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The Impact of Time on the Design of Learning Environments

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THE IMPACT OF TIME ON THE DESIGN OF LEARNING ENVIRONMENTS

This article is a report on the Time Workshop held at the international conference on "Innovative Alternatives in Learning Environments" in November 2000.¹ The report, written by Prakash Nair, a U.S. expert on school facilities and technology, includes significant input from Hans F. Van Aalst, the co-leader of the workshop, and all participants involved.

Introduction

Time is a critical component that shapes educational systems and school buildings. However, it is an element whose impact is rarely considered in the design of schools because time-bound learning is a "time-honoured" tradition that remains largely unchallenged, despite enormous evidence that it precludes a great number of students from learning effectively.

How time shapes schools and dictates their organisation

In the United States, subjects are taught in clearly defined 45-55 minute periods. Children are organised by chronological grouping, each attending school for one academic "year" per grade level, which is in turn broken down into quarters or "marking periods". There is a long break in the

summer, a shorter one in the winter and at least one other break during the spring.

School itself is broken up into five time-bound sessions called pre-kindergarten (below five years), kindergarten, elementary school (1st through 5th grades), middle school (6th through 8th grades) and high school (9th through 12th grades.) While this system represents the American form of education, some equivalent system is present in every country with a formal education system. The programme that determines a school design is largely shaped by these pre-defined time constraints.

The need for timeless schools

There is now research that shows how the idea of teaching students the same thing at the same time at the same pace is unworkable. It is known that learning does not start or end with school; lifelong learning is a term that is entering the mass consciousness. Physical learning places need to reflect current educational wisdom which places far less emphasis on time and more emphasis on developing each student's full potential at his or her own pace.

Toward the timeless school

With information no longer having the power it once had, the focus of learning has shifted from memorisation to critical thinking and analysis, supplemented by hands-on

1. See *PEB Exchange* issue 43, June 2001, "Amsterdam Watershed", pp. 12-17.

project-based instruction. Even when it is not possible to learn by doing in a real-world context, computer simulations are often used to mimic real-life experiences. Collaboration and teamwork and extending learning beyond school and into the outside community are all features of the timeless school.

It is important to remember that the movement towards timeless schools represents a significant paradigm shift away from the time-bound paradigm represented by most of today's learning facilities. The following are some of the factors that must be considered by architects and others interested in building schools that will endure well into the 21st century.

Schooling vs. learning

Though often used interchangeably, schooling and learning are not the same. Since schooling was traditionally seen as an objective process, it is one that was believed could be segmented neatly into pre-determined time increments. The underlying assumption is that, with some exceptions, most students will learn approximately the same things within the same allocated times. In other words, consistent schooling equals consistent learning. This assumption is the absolute foundation of most educational systems and, by extension, school buildings also represent this segmented time approach to learning.

Personal vs. societal clock

In designing the time-bound paradigm of education, there is little attention paid to the idea that each human being experiences time differently. In other words, time is not objective, but subjective and experiential. Different individuals perceive the same objective time-segment as being longer or shorter depending upon their interest and absorption in any given activity. This shows that learning is a very personal thing. One reason for this is because each learner "constructs" meaning differently, influenced as he or she is by his or her own unique life experiences.

Any attempt to hold both learning and time constant frustrates the purpose of education: to give each student a chance to succeed. In other words, to learn, a student must be given the time he or she needs to fully understand the subject being taught. Conversely, if time is held constant, it is inevitable that some students will not learn.

Personalised learning

The idea that each student is unique and, therefore, requires individualised attention, has led to the personalised learning movement. Very simply, personalised learning recognises

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This environmental education laboratory, set in a forest, offers five-day programmes for groups of school children and adults. Teaching is based on practical activity and group work.

that education is only meaningful in the context of each learner's unique interests and abilities. Instead of focusing on identifying learning problems and correcting them (the basis for test-based assessments), personalised learning attempts to discover and maximise each learner's inherent potential.

In order for personalised learning to be successful, students need to be exposed to a variety of learning modalities; while some students will excel in modes where cognitive abilities are stressed, others may excel in the areas of social or artistic abilities. If success is defined as the attainment of personal realisation and fulfilment, then it is only logical that educational systems should be geared toward delivering personalised learning.

From the perspective of educational facilities, personalised learning will entail many different activity areas not only within the classroom, but also throughout the rest of the school. Naturally, this approach to learning will also create the need for radically reforming the time-based administration of schooling – be it the period-based organisation of the school day or the chronological groupings that characterise the grade breakdowns in elementary, middle and high schools.

Time as a dependent variable

The problem with time-bound educational systems is that they see time as an independent variable. All the stated goals of education are therefore defaulted into dependent variable status, subordinate to the tyranny of time.

The solution to this problem is to relegate time to dependent variable status. In other words, the primary goals of education become the independent variables and time becomes subordinate to achieving those goals.

