

2 Renewing primary education

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For several centuries the growing need for knowledge in society and the economy was satisfied by expanding education: participation rates and the number of compulsory school years were steadily increased. The phenomenon of pupils dropping out of school acted as a natural selective, homogenising filter. In the socio-economic environment of our age, however, everyone is expected to possess the skills and abilities taught at the secondary level of education and it is therefore essential to make secondary education accessible to all. Both individual lives and the labour market are adversely affected if pupils interrupt their studies prematurely and move on without attaining the necessary knowledge. The first few years of schooling are decisive with respect to later studies. This is the stage when the basic skills and abilities which provide the foundations of all later studies should be developed. It is at this stage that children's overall relationship with learning is shaped, learning habits and attitudes toward school and school subjects are formed. Motivation, a learner's self-concept, expectations and goals for the future are greatly influenced by initial successes or failures.

Although the significance of childhood experiences has been emphasised by philosophers, educationists and practicing teachers for a long time, convincing scientific evidence concerning the significance of child development has only been available for the past few decades. Some countries have already drawn the lessons from them and now place special emphasis in their education programmes on young children's development. Among them are education systems with internationally outstanding outcomes (Finland and South Korea, for instance) and countries that have launched remarkable reform programmes (such as the United States) with special focus on the renewal of the first stage of formal education.

■ DIAGNOSIS

1. The educational culture characterising primary education has barely changed over recent decades. The developments accompanying the regime change, however, had a degrading effect on this stage of schooling. The decentralisation of education management was not accompanied by a multiplication of expertise needed to make the right decisions, differences in the financial means of school maintaining authorities create large deviations in learning conditions from the very beginning of formal education and the gap between schools has been further widened by the policy of open school choice.

Later educational accomplishments are largely determined by extreme developmental differences at the start of schooling.

The causes of disadvantages are not investigated in an effort to tailor teaching to individual needs.

Poor performers from disadvantaged backgrounds are segregated and the education system is highly selective.

Children are assigned to school years according to their age with the result that there may be extreme developmental differences between children attending the same year. The Hungarian school system is not equipped to deal with these differences effectively. Disadvantages of various types are not distinguished, the causes of poor achievement are not investigated, teaching is not tailored to individual needs and there are no programmes to compensate for disadvantages. As a consequence, a child's developmental level at the point of starting school greatly determines his or her educational accomplishments at later stages. A significant proportion of pupils drop out of school and it has become common practice to segregate poor performers and educate them in separate classes or schools, disregarding the reason behind their poor performance (which is often the absence of a supportive family background). The Hungarian education system is consequently more selective than any other system in the developed world.

Schools continue to be content-centred, teaching largely consists in imparting course contents to the pupils, "covering subject matter". All children are generally taught the same topics for the same period of time regardless of their prior knowledge or developmental stage. The developmental efforts targeting particular skills end when the predetermined time is up regardless of the level of mastery attained by the children. Learners will therefore have varied levels of knowledge of a given subject matter at the end of a learning period and will accordingly differ in how well prepared they are to move on to the next task. Thus there will be a constantly growing number of pupils who are made to set out to acquire new subject matter with no hope of success. Failure and repeated discouragement have the effect of turning these children against learning. If as a result of this process the majority of pupils in a class are constantly faced with tasks surpassing their current abilities, anti-learning and anti-social groups will emerge.

2. Of the many different types of problems inherent in the transition to school life, special attention must be paid to the fact that children starting school are at *very different developmental stages* and this may have serious consequences. A certain level of development is a precondition for a successful school start. There are well-defined prerequisites for the acquisition of reading, writing, numeracy, language and problem solving skills and if these are not satisfied, any attempt at developing these is doomed to failure. Let us illustrate differences in developmental stages through an everyday example: we start walking at different ages because we need varying amounts of time for the optimal acquisition of this skill depending on our inherited and acquired traits required for this skill. It is this aptitude-dependent time requirement that gives rise to phase differences (a delay or an advance). Developmental phase differences do not necessarily result in differences in the quality of acquired knowledge provided that pupils can take the time they each need: those who start walking late because they needed much longer than usual for the optimal acquisition of this skill may end up champion walkers nevertheless.

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There have always been developmental differences between children but in the past the system went through a spontaneous homogenization process as more and more pupils left school.

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The five year gap observed in year one doubles in size by the end of year 10.

