

This interview was made by e-mail with Chris Brannigan, the CEO of Caspian Learning. Caspian Learning is British software based e-Learning organisation. They create interactive learning applications, in which students are immersed within a 3D games based environment. Their web site can be found here: <http://www.caspianlearning.co.uk/>. The interview was made in June 2005.

**What kind of educational and training games do you design?**

We create Learning Based Games for both schools and corporations. In all cases these involve the student as a character directing events and actions in real time within a 3D learning environment to solve different cognitive tasks.

**What is the target group of the games?**

Schools, Government bodies, corporations.

**What kind of educational elements do the games have?**

Content developed by subject experts that is precisely mapped to the learning objectives of the relevant curriculum or training requirement.

A range of different interactive cognitive tasks that target the curriculum/training requirement learning outcomes.

Within task performance monitoring features.

Post task quantitative and verbal feedback.

A mechanism that links different student behaviours performed during a cognitive task to materials in an overall knowledge base. Post task, the system automatically delivers appropriate revision materials to the student.

An electronic student workbook - during the performance of a cognitive task the system records information to the student work book specific to their performance, such as: learning goals covered; quantitative and verbal performance feedback; errors made; correct performance materials; revision materials and other subject content. Over time this becomes the students' personalised workbook on the subject.

A performance database that records data on a multitude of learning behaviours performed by students within the different types of cognitive task.

### **What is your approach to designing a game for educational purposes?**

Our technology focuses upon cognition performance. We begin by clarifying and listing the different learning outcomes that are required. Often, in the case of a curriculum these are already specified. If not, then we have a methodology for mapping requirements to levels of cognition on Blooms taxonomy and specific cognitive tasks. We then have a document that maps the required learning outcomes to different cognitive tasks.

We then create an Application Map that describes the overall application - the cognitive tasks that will feature within it; subject content that will feature within each task; 3D worlds that will be used; other graphical objects that will feature as elements within the different cognitive tasks.

Different work streams then focus upon each of these areas.

The final work package integrates these work streams. The additional monitoring, measurement and revision functionality modules are configured automatically by the engine and the application is then published.

### **What kind of pedagogical theory are your products based on (if any)?**

Mainly the cognitive and constructivist approaches.

Our core technology targets a student's ability to manipulate information about a subject area. Each cognitive task targets performance of a specific cognitive process, such as their ability to compare and contrast information across multiple categories, or to integrate new information with old in order to satisfy an outcome like a prediction. This is drawn very much from the cognitive / information processing domain and ideas around the use of cognitive tools to support learning.

We also draw on the constructivist approach in which individuals must actively construct knowledge/representations internally themselves (by cognitive processing?) rather than being a direct mapping with the outside world. This describes concepts of 'cognitive scaffolding' and informs much of our development of monitoring, mentoring, revision and measurement.

### **What kind of reception have your games got?**

Very good. Educators are very willing to consider learning based games when there are clear learning benefits to be seen.

The first applications were launched in Feb. 2005 are already being used in hundreds of schools and City Learning Centres across England. The technology was selected for a national project (DiDA) that will roll out learning based games to 4000 secondary schools and FE colleges during 2005 and 2006. A corporate project will see the technology deployed across 20 different countries in September.

### **What is your solution to the dilemma that the different type of learners and persons of different genders tend to like different kind of games?**

We have not found any gender differences using our technology.

The gender differences you refer to, to my knowledge, have been generated with reference to non educational commercial games used in leisure time or trialled in the classroom. We have found very different results when the Learning Based Game is:

- mapped directly to the students and teachers curriculum learning objectives (i.e. what the students and teachers are both ultimately assessed against)
- integrated into the overall lesson plan for a subject so can be flexibly combined with other classroom activities
- provides clear learning outcomes and measures with which to assess performance (important for both teachers and students)
- provides a range of tools to enable the teacher to facilitate and guide learning within the lesson

**According to some, players have a tendency to cheat or take the easiest/shortest path possible in the games. How should an educational game be designed to make it sure that the player doesn't skip important educational parts of the game?**

There are many ways to do this depending upon the learning design that you choose. For example, if you are using an unfolding narrative or story telling approach then the story may simply not progress until certain criteria are met.

In our approach, the teacher is central to this. The student can experience any of the cognitive tasks within the application. In the classroom the teacher will typically direct the class as appropriate to focus upon different tasks within the application. The performance monitoring, revision, measurement and workbook provide the teacher with many sources of performance evidence that can be viewed during or post lesson. However, in most cases the teacher will regularly draw the class together within a plenary to discuss what they have learned during the lesson.

If the student has decided to use the application in their own time then the performance tools will provide guidance as to their progression through the tasks based upon their performance. It is up to the student then to take heed of the performance advice which is recorded.

**What is your opinion on educational and training games in general? What kind of visions do you have on this?**

Too many of them start from the gaming perspective - how do we use gaming elements in the classroom - and not from the learning perspective - what do we know about learning and how can the elements and technologies of computer games enhance this.

**Have you been designing commercial entertainment games? If you have, how does designing an educational or training game differ from that?**

No.

However, I think that there are many differences that make the design and production of Learning Based Games very different. One of the major differences is in the expectations of the users - students and teachers. Kids using computer games in their leisure time want to be entertained. As students in schools they have very different expectations, and very much more is also expected of them. Teachers are key actors to consider when designing games for the classroom. We must be very aware of their objectives and the many different elements affecting their role.

**Caspian Learning has also been working on an authoring tool for teachers. Could you tell something about that? What kind of applications can the teachers create with it and what does it require from them?**

Teachers and students will be able to utilise templates of thinking tasks to change and create their own learning applications. For example, if a Physics teacher is running the application on 'Forces', they may wish to change the content to add in their own materials or refine the content to be more suitable to the demands of their own particular students. The teacher may want to add additional tasks to the application, etc. Or the teacher may get the students to amend and create learning content as part of their learning. They may have studied the 'French Revolution' for six weeks and in the final two weeks they would then be tasked to create their own learning tasks. One group of students may have to use the authoring tool to create a task in which king Louis XVI is interrogated by his accusers amongst the Revolutionaries. In the task, Louis XVI would put up a defence of his record and the task of the player would be to cross examine and take issue with his defence. Another group may have to create a different type of task that takes the opposite view. The class could then 'run' the tasks within the French Revolution application to 'play' them. The files themselves would be very small so they can then host them or email them to other schools to try out.

The authoring tool is being designed to be very easy to use in terms of functionality. The difficult bit for authors is thinking about the type of thinking tasks to be used in an application and why, and then of course, creating the educational content. The actual selection of 3D worlds, objects and calibration of different games elements will be very easy - just selecting options and changing values. This will enable the author to create very varied applications very quickly - the key time spent will always be on the educational elements, not the game elements.