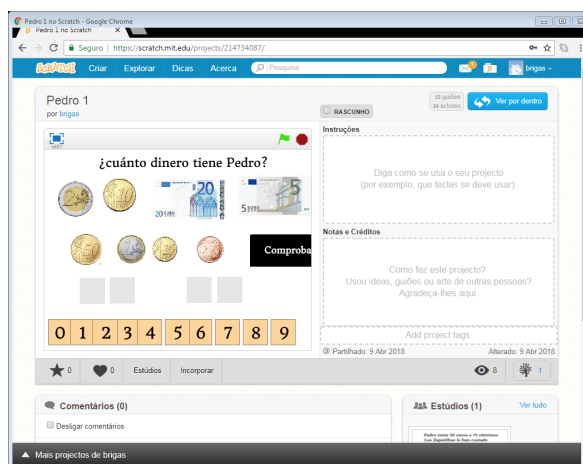


Figure 5: Scratch tool example 2.

- Addition and subtraction.
  - One-step or two-step problems involving adding, subtracting, and comparing.
- Multiplication:
  - tables;
  - One-step or two-step problems involving multiplicative situations in the additive and combinatorial directions.
- Money
  - Money bill in euros and cents involving numbers.
  - One-step or two-step problems involving measures of different magnitudes.

### 3 Conclusions

ICT in many schools is treated as an independent part of the curriculum with pupils trained in a computer lab to use computer applications as an office worker might use computer software as part of their daily routine.

Nowadays is very easy to find tools that can be used in education, in all fields, and in different contexts, it is possible to include ICT tools. Our selection was based on the useful knowledge we have using these tools and the primary school curriculum.

With these tools, teachers can promote several different activities in environments education, and it's possible to implement environments that promote creativity, interaction, and learning environments in which learners have an active role.

For us the main purpose of this tools is the support that they can bring to students, helping them to develop key skills in their learning and training process, it's also relevant to show how these tools can help teachers to achieve these objectives on the daily activities.

The ICT world surrounds us, in every area, thus Education should not be apart of the normal rule and needs to use it actively in a daily basis.

## 4 References

- Arvanitidou, V., Antoniou, P., Michalopoulou, M., Digelidis N., & Serbezis, G. (2015). YouTube: an educational tool in environmental education. *International Journal of Education and Research*, 3(4).
- Crompton, H. (2012). *How Web 2.0 is changing the way students learn: the darwikinism and folksonomy revolution*. Accessible in <https://eieed.campussource.de/archive/8/3240>
- Dalacosta, K., Kamariotaki-Paparrigopoulou, M., Palyvos, J., & Spyrellis, N. (2009). Multimedia application with animated cartoons for teaching science in elementary education. *Computers & Education*, 52, 741-748. DOI: 10.1016/j.compedu.2008.11.018.
- Danciu, E. & G. Grosseck, G. (2011). Social aspects of web 2.0 technologies: teaching or teachers'challenges?. *Procedia Social and Behavioral Sciences*, 15, 3768-3773. DOI: 10.1016/j.sbspro.2011.04.371
- Darwish, A., & Lakhtaria, K. (2011). The impact of the new Web 2.0 technologies in communication, development, and revolutions of societies. *Journal of Advances in Information Technology*, 2(4). DOI: 10.4304/jait.2.4.204-216
- Gavrilakis, K. I., & Sofoulis, K. M. (2002). *A web environment for planning environmental education programs*. In A. Dimitrakopoulou (Ed.), *Technologies of information and communication in education*, A, 325-334. Athens.
- Grosseck, G. (2009). To use or not to use web 2.0 in higher education?. *Procedia Social and Behavioral Sciences*, 1, 478-482. DOI: 10.1016/j.sbspro.2009.01.087
- Monroy-Hernandez, A., & Resnick, M. (2008). Empowering kids to create and share programmable media. *Interactions*, 15(2), 50-53.
- Nugultham, K. (2012). Using web 2.0 for innovation and information technology in education course. *Procedia - Social and Behavioral Sciences*, 46, 4607-4610. DOI: 10.1016/j.sbspro.2012.06.305
- Richardson, W. (2009). *Blogs, wikis, podcasts, and other powerful web tools for classrooms* (2nd ed). Thousand Oaks, CA: Corwin Press.
- Shirley A., David, B. Susan M., Mackay, A., Selinger, M., & Whitby G. (2013). *Beyond the classroom: a new digital education for young Australians*. In the 21st Century Digital Education Advisory Group
- Sivarajah, U., Irani, Z., & Weerakkody, V. (2015). Evaluating the use and impact of web 2.0 technologies in local government. *Government Information Quarterly*, 32, 473-487, <http://dx.doi.org/10.1016/j.giq.2015.06.004>