

Teaching programming with Python and the Blender Game Engine

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Shut down or restart?

The way forward for computing in UK schools

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EXCELLENCE
IN SCIENCE



THE ROYAL SOCIETY

DWINDLING ENTHUSIASM

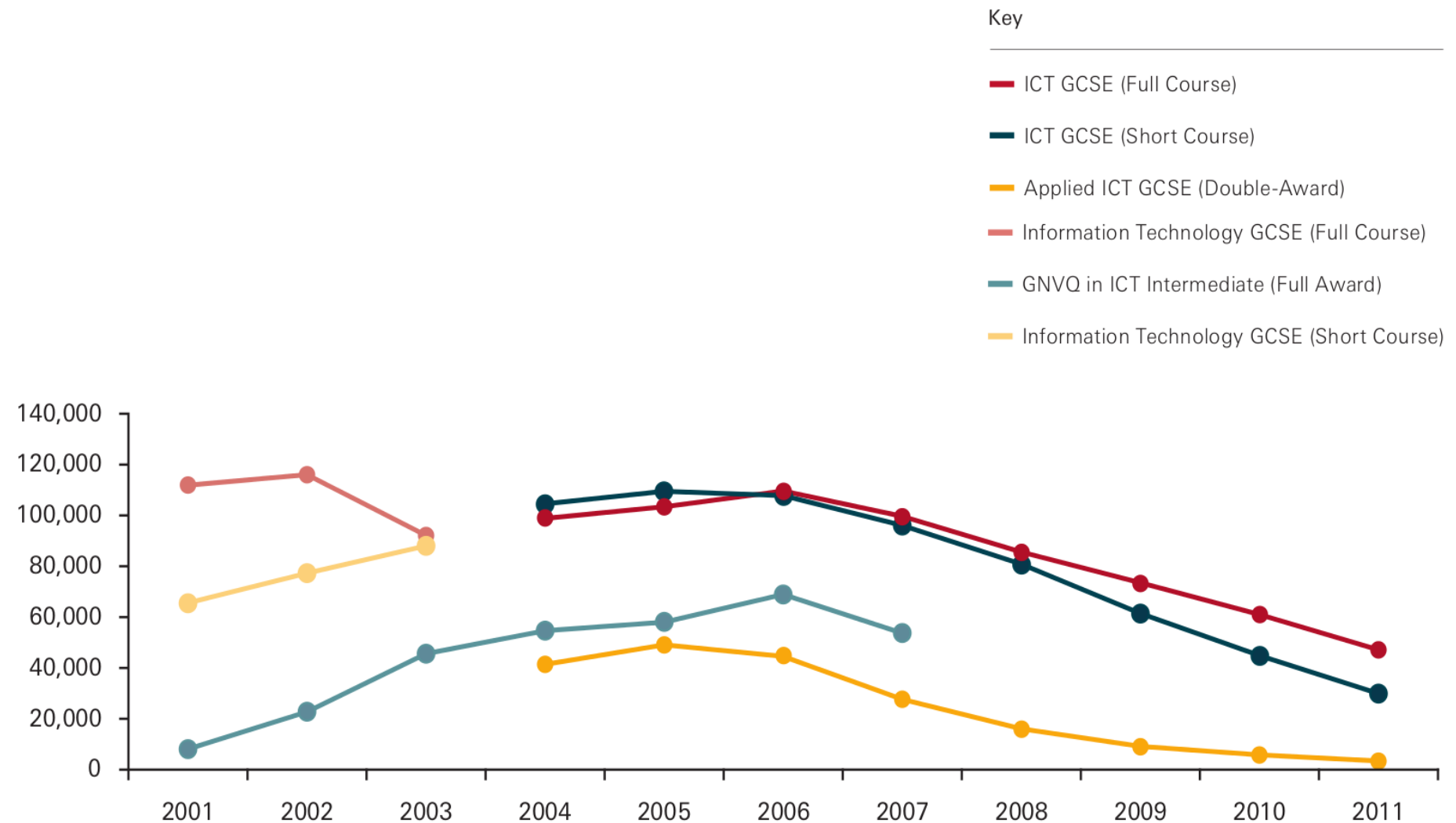
SHORTAGE OF SPECIALIST TEACHERS

HIGHLY UNSATISFACTORY

BORING

**LACK OF CONTINUING
PROFESSIONAL DEVELOPMENT
FOR TEACHERS**

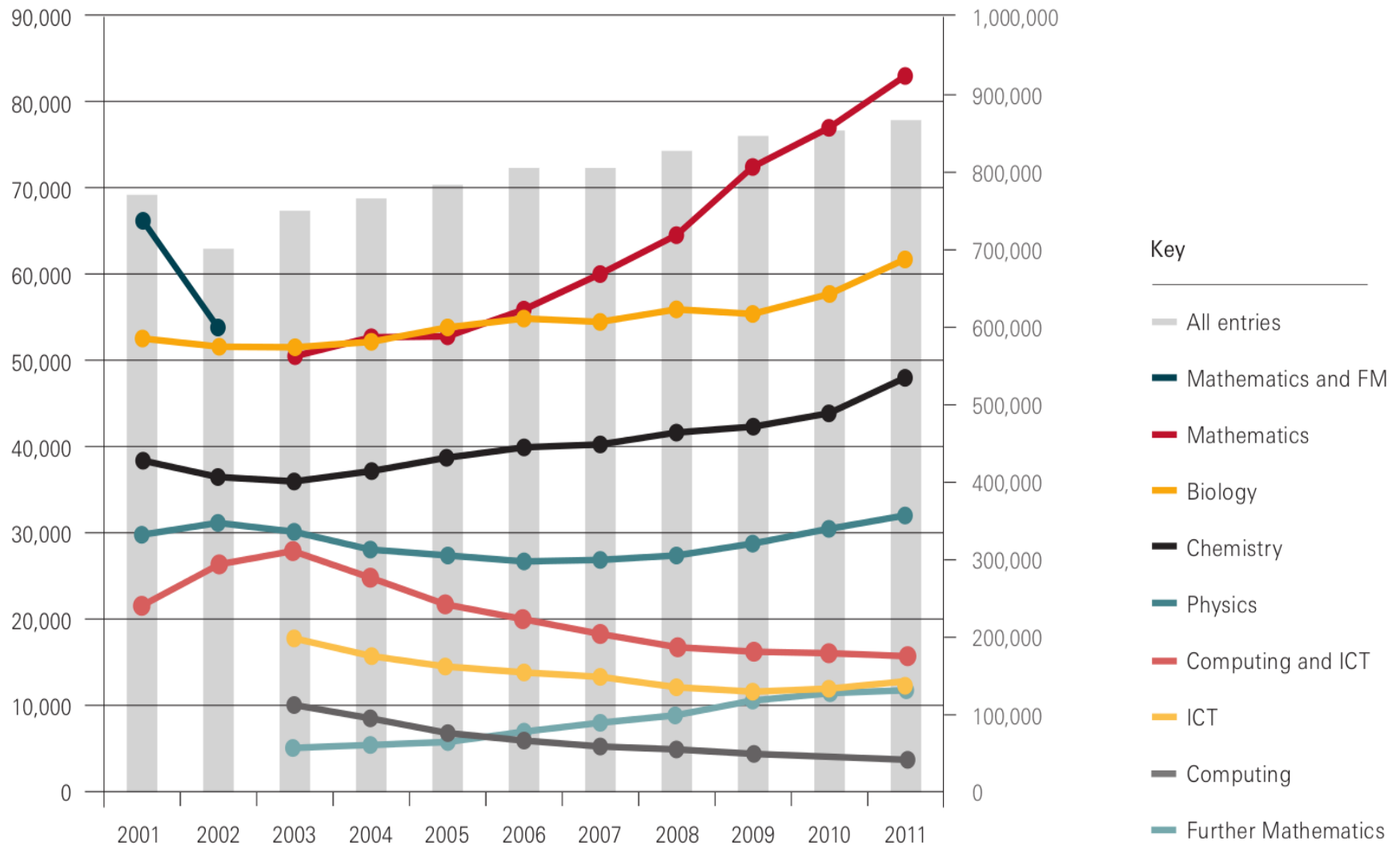
Total number of GCSE entries in ICT and Computing subjects across England, Wales and Northern Ireland (2001–2011)



Source: JCQ.

- The Royal Society

Total number of UK GCE A-level entries in science and mathematics subjects (2001–2011)



Source: JCQ.

- The Royal Society

**“ Suitable technical resources should be
available in
all schools to support the teaching of Computer
Science and Information Technology. These
could
include pupil-friendly programming
environments [...] ”**

“VISUAL CONTEXT”



(Crawford and Boese, 2006)

SCRATCH



File Edit Share Help



Motion

Control

Looks

Sensing

Sound

Operators

Pen

Variables

www.softpedia.com

Make a variable

Delete a variable

☒ Softpedia

set Softpedia to 0

change Softpedia by 1

show variable Softpedia

hide variable Softpedia

Make a list



Sprite1



x: 10

y: 0

direction: 90

Scripts

Costumes

Sounds

```
move 10 steps
point in direction 90
change x by 10
if on edge, bounce
turn 15 degrees
turn 15 degrees
move 10 steps
change x by 10
if on edge, bounce
say Hello! for 2 secs
think Hmm... for 2 secs
change size by 10
play sound meow
set volume to 100 %
rest for 0.2 beats
pen down
set pen color to
change pen size by 1
stamp
pen up
wait 1 secs
when space key pressed
wait 1 secs touching color
if mouse down?
length of world
= join hello world
```