It has been known for decades (see, for instance, NAGY, 1980) that there may be a developmental gap of more than five years between pupils in a single cohort of school starters. The youngest and the oldest child in a cohort may be separated by at most one year in chronological age but this may amount to more than five years in terms of mental age and more than six years in terms of social age. What this means is that assuming an average rate of development, children with the longest phase delay need, respectively, two and half years' and three years' extra time to reach the mental and social developmental stage typical of their cohort and five and six extra years' time to progress to the stage characterising the high end of their cohort. The range discussed here does not include children with serious disabilities, who make up 1–1.5 per cent of each cohort. Children who are often categorised as having mild mental impairment or specific learning disabilities are, however, held to pose a serious problem for the public education system (especially in year one and in primary education) even though the majority of these pupils are in fact characterised by a significant developmental delay rather than medical mental impairment or disabilities. They constitute about 6.5 per cent of each cohort.

The legislation on compulsory schooling specifies a certain chronological age when children must enrol in school. There have always been developmental differences between children but these were disregarded for a long time and the system went through a spontaneous process of *homogenization* as more and more pupils dropped out or left school at the end of a certain stage of the progressive stages of education. This process ensured that the initial developmental gap between pupils did not grow further. The situation changed radically when public education was made compulsory to all. Initial differences between children now have the consequence that a syllabus designed with an average pupil in mind is too difficult to follow and master for those who do not have the necessary prior knowledge. The increasingly complicated and abstract subject materials taught in higher years become more and more alien and incomprehensible to them.

The growing body of surveys assessing the development of cognitive and social skills and abilities reveal that while some pupils show steady progress thanks to formal education and regular learning activities in the home, about 25–35 per cent of pupils “switch off” and give up from year 4 or 6 onwards. Hungarian assessments indicate, for instance, that the basic cognitive skills and abilities of vocational school students do not on the whole progress beyond the level typical of primary school pupils in year 5 or 6 (see for instance NAGY, 2003). Data on learning motivation and the development of social skills paint an even more negative picture: most assessments show stagnation or even regress.

These processes have two especially serious consequences. It is clear from the above data that the developmental gap between learners not only fails to decrease but unmistakably and steadily grows. The five year gap observed in year one doubles in size by the end of year 10. The average cognitive abilities

of the most slowly developing students in year 10 correspond to the average cognitive abilities of year 5 students. The top students in year 10, at the same time, display cognitive abilities matching the average performance of the 20–21 year old population. (This is the difference between an average student finally dropping out of primary education and an excelling 16 year old secondary school student.)

The other consequence is that further education prospects and entire adult careers are pre-determined by the entry level of development for most pupils. An earlier study (NAGY, 1974) found a correlation of 0.86 between first year performance and eighth year performance. This result confirms the now widely acknowledged fact that the level of cognitive and social development attained up to the start of school and the several years' developmental gap have a decisive impact on people's entire lives.

These problems were recognised in developed countries a long time ago. Movements of pedagogical reform have explored several different potential solutions: a number of tools have been developed to tackle the problem of the steadily growing developmental gap amounting to years of difference originating in an initial phase delay. Two of these will be discussed briefly below, both of which are system-level and are still in use but have by now become inadequate.¹

3. *Can grade retention help?* Grade retention lets pupils have extra time to catch up and close the expanding developmental gap. Studies showed as early as the sixties, however, that grade retention by itself is not sufficient to eliminate delays (unless they are due to long-term absence). Several experiments have been conducted on education without grade retention (with automatic promotion). The most fundamental, still valid conclusions of these are aptly illustrated by the results of an exemplary study (WORTH, 1971). Half of underperforming pupils in the sample were promoted to the next grade while the other half were retained. At the end of the school year pupils' achievements were assessed in 12 core areas. Eight of the 12 assessments showed no significant difference between retained and promoted pupils, promoted pupils performed slightly better on three of the tests and the results of one test showed a slight advantage for the retained group. Both promoted and retained pupils remained the weakest performers in their respective classes. The experiment demonstrated that the punitive and humiliating practice of grade retention, the wasteful repetition of an entire year, does not have any real benefits. However, an education system where grade retention is prohibited by law is equally unsuccessful in tackling problems stemming from extreme developmental differences and extreme heterogeneity.

The humiliating practice of grade retention, the wasteful repetition of an entire year, does not have any real benefits. However, an education system with no grade retention is equally unsuccessful in tackling problems stemming from extreme heterogeneity.

[1] We shall not discuss differential instruction, compensation and other similar methods here. They all may help alleviate differences, but by themselves they are insufficient to address developmental gaps measurable in years.

4. *Homogenization.* The term homogenization is used here to describe the process of sorting and segregating pupils according to certain criteria in an effort to boost performance. The clearest and most consistent version of homogenization, the practice of streaming, was first introduced in England in the late 19th century. Pupils in the same year of study were divided according to ability, intelligence and developmental stage and the resulting groups were taught in different classes. About half of pupils attended schools of this kind until the mid-20th century, after which their proportion gradually declined and at present there are hardly any schools left using the original streaming system. Homogenization has taken many different forms around the world. The subject is remarkably varied and a rich body of research has addressed the issue. Three of their conclusions are discussed below.

