

## CHILDREN AND MICROCOMPUTERS

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This paper will not attempt to address all the various ways in which microcomputer developments might come to influence childrens' growing up. There are too many that can prompt only wild guesswork, while also being too indirect in their influences; for example, changes to family life that might be brought about by new work practices. Instead, I shall focus on the very direct ways in which children are themselves coming into contact with microcomputers and how this contact might come to effect psychological development. Microcomputers are childrens' cheap and accessible entry point into a powerful technology. This is a technology that many would regard as

shaping or amplifying force for human cognition; it may also be a technology that reorganises social relations and modes of communication. We may examine the possible impacts on growing up in two broad domains: microcomputers for leisure and microcomputers in early education.

I shall acknowledge three worries that are widespread in contemporary thinking on this topic. (1) Contact with computers may lead children to develop too mechanical a model of mankind itself. (2) The technology serves to isolate its users from contact with other people and thus might cut children off from important influences in social development. (3) The technology may be divisive, in particular its development may be more imbalanced with respect to the access and involvement of boys versus girls.

But I shall also make some positive points. To some extent they serve to challenge the above concerns and the paper will develop the relevant arguments. There are two optimistic claims I wish to make about childrens' use of microcomputers. (1) They are giving to children a new level of autonomy that we may wish to welcome and cultivate. (2) They promise to be a greater force for developing new forms of social activity and understanding than has been properly recognised.

In developing these points I shall draw upon three sources. (1) My own experience in visiting schools and talking with educationalists in this country and in the USA. (2) My own research and that of others in primary classrooms where computers are in use. (3) The use of microcomputers in Southern California as a case study that

might reasonably be a barometer for the future.

## A Mechanical Model of Man?

I shall argue that fears that children will be led to develop such models are based upon an antiquated notion of computers and the way in which they are used and will come to be used. We are trapped with the image of "programming" and "programmers". There are clear signs that the industry is committed to considerable investment into interface designs that encourage a different conception of computer use. In particular, this will not be compatible with the "hacker" image of users, it will not encourage the "programming" metaphor as a psychological model and it will undermine the importance of those secondary skills that currently lead to the belief that computers are a male preserve.

## An Isolating Technology?

First consider this problem in relation to the impact of microcomputers on childrens' leisure. What recreational use will be made of the technology. The contemporary worry focusses on video-style games. Firstly, there is some question whether these activities really are the mental equivalent of tooth decay as it is fashionable to claim. Some authors have pointed out the subtle skills that can be involved and cultivated in these activities. But, secondly, there is no evidence of an explosion of interest in this application. If anything the leisure uses of computing are moving away from activities with a strong "sensori-motor" component to activities with more cognitive, even social, components (namely, certain kinds of narrative-based adventure games).

But games are not the only recreational use to consider. There is growing development of microcomputers as devices for mediating between people – i.e. for purposes of communications. This is strikingly illustrated by the recent growth of interest in bulletin board systems and also in more immediately interactive computer conversations. The further development of this potential will not leave the growing child increasingly isolated, rather the opposite: the technology could be a great leveller, it may bring children together with common interests as well as bring them into contact with those of different views and attitudes. There are many examples to support this belief.

Now consider the same issue in the context of the way in which children are confronting computers in their education. There is a

worry for the school of the future that imagines children locked into solitary and sustained interaction with machines. Various reasons for doubting this prediction will be considered. But particular attention will be given to three positive aspects of microcomputers in early education that are less frequently discussed. I will cite examples from my own research in each case.

(1) Proper design of software can give children a greater degree of involvement and also a greater degree of autonomy in their learning. Myself and colleagues at Durham have been designing interfaces that give young children greater access to learning materials on their classroom computers and greater capacity to control their use.



(2) The prevailing model of the educational computer as a "partner in dialogue" leads to exclusive emphasis on the instructional programming. However, the computer is also a "medium for activity". In particular it is a medium which may allow us to bring children together for more collaborative styles of working in their classrooms. Work of my own shows the potential for using computer based activities to stimulate joint problem solving.

(3) The technology may serve to extend the reach of the school by introducing activities based upon communications with other children. I have established a computer satellite link between primary schools located in the north of England and others located in California. We will be studying the real potential for this kind of activity over the coming school year, but we

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believe it has the potential to give new purposes to established activities within the curriculum. More distinctively, by giving children the opportunity of communicating with their peers in a very different culture it may help develop an early understanding of human diversity and some of its cultural bases.

## Summary

Many of our fears for the impact of microcomputers on childrens' development are based on too narrow a conception of computer and an under-estimation of their potential for communication. In general, this may be a technology that allows social experiences to flourish rather than one that serves to socially isolate the child during development.

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