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Computer Research with LD & Autistic Children

J Autism Dev Disord 2000 Aug;30(4):359-62

Brief report: vocabulary acquisition for children with autism: teacher or computer instruction.

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This study examined the impact of computers on the vocabulary acquisition of young children with autism. Children's attention, motivation, and learning of words was compared in a behavioral program and an educational software program. The educational software program was designed to parallel the behavioral program, but it added perceptually salient qualities such as interesting sounds and object movement. Children with autism were more attentive, more motivated, and learned more vocabulary in the computer than in the behavioral program. Implications are considered for the development of computer software to teach vocabulary to children who have autism.

Psychol Rep 1998 Jun;82(3 Pt 1):1051-6

Acquisition of basic concepts by children with intellectual disabilities using a computer-assisted learning approach.

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Computer-assisted learning can be an efficient learning-teaching procedure. Although there is an extensive educational software tradition for this approach, few have better performance than standard drill-and-practice methods. In this work, the specific software "Let's Play With..." was designed to teach concepts of colours, shapes, and body position to children with intellectual disabilities. The software structure follows the Gagne instructional design and applied behavior analysis. The program was carried out with 39 boys and 21 girls who were special education students in the Cadiz School District. Statistically significant differences were found between groups taught with and without the software.

Ment Retard 1993 Dec;31(6):368-76

Comparison of personal and computer-assisted instruction for children with autism.

Chen SH, Bernard-Opitz V

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The potential of computer-assisted instruction in working with individuals who have autism has been a controversial topic for both teachers and parents since its introduction 2 decades ago. In the present study computer-assisted instruction was compared with personal instruction. Four children with autism participated. Although 3 of them showed better motivation and fewer behavior problems in computer-assisted instruction compared to personal instruction, this did not affect their learning-rate. Future directions of computer-assisted instruction research for individuals with autism were discussed.

Ann Acad Med Singapore 1990 Sep;19(5):611-6
Computer assisted instruction for autistic children.
Bernard-Opitz V, Ross K, Tuttas ML
CAI-Research-Project, German Research Foundation (DFG) Johannes-Anstalten, Mosbach.

Since the beginning of 1980, Computer-Assisted-Instruction (CAI) has been used systematically in special education. The use of computers in the treatment of autistic children is highly controversial and emotional among parents and professionals. Fears of reinforcing autistic withdrawal are often mixed with insecurity and dislike of new technologies. On the other hand, positive effects of CAI on learning and behavior are reported by parents and published as single case studies. The following paper relates perception, motivation, communication and behavior-characteristics of autistic children to features of computer-assisted learning. Preliminary findings support the benefit of the use of computer-technology for the management of behavior and learning of autistic children. In 12 autistics, video-taped evaluations showed higher enthusiasm ratings in computer-sessions than personal instruction sessions. Single case-studies demonstrated a positive influence of CAI on autistic children's behavior-problems (e.g. avoidance of eye contact, echolalia) as well as improved spontaneous communication and better learning of academics.

Z Kinder Jugendpsychiatr 1989 Sep;17(3):125-30
[Using computers with autistic handicapped children].
[Article in German]
Bernard-Opitz V, Roos K, Blesch G
Johannes-Anstalten Mosbach, Bereich Angewandte Therapieforschung.

Since the beginning of 1980 computer assisted instruction (= CAI) has been used systematically in special education. While England, the USA and Japan are experienced in this field, comparable attempts in Germany are rare. The possibility to use the computer for autistic children is discussed highly controversial and emotional among parents and professionals. Criticism and fears to "reinforce autistic withdrawal" are often mixed with insecurity or dislike of new technologies. On the other hand positive effects of CAI on learning and behavior are reported by parents or published as single case studies. The following paper summarizes theoretical issues, findings of the literature and experimental results. Perceptual, motivational, communication and behavior problems of autistic children are discussed under the aspect of computer assisted instruction.

J Autism Dev Disord 1984 Dec;14(4):375-82
Computer technology for autistic students.
Panyan MV

The first purpose of this article is to review the literature related to the use of computers with autistic individuals. Although only a limited number of applications have been reported, the potential of the computer to facilitate the progress of autistic persons is promising. The second purpose is to identify specific learning problems or styles associated with autism from the research literature and link these with the unique aspects of computer-based instruction. For example, the computer's role in improving the motivation of autistic individuals is related to its capacity to analyze the reinforcing qualities of a particular event interactively and immediately for each user. Finally, recommendations that may enable computers to be maximally beneficial in assessing the learning process and remediating learning problems are offered. Two such recommendations are selecting appropriate software and integrating computer instruction within the classroom environment.

While it appears reasonable to assume that the autistic child might benefit from the development of programmed instruction and teaching machines to teach imitation, concepts, and receptive vocabulary skills, no systematic research to date has seriously investigated such possibilities. The purpose of this study was to compare the effects of automated versus teacher-controlled instruction in the education of autistic children. Four autistic children, each with extreme deficits in language, social, and self-care behaviors, were trained on a matching-to-sample task under three different instructional situations within an intrasubject replication design and multiple baseline procedure. Analysis of the data showed the following results: (1) The teacher, manually operating the teaching machine, was able to teach and maintain the matching-to-sample task; (2) the same autistic children did not acquire or maintain the task when taught by the machine alone; and (3) the teacher alone (without the machine) was able to teach and maintain the task. The results suggest that automated instruction may, at least, serve as a valuable aid to teachers of autistic children. However, before machines can be used without the participation of a trained teacher, further research appears necessary. Several areas, including the role of motivation in automated instructional settings, the saliency and effectiveness of reinforcers, and the importance of controlling antecedent stimulus conditions and off-task behavior are discussed as areas of primary concern in the development of automated instruction for autistic children.

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