The societal and sociological consequences of homogenization have always been the subject of criticism backed by research evidence. Olsen, for instance, wrote, “When we place pupils in classes according to abilities, we segregate them and form intellectual ghettos which parallel social ghettos, whether this ghetto be Park Avenue, or Harlem” (OLSEN, 1971). However, the view that homogenized classes may be objectionable in this respect but produce better academic results because of their homogeneity was upheld for a long time. Research evidence discrediting this view first appeared in the sixties. Studies comparing schools educating their pupils in segregated (homogenous) classes to schools teaching pupils in heterogeneous classes conclude that homogenized education is not any more successful in terms of academic achievement (HILLSON & HYMAN, 1971). A UNESCO survey involving 12 countries revealed as early as 1963 that a system of homogenized classes increased developmental differences between young generations.

These findings and conclusions have been again and again replicated in later surveys.² We may contend, then, that homogenization as described above has proved to be a pedagogical dead end. Nevertheless, homogenization attempts, efforts to reduce heterogeneity with the aim to improve outcomes, surface in several countries in a variety of shapes – be they overt or covert – regardless of whether the practice is accepted, tolerated or prohibited. This does not mean, however, that a policy of eliminating homogenization and segregation by legal means would be sufficient for moderating extreme heterogeneity and mitigating the problems stemming from it in an effort to improve outcomes and equality of opportunity. To achieve this aim, pedagogical culture must be renewed.

5. *Knowledge-centred versus competency-based pedagogical culture.* A knowledge-centred pedagogical culture focusing on lexical contents does not devote appropriate attention to the development of psychological factors, their

Schools teaching learners in homogenized classes are not any more successful.

[2] In PISA surveys, for instance, the top performing countries are invariably those where there is no early segregation in the school system, where schools are ready to accept differences and have heterogeneous compositions.

A knowledge-centred pedagogical culture with its focus on lexical contents does not devote appropriate attention to the basic system underlying the personality and is therefore incapable of delivering systematic development programmes.

organisation and operation, acquisition processes or the criteria of optimal acquisition and usability, and is therefore incapable of delivering purposeful and systematic development programmes. A competency-based pedagogical culture creates and uses this knowledge and can thus offer a solution to the increasingly serious efficiency and equality problems generated by traditional pedagogical culture.

Traditional pedagogical culture does not distinguish personality as a whole from its underlying basic system (or, to use a computer analogy, its “operating system”). The basic system underlying personality is a functional system of psychological basic components — basic motives, basic skills, basic abilities, basic concepts and key competences — that allow an individual to function, adapt and develop, i.e., to grow into a successful adult member of society. The components of this basic system must be developed fully with conscious effort for each individual. Since knowledge-based education altogether disregards the distinction between the personality and its “operating system”, it is left to chance whether each of the crucial basic components duly develops or stagnates at an unusable level for a given individual. *Competency-based education, in contrast, focuses on developing the basic system and sees all other kinds of knowledge as subservient to the development of individuality.*

Mastery learning may offer a solution even though there are areas where the principle of “proficiency for everyone in everything” cannot be applied. The method should be used in developmental efforts targeting basic skills and abilities that form the foundations of all later learning and cognitive development.

Traditional education allocates a given period of time (lessons, school terms or years) for the acquisition of a certain body of knowledge, which applies to all learners regardless of their level of development or prior knowledge. This leads to steadily declining effectiveness and growing inequality — due to the increasing gap in prior knowledge — and to motivation problems. Mastery learning is a promising attempt at solving this problem even if there are areas where the principle of “proficiency for everyone in everything” cannot be applied. The method should be used in developmental efforts targeting basic skills and abilities that form the foundations of all later learning and cognitive development. In a competency-based education system every pupil is given as much time as they need to meet the criteria of optimal acquisition. This criterion-referenced strategy involves continuous provision of help and support for the learners that may traverse topics, school terms, school years or education levels.

If a piece of knowledge is not referred to or used regularly, it is highly likely to be forgotten. This is a natural and inevitable process. Yet, knowledge-centred pedagogical culture does not reckon with it, different elements of knowledge are not weighted according to their importance and no provision is made for the regular application of knowledge forming the foundations of learning at later stages. Traditional pedagogical culture leaves it to chance whether a particular piece of knowledge will be retained over time. Competency-based education, in contrast, sees continuous support in the service of optimal acquisition as a fundamental task.