Under this scheme, the following are some independent variables freed from time-bound strictures that limit their realisation insofar as individual learners are concerned. This does not mean students are not taught how to manage time, only that time cannot be seen as independent of the expected outcomes. These independent variables are also examples of important educational goals for the 21st century:

- developing time management skills;
- nurturing creativity;
- encouraging independent thinking;
- developing emotional intelligence;
- building self-awareness;
- nurturing the multiple intelligences;
- acquiring knowledge;
- applying knowledge;
- creating communities;
- providing useable skills in various disciplines.

Project-based learning

Under the scheme where time becomes a subordinate variable in the learning process, project-based learning can take the place of subject-based learning. Projects are a good way to manage time because they are organisational units that permit holistic development of the person while serving as the vehicle to impart specific life-skills. Project-based learning solves the problem of students being forced to absorb information without context. Such rote learning has been shown to have no long-term benefits. Hands-on project-based instruction, on the other hand, engenders a greater level of interest and motivation in students and results in learning whose influence is often lifelong.

Lifelong learning can be anytime, anywhere

Disconnecting education from the strict adherence to time-based elements also requires a rethinking of the place of education. When the 9 a.m. to 3 p.m. school day no longer governs, educational systems must expand the concept of learning not only to include “anytime” but also “anywhere”. Once schools begin to offer choices in scheduling and

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the Netherlands*

Modular partition walls throughout this college building will allow the space to be rearranged in the future, as needs change.

course delivery, they will inevitably have to offer choices of location. This is facilitated by the advent of virtual learning over the Internet and the widespread use of e-mail, video-conferencing and other forms of electronic communication that do not require the student and teacher to be physically present at the same location.

Under the timeless learning paradigm, the central school building, so long the staple of our educational systems, will be relegated to the place for the physical meeting, but not necessarily the place for all learning.

Role of the mentor/coach in the timeless school

In the early learning years, teachers will assist learners to understand that, even with flexible time, there are self-imposed boundaries and structures. Time management is a skill that must be taught early in life so that it becomes naturally practised in later years of life.

Teachers in their role as advisors and facilitators seek to write themselves out of the learning equation as they teach students the art of independence and self-responsibility. The “teacher” is not always a designated instructor, but anyone who is able to transfer knowledge. In classrooms and other learning settings, the teacher may often be a peer or other mentor.

From “frozen time” to “improvisational theatre”

It is easy to understand how a school built in the early part of the 20th century stands today as “frozen time”, representing an educational system no longer relevant in today’s information age. It is somewhat more difficult to explain why schools built in the 1990s have also become relics so quickly.

In the business community, there is an understanding that every few years the form and content of the workplace will undergo radical reform. Buildings are, therefore, simple “shells” with some core infrastructure elements built in such as elevators, power and water and toilet facilities. Individual occupants can “fit out” the space to their exact specifications as often as they choose. In stark contrast, and for reasons that are hard to fathom, hundreds of millions of dollars are expended on “frozen time” schools. For example, in New York City, with some rare exceptions, new schools are still being built with permanent masonry partitions – as if the curricular requirements of the 1980s and 1990s frozen in place by today’s design will remain unchanged well into the 21st century. As it happens, most of these schools are already obsolete on the day they open.

So what is the answer? The solution opted for by the business community will not work for schools, which are less likely to undergo major interior rehabilitation every 15 years or so. Besides, unlike business establishments whose activities are more easily predictable and therefore easier to design for, schools need designs with far greater flexibility. In schools, a variety of teaching modalities and audience sizes need to be accommodated within per-occupant square foot standards that are a fraction of what is allowed in the business world.

One way to look at the design of the 21st century school is to see it as designing for improvisational theatre. The improvisational theatre is used in ways the designer of the space could never fully contemplate. On any given day, the theatre could become a stage for one single individual, a duo, a small group or even a large group such as a chorus. The idea is that the occupants define the space and the activities within the space define its purpose. This is a departure from traditional schools whose spaces define its purpose and whose occupants must live by the limits of its pre-determined purpose.

Conclusion

There is one significant manner in which school designs for the 21st century will deviate from the simple black set that defines improvisational theatre. In the black set, the actors

are expected to supply all the stimulation. In a school, however, the set must have elements that the actors can interact with, elements that entertain a variety of interactions. For example, its users may treat a sitting area around a fountain with moveable furniture very differently than a similar area with fixed seating. Classroom configurations with moveable walls, adaptable furniture and mobile casework are likely to encourage more learning and teaching styles than those with fixed walls, standard furniture and built-in casework. A painted mural is likely to have less educational value than an electronic mural that changes every day – and perhaps allows students to express themselves artistically.

Spaces need to be designed not simply to stimulate action. Some spaces are necessary to stimulate contemplation. In a frenetic world where external stimuli of all sorts bombard people from every direction, learning places need to provide some opportunity for reflection and quiet, to refresh spirit and soul. Such spaces need to be designed in a way that learners will naturally be drawn to them. They should be places where time, indeed, stands still – at least for the moment.

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