EDUCATIONAL INTERVENTIONS FOR CHILDREN WITH AUTISM: A LITERATURE REVIEW OF RECENT AND CURRENT RESEARCH

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Background to the review

The DfEE commissioned this research review in order to set out what is known and what gaps exist in our knowledge about educational interventions for children with an autistic spectrum disorder (asd). It is intended as an aid to future research in this field and, more particularly, forthcoming research which the Local Government Association is commissioning into some of these interventions. It will also be of interest to those who make provision for children with autistic spectrum disorders (asd) and autism support groups.

Objectives of the review

• to collect information from relevant professionals, researchers and support groups on the questions they have about educational interventions and the research they have planned or completed
• to collect information from LEAs in England and Wales on the current state of provision for autistic children
• to provide a description of each intervention in terms of its aims, target group, costs, parental involvement and training implications
• to describe and comment on the research studies conducted to date (or planned) and to identify gaps in the research evidence and suggest ideas and methodologies for future research

Key Findings

• LEAs were most interested in the comparative effectiveness of different approaches and, in particular Lovaas, the Higashi School at Boston and TEACCH.
• most approaches had some evidence of their effectiveness, and proponents offered further refinements on the research needed. An examination of the range of approaches and documented evaluations suggests that the common elements could form the basis of controlled studies in the future.
• there were sufficient consistent positive findings, across all the studies of early intervention, to suggest that some form of early intervention is warranted. For example, of the behavioural approaches, the Lovaas method has been successful in demonstrating that early intensive intervention in autism can be very effective for a substantial proportion of children.
• approaches that relied on integration as part of the approach showed promising results both for the children with autistic spectrum disorders (asd) and their normally developing peers, but more rigorous control of some of the variables is needed.

Key recommendations

• research studies should use standard measures for assessing the children and measuring progress and standard research designs for the timing and nature of the measures.
• independently evaluated, preferably with double blind techniques. The use
• approaches need to be compared with one another in well designed studies that allow for control (or statistical accounting) of all key competing variables, including intensity. Failing a direct comparison study, standardised design and measures would allow comparison through a meta-analysis.

• there needs to be an examination of the construction of eclectic approaches often used in UK schools - their rationale, process of operation, and effectiveness - compared to single approaches. This is most important in school studies but also affects the way different approaches are adopted concurrently by parents and the interactive effects that might result.

• integration and inclusion of children with asd in UK schools need to be studied as a process and effectiveness of placement in mainstream, special and specialist schools evaluated in terms of outcomes (for children with asd and their peers), access to a relevant curriculum, school and child characteristics, timing and preparation.

• parental choice needs to be researched in terms of the availability of information and then the degree of choice following diagnosis, factors affecting choice of school or approach, outcomes for all the family of following different approaches, and reactions to apparent success or failure of approaches in terms of parental expectations.

• Research is needed on the child characteristics that lead to success in different approaches and to parental characteristics that lead to the adoption of one kind of approach over another. Factors influencing the degree of direct parental involvement need to be researched as does the number of parents whose circumstances or choice would preclude direct teaching involvement.

• Across approaches there are areas of small scale research that can be identified, such as research on the most effective way of teaching communication and language, or concept development, or independent versus dependent styles of learning as long-term effects of different approaches.

• a postal survey with questionnaires sent to relevant professionals and support groups

• a literature review of research done or planned on educational interventions with children with an asd

The nature of autistic spectrum disorders

As our understanding of autism increases, so definitions, diagnostic criteria and ideas on which approaches may be most useful, change. This, in turn, affects the research that is done. The two major diagnostic systems now have common criteria for a diagnosis of autism based on a triad of impairments in social interaction, communication and flexibility of thought. Accounts from able adults with an asd suggest that they have a different (and not necessarily a deficient) world view and way of being and that others should not be focused on making them behave and act as people without an asd.

It is likely that as interventions and support systems become more appropriate, the better the outcome for people with an asd will be. There are difficulties in defining success and measuring quality of life and these assessments will vary depending on whose perspective is taken.

Educational provision and approaches for children with autistic spectrum disorders in the UK

Within the autistic spectrum, there is a range of provision and intervention. In the UK, children with asd may attend mainstream schools, a generic special school or a school or unit specific to autism. Some of these children will require support and resources additional to those usually provided within the school, but others will not. A variety of pre-school provision also exists and outreach services are developing to support children, parents and staff.

Most practice in schools in the UK is eclectic in that a number of approaches might be used within a school in whole or in part with some or all of the children with an asd.

Results from the postal survey

Questionnaires were sent to LEA personnel, researchers, principals of services offering particular approaches, support groups and child development centre staff. These asked respondents to comment on the research they had done or had planned on educational interventions and the
research questions they had. The response rate from LEA personnel was 52%.

Twelve of the 95 LEAs which replied were funding one or more children in full or in part at the Boston Higashi school (5) or for a Lovaas programme (22). Sixteen LEAs knew of families who were financing Higashi (1), Lovaas (14) or the Option approach (4) themselves.

Twenty-two (22%) researchers made returns with details of the research in which they were engaged or planning. Some of these return rates are low, but we did not expect responses from those who were not engaged into educational interventions.

The main questions respondents raised on educational interventions were:

- how effective are the different interventions?
- what is their relative cost?
- for which group within the autistic spectrum is an approach most appropriate?
- what are the implications for staff training?

