

# Curriculum change, innovation and innovative examinations: shifting expectations.

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## *Abstract*

In the last two decades, curriculum content in Dutch education has been re-arranged into a limited number of new programs or profiles. Students are expected to study more independently and are encouraged to take increasing responsibility for their studies.

Although none of these reforms led to structural changes in the educational system, consultations with the majority of Dutch secondary school principals and teachers have initiated an ongoing debate about the current system of national examinations. Cito, the Dutch National Institute for Educational Measurement, in charge of the production of the national examinations for general education since 1967, the National Examination Board, the Department of Education and the National Organization of School Principals are working together on an agenda for the future of examinations. The aim is to design a more flexible national examination system that will safeguard the quality of the current system while giving enough room for development of innovative examination strategies.

On top of these changes, there is a growing influence of social constructivism in secondary school curricula. This trend has resulted in a number of experimental schools and programs. One important characteristic of these experiments, called the 'new learning', is the tendency to organize education in terms of 'mass customization', in a way similar to mechanisms we see in the organization of industrial processes. Standardization and modular structure leading to 'tailor made' products are important characteristics of mass customization in general and recent research show that these characteristics also apply to this latest education reform.

This presentation discusses the dilemmas and perspectives of maintaining the quality standards of a system of national examinations while giving enough room for experimental schools and their curriculum development.

## **1. Scenario's for the future**

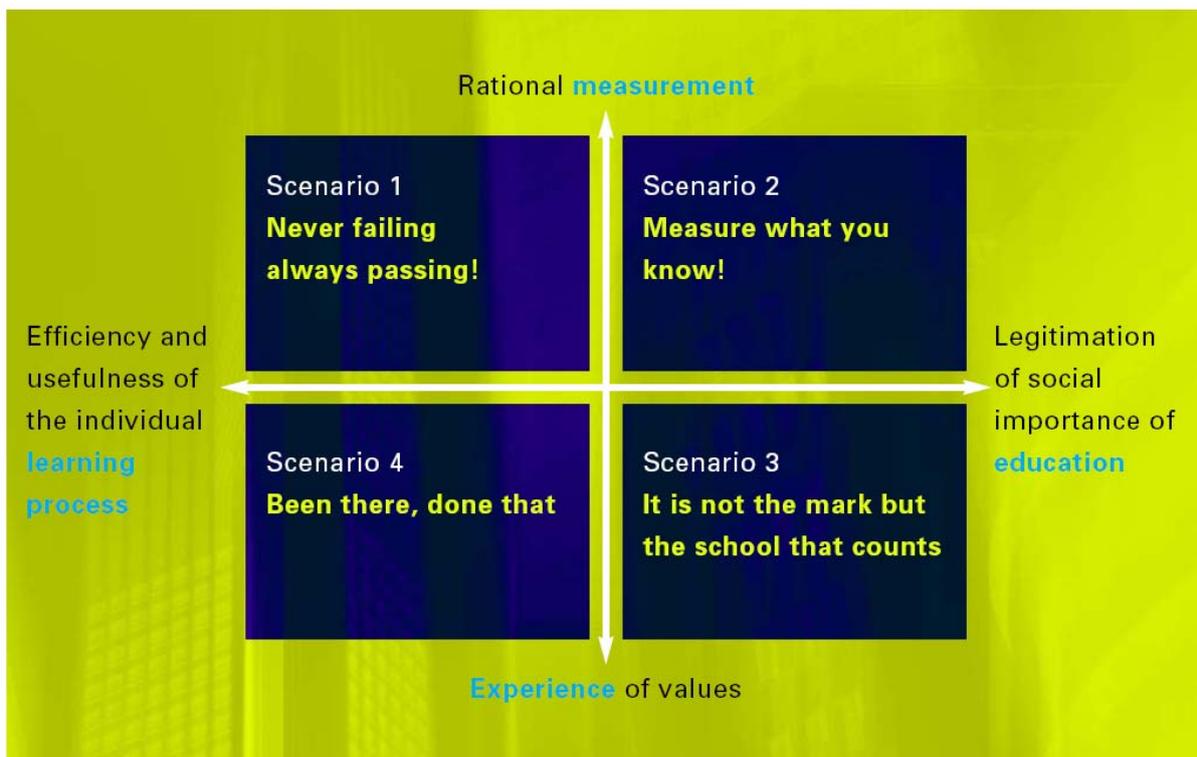
Education in the Netherlands is public domain in every aspect and teachers, parents and students are very well informed. The educational debate is a public debate and as a result the media play an important role in this process. A notable change in the educational debate in the Netherlands occurred around 1995. Not only did the last reforms, that had started in the early eighties raise an unusual amount of criticism and discussion, the debate did not stop after these reforms had become part of everyday practice in education. Because a number of critics suggested that the system of national examinations would eventually frustrate these curriculum reforms, Cito set up a research project to explore the future of the national examinations.

