UNLIMITED SPACE AGENCY's "SPACE CAMP"

An online game for the Unlimited Space Agency with the purpose of inspiring children in science through play and immersive storytelling

In 2009 Unlimited was commissioned by the Polka Theatre in London to make a new play for children "to inspire them about science". The resulting play "Mission To Mars" ran in London for 5 weeks before touring to major regional theatres across the UK and was acclaimed by both audiences and critics alike.

"Unlimited have been pioneers in combining theatre and science, fearlessly going where few other companies have gone before in exploring the impact of scientific advances on our lives... Mission To Mars is great fun and if there's a sudden interest in science in coming years among the children of south-west London and beyond, it may well be traced back to Unlimited's show for 7 to 11-year-olds." The Guardian

"We saw Mission to Mars at Curve in Leicester today - my kids, who go to the theatre a lot, said it was the best thing they had ever seen. My 8yo son said it was even better than 'Oliver' in the West End! Thank you so much; we had a wonderful afternoon!" The Bannister Family

In addition to the show we also created a series of "Satellite" projects to accompany (orbit) it.

We set up UNSA - the Unlimited Space Agency which we've already created a 'gentle' (but effective) online presence for with its own website, Twitter account and YouTube channel. UNSA's mission is "to inspire, recruit and train the scientists and space explorers of the future" and we've worked closely with scientists at every stage of the project in the research and delivery of all elements, in particular Dr Andy Newsam from the Astrophysics Research Institute at Liverpool John Moores Univeristy and Dr Gail Iles – a condensed matter physicist and astronaut instructor with the European Space Agency's Astronaut Centre in Cologne where, as part of our research, we trained as astronauts for three days.

Responding to a commission from game design agency Hide&Seek, we created SPACE CAMP - part of UNSA's programme to identify potential future cadets: a live action game for families to play where they have to work as a team to complete science based challenges on UNSA's Earth Orbiting Space Station which we create in public spaces. So far it has been played in the foyers of the National Theatre in London, outdoors at the Green Man Festival in Wales and in the galleries of the London Science Museum.

Following the success of this work, we want to scale up our activity in this area to significantly extend its reach. This application is submitted in the hope that the STFC will want to support the development and creation of an ambitious, digital version of Space Camp that will reach reach, inspire and engage many thousands of children in science both at home *and* in school.

In UNSA's Space Camp, players will sign up as Agents of UNSA at a website where they can create their avatar – they will be able to choose gender, hair style/colour, mission badge etc. so that their character is uniquely *their own*. We intend to create an option for Agents to play either as individuals or in teams – either at home with parents/carers or as a class in school led by their teacher.

The overarching narrative premise of the game is that UNSA are assessing the Agents' potential to work as scientists and space explorers in the future. There are no 'winners' or 'losers', rather "rewards for different levels of success" which would include:

- badges and uniform 'enhancements' for players' avatars

- certificates to download and print
- high score boards
- 'broadcast' of particularly high-flying agents' achievements

Having signed up as Agents, players are then 'launched' from UNSA's base on the ground (inspiration for design/learning here will be ESA's Spaceport at Kourou in French Guiana) to UNSA's Earth Orbiting Space Station. Opportunities for science based learning/information here include explanations of gravity/micro-gravity, escape velocity, distances to space and near Earth orbit etc.

Having successfully piloted their vehicle and docked it to the space station, Agents will begin their mission on board to prove that they have "the right stuff" to become the scientists and space explorers of the future. Challenges and puzzles will all be science based, performed in micro gravity conditions and (ideally) inspired by actual experiments that have been performed on the ISS. We imagine…

- puzzles involving water that embeds learning about the different qualities of solids, gases and liquids both on Earth and in space.
- A challenge requiring operation of a robotic arm on the outside of the space station that embeds learning about "Perpetual Motor Deficits in Space" ie why astronauts experience difficulty with hand-eye co-ordination while on orbit
- A mini-game measuring (catching!) cosmic ray particles with reference to the Alpha Magnetic Spectrometer Experiment on the actual ISS

We also imagine a 'secret level' which can be unlocked by high scoring players giving them access to UNSA's version of the ISS's Cupola where they are presented high definition views of the Earth (as seen from the ISS) and deeper space (as observed from space telescopes such as Hubble, Planck and Herschel).

These are only examples of elements that we *might* make as part of our mission to inspire children about science – the actual content of the games/puzzles and the detail of the narrative that *drives* the Agents desire to play (learn) will be created in the process once we've secured funding and therefore time to do that.

Beyond the game itself, further learning will be encouraged by the production of downloadable education packs for parents and teachers who sign up in advance, using the experience as reference for curriculum linked and/or age specific lesson plans, experiments and conversations. We would also hope to provide links to other STFC related projects that users could be encouraged to visit or experience.