Notwithstanding its rich century-old tradition, active learning has never become common practice.

Notwithstanding its rich century-old tradition, active learning and its facilitation have never become common practice at Hungarian schools. A similar observation can be made for group-based co-operative active learning even

though several varieties of group work have been developed over the past century or so and its effectiveness and positive impact on the development of basic social skills have been experimentally demonstrated. All in all, traditional pedagogical culture is incapable of adopting and supporting regular active group learning. One of the main reasons is that practicing teachers cannot be expected to prepare for activities of this kind on a regular basis.

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If a programme of regular active group learning is to be introduced in the classroom, teachers and learners should be provided with a detailed, experimentally tested package of tools and materials (ideally with a range of different options to choose from). A package of this kind is indispensable for the implementation of a programme of several years' optimal, criterion-referenced development of basic personality components. The regular use of group-based/co-operative active learning is a fundamental feature of competency-based pedagogical culture.

6. A further source of problems is that education continues to be teacher centred; classes are of an invariable duration and are dominated by frontal instruction. Pupils' desks in classrooms are typically arranged with this style of instruction in mind while just a simple rearrangement of classroom furniture would permit varied group work. The change from kindergarten to school is too abrupt, the playful education characterising kindergartens is replaced by formal, demanding and joyless school work all at once.

7. The goal of primary education is to develop the basic skills upon which all later learning is built. Key areas include linguistic skills, verbal skills and children's ability to express themselves in speech and writing and to read and comprehend texts. Counting, numeracy skills, mathematical and logical skills, and the acquisition of reasoning skills, including deduction, are prerequisites for understanding and mastering scientific knowledge taught at later stages. Schools offer very few opportunities for children to engage in activities developing various social roles and social skills needed for co-operation. The effects of failures during the first few years of formal education tend to surface at a later stage. Children cannot learn to interpret complicated texts or acquire basic mathematical and logical skills. The consequences become obvious at a later stage, when these skills should be used. The problems that surface towards the end of primary school or in vocational education have their origins in the first few years of schooling.

In the Hungarian education system the transition from primary education (years 1 to 4) to lower secondary (years 5 to 8) is just as abrupt as the change from kindergarten to school even though the former two stages are typically provided by the same school. At the end of their fourth year roughly 25-35 per cent of students are not ready to meet the challenges of lower secondary education and the curriculum of this stage is not flexible enough to take learners' level of development into consideration. Some of the pupils will therefore

be unable to keep up with the rest of their class and their cognitive and social development will be hampered. There are good reasons why in most countries the shift from elementary to secondary school coincides with the end of childhood, the beginning of adolescence. In Hungary, this would be paralleled by a structure where primary school spans years 1 to 5 or 6 rather than years 1 to 4, as is now the case. (Under the Hungarian system before World War II elementary schools did cover years 1 to 6.) Fortunately, it is not necessary to transform the school system to align educational stages with biological stages; the solution to these major problems lies in ensuring a smooth, problem-free transition between the stages of education. Let us consider three examples illustrating the consequences of the shift.

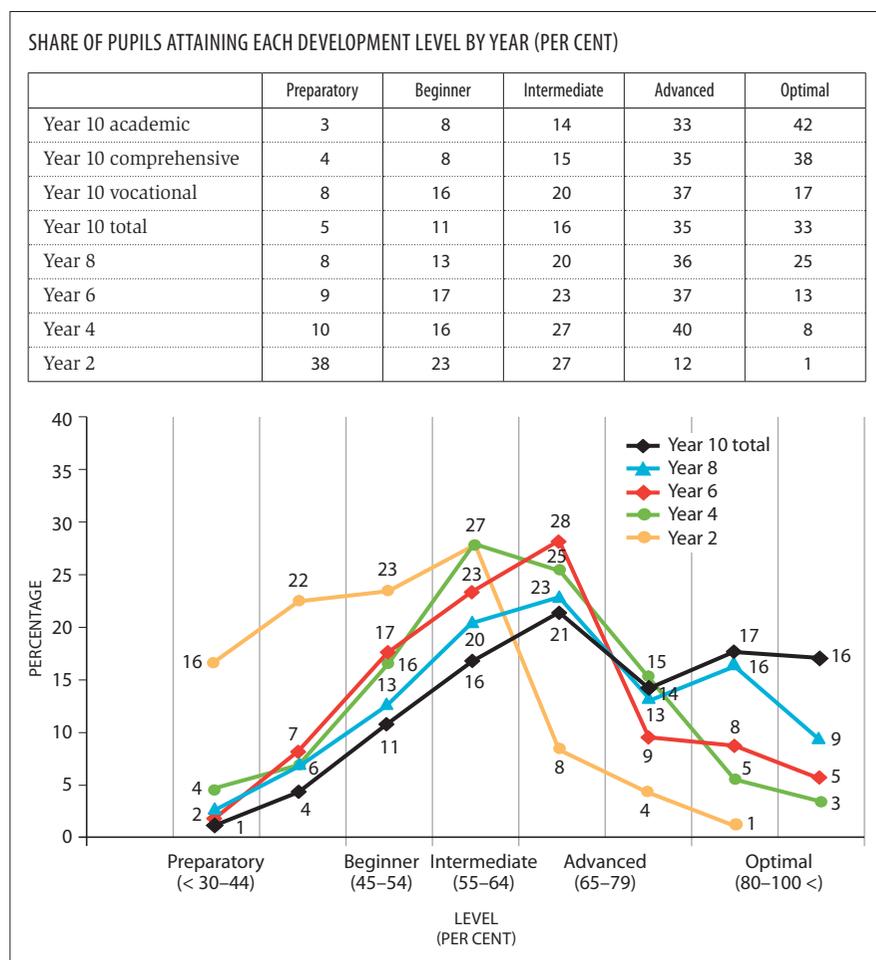
a) Drawing-like writing (which is fully acquired by the end of year 2 by all except those with serious dysgraphia) demand great concentration and a lot of time. When writing is used for a practical purpose, this letter-drawing method fails and handwriting disintegrates into a barely legible scribble. Roughly half of third year pupils have optimal letter drawing skills but the corresponding proportion is only 24 per cent in year 5 and remains at that low level until year 9.