In the first part of this project, Cito conducted a scenario study to explore different perspectives on the exam system. Using a methodology originally developed by oil companies, we explored four different scenarios for the future of examinations. Future scenarios are used to invent and then consider, in depth, several varied scenarios of equally plausible futures with the objective to bring forward surprises

and unexpected leaps of understanding. These scenarios represent a tool for bringing order in the perceptions stakeholders. The point is not to select one preferred future and hope for it to become true. Nor is the point to find the most probable future and adapt to it. Rather, the point is to make strategic decisions that will be sound for all plausible futures. No matter what future takes place, any company or institute is much more likely to be ready for it and be influential in it, if it has seriously thought about scenarios. Scenario planning is about making choices today with an understanding of how they might turn out tomorrow.

Scenarios are based on 'driving forces' and dilemma's (or critical uncertainties) in a certain field. In the case of examinations, a movement away from assessment *of* learning towards assessment *for* learning was considered to be the main 'driving force'. In assessment for learning the individual student and the individual learning process are central. Assessment is used to guide learning in a meaningful way and to strengthen intrinsic motivation. In assessment of learning the social and economical value of the human potential are central. Assessment is focused on the social relevance and the social comparison of student outcomes. Assessment of learning is important for the external legitimation of education.

Apart from being objective, standardized measurements, tests and examinations are also cultural 'rites of passage' with strong traditional, emotional and ritual aspects. The introduction of computer based assessments may lead to increased efficiency but increasing the efficiency of processing examinations will in one way or another affect the ritual value of the exam. The discrepancy between rationalizing procedures and emotional experience can be seen as a dilemma but also as a 'driving force'. A driving force because it is impossible to predict with certainty what will guide the discussions about examinations: efficiency or effectiveness. The scenario studies have resulted in four scenarios:



After Cito published the scenarios, the results of these studies were discussed with numerous representatives of the education community, thus becoming a common reference for future developments.

## **2. The New Learning**

Two of the scenarios reflect the trend towards individual programs of study. The idea of 'custom made', individual programs of study has been a major characteristic of all educational reforms in the Netherlands since 1960. First through programmes of study leading to the final examinations that contained a very limited number of compulsory subjects and a large number of optional subjects. In the most recent change in the curriculum, this diversity was limited to a small number of programs. But at the same time students are expected to carry more responsibility for their studies, they are supposed study more independently and they are also expected to select their own study and research projects within the boundaries of these programs of study.

In a second research study we looked at a number of initiatives in secondary education in detail to see if and how they would fit our scenarios and also if they were mere incidents or the forerunners of a broader movement to introduce a new education based on a social constructivist ideology. In the public debate in the Netherlands, these new initiatives were referred to as the "New Learning".

Advocates of the New Learning have estimated that 20% of the schools in the Netherlands were, in one way or another, experimenting with New Learning. The New Learning is not a single concept; it is the common denominator for a number of new or different approaches towards education and teaching from Sudbury Schools to Post modern Neo-Montessori institutions.

For our second research project we wanted to consider a sample of schools that would represent as many variants of the New Learning as possible. Based on statistics, findings in empirical research, and information obtained by the inspectorate, a lively portrait of an imaginary average Dutch secondary school was composed. This school was given the name of Aver College and set in Middletown. The portrait of Aver College was then distributed among more than a hundred educational experts, who were asked to name schools that they considered to be clearly different from Aver College. We reviewed the literature, consulted the Internet, newspapers, periodicals, reports from the inspectorate and studies in order to identify as many schools as possible that clearly differed from Aver College. The criterion of maximum variation guided the reduction of this sample to a list of twenty case studies. To these twenty cases we added two plans that had not yet been implemented, but were soon to be put into practice. As before, the plans that we selected were those that differed most from the schools that had already been selected for the study.