Softpedia

0



x: -62

y: -394

New sprite:



Sprite1



Stage

skillwheel | Processing 2.0a6

File Edit Sketch Tools Help

STANDARD

skillwheel

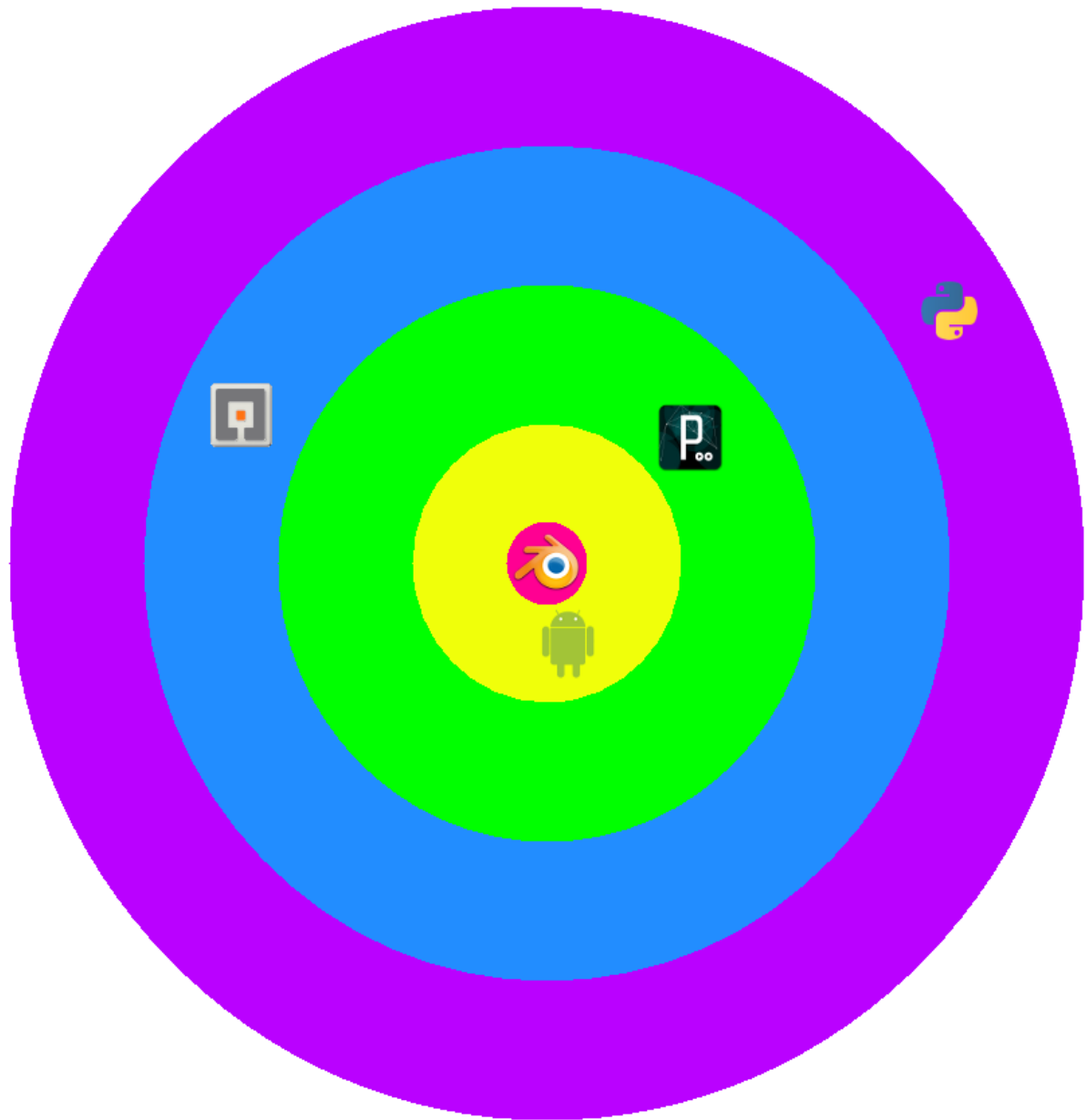
```
/* @pjs preload="NXT.png, android.png, blender.png, processing.png,
*/

PImage processing;
float t = 0.0;
PImage python;
PImage blender;
PImage nxt;
PImage android;

int state = 0;

void setup() {
  background(0);
  size(1000,1000);
  processing = loadImage("processing.png");
  python = loadImage("python.png");
  blender = loadImage("blender.png");
  android = loadImage("android.png");
  nxt = loadImage("NXT.png");
}
```

1





“[...] market appeal / industry demand / student demand is one of the most important factors affecting language choice in computer science education.” (Arnolds et. al.)

**“[...] such specialized teaching environments leave [students] without a real-world programming language upon graduation”
(Crawford & Boese, 2006)**



TIOBE Index for September 2012