b) 61 per cent of second year students' technical reading skill (enabling them to comprehend not more than written words and sentences) reaches merely preparatory or beginner levels in the terminology of the Diagnostic Development Index. At these levels, the reading skill is practically unusable for practical purposes. Although the corresponding proportion drops to 26 per cent in year 4, development slows down after this stage: 21 per cent of eighth year pupils have still not progressed beyond preparatory or beginner levels. The slowly improving or stagnant trends in the development of reading skills observed among pupils entering year 5 with slow and letter based word recognition are shown by the distribution curves in *Figure 2.1*. Children who enter lower secondary education without the basic skill of reading cannot progress any further and are very likely to need to live their lives with virtually non-existent reading abilities. We do not need detailed analyses to see that primary education fails to develop the technical reading skills of a large share of pupils to the level required at lower secondary education. And lower secondary education in Hungary does not take the large differences between admitted learners' reading skills into consideration.

c) The acquisition of elementary arithmetic skills presents similar problems. Around 40 per cent of children attain optimal proficiency in elementary arithmetic by the end their fourth year at school. Years 5 and 6 are characterised by a slower rate of development. Half of pupils entering year 7 stop progressing any further, and in year 9 only about 50 per cent of pupils possess elementary arithmetic skills of an optimal level of proficiency and usability. As regards those at the preparatory and beginner levels, 33 per cent of pupils enter lower secondary education with elementary arithmetic skills so poor that they cannot be put to practical use. Although their share decreases over the next four years, as many as 13 per cent of pupils are still effectively number illiterate in their ninth year of schooling.

[FIGURE 2.1]
The development of
technical reading skills

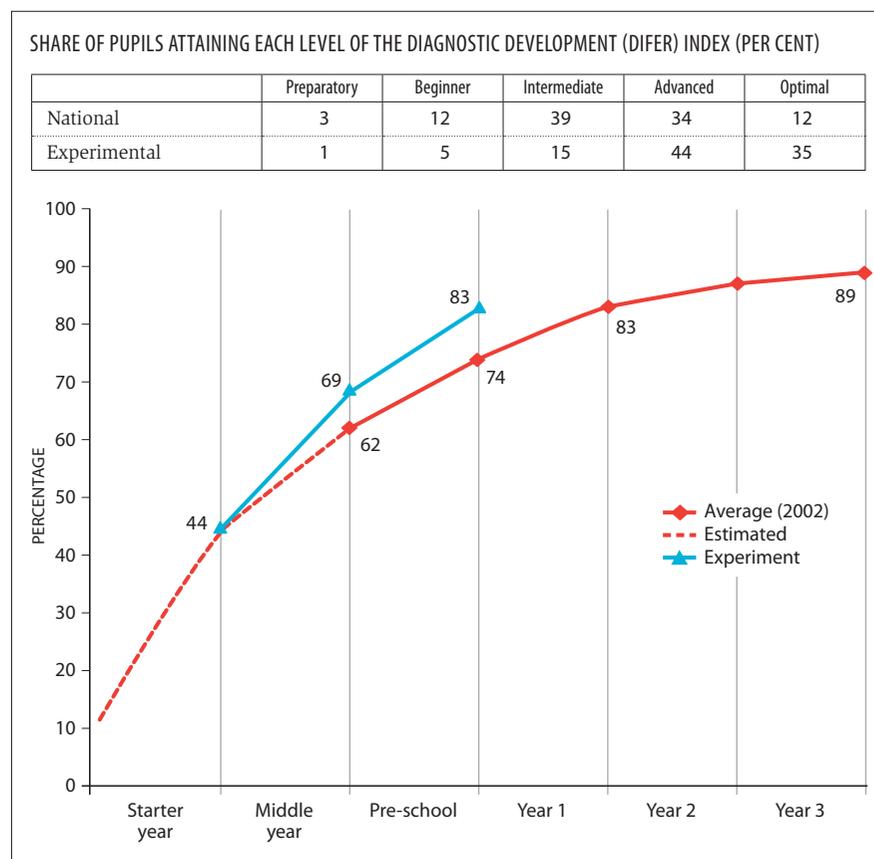
[SOURCE] NAGY (2004).



