

Kids & Computers: What's a parent to do?
MIT, 1991

50 Minutes, followed by Alan Kay

Video Link: https://youtu.be/DQF_0IS4ZVY?t=11m

Seymour Papert:

Congratulating Tom for his baby. I also want to appropriate his fortune cookie message. Nightlife is for me too, and I'd like to just start talking by saying that if I'm in a strange mental state, it's because I've just had two nightlife experiences which I want to blame on the computer because two nights ago, I was in Maine where I had been in a very secluded place for quite a while trying to finish some writing, and then decided to pull together some stuff that I'd been doing during the summer that I wanted to share with you, and got it loaded up in the computer and starting hacking with some programs they say. All of a sudden, it was 4:30 in the morning, and somebody was going to wake me at 7:30.

I missed that night's sleep practically. In a way, that's a classical example of one of the stereotype images one has of what happens when you put people together with computers. One thing led to another, and maybe because of the chaos of a first night without sleep, I had car trouble and I didn't get away, couldn't leave Maine until about quite late yesterday evening, and so here I am not having slept last night and having driven this car six and a half hours from Northern Maine down to here. That puts me in a state of mind which maybe is abnormal, but on the other hand, although I have often decided that I would never do that, that is I'd always be much more organized and wouldn't arrive after a red eye airplane or driving in a car or whatever and give a talk like this because I tend then to say even less what I intended to say than I always do.

It occurred to me though that this, I was contradicting myself. One of the things I wanted to talk about was in fact the issue that's often raised about children becoming obsessively as they say or [addictively 00:03:03] involved with computers. What I was going to say about that was that when I see this happen, I think two things. First of all, if this child was obsessively involved with a piano or with reading Shakespeare, with writing poetry, you wouldn't use the word addicted, so it's an interesting question about why we use the word addicted when we talk about the computers. Maybe Sherry Turkle is going to say something about that. I don't know what she's going to say. She has some interesting thoughts about that subject, so I'll leave that to her. I will comment on another side, and that is when people ask me what I think about their children spending six hours a day at the computer or at Nintendo games or whatever it might be, I've learned that the right thing to say is, "What is the child telling you, and why is the child doing that and not other things?"

Maybe this is a message to you about something else being so totally boring in the child's life like school perhaps or that. It seems to me that looking at that sort of involvement, the right response is not to say that it's saying something about the computer or the video game or whatever it is. It's saying something about your child, or about children in general, or about people in general in our culture perhaps. Applying that to myself, I think that my initial strictures again, blaming myself as I drove down for once more getting into this situation of arriving in a chaotic state having driven all night and not even properly dressed. I'm not a professor at the business school, so I don't have to wear a tie. Whatever it might be, I started saying to myself, "Well, maybe that's what I really wanted and maybe that's really what this business of what the computer is all about."

I'll try to elaborate that as I talk to you a little about some of the things that I've been doing recently with some children and the computer, but I'd like to say something else first, and that's I was down on the program in two roles here. One, welcoming remarks, and two, making a talk about computers and children. Reverting to welcoming remarks for a moment, and there's no reason why they should be kept in order. I would like to add to what Edith Ackerman said about making this a brainstorming, not just listening to some lectures. I'd like to take a step further, and I'm sorry I'd never thought of this before, but seeing how many people came here and hearing the remark about the computer users and education and so on kind of organization, it strikes me that maybe it would be very interesting to have some sort of continuation of this getting together after today. Perhaps some people who are present here who are parents, and maybe their children too, and maybe some of us might like to stay in touch and continue dialogue over time.

I was thinking of maybe meetings from time to time. I was also thinking of setting up an electronic communication and so on. I would like to plant that idea in your minds now and turn it over. Maybe at various times give you a chance to talk about it, and if at the end of the day you'd like to leave your names and addresses, if you're interested in pursuing anything like that, please do and find some way to leave them somewhere.

To computers and children, I always feel a little awkward talking to a group of people I don't know. I see a lot of faces there, and [inaudible 00:07:31] who you are or what you think or what you do. Since my whole approach to education is don't give lectures, and what's wrong with school is that if a teacher stands up in front of 30 children and talks at them, and that's not a way to learn, and here I am standing up in front of 300 people and talking at them, and that's not a way to learn either. It makes me feel that something's wrong. However, I don't know how to get around it except as I already proposed doing something about

getting closer together. I'd like to excuse myself if I'm making assumptions about some of you that apply to only some of you and not to others.

