Johnny's Adventures

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"Johnny's Adventure" is a tile-based adventure game aimed at providing an alternative to traditional classroom teaching for primary school students with learning difficulties. By using media and technology to address the differences and difficulties that some children experience in learning, it aims to provide computer-based software that will assist in NZ maths curriculum 1-3: Time and Money.

The client for the project was Group Special Education of the Ministry of Education. Local primary schools have supported us through the design process with teacher interviews, resources, feedback and access to children in the target user group for user testing.

Attention Deficit Disorder (ADD, also ADHD), is a developmental disability estimated to affect between 3-5% of all children. Such students are described as being "inattentive, can't seem to get focused or stay focused on a task or activity, hyperactive-impulsive, very active and often acts without thinking, inattentive, impulsive, and too active" (Jamerson 2002). They do, however, usually like computers and games:

> *"When asked how technology made a difference, she stated that he loves video games and she is always surprised at how attentive he is while he plays" (Jamerson 2002)*

The main goal of this project is to engage the user in the game so that they are interested in what they are doing and by this means, learn the topic without realizing they have done so. This is achieved by providing an animated character "Johnny" with whom the child can identify. The child guides Johnny through the game environment to access the various educational tasks. As the child completes the tasks, Johnny earns "gems" which will help him reach his eventual goal of defeating a sly wizard.

Many of the requirements of this game are similar to those in 'normal' digital game-based learning (Prensky, 2001). However, the special needs of children with ADHD pose special design challenges. Many children's educational games have busy screens that distract the user from the learning outcomes. These are inappropriate for ADHD type children who typically have short attention spans, which discourage concentrated learning. We need, then an engaging game structure without flashy distractions.

Another problem with some educational games is that the user can manoeuvre through the game without completing all the tasks. We have forced this issue by requiring the user to complete each task before moving on to the next. We minimize the possible frustration of this approach by providing constant supportive audio feedback via an appealing animated character called "Donk". The individual tasks are also sufficiently easy that a child is unlikely to struggle to achieve success. Through trial and error, and backed by positive reinforcement, children can complete all tasks without losing face, self-esteem or interest in the game.

The game thus needs several identified characteristics:

- Simple design
- Engaging scenario
- Ease of use
- Positive feedback
- Graduated rewards
- Simple tasks
- NZ-relevant content

The game was tested with primary age children of both genders who were identified by their school as having both learning difficulties (ADD) and limited maths skills. These children all seemed confident with the use of computers, as predicted by our user analysis. They quickly became engaged with the game and successfully completed the maths skills. Further work continues into testing of transfer beyond the game.

"I like getting the crystals at the end of each part" (8 years old)

"Donk helps me get to the tests" (7 years old)

References

Jamerson, J. (2002) *Helping all children learn*, Longfellow Elementary School Muncie, Indianahttp://www.smarterkids.org/research/paper15.asp Accessed Jan 24 2004

Prensky, M. (2001). Digital Game based learning. New York, McGraw-Hill.