



Reactickles

Designing Playful Experiences With Technology: Implications For Children With ASD

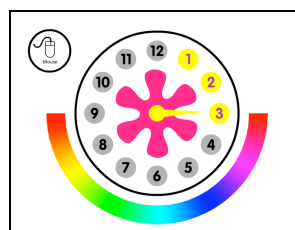
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This presentation integrates practical insights and theoretical perspectives to offer a conceptualisation of conventional computer technology as ambient and playful, where the natural rhythms and modes of social communication can be explored in order to facilitate relaxation, engagement, and playfulness for young children on the autism spectrum. Using the ReacTickeles Creativity Box & we demonstrate how we the addressed some of the pedagogical challenges of integrating playful experiences into current curriculum frameworks in the UK and the implications for future practice.

Project links:

<http://www.reactivecolours.org/> -
<http://www.reactivecolours.org/gallery/main.php>
<http://www.reacticklesglobal.co.uk/>
<http://www.reactickles.co.uk/>



Involve Children In Research And Development

Children are individuals

Collaborative and explorative design approaches are vital to enable the emergent, unpredictable and idiosyncratic behaviours of the children to present themselves without fear of judgment. We benefit from observing children in their natural environment – its not what the software does, its what children do with it when given the opportunity to explore.

Listen to Teachers

They will know the child's zone of development and will be experienced in organising lessons in a variety of settings, we let their experience teach us. Teachers and support staff who know the child are able to detect nuances and qualitative differences in behaviours.

Families want to be involved

Learning is an intrinsically social experience; this starts at home (reactivecolours.org). Give families a voice

Experts have in depth knowledge

In subject domains (psychology, linguistics, sociology etc) methodologies and evaluation. The contribution of experts introduces deeper theoretical perspectives and provides a holistic understanding of the issues that face autistic children on a daily basis thus avoiding concentration on the negative aspects that dominate descriptions of autism.

Avoid complex specialist equipment

The actions, agency and performance made possible through the relation between the child and digital environment can only be discovered when the settings are natural and require limited, if any, instruction.



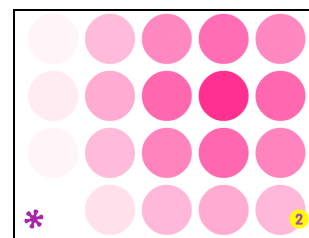
Create a Playful environment

Maximise on physical and perceptual skills

For children with learning difficulties the opportunity to using of physical and perceptual skills offer a more inclusive route to learning experiences. The value of ReacTickles software, in an educational context, is that it is experiential, driven by action rather than cognition. This kind of experiential learning, when the learner is given the opportunity to experiment, modify and encounter others through exploration, is understood to be far more motivating for most children than following a predetermined sequence of instructions, and is essential in developing planning and reasoning skills.

Avoid computer-mediated overload

ReacTickles do not require a deep level of understanding or interpretation of a graphical interface. Instead they exploit the physical directness of manual input, which lends itself naturally to certain types of movement and exploration and may have the potential to arouse playful interest.



Use peripheral attention

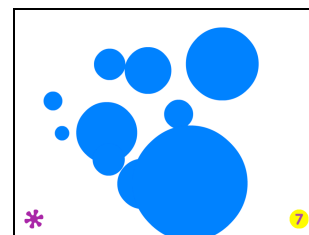
Children with ASDs can show unusual interest in detail, often their attention is deeply focused on one aspect meaning that they are unable to share their attention elsewhere. Teachers have reported that when using computers children become locked into their central area of focus and do not process other sensory information, accentuating rigidity of thought. To promote calmness, ReacTickles encourage children to shift attention back and forth between what is of explicit interest and what may be occurring on the periphery of attention. When physical interaction is combined with bodily and spatial movement people are able to more actively use their peripheral attention to engage in their tasks.

Introduce rhythmic actions

Autistic children are known to enjoy repetitive action for the feeling of control and reliability it induces, however, actions that are repeated continuously with no sense of purpose are usually considered negative and can often become challenging in classroom situations. ReacTickles subtly encourage rhythmic actions, moving from the repetitious, with no interest shown in the outcomes, to the recurring, with evidence of contemplation and reflection.

Remove the potential for failure

The goal of ReacTickles is not to impose a task. Therefore the potential for failure, which can be de-motivating and distressing, is reduced. Instead children are encourage to set their own goal in the context of 'being playful'.





Let the child lead

Provide a simple structure

The computer itself provides structure and presents an ideal environment for ReacTickles play.

Structure provides a framework, a reason to start, a sequence of events, which, should ultimately lead to reward. For this framework to be successful, there needs to be an appropriate level of focus, without multi-sensory stimulation and the necessity to process complex information.

