

## ICT MODEL FOR EDUCATORS

*This ICT Model has been created by and for the eFuture european funded project. While it can be applied as a model to the teaching of any subject and in any area it has a bias towards working with a particular group of students, Youth at Risk of NEET - students identified as being in danger of dropping out of formal education and training and not being employed.*

*The eFuture project was tasked to create a programme for this target group that employed ICT as a major driver - looking to either re-engage these learners through moving away from traditional classroom teaching or to equip them with tools and skills that would make them more employable if they did drop out of the system.*

*As such, there is an emphasis throughout on relating learning and subject mater to "real-life" practicalities i.e. how can you use what you're learning here and apply it in the "real-world" of employment, socialisation or further education.*

*This could well be a strategy that would work for whatever you are teaching - but if you feel that it does not apply in your situation then please set that advice aside and use the rest of the model as you require.*

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*To live, learn, and work successfully in an increasingly complex, information-rich and knowledge-based society, students and teachers must utilize technology effectively. Within a sound educational setting, technology can enable students to become:*

- *Capable information technology users*
- *Information seekers, analyzers, and evaluators*
- *Problem solvers and decision makers*
- *Creative and effective users of productivity tools*
- *Communicators, collaborators, publishers, and producers*
- *Informed, responsible, and contributing citizens*

*Through the ongoing and effective use of technology in the schooling process, students have the opportunity to acquire important technology capabilities. The key individual in helping students develop those capabilities is the classroom teacher.<sup>1</sup>*

The purpose of this model is not to denigrate or to replace any current models that educators are using but to offer alternative and additional strategies for working with students through ICT. Consider this model as part of a "blended learning" approach to teaching – take from it those elements that work best with your students, your subject and your class composition.

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<sup>1</sup> *ICT Competency Stanards for Teachers; 2008*

<http://cst.unesco-ci.org/sites/projects/cst/The%20Standards/ICT-CST-Policy%20Framework.pdf>  
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As ICT is an “enabler”, it supplies the means and/or opportunity to accomplish something, so this model views the teacher – as an enabler, working with students as guide, mentor and facilitator on their active route to learning – but this is only one part of what being a teacher is about and you must make your choices about how effective it will be based on your own experiences and your own situation.

## ICT

For the purposes of this model we define ICT using C. Blurton’s 2002 definition ICT is “a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information”<sup>2</sup> These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony.

When applied to education, we hold implicit within this definition that learning can occur asynchronously and at distance – the traditional classroom environment is not a pre-requisite for delivery and receipt of learning.

Further, we hold that even though the traditional classroom may still be the focal point of teaching and learning for much of the time, the practices and actions within that environment must change and that ICT is both the driver and the enabler for this change.

## The influence of Web 2.0 technologies

The advent of the Web 2.0 world is now becoming fully realised in all aspects of our lives – from purchasing decisions based on peer-review and feedback to the “always-on” news and communication channels of Twitter and Facebook. The impact is also emerging in the classroom (or perhaps we should say the “Learning Space” or “educational environment”). The expectations of our students have changed, they no longer expect (and did they ever enjoy?) all teaching to be didactic, led from the front and one-to-many. They expect and, in our opinion, learn more readily through “interactive and bi-directional communication systems”.

Our students live a part of their lives in “alternative spaces” – Facebook, YouTube, Xbox Live etc. And their communication and creation expectations have altered.

As educators we can, and must, respond to this – the use of ICT, and in particular Web 2.0 tools, favours and supports interaction and collaboration among students and enables new means of communicating and interacting both in real and asynchronous time.

Internet enabled ICT also provides access to “all the world’s knowledge” in an infinite resource library that can be tapped into, explored, exploited and shared.

## The role of the Teacher

Our ICT Model for Educators is based around open, flexible, experiential and explorative learning. Within this Model there is a shift in the role of the teacher. The teacher cannot be the single, authoritative source of knowledge any longer – how can you compete with the internet on that score? Rather, the teacher becomes a guide and mentor who can focus the students’

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<sup>2</sup> Blurton, C., “New Directions of ICT-Use in Education” 2002

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direction (as per syllabus or curriculum demands) and a “knowledge critic” who questions both the veracity of the information students are working with and also the amount of learning they have taken from that gained knowledge.

### **The role of the Student**

The student too has to adjust to a new role, in many cases more naturally than the teacher...

The student has to take on new responsibilities for their own learning:

- becoming an active learner, responsible and self-directed
- becoming accustomed to learning outside a classroom environment
- becoming more critical of “found knowledge”
- becoming a participant in group and peer work (often asynchronously and/or over distance)
- becoming an explorer or “locator” to find and filter appropriate information
- becoming a responsible “cataloger” of information and resources
- becoming an efficient, proactive and fast, adopter of ICT technologies as they emerge

### **Theoretical background**

Taking all of the above it becomes apparent that we are promoting a constructivist model of education enhanced by the use of ICT.

*Although innovative ideas on teaching and learning have been progressively introduced over the past few decades, traditional views have been difficult to change. Such views often consider students as “empty vessels” waiting to be filled with knowledge. Students are now learners who come to the classroom with their unique backgrounds, experience, conceptual understanding, learning styles and personal circumstances. Teachers now become learning facilitators rather than reservoirs of knowledge. Psychology of learning has shifted from behaviorism to cognitivism to constructivism.<sup>3</sup>*

Constructivism states that learning is an active, contextualized process of constructing knowledge rather than acquiring it. However, this doesn’t mean that teachers become redundant – instruction is not “outlawed” - rather, that it is another one of a series of ways that knowledge is gained. Constructivism assumes that all knowledge is constructed from the learner’s previous knowledge, regardless of how one is taught. Thus, even listening to a lecture involves active attempts to construct new knowledge.<sup>4</sup>

Further,

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<sup>3</sup> Chan, D. The Role of ICT in a Constructivist Approach To the Teaching of Thinking Skills  
<http://www.learnerstogether.net/PDF/ICT-in-Constructivist-Teaching-of-Thinking-Skills.pdf>

<sup>4</sup> <http://www.learning-theories.com/constructivism.html>  
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*For technologies to be used optimally, teachers must be comfortable with a constructivist or project-based, problem solving approach to learning; they must be willing to tolerate students progressing independently and at widely varying paces; they must trust students to sometimes know more than they do ... they must be flexible enough to change directions when technical glitches occur<sup>5</sup>*

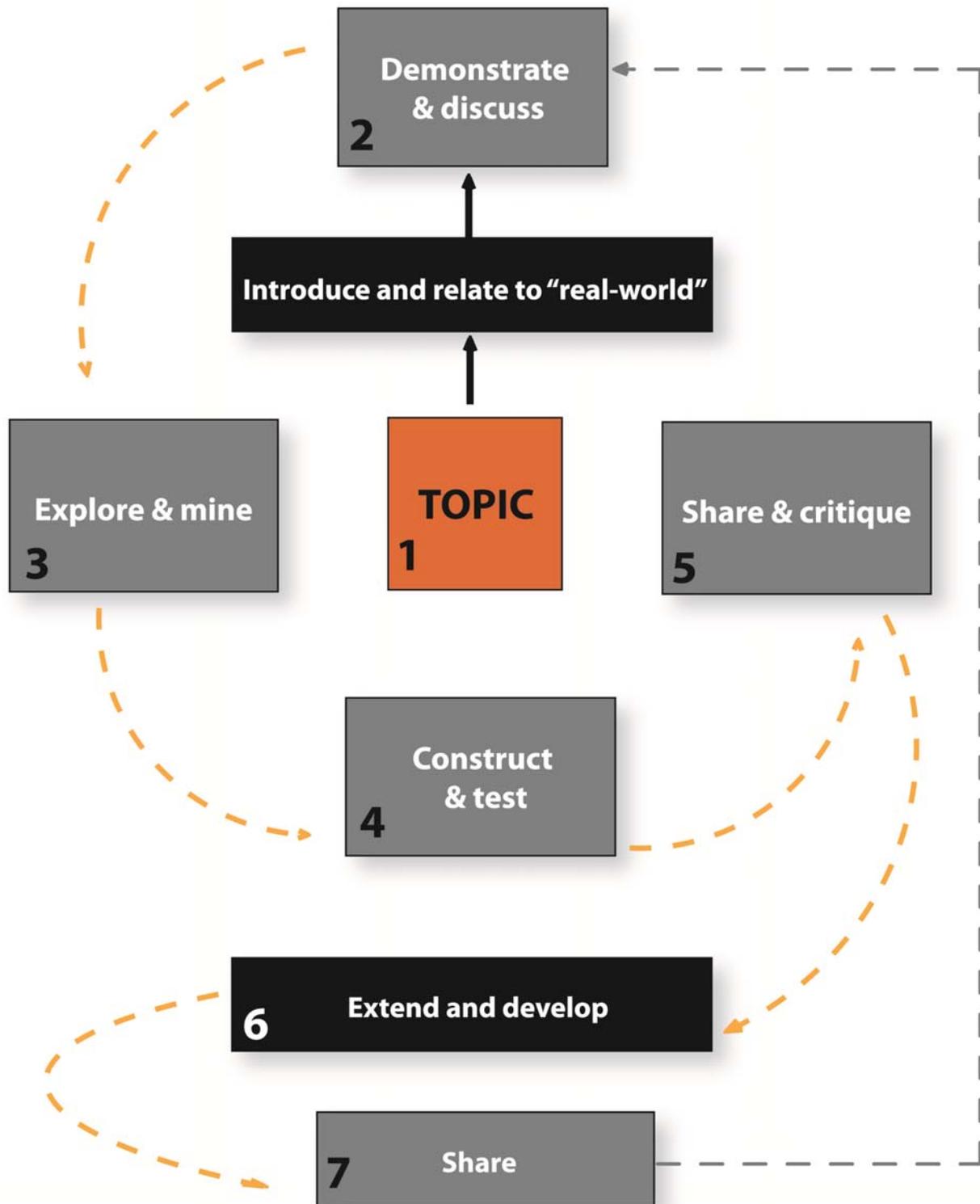
Our constructivist, ICT enabled, education environment will see students participating in knowledge construction, filtering and dissemination through collaborative, technology enhanced, activities. These may be separated by time and space but will exist within a meaningful context i.e. real life scenarios and direction and learning will be reviewed, criticised and embedded through peer-exchange and teacher/guide reinforcement.