8. The problems caused by developmental phase differences are not impossible to remedy. It has been demonstrated by several Hungarian experimental studies that continuous criterion-referenced developmental efforts can effectively advance the acquisition of critical basic skills. The results of a two-year continuous criterion-referenced developmental intervention programme spanning the middle and pre-school years of kindergarten education (JÓZSA & ZENTAI, 2007) are displayed in *Figure 2.2*. At the beginning of the programme subjects in the middle-year of kindergarten (4-5-year-olds) performed at an average of 44 per cent. As indicated in the Figure, this result corresponds to the Hungarian national average. We can assume that if the subjects had not participated in the experiment, their spontaneous development would have followed the developmental curve characterising Hungarian children. The children were assessed again at the end of the first and the second academic years of the experimental programme and achieved average scores of 69 and 83 per cent respectively.

[FIGURE 2.2]
Results of
a developmental
intervention in the middle
and pre-school years of
kindergarten

[SOURCE] JÓZSA & ZENTAI
(2007).

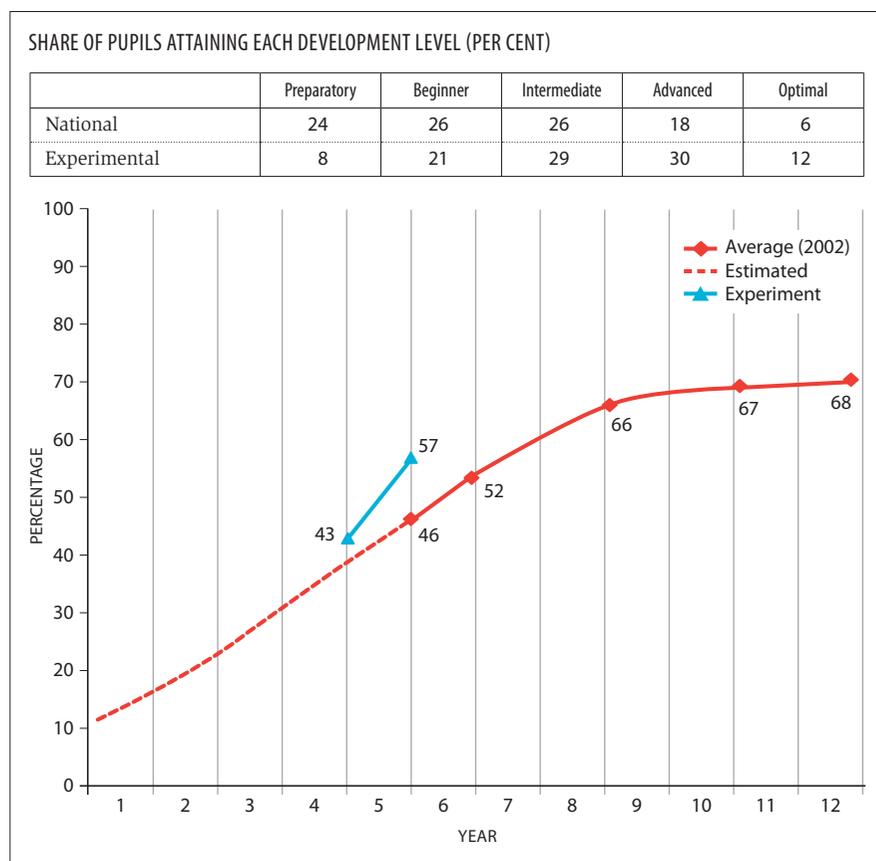


That is, the children's performance improved by $69 - 44 = 25$ percentage points in one year and $83 - 44 = 39$ in two years. By comparing this improvement to the spontaneous development typical of Hungarian kindergarteners we can determine the added value of the experimental programme: $69 - 62 = 7$ percentage points at the end of the middle year of kindergarten and $83 - 74 = 9$ percentage points at the end of the pre-school year, i.e., an advantage of $7 + 9 = 16$ percentage points in two years.