The final report of our research was based on seventeen case studies, each of which consisted of an analysis of written material, a school visit made by a team of two researchers, and interviews with people who were directly involved in the changes that were made (often school principals, project managers, or both).

The ideologists of the New Learning are convinced that our current educational system is outdated. Their basic assumption is that knowledge as such (facts) is

becoming less and less important. They are convinced that competencies as being able to retrieve and process knowledge, collaborative skills and learning to learn are more appropriate goals for 21st century education than rapidly aging knowledge. The most important finding of our second research is that almost all of these initiatives were guided by the strong belief that school had become too boring for a generation that is growing up with MTV, MSN, SMS and online gaming. Today's students are just not interested in what schools have to offer; the 'old teaching' is no longer motivating our students to study.

The needs and wishes of students and their parents are very diverse, and schools feel obliged to meet those varied needs. Notions about the knowledge society and life-long learning push these ideas further, stressing that all students should be able to fully develop their talents. Schools are therefore urged to diversify their practices in order to offer "personalized learning," "tailor-made education," and "customized learning". At the same time, school budgets have hardly increased at all. Expected to increase diversity without increasing costs, the trade-off between diversity and efficiency poses a dilemma for secondary schools.

Because what seemed to be overlooked is the notion that diversity almost always leads to an increase of costs because it is less efficient. Standardization on the other hand is the driving force behind efficiency. In the Netherlands, all schools are private schools, but they are all publicly funded and budgets are based on a sort of standard educational practice. As a result, most schools offer a similar sequential curriculum, similar textbooks, and similar teaching methods.

Any school implementing a curriculum based on diversity and variety of study programmes will encounter an increase of cost. Our studies have shown that a number of schools that introduced a more diverse and varied curriculum, had to reorganize the primary processes in way that was remarkably similar to the concept of mass customization in industry. The concept of mass customization is not new education, but up until now it seemed to be applicable only in higher education institutions where it is common practice that students follow diversified, personalized routes throughout their studies.

In terms of industrial production the concept of mass customization refers to the idea of offering the customer a tailor made, personalized product, while the production process itself is standardized as much as possible. In the case of a tailor making a suit, there is little or no standardization in the production process when compared to the process of producing of mobile phones. All mobile phones of a certain type are similar when they end up in the customer's hands and it is the customer that customizes the product by changing the ring tone, the cover, the screen image etc. Nike offers you online ordering of custom running shoes that come in a number of up to 7 million different versions. You can assemble your own personalized, custom racing bike or car, so why not assemble your own personalized programme of study?

Schools, just like any other organization, are subject to the economic law that customization implies diversity, and diversity implies a loss of efficiency and an increase of cost. Adding diversity without increased funds (or higher prices/ teaching fees) thus creates a diversity-efficiency dilemma for schools that is comparable to that faced by private companies when customizing products. Although the nature of a

school organization is indeed very different from that of a private production company, strategies for coping with such dilemmas are likely to bear resemblance. The body of research on mass customization shows a wide variety of organizational strategies.

1. Cosmetic customization (new sophisticated names for old programmes of study)
2. Postponing the point where diversity becomes inevitable (the 'decoupling point')
3. Collaborations and combinations of schools and programmes (through modularization)
4. Reducing heterogeneity (Magnet or theme schools)
5. Adding resources (private sponsors, industry-education partnerships)
6. Digitizing (e-learning)

The results of our first analyses showed that the 17 schools in our first case study used most of these strategies in one way or another.

School	Strategy
School 1	Reducing Heterogeneity & Collaboration
School 2	Adding Resources
School 3	Adding Resources
School 4	Modularization & Collaboration
School 5	Modularization & Collaboration
School 6	Modularization
School 7	Modularization
School 8	Modularization
School 9	Modularization
School 10	Modularization & Enlarging Unit of Organization
School 11	Modularization
School 12	Modularization & Collaboration
School 13	Enlarging Unit of Organization
School 14	Enlarging Unit of Organization & Collaboration
School 15	Enlarging Unit of Organization
School 16	Enlarging Unit of Organization
School 17	Enlarging Unit of Organization

Within this group of schools three main categories of schools can be identified: conservatives, differentiators, and radical customizers. Conservatives attempt to avoid the diversity-efficiency dilemma by protecting themselves against the pressure to diversify. Their main strategy is to reduce heterogeneity of the student body. Radical customizers avoid the diversity-efficiency dilemma by adding resources and by enlarging the units of organization (increasing group size). Most of the case-study schools occupy the middle ground on the continuum; they are differentiators. These

schools face the diversity-efficiency dilemma in its most severe form, because they are caught in the middle. They try to offer diversity in content, pace, and pedagogy, while trying to remain within the boundaries of mass education. For these schools modularization of curriculum content is the dominant strategy.