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<sup>5</sup> Foa, L., Schwab, R.L. and Johnson, M. (1996) Upgrading school technology. Education Week, 52. Transforming progression and learning outcomes for Youth at Risk through ICTs, Web 2.0 and Mobile Learning.



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## The Model

The graphic above demonstrates the outline of our model which is explained in detail below. The model should be practical for any curriculum area or scenario.

It is also important to recognise that while we refer here to the “session” this need not necessarily occur in a single classroom session – it may be extended over time and space to encompass remote work, individual and group work outside the classroom and asynchronous work.

Note: The accompanying *Training Programme for Youth at Risk*, also created by the eFuture project, has been constructed using this model and methodology. You can access this at [www.efutureproject.eu](http://www.efutureproject.eu)

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### Step 1: Topic Introduction

A standard beginning to any instructional scenario – introduce the topic for investigation.

Review any learning from the previous session and show how it links with the new topic

Relate the topic to real-world – uses, scenarios etc.

Layout clearly what will be coming up in this session, what will be covered and what will be expected of students during and post-session.

**Notes and strategies:** This part of the session is, necessarily, teacher-driven and led from the front. However, it should be concise and inclusive.

**ICT usage:** The typical ICT usage here will be using standard classroom technologies – whiteboard, projector, video etc.

### Step 2: Demonstrate & Discuss

The topic that has been introduced is explained in more detail and practical demonstration, exemplars etc. are put forward. Abstract ideas are illustrated with solid examples.

Guide an ongoing discussion with students about what’s being presented.

**Notes and strategies:** Ensure a clear link between and abstract or theoretical work and its application to real-life situations that have resonance with the students. If discussing a tool or resource show it in use or get “hands-on” and have the students use it.

**ICT usage:** For demonstration to the students use video (exemplars, best practice, real-life usage). For discussion and reinforcement get students to take notes or make comments into the class wiki or onto their blog pages. Possibly pre-prepare a questionnaire using one of the online tools available e.g. Survey Monkey and have students complete this individually or as a group.

### Step 3: Explore & Mine

**Step 3 is where the student begins to get really actively involved with their own learning. Exploration and mining (we use the word mining in the “data mining” sense – to dig, delve and discover). Students are set the task of further researching and “digging down” into the subject that the teacher has set them. This is when the teacher steps out of his traditional role and becomes a guide and peer – helping to both discover and filter content alongside students.**

**Notes and strategies:** Give the students guidance about the kinds of things you expect them to return with. Give guidance over types of resource available and how to ensure veracity of information. To ensure learning is embedded get the students to present back and for their peers to feedback on findings.

**ICT usage:** The Internet is your key tool for exploration and mining but do not forget other resources available or the wealth of types of information available through ICT (video, academic research, newspapers etc.). For feedback and review there are many tools available from straight presentation to class, video presentation, published findings via wiki or blog etc.

### Step 4 : Construct & Test

This step revolves around specific task(s) set by the teacher. Students work towards “challenging goals”. The task(s) require them to apply the knowledge, theories, skills etc. that they have just been introduced to, explored and researched. This involves them in reasoning not just reproduction e.g. problem solving, making decisions, and creating things e.g. online CVs (Work Programme for Youth at Risk, Week One) or online mind-maps to work through a problem to solution(s).

It is here that students will, if learning a practical skills, learn the real practice of carrying out that skills or, if learning theoretical/abstract skills be able to examine them critically and use them constructively.

**Notes and strategies:** Group work and interaction can be a powerful learning strategy during this phase – allowing peers to build upon each other’s experience and understanding and to support one another. This need not happen in the same space or time but could well be conducted through an online environment over time and distance.