Beyond the embedded learning objectives described above, we also want to take this opportunity to undertake a significant piece of accompanying research that will test and report on two key propositions:

1. *How do we increase reach/distribution to a young audience that we know is difficult to reach beyond traditional institutions?*
This proposition will test the effectiveness of "casual gaming" and related distribution platforms to inspire a younger audience about science directly, outside of existing cultural/educational routes. It will test what partnerships/seeding and marketing strategies are effective with a limited budget, and will measure time spent and engagement with the narrative and educational content.

2. How do we retain their attention and encourage repeat engagement?
This retention proposition will use a variety of calls to action within the site and game to test which ones are most effective in encouraging users to build a relationship with the UNSA project. It will use a variety of events – including sharing of high scores, UGC (user generated content) competitions and offline rewards (eg certificates/badges/etc) to see which ones are most effective at turning casual play into a deeper relationship with the UNSA project and therefore, by extension, STEM related subjects and science learning more generally.

In testing these propositions we believe the results will be of significant value to the wider sector. Since this project will test the efficacy of a small, highly focused campaign in the context of an often much better commercially financed "competition for attention", it should therefore be of great value to many public organisations/institutions looking to reach younger audiences.

The most significant insights and data that we expect to be produced from the project includes:
- detailed user data for the game, including breakdowns of performance by platform, time of day, technological context and repeat usage
- detailed user data for a variety of calls to action to build a relationship outside of the game, including social sharing and offline rewards.

Ultimately, this project is about delivering an inspirational, educational experience for a large number of young children at a vital stage in their lives. It will communicate key science information about particle physics, astronomy and space and promote a greater understanding of how STEM subjects impact on their lives and potentially their future careers.

UNSA's motto is "Ready for the universe." We hope you will want to join us on the next stage of our adventure.

BACKGROUND – Evidence for Effectiveness of Learning Through Play

There is conclusive and increasing evidence that games, and particularly 'casual games' played on the internet, have an enormously positive educational impact on children and young people.

As long ago as 2005 a significant piece of research commissioned by the BBC reported that 100% of children aged 6-10 described themselves as 'gamers', with that number falling only to 97% of 11-15 year olds and 82% of 16-24 year olds. Significantly too that means that there is no gender split up to the age of 10 and almost no split up to the age of 65!

"This research returned the result that 59% of 6 to 65 year olds in the UK are gamers. In total there are 26.5 million gamers in the UK… and the gender split is almost even, averaging out at 45% female and 55% male. "

The full report is online here:
http://open.bbc.co.uk/newmediaresearch/files/BBC_UK_Games_Research_2005.pdf

Our own experience in the last year is that immersive storytelling and game play *motivates* a level of engagement in learning that 'regular' teaching methods simply don't. Our STFC supported project "The Astronautical Challenge" which ran in schools 2010-11, won a prestigious National Charity Award for its success inspiring children in science with teachers reporting extremely positively:

"Definite improvement in motivation for science, particularly for the girls. The digital media skills showed progress and it definitely helped with teamwork in the class, although that is still far from perfect!" Teacher, Deans Hanger primary school Northampton

"I loved the whole programme. It made science exciting and fun and the lesson plans were a fantastic help. The children were extremely motivated by the whole thing, every aspect excited them and they weree engrossed in the characters created and the sense of competition." Teacher, Holy Trinity Primary London

The independent evaluation from education expert Juliet Desailly <www.julietdesailly.co.uk> backed up the responses we received from the teachers, reporting a clear increase in engagement with learning within the curriculum in Science:

"All the science tasks were found to be highly successful. Most teachers reported that children were now much more positive in their reactions towards science. They were excited by the ideas being investigated and were looking forward to more science topics and seeing relevance in their science work."

In her report Juliet also found that there was a very significant engagement beyond the classroom and that many children engaged with the project at home, working in their own time:

"Children were motivated to learn by their involvement with the characters and desire to help them. The competitive element and the stimulus of doing their best for the characters in the adventure meant that the children themselves were striving to improve their work and were often not satisfied with their results and wanted to improve them. Instead of a 'that will do' attitude to their work teachers reported that children wanted to spend extra time improving their submissions."

The other science+game based projects we have recently created have been similarly successful and recognised with a series of other awards including the 2011 Sir Arthur Clarke Award for Achievement in Space Education & Outreach and the 2011 UKRC WISE Champion Award for inspiring young women into STEM subjects and careers.

A full report on these projects can be read in the form of a transcript of Creative Director Jon Spooner's recent paper for the 62nd International Astronautical Conference in Cape Town: "Artists & Scentists Experimenting Together: inspiring primary school children about space and science using art and play."
http://unsa.org.uk/?p=184

Having proven the extreme effectiveness of this approach and these types of project to inspire children in science, we now want to significantly scale our work to reach a much larger audience through the internet.