The effects of continuous criterion-referenced education also surface in measures far more important than the improvement of average performance: it helps children attain a school-ready level of proficiency in critical basic skills. In *Figure 2.2* the levels labelled "optimal" and "advanced" mark the levels of mastery necessary for school readiness. The results of a large-scale assessment have revealed that in Hungary 12 per cent of pre-school year kindergarteners perform at the optimal level and 34 per cent attain the advanced level if left to develop spontaneously. That is, $12 + 34 = 46$ per cent of children starting school are sufficiently highly developed to be successful in their school work. The developmental experiment raised this share to $44 + 35 = 79$ per cent. The national

[FIGURE 2.3]
Results of
continuous criterion-
referenced developmental
intervention in year 5

[SOURCE] PAP-SZIGETI (2007).



figures further show that 3 per cent of all children do not progress beyond the preparatory level of acquisition before they start school and a further 12 per cent reach only the beginner level. That is, $3 + 12 = 15$ per cent of children do not reach the developmental level required for success at school. The intervention reduced this proportion to $1 + 5 = 6$ per cent.

A second continuous criterion-referenced experimental programme was delivered in year 5 of schooling (PAP-SZIGETI ET AL., 2006; the results are published in PAP-SZIGETI, 2007). As can be seen in *Figure 2.3*, collapsing the results of different basic skills and basic ability tests pupils performed at 57 per cent on average at the end of the one-year intervention. Compared to the 46 per cent observed for spontaneous development, this result amounts to an added value of 11 percentage points. When left to develop spontaneously only 6 per cent of students acquire the basic skills and basic abilities targeted in year 5 at the optimal level. As a result of the experiment their share increased to 12 per cent. The proportion of students reaching the advanced level without intervention is 18 per cent as opposed to 30 per cent for the participants of the experiment. Thus, through spontaneous development 24 per cent of pupils are fully pre-

pared for further development while the corresponding proportion is 42 per cent among students participating in the developmental experiment. Spontaneous development takes 24 per cent of pupils to the preparatory level and 26 per cent to the beginner level; this is 50 per cent in total. Most of these children will not progress any further (which is shown by the fact that vocational school students demonstrate a typical level of cognitive development corresponding to the average level observed among fifth and sixth year students). As a result of the one-year intervention their share decreased to 8 per cent (preparatory level) and 21 per cent (beginner level), i.e. 29 per cent in total. The added value of the intervention is therefore a $50 - 29 = 21$ percentage point reduction in the share of pupils at risk of not being able to progress any further.

The data displayed in *Figures 2.2* and *2.3* reveal that the two experimental programmes contributed about 8-10 per cent a year to children's development. It is reasonable to assume, then, that if a continuous criterion-referenced education programme is implemented from the middle year of kindergarten education through to the end of year 6 of schooling and the conditions discussed above are created (including a diagnostic criterion-referenced assessment and self-assessment system), developmental stagnation can be eliminated (reduced to a minimum) and it can be possible for the overwhelming majority of children to reach advanced or optimal levels regarding the basic cognitive and motivational components of the personality. (As a reminder: at present, the optimal acquisition and mastery of not even a single basic ability, text comprehension, is realised by the end of year 8. About every fourth child leaving year 8 is functionally illiterate.)

■ SUGGESTIONS FOR IMPROVEMENT

Treat observed differences as differences of developmental phase.

Experimentally tested package of tools and materials for teachers and learners

Regular diagnostic criterion-referenced assessment of outcomes

1. The first prerequisite to change is to treat observed differences as differences of developmental phase. This shift in attitude will permit teachers to abandon the practice of mechanically covering course material and to turn instead to the continuous development of basic skills, traversing topics, school terms, school years and education levels. For this shift to be successful, two conditions should be met. Teachers and learners should be provided with a detailed, experimentally tested package of tools and materials, and outcomes should be regularly monitored through diagnostic criterion-referenced assessment. Primary education should be renewed and improved with the objective to dispense with grade retention and segregation while at the same time reducing extreme developmental differences and finding ways of tackling remaining differences.