### **3. Assessment and the New Learning**

Triggered by the ideas of the New Learning there is a growing demand for new forms of educational assessment, assessments that tell a richer (and for some truer) story of a student's competencies than classical tests do. There is a growing demand for long term assessment systems that fit an education culture that is based on continuous formal and informal assessments and guidance. Instruments that are primarily used to improve the quality of learning of the individual student.

New assessments that tell a richer story of what students know and are able to do, will be more time consuming and more labour intensive than the mass produced, standardized assessments such as our national examinations. An unavoidable consequence of the process of diversification and individualization of learning outcomes is that it will increase information cost. Not only will it take more resources to gather, compile and communicate results and data of complex and diversified assessments, it will also result in an increasing amount of time and resources for stakeholders to process the information. No institution for higher education is willing and able to study and digest extensive student portfolios for entrance selection of students.

One of the conclusions of a large debate among school principals, the national examination board and the department of education initiated by Cito, was that the concept of having national examinations in terms of civil effect, was too important to abandon. At the same time it was acknowledged that new concept of personalized and customized programs of study in secondary education would require changes to the examination system. Changes that would lead to an examination system that would fit the needs of innovative schools, while at the same time, safeguard the value of the current system of examinations and certificates in society.

In an earlier stage, Cito had sketched the implications of a more flexible examination system for three dimensions of the system: variation in type of assessment, variation in time of assessment and variation in content of assessment. Variation in type of assessment might include the choice between equivalent multiple choice or essay type examinations. Variation in content refers to writing, research and study assignments where students can choose from range number topics. Variation in time implies increasing the number of times per year a student can sit for an exam, including a system where on demand examinations are possible.

A first project that will start next year including 10 schools for secondary education concerns the introduction of an extra examination period in January. This will give student the opportunity to finish their studies in a number of subjects in January and give students the opportunity to use the remaining time for their personal studies or subjects. A variant still under consideration is giving students the opportunity to sit for a limited number of subjects one year before they finish their secondary education program.

This first experiment will include a limited number of schools because one can only speculate about effects of introducing extra examination periods on the curriculum and on student behaviour.

A second project concerns the development of a competency based 'circulation card'. The idea of the circulation card is to develop an 'extended certificate', containing not only examination scores but also scores on a number of standardized instruments, including scales related to a number of core competencies. The aim of the project is to control the information cost by introducing a standardized format that will allow for the necessary flexibility. A document comparable to a waybill or a bill of lading, in this case specifying not the cargo but the study results of a student.

A third initiative to increase the flexibility of the examination system is the increased use of computers in assessment and examinations, including the development of a system for online, high stakes computer based test taking. Within a few years, computer use will be included in at least one examination for every student.

And recently, the board of examiners gave permission to start an experiment with integrated examinations for social studies and science on the first school that introduced the New Learning in the Netherlands: Slash21. The curriculum of this particular school is based on a re-shuffling of the classical curriculum content in two larger integrated programs for science and social studies combined with programs for mathematics, languages and arts. The design and development of these school based examinations will serve as a model for others schools.

#### **4. Towards a New Examination System?**

An examination system is a very intricate construct. Logical or necessary changes in education do not necessarily lead to changes in the examination system as such. Any curriculum based examination or assessment system inevitably dictates the education process in one way or another. But, in the case of the New Learning, the advocates claim there is a genuine risk that the examination system will frustrate the innovations in learning and teaching in these schools.

Recently, the National Educational Council made a plea for a more evidence based educational development. The merit of the current system of National Examinations in the Netherlands has been undisputed since it was established in 1967. The experiments and projects mentioned before and the accompanying research will have to yield the evidence to support the claims of the innovators, before changes in the examination system will be implemented.