**ICT usage:** The use of ICT will vary here according to task and subject. Use any and all tools that are available and can aid communication, collaboration and construction.

### Step 5: Share & Critique

**Peer review, peer feedback and peer criticism are powerful tools for reinforcing and developing learner – both for the “giver” and the receiver- ensuring that both have to critically assess progress, outcomes and understanding. Step 5 is envisaged as a purely online**

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**process and is designed to occur outside of the classroom environment and over some period of time.**

**Students are asked to post to a blog, a forum or a wiki, some communication tool that allows user comments to be added and, if necessary, threaded discussions to occur.**

**Notes and strategies:** Don't make the time period for this too long or the subject will not be fresh in the mind. Do set a completion date when findings will be delivered back to the group. A good strategy is to get groups or individuals to present the findings and comments for another group or individual.

**ICT usage:** Students will require off-site access to the internet and to be comfortable with the chosen dissemination and feedback tools.

### **Step 6: Extend & Develop**

**Extension and development in Step 6 is viewed as extra reinforcement – it will not be necessary in all cases but will work well for particularly complex subjects or for extended project work. Here Steps 3 and 4 can be reintroduced in varying formats based on the interaction, review and feedback received in Step 5.**

**Notes and strategies:** It is suggested that Step 6 and 7 occur mainly online and over time and revolve around continued discussion and exploration/discovery of additional resources/knowledge around a subject.

**ICT usage:** As above and whatever fits the task

### **Step 7 : Share**

**Repetition of Step 5 based on outcomes of Step 6, where it's felt necessary or beneficial.**

**Notes and strategies:** Steps 6 and 7 can become cyclical and infinite depending on the needs of the class or individual.

**ICT usage:** As above

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This is our practical model for ICT for Educators.

Addendum: During our research we came across a very useful strategy for preparing students for the work expected of them (and preparing as a teacher). This came from Jim Judges, e-learning Advisor (Teaching and Learning) at the JISC Regional Support Centre in the West Midlands. He got the idea in turn from Pieter van der Hijden at the UK Moodle Moot 2007 held at the Open University. With a thank you to both we reproduce their thinking here as a help to implementing the model above.

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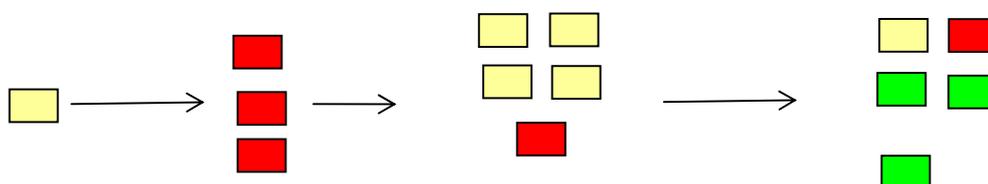
### Storyboarding your sessions

Suppose we are going to plan a mini Moodle course, though this method will also work for any course or assignment using a blended approach. First brainstorm some **learning activities** for your chosen topic.

Now write each activity on a mini coloured 'post-it' note using this colour code:

- **“Individual Activities” (red 'post-its')**. The students do these activities alone, so they can be done at any time to suit them, though there will probably be a deadline for completion.
- **“Synchronous Group Activities” (yellow 'post-its')**. These activities might be done by a group while they are together in class at the same time. Alternatively, they might do them while they are physically apart, but still at the same time. Examples include :
  - an online chat session,
  - a conference call; this could be an “old fashioned” telephone conference call or VOIP “Skype” conference (or similar) using voice over the phone or using a PC headset  
*(You could use different coloured 'post-its' for separated and same room activities.)*
- **“Asynchronous Group Activities” (green 'post-its')**. This is a group activity, but where the students don't need to be working at the same time. An example might be:
  - Add a comment to an online discussion forum, and then respond to another's comments
  - Add terms and their meanings to an online glossary. This can create a useful resource, and selected items in the glossary can be tested
  - Contribute to a wiki (a collaborative document). This is often better in small groups (3 or 4); each student must add one or two examples or ideas and must also edit and improve the existing content (spelling, format, layout etc) until a final finished collaborative document is produced. e.g. "Give two or three examples of something you should do in preparation for an interview" would produce a document with 10-12 useful tips and ideas. An extension activity could be to sort items by importance or into chronological order, or to group items under their own headings.

**Storyboarding** with post-its can be used to create a flow diagram of tasks



Now that you have decided on the activities, the next stage is to consider how Moodle (or whatever system you're using) will facilitate your post-it activities. For each activity, choose an appropriate tool to

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deliver that activity. For example you might use tools such as quizzes, chatrooms, databases etc. This information is then added to the tiny post-it.

Storyboarding is a very powerful exercise as: (a) it focuses on the activities to support learning not the technology (Moodle) (b) it encourages planning.

