



# The evolution of computers in society

Addressing learning outcomes  
and building key skills

Resources and strategies for the  
**LEAVING CERTIFICATE COMPUTER  
SCIENCE CLASSROOM**

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# Overview

The Leaving Certificate Computer Science (LCCS) specification is constructed into 3 strands: Practices and principles, Core concepts and Computer science in practice. The learning outcomes are interwoven across the 3 strands. Many learning outcomes across all 3 strands can be achieved through a blended pedagogy of group activities with guided exploration and creative problem solving.

## Suggestions on how to use this resource

This resource aims to primarily support the learning outcomes around Computers and society, and the evolution of computers in society, in **strand 1**, and also the core concept of Computer systems in **strand 2**.

The resources and strategies provided are intended mainly for the teacher to use in the classroom. They can be used in the context of an Applied learning task (ALT) or simply as classroom strategies to engage students in wider ethical and cultural questions. They are not prescriptive and the concepts do not have to be taught in the order they are presented. Teachers will discover many other ways of helping their students achieve the learning outcomes. Much of the learning around computers and society and the direction of technological development can be facilitated by teachers with classroom techniques, such as *Power of Persuasion*, *Think-Pair-Share-Snowball* and *Stimulate a Debate*, which are described within this resource. There are also design and development activities, plus ideas for other suitable activities. The resource itself, with guidance and differentiation from the teacher, can be used as a learning platform by students.

**Material that is suitable for Higher Level only is indicated by an orange bar to the side.**

The evolution of computers in society is outlined below. Each development in the evolution is used as a platform to study subsequent related developments. In this sense the learning outcomes can be achieved in an iterative and non-linear fashion. The [learning outcomes](#) can be viewed at curriculum online.

# 100 Years of Computing Developments

Early Computers and Computing Technology

**1936**  
The Turing Machine

**1942-1946**  
First Electronic Computers:  
*Colossus and ENIAC*

**1947**  
Solid State Transistors

**1953**  
Invention of High Level Programming Languages

**1958**  
Integrated Circuits

**1973**  
Mobile Phones and Interconnected Computers

**1977**  
First modern PC - Apple II

**1989**  
The World Wide Web

**2000-2020**  
Cloud Computing and the Smart Phone

Emerging trends in the 21st century

## Encouraging successful groupwork

Here are some ideas on how to set up and encourage effective groups.

<p><b>Heterogenous members</b></p>	<p>Avoid friendship groups. At the start, students may object to being separated from their friends. Explain that the groups will change regularly. Groups could be <a href="#">generated randomly</a>. Keep groups small to begin with.</p>
<p><b>Social skills need to be taught</b></p>	<p>Teachers must teach the skills needed for group work, such as listening skills, leadership skills (shared and rotated), conflict resolution skills, how to give feedback, how to encourage each other, etc. "<a href="#">Be Kind, specific, and helpful</a>" (Berger)</p>
<p><b>Ensure everyone feels accountable for their own work and for the work of the group</b></p>	<p>Teachers can ensure that the group is accountable while at the same time making sure that there is individual accountability. For example by randomly selecting one student to explain the group's answer or giving out role cards so it is clear who is the designer, reporter, communicator, etc.</p>
<p><b>Create positive interdependence</b></p>	<p>The teacher structures work in such a way that students need each other in order to complete the task.</p> <p>This can be achieved:</p> <ul style="list-style-type: none"> <li>▶ when the teacher sets a shared task or goal, and explains that all the group members must be able explain how it was arrived at</li> <li>▶ when resources are shared (one worksheet between each pair/small group)</li> <li>▶ when the teacher requests one end product and there is a shared and named input from each member</li> </ul>
<p><b>Both the task and relationships are important</b></p>	<p>Cooperative learning groups try to increase students' learning and maintain good working relationships. Students need to be reminded to observe how they are succeeding with both.</p>
<p><b>Make time for group reflection/evaluation</b></p>	<p>The students need time to discuss how well they are achieving their goals and how they are working together. Questions such as "What worked well in the group today?" and "How can you work better next time?" are useful.</p>

Adapted from Johnson, Johnson and Holubec, *Cooperation in the Classroom*.