One of the assumptions that people often make in dealing with thinking about children and computers is, well, what software, what computer, what activity is good for that child? My child in particular. Of course, there's nothing wrong with that and I don't want to discourage that question, but I'd like to focus also on some other questions that are I think perhaps are just as important, maybe in the long run more important. The two kinds of other questions I'd like to focus on are one, which is the content of a lot of my summer activity apart from trying to write which was working with some children and their parents on the idea that what it would be nice to have with computers and what a lot of people miss is an opportunity to do something together with the kids.

That is, as opposed to here's a software which will load in the computer or the kid can load in the computer and run which is great, maybe it might be ... Another view of it is, wouldn't it be interesting if you and the kid, the parent and the kid could work together or have projects together around the computer, with the computer, doing things or whatever they might be? That's a perspective that I'd like to hold up, and it's one that I'm going to show you. I'll give you a little peep at what I was trying to do, trying to design tools to make it easy for that to happen. My model there was something that I see is frequently the case. Put up your hand if this applies to you.

I find that a lot of people I know have a computer at home. They have small children who want to use the computer. If they're very small children, the children are like four or three, the children climb on their knees and want to hit at the computer keys and are frustrated, but the parents also are frustrated at not being able to find some kind of more constructive, unfolding way of doing something with it. I think there are a lot of such people around who have computers, getting to be comfortable with using them who might even be experts in one or other aspects of using computers but have not been able to find a way of sharing this with children of various ages. Anyone here? I think it's pretty widespread, and what I was trying to do following that through was starting with [Logo 00:11:28] and working with parents and kids and trying to see what tools we should add to Logo to make it easier for a parent and a kid to be able to work together to produce something.

The examples I just [lettered 00:11:52] flow in the cases I worked at. I rounded up some people who were interested. In one case, the child was about four and was very interested in everything to do with trains. Anything involving trains is fascinating for this child, so a natural thing to do would be to sit down and make some programs, make something that maybe starting from something that already exists, and in this case this evolved into starting with a general format of

the typical Mario-type Nintendo game where something moves along and there are various actions in a very simplified form. It was going to involve trains, and with some simple tools, the child and the parent together could develop ideas for trying to evolve a version of one of these games. It would be owned by them and could develop overtime starting with very simple into more complicated.

Another example was more socially oriented. This was a slightly older child who was very much involved with concerned about ecological matters, and preservation, and conservation, and animals and so on. They got involved in developing some software that would make demonstrations that could be used to show other people, children, teachers, neighbors, to bring out issues about nature and ecology and conservation that were of concern to the child and to the parent and to people around them so that by developing this stuff, they were using the computer to take a step forward in just adding an extra dimension to an interest they already had. I think this is a very different perspective from thinking of, well, which software can I buy? Which will be most amusing for the kid or most instructive or most developmental, mentally or whatever it might be. There's one perspective that goes beyond saying what's good for the kid. It's saying what's good for my relationship with the kid and for our relationship with other people.

The other aspect is related to school. Anticipating a slight circuit I'd like to make about this, I'd like to come to a conclusion. The conclusion I want to come to is that all people, the people who have computers at home and are interested enough to develop ideas around them and uses of them and get their kids involved, I think that such people are going to be one of the major driving forces in changing school. I don't just mean changing the way that computers are used in school. I mean changing school itself. This other perspective is looking beyond what you might do today or tomorrow with a computer or what your kid might do, but thinking of kinds of activities and ways of thinking about it and ways of involvement which will exert a pressure or explore ideas or will pursue ... But are focused on a longer term kind of evolution of the learning environment in general in its widest sense.

In that kind of perspective, I'd like to look at the way I'm thinking these days about computers and children and learning on three different time perspectives. One time perspective is what you can do now. You can go home tonight or tomorrow or next week. The other time perspective way down there is looking into a future that might be extremely different from anything that you could possibly do now, and then in between is the Trojan horse idea that is what can we do in an intermediate time that will tend to bring about that further state of affairs. I do think that unless we give way to a certain amount of utopian thinking, although it might have a romantic flavor in itself, unless we do a certain

amount of that, we can't make decisions about what's the important thing to do today.

I think this particularly applies to what's happening in schools where people are so preoccupied and most of all, the research community and most shockingly I think in some ways. Everybody is concerned about what effect putting these computers in this school is going to have on how these kids learn to spell or do arithmetic or whatever it might be. Now, learning to spell and do arithmetic is an okay goal except that the computers don't make a significant difference anyway. Concentrating on that aspect of it tends to make the whole research community in computers and education an instrument of conservatism, and in these days of new revolutions in Moscow and other places that tend to use that kind of political jargon an instrument of reaction rather than an instrument of revolution.

I find this happening to myself. I find that before say about the late '70s or the early '80s when there were no computers in schools except in occasional exciting, romantic utopian projects. My ideas when I talked about computers, they were all on a sort of mythic scale, tied to a fundamental critique of education as it's practiced in school. I do think, I thought then and I think now that computers in themselves don't do anything. They're only inanimate objects, but they are an instrument which could create a context within which radical change in education could be brought about. However, when computers started creeping into schools, the pressure on all of us interested in computers and education, the pressure to present them and find things to do with them that can be taken up by the school today or next week or next year is so great, that instead of ... That our thoughts are taken away from the thinking in visionary terms of where things might go, and they become focused on what will these school administrations, and the school education establishment find reasonable in the short run.

I think that within the school, we see this shift. In the early '80s, whenever I saw microcomputers in schools, they were brought there by visionary teachers. The typical example of a microcomputer in a school was you come in this classroom and it'd be as if you're in two worlds, and there might be the teacher talking at a blackboard, but the back of the room [inaudible 00:20:09] around two computers are a bunch of kids totally ignoring what's happening up there, and involved with carrying out some crazy project, some wonderful project using the computers to explore, to create outside of the framework of schools' chopping up of subject matters and class periods.

An example, one out of thousands, but one that I like very much because I can say it in two minutes happened in a New York school in 1981. It's about two children called Brian and Henry. I'll use those names. Brian and Henry have been

in the same class since first grade. They were now in fourth grade, but they'd hardly ever talk to one another. They'd hardly ever talk to one another because they had such totally different interests in life. Henry was the math wiz of the class, and was interested in science fiction. He thought himself as a scientist, as a mathematician to be. Brian was interested in music, in dance, in movement, in how he dressed, very different things, and they didn't talk to one another very much. When a computer came, there was no software then those days. This teacher had learned to program in Logo during the previous summer, and she brought these two computers among, and Brian knew instantly. Sorry, the math wiz child knew instantly that this was his thing. He was going to be the superstar at the computer, and in fact very quickly he mastered the technicalities of it.

It so happened that one of the kinds of programming activity that took on in this class was creating visual special effects on the screen, all sorts of visual effects. Some animation stories with a narrative, some just abstract things. This was a time when Star Wars the movie was new and young and in people's visual images, and they tried to make, create that kind of exciting visual effect. The math wiz found that although he could do smart, technical things, his programs did not draw the oohs and ahhs of admiration that some others did. One day watching the dancer do a dance in the playground, an idea came to him. This idea led to the two coming together and putting together the one sense of moving and drama and grace with the other's easy mastery of the mathematical aspects of programming, and they began to work together in a project that went on for a long time to make the best computer choreography of objects moving like fireworks and flying around in spirals and explosions on the computer screen. Together, they made some very wonderful things.

This was around the computer a cultural divide that breaks our culture into fragments was being crossed. To see that as an example of this computer going against the basic epistemology and sociology of the school which reinforces these fragmentations of knowledge and intellectual style that in the school, mathematics is one thing and dance and music and art is another thing and for the intellectually inferior moreover. This computer in this classroom and those two kids made a situation that broke down, that showed ... I mean it didn't break it down, but it pointed to a direction of breakdown of this I think extremely pernicious separation, fragmentation of knowledge that exists in many minutes, thoroughly rooted in our society and our culture is reinforced by school and was being broken down there.

I think in all the examples I saw in the early days of microcomputers in schools, there were visionary teachers who saw in the computer the opportunity to carry a step further something they've always tried to do which is to resist this role of reinforcing fragmentation and rather to try to bring together in a more holistic way the excitement of development of a child's mind. Things changed. I think

the adjust is many. There are even more visionary teachers now than there were then. It's not that that has disappeared, but the predominant presence of computers in schools has shifted to something else that by the middle of the decade of the '80s, computers in schools became big business. It got taken over by the school administrations, by city school departments, state school departments, big companies, and quickly we begin to see a totally different phenomenon where the computer is pulled out of the classroom and pulled out of that sort of use and put in a special room with a specialized teacher with a special curriculum.

When this happens, although being inside that context, individual kids and teachers can still do wonderful things, but you see the trend there inherent the nature of school to take it out of the learning environment and fragment it so it becomes one more subject apart from the rest of the learning life of the children. I think one has to see what's happening in schools, I see it as a struggle in political, sociological terms. It's not a question of do we know how to use the computer. A lot of people complain, "Well, schools don't know how to use them." I think that's a mistake. They know how to use them very well. The question is, who is using it for what? Those visionary teachers knew how to use the computer, and many of them who are still doing it now know how to use a computer, and the school establishment which consciously or unconsciously has a deeply vested interest and identification with these traditional ways of thinking is using it very well for its purposes.

One shouldn't mistake the fact that somebody is using it for another purpose shouldn't confuse that with they don't know how to use it and we should do more research and so on to find out the right way of using it. That was my circuit, and it's to come back to this idea that those of us you ... Those people who see the visionary role of educational change and want to see the computer as a kind of Trojan horse or an instrument that can be used to encourage that which I think it is need to have that vision of where we're going, and I think and profoundly influence the decision making and the thinking that's happening inside the school structures by supporting those visionary teachers rather as opposed to the powerful establishment.

Inside that perspective, I think one wants to look at the computer in a longer range use. I'd like to tell two little quick stories and show you a piece of videotape and a program that will maybe fill in, fill in this concept, another angle. A little while ago, a child aged four, a girl, who knew that I'd grew up in Africa said to me, "How do giraffes sleep?" I said, "What you mean? They close their eye." No, she said, "They've got such long necks. Where do they put their necks?" There's a problem, and it's clearly this child had thought about it. Pursuing [inaudible 00:29:22] the conversation she said, "Well you know ..." Her

puppy likes to cuddle his hair when he sleeps, and so does she. The puppy uses the arm for a pillow. What can the giraffe use for a pillow?

Another kid said, "Well, maybe it finds a tree that has a fork, and it puts its head in there." Another one said, "Well, it's like a horse. A horse sleeps standing up, but then where its head go? It can ..." The tree thing fitted in with that. There was a lot of talk, fantasy about how the giraffe sleeps. That was pretty exciting. I didn't know how a giraffe slept, so I went home, and I tried to look in encyclopedias, and I looked in my encyclopedia. I had all these books, and I browsed around. I didn't find out how a giraffe slept. I found out a lot of very interesting things about giraffes and some things about other things in this browsing, and I didn't found out, and I put the word out. I mentioned this story on telephone, in personal contact, on email to various people, so networking. That eventually brought back from four or five different people including [inaudible 00:30:48] [Leeson 00:30:48] who's already praised here as accredited [inaudible 00:30:53] contributed to the organization of this meeting who took the initiative of calling a director of a zoo.

Anyway, we found out, but you see through books, through networking we could explore this activity. Now, the point that I'd like to emphasize is not the fact that we found the answer. [inaudible 00:31:16] mattered if I'd never known how giraffes sleep. I would not be any the poorer for that. What was extremely interesting and exciting for me was that pursuit, exploring, trying to find out. This is what intellectual life of an adult is about, and this is what makes things exciting and thinking. We as adults have ways like books, like telephones, like electronic mail, like all sorts of stuff like that which enables us to explore distant issues like giraffes in another continent.

This is not though different from what children do in relation to the more immediate surround. Children from the time they're born are fascinated. They explore everything in the immediate world. Whatever they can see, they grab it, and they'll take something, and they'll concentrate on some aspect of it like put an object inside a container, and take it out, and put it in. For a while, all that matters is this little micro world, the relationship between the object and the container. The child will explore this, or the way things balance, or the way the different textures, or the way animals respond. Whatever is there in the immediate world is explored in a very associative, persistent, constructive kind of way. I think you're seeing in that the mechanisms out of which real intellectual growth happens in children.

When it comes to a giraffe in a distant continent, well, no. The kind of exploration that can happen there is it's still exploration in fantasy or in conversation with an adult, but there's a shift in balance. A shift in balance between what's inner and what's out, a shift in balance between what's

self-dependent and what's dependent on others. The adults are often not available or don't know or don't have the time. I think that this balance is an important, critical aspect in the development of children. If that can change, I think we're dealing with something very fundamental. I would like to suggest too that it obviously could change. That at some time in the future, I don't know when, not soon. But some time in the future, the child of four will be able to explore this issue of giraffes better than I could because electronic encyclopedias, visual encyclopedias, more intelligent encyclopedias will be better than my clumsy Encyclopedia Britannica which is limited in size because if it doubled or tripled or became 10 times as big, I wouldn't have enough shelf space. It'd be too expensive. It'd be too cumbersome to use.

Cross reference is so hard. Just think for example of the fact that there probably is in my Encyclopedia Britannica exactly the piece of information that I needed, but how do I find it? Things are in alphabetical order which is a clumsy, particular way of ordering things. Very useful in some ways. You can find a word in the dictionary very quickly if you know how to spell it, but to think if you want to find out how many English words there are that end in ZZ, how do you find [inaudible 00:35:08] in a dictionary? You might have to read through the whole dictionary or do a lot of work and a lot of guesswork, and the dictionary isn't organized for that, but if it's an electronic dictionary, a little program so big can quickly scan through it and find all the words that end in ZZ. I think we can envisage a day when the children's ...

The shift from the immediate world that can be thoroughly explored to the distant world which now cannot but will be, that the shift in that balance is going to happen, but notice a couple things about it. First of all, it won't happen easily. It won't happen easily because running away and writing a database about giraffes doesn't solve this problem because the whole point is that giraffes sleeping was just one of an infinite number of questions that could have occurred to this child, so it's going to need a whole culture, a tremendous growth of work before whatever a child thinks about has a fair chance of leading somewhere in this sort of context. This isn't something that we can think about tomorrow, but it's something that is an example of a long term perspective.

Secondly however, I also think that it's problematic. It's not obvious that this is a good thing to do. It's not obvious that what happened to the child of having to resort to fantasy rather than find the facts isn't a better thing. It's not obvious that the dependence on adults isn't part of the development between the children and the people and the important part of personal development. It's not obvious that how this shift takes place is how it should happen, what's important, what's right and wrong about it and how to think about it. This is not obvious at all, but I think what is obvious is that it's important that we're dealing with a deep issue there, and it's a deep issue that is vastly more important than

whether the child learns better to add or multiply. A useless activity anyway in the days of electronic calculators.

There's my example then, one of many that when we think of the future, we can think of very different ... Of computers playing a fundamental role in the lives of children. That's what we should be focusing on. It's hard. It needs a lot of imagination. We don't know where to go, but I think that that's where our eyes should be. In the intermediate, I just want to take the rest of my few minutes to give you some examples. First of all, I'd like to show you a piece of videotape which shows the result of a collaboration between our research group and the Lego company over the last four or five years. Lego has supported research and endowed a chair. Well, if they can turn on this videotape. How does that happen?

Speaker 2: [inaudible 00:38:43]

Seymour Papert: Oh. This videotape was made by Mitchel Resnick who is a part of our research time, and I think you will see him outside. You'll see in this piece of video some little things, some objects made out of an extended Lego. You'll recognize the basic Lego materials. What's been added to them is computer in one form or another so that they can behave. What I'd like to emphasize is to focus your attention on the fact that making these objects in a certain sense is technical, is science, is technology, is engineering, but in a certain sense it's fantasy also.

Now you see, this thing has sensors that has computing elements in it so that it can be programmed to ... This one just turns around when it gets touched. That one, guess what it does? I think it had a light sensor, and the light sensor made it when the lights changed, it stopped. This one was a serendipitous piece of behavior. I think it responds to the change in light, so it's looking for the edge between the shadow and the light and tries to get in there. Okay, enough. Turn it off.

The point about those things is that in building these devices, you are playing with fantasy, imagination, creating something like you might in writing a story in a piece of creative writing or in painting, but you're using technical stuff. You're using mathematics. You're using engineering ideas that are usually considered the province of graduate students or professional scientists and engineers rather than children. It's this ability to take over these ... To turn ideas of this sort, to turn this knowledge into something that you can use to realize ideas that come from within your own imagination that is radically different.

The teaching of mathematics or engineering or physics I think in the past has been taken a particular form for all sorts of reasons, but one of them is that the context of the technological world until very recently was such that there was

very little that a small child could do with that kind of knowledge. With this technology that can be mastered by children, this knowledge becomes something that can be used, and that shift from learning the knowledge and banking it away in your head and being tested on it, which requires it being chopped up into little bits and divided into subjects. This is math and this is physics, and this is art and this is writing, and chopped up into grade levels. I think all these aspects, teaching as a technical act and education as a technical act are closely tied with the circumstance that in our society for technological and for all sorts of reasons, our children were learning without being able to use the knowledge.

What I see as the key new element brought in by the technology is not using the technology to make machines into super teachers in the old style, but changing the relationship to knowledge so that knowledge becomes something that can be freely explored as in this encyclopedia image and used as in creating say these objects of this sort, or computer programs, or all sorts of stuff of this sort. I think that I'm not going to show you my computer programs, but I will ... I'm just too scared to get, turn on another technology, and I think it's ... Oh dear. [inaudible 00:43:49] Can everyone see what's happening? This is in Logo, an incredibly simple program. A child of four could learn to program the ... The program for this train moving is just-

Speaker 3: [inaudible 00:44:25]

Seymour Papert: Oh dear. The program for the train moving is just repeat a large number of times forward one, and this command which is built into the programming language enables the train to ... First you draw the train, and then you set it in motion. This child for a while just found it fascinating just making the train move, but after a while thought, "Well, let's ..." By accident brought an animal in and brought this rabbit. The rabbit was there, and inspired by a Nintendo game, the child thought, "Well, if I press the button, the rabbit can jump." That was almost as simple a program to write in just a few lines again. Press the button, click the mouse and the thing jumps. That was fun for a while. The train would come and you'd jump over the train.

Then this led to adding on yet another little piece in two different directions. One was the idea, "Well, maybe if it landed on the train, it should just go for the ride." That was a little more difficult and probably the four, five year old child would not have managed that at that stage of development, but with a parent could easily do that and maybe with the appropriate tools with other elements in the programming language, that could easily be done. That happened, but in order to do that, you had to judge to jump at the right time.

This was a child's idea, a brilliant idea. Do you see those trees in the background? That in order to judge the right distance between the train and the rabbit to make the jump, some kind of reference was necessary, and just planting the trees there spontaneously came from the child as, "If we had something there, then we could say it's a distance of a tree." Well, it wasn't a distance of a tree, and this child didn't have the language to say a proportion of the distance of a tree, but clearly that idea was in the child's mind and was used to decide when to press the button to make the thing jump so it would land on the train.

Then the other direction is what you saw when there was the collision that is on the train. The other direction was well, if you miss it and the train bumps into the rabbit, then something ought to happen. You heard those noises, and the rabbit flew into the sky. Each of these little pieces was a very simple addition of just two or three lines of quite a simple insertion like repeat a lot of times forward one, like when click repeat a lot of times, forward one. Then this goes that way, but first face upwards, repeat a lot. When click repeat a lot of times, forward one and then it goes up. Then add to that repeat a lot of times go down.

Building up these little programs leads to the elaboration of this game and a sense of I think a very obvious empowerment of this child as getting a sense of being able to take possession not only of the computer, but of those video game scenarios, those images that are familiar through the commercially made games are now appropriate by the child with tremendous engagement and force because the child has seen them so often on other people's screens becoming a producer rather than just a consumer of the same things brings that child with a new relationship with that knowledge, with the objects, with life, with the child's own self. I'll stop on that because this is maybe the most important thing that one sees with these children.

Another way of describing what school does to children is infantilizing them, treating them like children so to speak. Now, one's got to be careful playing with that word. I think children should be treated like children, but I think that when I was exploring about how the giraffe slept, I was doing like a child. Being treated like children in that sense, we should all be treated like children. School treats them like children in an impoverishing sense where children are assumed to be people who don't have good ideas, whose knowledge is limited, who have to be told rather than exploring, discovering, creating, possessing knowledge. I think that's the shift that we can bring around, about, and we have to ... I see setting up that vision as the most important, maybe the most important act in the world because all the other things like saving the environment and the planet will flow from new ways of thinking that depend in turn on children growing up with a

different relationship to knowledge and with the world, and a different vision of themselves. I will stop there and hand over [inaudible 00:50:14].