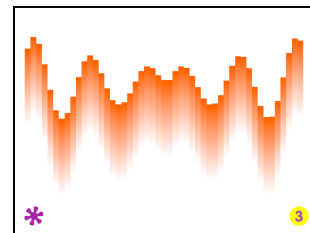
ReacTickles structure is provided through a simple clock interface. This cyclic mechanism for choice provides rules and prompts a sequence of interactions towards a goal - spontaneous sensory play. The clock hand follows the user and rewards exploration with movement and sound. When the child clicks on a clock number they select a ReacTickle. This action provides familiarity, it can be easily learnt and copied, the clock sets an appropriate challenge, which is consequently rewarded and reinforced by the ReacTickle.

Make the child's interest visible

As children play with ReacTickles they are rewarded with a range of visual and auditory phenomena, which can be observed by the child and others. The software has the playful effect of dynamically responding to action via the computer screen, for the child, seeing small recurring actions and exaggerated gestures mirrored has the potential to not only increase awareness of self, but also enable others to share the experience, through emerging interest rather than command. Bodily actions, rhythms and patterns that typically dominate pre-verbal forms of communication, can become the tools for play in a safe, creative digital playground.

Join in

Use expressive language to make your enjoyment visible, the reduction having to understand symbolic meanings will provide more space to tolerate and involve others.



Encourage expressive language

For most humans, the desire to communicate is the primary motive for acquiring language. The expressiveness of body language not only adds emphasis and meaning to verbal communication but it also regulates attention and action, even more importantly in the context of this research, body language and gesture can enhance the sense of self?

ReacTickles naturally encourage pointing and whole body actions; there is little demand on fine motor skills. At the Smart interactive whiteboard, for example, the use of the finger to control the action naturally stimulates pointing as the primary input for action, whereas often autistic children are unlikely to use pointing to initiate actions, children can be encouraged to use pointing in combination with other forms of gesture to draw attention to their action.

Encourage imitation

The exaggerated gestures and performance as well as the visibility of actions through colours and shapes on the screen make it easy to mirror the actions of another and these forms of imitation are understood to be an unconscious way to demonstrate positive feelings, engagement and interest. Encourage children to mirror the body language - hand movements, gesture and posture as an initial way for children to bond with others. Children can move beyond their current level of learning (zone of proximal development) if engaged with another child or adult.



Integrating ReacTickles into daily routines.

Activities are organised to meet curriculum frameworks

The ReacTickles Creativity Box includes an enhanced version of the ReacTickles software <http://www.reactivecolours.org:16080/gallery/main.php> and incorporates the software into an overall educational strategy. The main aim was to ensure that the experience was pedagogically anchored on current practice whilst at the same time encouraging a positive, playful, inclusive, mutual experience for all learners. We have used themes that are scalable and transferable across subjects, stages and curricula.

Easy to use

The ReacTickles Creativity Box is a modular system with a simple organisational structure. A simple booklet offers both the contextual and theoretical explanations for the software, and an “at-a-glance” indexed card system organises activities into colour-coded themed headings. In addition, quick reference cards and children’s playing cards were included to encourage improvisation in free play sessions.

To avoid the teaching of discrete skills and the reliance on learnt cues, the materials have been created under the broad headings of:

- Creativity
- Thinking Skills and Problem Solving
- Language and Communication
- Working with Others
- Physical Development and Mobility



Easy to evaluate

Learning outcomes from ReacTickles can easily be measured using PLevels and other established metrics, for example social skill checklists

Customisable

In order to avoid cluttering the ReacTickles interface with burdensome features, but still to support customisation and choice, the ReacTickles Creativity Box software has a simple user preference system, with separate functional modules, each with a limited set of controls, offering for a different aspect of preference. For example the speed of ReacTickles can be altered for children who may have problems with proprioceptive, sensorimotor skills; colour preferences can be adjusted to support visual sensitivity and likewise volume of sound can be adjusted to avoid unnecessary stimulation of the auditory sensory system. For many players, this enhanced functionality affords a continuous process of exploration with ReacTickles as the range of possibilities is extensive, however for most autistic children, whose sensory differences can cause discomfort and anxiety, the ability to customise the environment is central to engagement and relaxation.

Flexible

Using the computer as an expressive medium for relaxation not only provides an excellent context for being playful, but can also be exploited to engage children in different learning environments, both at school and the home. The Creativity Box provides a non-linear structure for a positive experience, as opposed to a discrete set of skills, the possibilities for generalization and transfer increase thus supporting children to become more actively engaged in ICT as a means to assist them throughout school and a significant part of their future lives. Too many interventions are dominated by operational activities that can result in the child learning the rules and not being able to reflect on their learning and generalise to other settings. ReacTickles encourage social interaction in a variety of ways and allow the child to perform based on interest rather than rules.