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Conference or Workshop Item

Title: A mobile phone solution for young people with autism: introducing the “HANDS” project

Creators: Mintz, J., Devecchi, C. and March, C.


Version: Outline of the EU funded project HANDS (Helping Autism/Diagnosed to Navigate and Develop Socially)

http://nectar.northampton.ac.uk/5825/
A mobile phone solution for young people with autism: Introducing the HANDS project

Dr Cristina Devecchi, Caty March & Joseph Mintz

London South Bank University, UK

British Educational Research Conference, University of Manchester, 2-5 September, 2009

European Commission, Grant No. 224216 (http://www.hands-project.eu/)
Technology and children with special educational needs

Technology, in its broadest sense, is a tool used for:

- tutoring,
- exploration,
- assistance,
- communication,
- assessment, and
- data management (*)

Technology and students with autism

Use of ICT and autism

Rewards
General educational software products
Specific skills educational software products
Comprehensive autism-specific interactive software solutions

Computer-based
Professionally based

Why a mobile device for children with autism?

- Evidence shows that children are motivated to use technology
- It’s mobile, ubiquitous, and personal
- Can create a link between motivational input in the classroom and at home and other locations – can “be there” when problems occur
- It can be customized for individual needs and interests
- It allows students to work at their own pace and it is not judgmental
- It is predictable
This presentation ...

- Outlines the HANDS project
- Explains how the ICT toolkit should work
- Summarises the evaluative research methodology
THE HANDS PROJECT
What is HANDS?

HANDS stands for Helping Autism/Diagnosed to Navigate and Develop Socially.

It is a multidisciplinary European project commissioned under Framework 7 Challenge 7: ICT for Independent Living and Inclusion.
HANDS objectives: supporting learning

The development of the innovative mobile software solution to be used on smartphones to enable young people with ASD to become better integrated/included by:

• helping them with situations that they find difficult

This involves helping them to:

• Improve their social skills;
• Improve their self-management skills
HANDS objectives: supporting teachers and teaching

- an efficient tool for the teachers to design and customise the tools for the young person,

- an efficient tool for the teachers to measure the progress of the improvement in the social skills and self management skills
User engagement network

LSBU-UK

ELTE-H

AAU-DK

HA

AF

SVE

EG

Teachers, carers, parents & children

Mainly researchers, but also teachers

Mainly teachers, but also children

Software developers
How does HANDS work?
The mobile solution: design components

The Handy Interactive Persuasive Diary (HIPD)
An interactive calendar function with usual calendar facilities, but also with configurable and programmable abilities and ‘knowledge’ about situations where the user is more likely to be ‘persuaded’ to adopt a new behaviour or attitude.

The Simple Safe-Success Instructor (SSSI)
An instructor function, which gives precise and practical advice on how to solve a given problem. E.g. how to travel by public transportation. The Simple-Safe-Success Instructor can be integrated into the HIPD.

The Personal Trainer (PT)
A training function which is basically a simulator of problematic situations with concrete and practical advice input, given with the necessary credibility.

The SharingPoint(SPo)
It allows the users to share their knowledge, experience and interests, thus facilitating a protected creative environment for young people with ASD.

Tin - The Individualizer
Customization in terms of both aesthetic aspects of the interface and in terms of the presented functionality.
The 'Credibility-O-meter' enables the teacher to create the activities via a web portal, and then to download them onto the phone. It also allows the teachers to monitor and assess to what extent the HANDS toolset is experienced as being credible by the user. This includes the extent to which the toolset has an influence on behaviour and the extent to which the young person evaluates the advice given by the toolset. The Credibility-o-Meter is based on the electronic footprints left by the user on the mobile device during normal use.
Persuasive technology:
The evaluation process: How effective is HANDS?
Evaluating the effectiveness of the ICT solution: 3 research perspectives

COGNITIVE PSYCHOLOGY (ELTE, Budapest)

HCI & PERSUASIVE TECHNOLOGY (Aalborg, Denmark)

Use and impact of technology on teaching and learning

AUTISM

EDUCATION (LSBU, UK)

Educational provision for children with ASD
Aalborg methodology: Persuasiveness

**Approach:** FCA (*Formal Concept Analysis*. Mathematical based analytical methods drawing from lattice theory)

**Methodology:** Mixed

**Methods:**

1. Log files harvested throughout the test period (*mainly through the phone use and the CoMe*).
2. Qualitative approaches, in particular observations of use and semi-structured interviews.
ELTE methodology: Cognitive psychology

**Approach**: Efficiency testing

**Methodology**: Randomized Clinical Trial (RCT) (27 children participating in the Prototype 1 and 2 testing)

**Methods**:
- The Autism Diagnostic Observation Schedule (ADOS)
- The Autism Diagnostic Interview Revised (ADI-R)
- Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV)
- Vineland Adaptive Behaviour Scale (VABS)
- Social Responsiveness Scale (SRS) - for testing specific skills
- Experimental Task-Analysis (ETA) - for testing specific behavioural-level effects (Autism Foundation for PT1; all schools for PT2)
**ALE research questions**

**Impact** is defined as any changes which can enable or prevent teachers and children from achieving their goals.

**Teacher questions**

1. How does the introduction of HANDS toolset impact on the *professional* lives of the teachers, including consideration of working practices, attitudes towards children with ASD, competence, professional development, patterns of collegiate working, roles and power relationships

2. How does the introduction of the HANDS toolset impact on the ways in which teachers and other adults work with children in autism in the classroom?

**Children questions**

1. How does the HANDS toolset impact on the children as learners? (*with regard to the research goals, and according to literature, e.g. attainment, creativity, organisation, motivation, self-esteem, sociability, etc.*)

2. How does the HANDS toolset impact on the children as persons? (*by person is meant the exercise of one’s autonomy and independence in making valuable decisions about one’s life and being able and enabled to fulfil one’s aspirations. I would like to apply the capability approach to the evaluation of the mobile technology*)
LSBU methodology

**Approach**: Naturalistic evaluation

**Methodology**: Ethnographic case studies

**Methods**:
- Observations (*UK school only*)
- Interviews (*UK school only*)
- Questionnaires (ALL schools)
- Log files in the CoMe (ALL schools)
- Guided writing (ALL schools)
### DIAGRAM OF ALE TIMELINE: EVALUATION OF P1

**METHODS OF DATA COLLECTION**

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<th>Child data set</th>
<th>Interviews</th>
<th>Observations</th>
<th>Questionnaire</th>
<th>Guided writing</th>
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**Key**
- Child dataset
- Observations
- Questionnaire
- Guided writing
- Teacher Thinking Study
- Interviews
- Log files
- Guided writing
Thank you

Caty March: marchc2@lsbu.ac.uk
Joe Mintz: mintzjh@lsbu.ac.uk
Dr Cristina Devecchi: