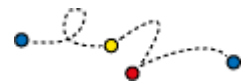




What do Children Need to Learn to Become Powerful Players in the World of Tomorrow?

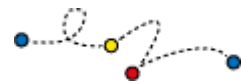
LEGO[®] learning institute



This paper was written by Anne Flemmert Jensen. Since August 2002, Anne Flemmert Jensen has been the Senior Researcher of LEGO Learning Institute; a research unit of LEGO Company dedicated to research into children's development and the connections between play, learning, and creativity in a changing world.

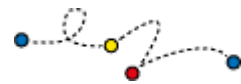
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During and after her academic career, she has worked as a researcher in her own private company. Here, one of her main tasks was evaluating community projects aimed at providing social and health care services for children and adolescents.



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Background

An increasing number of research findings show that the trend toward pressuring children to acquire formal academic skills before entering school is strong, and to some degree replaces efforts of actively supporting the development of social, communication, and creative skills on the children's own terms. This trend is particularly strong in USA, but also increasingly in UK and Germany.

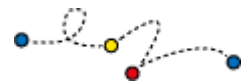
Research conducted by Lego Learning Institute shows that parents are indeed aware that free play holds important learning value. Simultaneously, though, free play activities seem to clash with a late modern lifestyle characterised by increasing time- and performance pressures among parents as well as their children.

Research done recently by LEGO among U.S. moms shows that achievement oriented parents emphasise giving their children the best of everything available in order to guarantee them a successful future. This process often begins even before a child is able to talk or walk.

According to the report, the trend is rooted in the desire to protect against the future by turning out fully prepared, smart children who are ready to live in whatever society may lie ahead. It is triggered by an undercurrent of anxiety, and appears to breed an irrational type of fear in parents: They are afraid that not pushing preschool children will result in their children being left behind academically, thus not giving them a chance to get into those schools that will secure their future.

Thus parents seem to think that they support their children in the best possible way via a strong emphasis on academics and on *teaching* children skills instead of actively *supporting* their natural urge to learn and to develop skills and competencies.

Simultaneously, politicians often seem to react on bad PISA tests by demanding more emphasis on academics in schools. Often the solution offered by politicians is to expand the number of hours spent on teaching children reading, writing and arithmetic skills, rather than initiating a discussion of whether the teaching methods need to be changed.



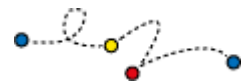
LEGO Learning Institute has initiated a research project aiming to provide insight into and raise the public debate about this trend. The purpose is to ask some fundamental questions:

1) Parents seem to rush themselves and their children to become prepared for school by focusing on *teaching* them academic skills. But: *Are* parents actually securing their children's future in the best possible way by putting emphasis on academics and on *teaching* skills rather than supporting their children's natural urge to learn and explore? Do the pre-schools and primary schools who focus heavily on academics and on skills actually prepare our children properly for life? Are the politicians right to think that the solution to bad PISA results is to focus more on academics?

2) During the past 1-2 decades, we have witnessed vast cultural changes. We live in a world of increasing diversity, fragmentation, and complexity. And this puts new demands to our children's development of competencies. Do schools today support sufficiently the development of those competencies among children? What do children need to learn in order to become powerful players in the world and work life of tomorrow? Which learning environments promote the development of such skills and competencies among children?

The project consists of a collection of secondary and primary data. In 2003, we are conducting both qualitative and quantitative studies among children, parents, and teachers. But we are also looking for secondary data that we hope to collect in order to create a picture of what it takes to support children in growing into happy and competent individuals in the world and work life tomorrow. We are looking very broadly on research and research findings about:

- The relationship between pre-school models and later school success.
- Findings within brain research that show the relation between certain learning approaches and children's development of skills/competencies.
- (Playful) Learning in a sociological context: Research into whether children's play cultures and learning processes/styles are changing concurrently with the vast cultural changes we have been witnessing for the past decades.
- Research that shows and/or argues that certain kinds of learning approaches are better suited in today's society considering the fact that children are growing up in a world considerably different from the one we grew up in.



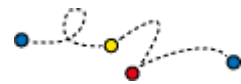
What do we know about children's intellectual development?

In the past 20 years, a long row of comparative studies have been conducted looking at the connection between pre-school models and later school success (see, for example, Consortium for Longitudinal Studies, 1983; Schweinhart, Barnes, & Weikart, 1993; Schweinhart & Weikart, 1997; Marcon, 1992, 1995). The results of these studies have been somewhat mixed, although a considerable number of them show that those children enrolled in preschools based on constructivist approaches do better in school in the long run (Miller & Bizzell, 1983; Marcon, 1992). Longitudinal studies do show that the possible head start gained by children exposed to "instructionist" preschool models only last for a year or two.

One of the major concerns about this dispute about goals and methods is that both sides in the struggle become too narrow sighted and overlook curriculum and teaching methods transcending the traditional approaches. Observations in early childhood classrooms as well as findings within brain research suggest that children's learning curve can be boosted through curriculum and teaching methods that address children's intellectual development distinctly within a constructivist context.

Constructivist theory does not neglect children's intellectual development; however, constructivist theory is sometimes misinterpreted. Believing that children "construct their own knowledge," some adults do little more than set out a variety of activities that children enjoy, while avoiding teaching them basic academic skills. Indeed, it is not surprising that observers of nonacademic preschool and kindergarten classes who have little knowledge of young children (e.g., E. D. Hirsch, Jr.) criticize "progressive" and "constructivist" classes as banal, vacuous, overemphasizing play and fun, and wasteful of children's capacities.

At the same time, a strong academic approach may undermine the disposition to use the knowledge and skills so intensely instructed. The disposition to be readers or, similarly, to be ready users of mathematical concepts and skills often painfully acquired may be damaged by premature instruction, given the amount of drill and practice usually required for success in mastering these skills at an early age.



The Relationship between Preschool Model and Later School Success

In the ongoing debate over education reform designed to improve academic performance of American children, preschools are under increasing pressure to offer instruction in basic academic skills. But does such instruction at an early age actually improve children's academic performance in later school years?

Rebecca A. Marcon has conducted a longitudinal study in an urban school district in USA where this was a central question. 721 4-year old children were randomly selected and assessed on the basis of the following parameters:

- 1) Basic academic skills
- 2) language
- 3) Self-help
- 4) social skills
- 5) motor skills
- 6) Adaptive development

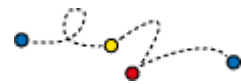
A follow up study was conducted in 2002 to measure the long term effects. By the end of their sixth year in school, children whose pre-school experiences had been academically directed earned significantly lower grades compared to children who had attended the child-initiated pre-school classes.

Children's later school success was enhanced by more active, child-initiated early learning experiences.

Children's grades from the direct-instruction preschool model had declined in all but one subject area (handwriting) following the Year 6 transition.

Why did academic performance of children from academically directed preschool classes begin to decline? Marcon suggests the answer can be found in the new demands characteristic of the later elementary school grades.

Through the primary grades, children are learning to read. An academically directed approach typically emphasises the act of reading over comprehension.



Beginning in fourth grade, though, children are increasingly reading to *learn*; comprehension is critical. In fourth grade, they encounter more abstract concepts that do not necessarily match up with their everyday experiences.

Additionally, fourth-grade teachers expect children to be more independent in the learning process, to assume more responsibility for their learning, and to show greater initiative. Perhaps teachers foster this independence by stepping back somewhat and shifting their instructional approach to be less didactic.

At this stage, the *ability to learn* becomes just as important as the learning in itself. And children who are used to the fact that learning emerges from their own efforts, have a greater ability to learn than those children who are used to linear, top-down approaches.

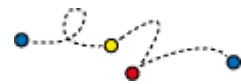
Important lessons about independence and self-initiative are being learned in the early childhood years. Overly teacher-directed approaches that tell young children what to do, when to do it, and how to do it most likely curtail development of initiative during the preschool years.

According to developmentalist Constance Kamii (1984), such an approach produces passive students who wait to be told what to think next. Therefore, it is not really surprising that children whose preschool experience may have curtailed initiative would find the transition to the later elementary school grades more difficult. The foundation of critical thinking may be found in early childhood experiences that foster curiosity, initiative, independence, and effective choice.

Marcon (2002) concludes: "Pushing children too soon may actually backfire when children move into the later elementary school grades and are required to think more independently and take on greater responsibility for their own learning process".

Which teaching methods support children's intellectual development?

An appropriate curriculum addresses strengthening and using the intellectual dispositions, offers good processes about rich content, and results in high-quality products. For these reasons, many teachers



have been incorporating project work into the curriculum (Katz & Chard, 1989; Beneke, 1998).

Project work not only provides contexts for the intellectual dispositions involved in the investigations that children undertake, but it also provides texts and pretexts for children to make meaningful and functional use of the academic skills they are taught during the "instructive" part of the curriculum.

Thus, we might "trichotomize" the early childhood curriculum so that it is focused on at least a trio of goals: (1) social/emotional development and (2) intellectual development and (3) the acquisition of meaningful and useful academic skills.

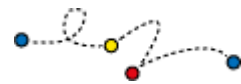
Excellent examples of meaningful long-term projects in which children's intellects as well as growing academic skills flourish can be seen in the work of the children in the pre- and primary schools in Reggio Emilia, Italy (Reggio Children, 1997), as well as in reports of projects by Beneke (1998) and Helm (1998). These works demonstrate that young children can express their intellectual dispositions in the pursuit of serious topics and apply their emerging and academic skills and generate high-quality products simultaneously.

Beyond the Industrial Society

"Our World is being remade. Mass production, the mass consumer, the big city, big-brother state, the sprawling housing estate, and the nation-state are in decline: flexibility, diversity, differentiation, and mobility, communication, decentralisation and internationalisation are in the ascendant. In the process our own identities, our sense of self, our own subjectivities are being transformed. We are in transition to a new era." (S. Hall et. Al., 1988)

We have an obligation to create toys and tools that give children of today rich play value and learning rich experiences. Children of today, however, grow up under other cultural conditions than we did, and that effects their play cultures and learning processes.

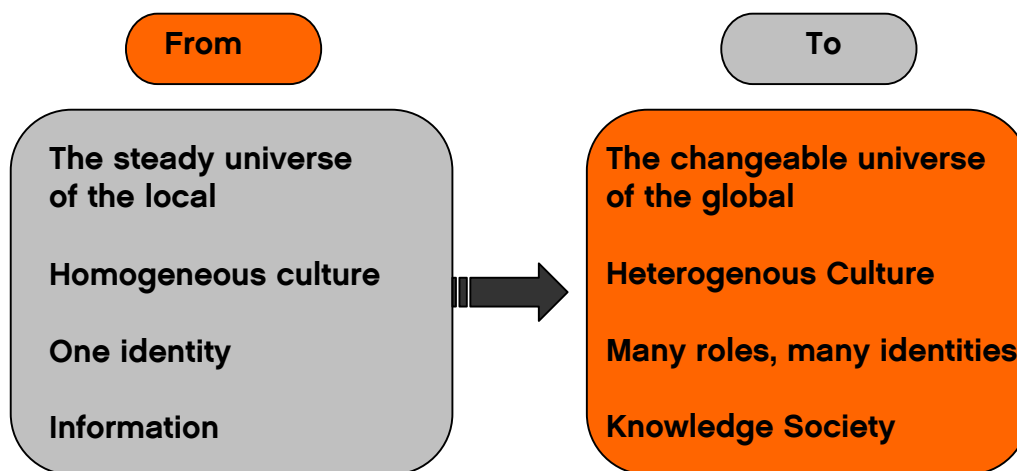
It is widely acknowledged among sociologists that we have moved beyond what is characterized as modernity - and the institutions and modes of life associated with modern societies as a whole. A 'postmodern' era is arriving or has already come into being. Modern societies, it is claimed, took their inspiration from the idea of progress and enlightenment.



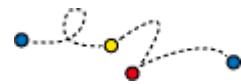
The advocates of the idea of postmodernity suggest today that this notion has collapsed. There are no longer any 'grand narratives' which make any sense (Lyotard, 1985). Not only is there no general notion of 'progress' that can be defended, there is no such thing as 'truth' and 'objective knowledge'. All that exists is an indefinite number of different narratives and forms of knowledge, without any natural core. This situation is bound up with the recognition that many different, equally authentic values and orientations are possible. The postmodern world is thus a highly pluralistic one.

As illustrated in exhibit 1, the main characteristics of this society is that we have moved from a life based on the steady universe of the local to the changeable universe of the global. A world characterized by great diversity, complexity, and fragmentation in which we and our children have to be able to play many different roles, take on many different identities, and live with multiple truths.

Exhibit 1: Children's Changing Life Conditions



To become a strong player in such a world, demands a lot of new competencies and a great capacity for life long learning. We have to be able to construct our own identities on an ongoing basis, and to engage in many different social context where our own roles are constantly being negotiated and transformed. One backside of this is that the gap is increasing between those who thrive in such a society and those who don't. Some researchers believe that we are moving towards a 20/80 society where only 20% of the population are



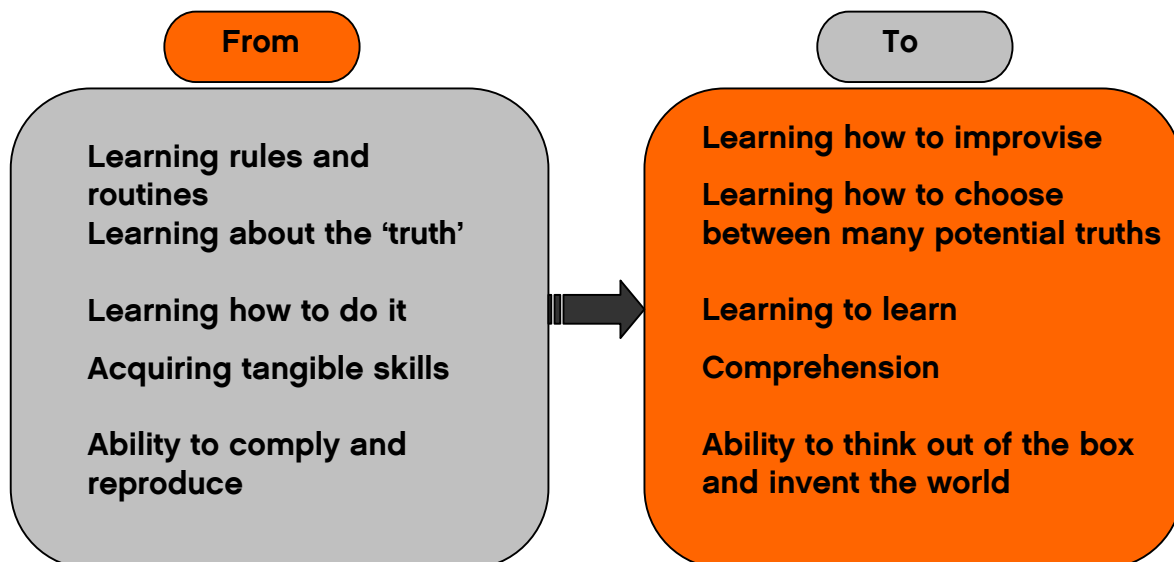
able/have the competencies to match the new knowledge society, while the last 80% have to be fed passively with *titty-tainment*.

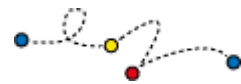
Toward the Creative Society

A growing number of researchers are also emphasizing that children's learning styles and cultures are changing concurrently with cultural change and that what they need to learn to become powerful players in tomorrow's world is considerably different from what they needed to learn in the industrial society.

As illustrated in Exhibit 2, the social networks of the industrial society were local. The 'know how' that a child had to acquire was rooted in the local and based on a long row of rules and regulations which were an integral part of the local world. This root in the local and in the forming of rules and regulations does not exist anymore. Instead knowledge is rooted in the individual.

Exhibit 2: Influence on Children's Learning?





When the forming of rules no longer has a fundamental significance to children's construction of knowledge, *improvisation* suddenly becomes quite central in the learning process. Some researchers refer to this transformation as a move from drill and practice (where rules are taught) to 'learning through practice' (where one always has to improvise and put existing knowledge into new contexts)

In *Toward the Creative Society*, the Annual Report 1999, produced by Next Generation Forum, it is argued that we are moving away from a focus on institutions and systems, toward a focus on human resources and values, from a focus on memorizing and facts toward a focus on creativity, playfulness and learning, from a standardized industrial economy based on physical resources, toward a knowledge economy based on ideas, creativity and innovation.

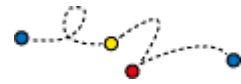
In the report, our use of technology is used as an example to draw a clear distinction between the industrial society and the Creative Society: Industrial society is a society of reproduction. In such a society technology is used to do the same things a little faster. In the Creative Society, though, technology is used to do totally new things, such as mixing and merging different media in the creation of new, innovative expressions.

In the Creative Society, it is no longer enough to learn formal skills; it is equally important to gain emotional, social and cognitive competencies. It is no longer enough to learn how to do things, but more important to comprehend the underlying principles of different disciplines, and to be able to take the learning gained in one field and apply it to new problem fields.

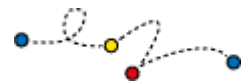
The conclusion to the report is that children and their play will take a new and central role in the development of society. Play and childhood are no longer to be seen as preparations for a more realistic adult life - it is at the very core of what is needed to become a powerful player in the world and work life of tomorrow.

Concluding Remarks.

Parents, educators, politicians - and not least companies producing tools for children - need to acknowledge that we live in a world characterized by increasing diversity, fragmentation and complexity. In such a world knowing the drills of reading, writing, and arithmetic is of course necessary, but by far not enough. We have to *empower* children to become active players in such a world; to become creative

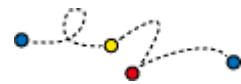


and innovative thinkers rather than reproducers. To become skilled at using different media to communicate and create new messages rather than just becoming passive receivers of entertainment. As Dean Kamen, Founder, F.I.R.S.T. has said: "We need to show kids that it's more fun to design and create a video game than to play one." Thereby we enable children to become powerful players in tomorrow's society.



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