Part 2: Review of the research on approaches

Approaches and research studies are described in a standardised way, and then the research in that area is analysed. The main findings on the various approaches are detailed below in separate sections:

Interactive approaches

Interactive approaches emphasise the importance of developing a relationship and communication between the child and their parents and/or staff. Six different interactive approaches are described and six research studies presented. There is research evidence for some of the principles underlying the approaches but much of the research on the approaches themselves has been limited to small case studies. Many studies report gains made within the sessions but they often lack a control or comparison group and do not ascertain whether the skills displayed in the sessions are shown in other settings.

Approaches to communication

There are several approaches designed specifically to encourage and develop communication skills. Other approaches within the review also address this area as a part of their programme. Three particular approaches are described and ten research studies. The two studies conducted on children attending the Delaware Centre using the Picture Exchange Communication System (PECS) have shown gains in the children’s communicative abilities and that the system may aid language development, but there was no control group or independent evaluation. A few of the many studies on Facilitated Communication (FC) were selected for this review. Much of this latter research centres on the authorship of what is written but some studies were presented which evaluated the possible benefits of facilitation as a technique.

Integration approaches

Three pre-school programmes are described where the children with an asd are included with normally developing children and taught to participate in varying ways. In these approaches, the integrated experience is the learning medium. It is not just where other skills are practised. All three studies given show gains in many areas of development and successful mainstreaming of at least half of the children, although only one study had a matched control group.

Division TEACCH

TEACCH (Treatment and Education of Autistic and related Communications handicapped Children) is a structured teaching approach based on visually mediated learning and the prosthetic structuring of the environment to cue behaviour. It was developed in North Carolina but is widely used in UK schools through a training programme of short courses. TEACCH has parental involvement at its heart, but in the UK it is used more in school than in pre-school settings. Eight studies were found but only one short-term study had a matched control group. Even in this study, the effects of intensity were not controlled so the evidence for specific TEACCH effectiveness is not strong. The outcomes reported are very encouraging and there appears to be a high rate of parental satisfaction, but more rigorous research is needed to eliminate possible bias in the results and to compare TEACCH with other approaches in a well-matched design.

Daily Life Therapy as practised at the Boston Higashi School

This is a programme for children with autism that originated in Japan but which is now also practised in a school in Boston, Massachusetts which some children from the UK attend, often from an early age. The teaching approach is embedded in the Japanese culture of group performance and identification with the group. The curriculum content and mode of delivery is based on age rather than developmental level and the aim is to teach the child at a level that will allow integration into mainstream. The Boston school now has an overlay of the American system (eg individual educational plans and the use of computers) and
there are plans to establish schools in the UK following Daily Life Therapy principles. There has been almost no published research on outcomes of Daily Life Therapy and no well matched controlled study. One study with a comparison (not control) group showed differential improvement in the children undergoing Daily Life Therapy in just those areas focused on in the curriculum.

**Behavioural approaches**

Many approaches to autism use behavioural techniques as part of their programme but this section looks at approaches where this is the sole methodology used. Even within this group, there is a division between those who follow a strict Applied Behavioural Analysis (ABA) with discrete trial learning (as Lovaas has done in his work) and those who use other behavioural techniques. The ability to train specific behaviours has been well documented in the research literature with a range of subjects, including children with an asd. More recently, however, it has been criticised on educational grounds for producing dependent learning styles and a failure to generalise. The Young Autism project conducted by Lovaas seemed to address these shortcomings in a controlled study. Careful analysis of the studies, however, shows that these results demonstrate the effects of intensity rather than the treatment itself and, moreover, the original experimental group also had contingent aversives (a slap and a shouted ‘No!’) whereas the control groups did not. Thus, since modern versions of this approach do not use such aversives, there is no scientific basis for the approach. Nevertheless, all the reported studies do show gains in the children, some with less than 40 hours a week and some starting later, but research is needed to see whether this modified methodology is as effective and to identify the features that distinguish those children who benefit substantially and those whose progress is less marked.

**Comparative research on different approaches**

It would be surprising if consistent and systematic work with a child with an asd did not produce at least some beneficial results, whatever the approach. The real research question, then, is whether one approach is better than another and for that, research which compares different approaches is needed. There is also a need to examine the effects of most educational settings in the UK for children with autism, where a variety of approaches may be used. There has only been one recent attempt at this kind of comparative research but the study had methodological weaknesses which make it difficult to interpret the results.

Some of the difficulties inherent in this kind of research are explored.

**Discussion of research findings and implications for the future**

This chapter concludes that there is no really strong evidence to suggest that one approach for a child with an asd is better than another, although there is a consensus of findings that early intensive education that involves the parents and includes direct teaching of essential skills with an opportunity for planned integration, can produce significant changes in children with an asd. Some children were reported to move out of the diagnostic category of an asd, but there needs to be further research to determine the validity and reliability of this finding. Certainly, there is evidence of improvement, but not yet ‘recovery’. Within all the studies, however, there are always some children who do well and others who do not. Research is needed to pinpoint the variables that lead to that difference because the evidence at the moment is not clear. Long term comparative and detailed research will be difficult to conduct, but suggestions are made for the kind of research that is still needed for that analysis and for smaller scale research project to address specific questions that have arisen through the review. A plea for consistency of methodology and measures across research is made so that results of one study can be more readily compared with that of another in a form of meta-analysis.

Copies of the full report (ref RR77) - cost £4.95 - are available by writing to DfEE Publications, PO Box 5050, Sherwood Park, Annesley, Nottingham NG15 0DJ.

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