The improvement of learning motivation is one of the most important conditions of change. To deliver this task the various options suggested in the rich literature on the subject should be explored (see, for instance, RÉTHY, 2003;

JÓZSA, 2007) and engaging, stimulating active learning activities should be introduced into the classroom on a regular basis (see the rich literature and experiences of a century of reform pedagogical movements). In encouraging learning motivation and active learning, special emphasis should be placed on promoting basic prosocial motives, skills and abilities (i.e. prosocial competence) by regularly using co-operative group work in education (relying on the also century-old ample literature and experiences, see for instance KAGAN, 2004). These tools are essential for the efficient development of the intellect and for an improvement in equality of opportunity. To be able to use these tools for the enhancement of the education of young pupils, a fully functional diagnostic criterion-referenced assessment and self-assessment system is needed allowing regular learner, teacher, institution, maintainer and national assessment and self-assessment, monitoring and improvement from the start of the middle year of kindergarten education to the end of year 6 of schooling. A pedagogical culture embracing the continuous criterion-referenced development of the basic components of the personality must be established.

Benchmarks should be defined and every learner should be helped until they have attained those benchmarks. This will take longer for some learners than for others. Courses need to have lexical knowledge as content, since skills cannot be developed without content. Lexical knowledge should not be viewed, however, as an end in itself but as a means of development.

2. Benchmarks to be attained by every learner should be unequivocally defined. Every learner should be helped until they have attained the required level of proficiency (criterion-referenced development). This will take longer for some learners than for others. Priority should be given to the development of the learner rather than to the transmission of course contents. That is not to say that courses do not need lexical knowledge as content: the necessary skills cannot, of course, be developed without content. Lexical knowledge should not be viewed, however, as an end in itself but as a means of development. If learners are asked to perform active, analytical tasks involving course material that they are intellectually ready to process and grasp, not only will their skills develop but they will also be more efficient in acquiring that knowledge (content based development).

Learning must be turned into an engaging, gratifying and stimulating activity. The austere character of classes should be relaxed and classrooms should be equipped with furniture that can be easily rearranged.

3. The renewal of pedagogical culture is an important precondition of successful education. Over the past fifty years several teaching methods have been developed worldwide which are sensitive to learners' level of development, promote comprehension, improve motivation and lead to the mastery of subject materials. There is, of course, a lot of variation among these progressive approaches, they are not equally efficient in every age group or every subject area. They should therefore be carefully tested in different contexts and the results should be subjected to scientific analyses. The entire process of renewal should be guided by the principle that learning must be turned into an engaging, gratifying and stimulating activity. The austere character of classes should be relaxed and classrooms should be equipped with furniture that can be easily rearranged. Learners should be allowed to move around and communicate with each other. The first few years of school should be characterised by the kind of playfulness typical of kindergartens.

Mastery learning is an approach that reverses the logic of traditional education: it is the level of acquisition that is pre-determined for all learners rather than the period of time dedicated to each topic or skill.

4. Teachers must be prepared to cope with large differences between students (differentiation) and instruction must be tailored to individual needs (personalisation), setting student-specific targets that they are ready to achieve. Mastery learning is an approach that reverses the logic of traditional education: it is the level of acquisition that is pre-determined for all learners rather than the period of time dedicated to each topic or skill. In addition to the cognitive benefits of learning from peers, the various methods of group work and co-operative activities in the classroom also enhance social skills. Misconceptions can be clarified before they could become entrenched by ensuring that concepts are grasped by each learner and triggering conceptual change at the right time. Interpretive learning can be encouraged by using the technique of cognitive maps.

5. Several methods are available that bring formal instruction closer to natural, spontaneous learning, support comprehension and arouse students' natural curiosity about the subject matter to be acquired. Complex problem solving embedded in real-life situations and problem-based learning greatly raise motivation. Independent work can also be encouraged by setting up projects with pupils working either individually or in groups. Appropriate learning habits must also be formed and learning skills must be continuously developed.

6. The renewal of primary education is contingent on finding ways to deal with the problems currently characterising the period of life before the start of school. Atypical development needs to be identified, potential problems must be diagnosed in good time and any necessary compensatory procedures must be applied. The general availability of kindergarten services is of special significance, especially for children whose immediate surroundings offer less than usual encouragement to learning.

Every child from a disadvantaged background should regularly attend kindergarten.

Besides the reasons discussed in the previous chapter, the need to prepare children for school also points to the conclusion that every child from a disadvantaged background should regularly attend kindergarten. At present children with the greatest developmental delay, who need the support of kindergarten education more than anyone, are the ones who are least likely to participate in kindergarten education.

Further improvement can be expected from the implementation of more constraining regulations concerning the current flexible system of school enrolment. The system introduced in 1985 no longer functions as originally intended, as it allows more flexibility than is reasonable. An increasing number of parents request, for instance, to keep their fully school-ready children at kindergarten for an extra year. Kindergartens accommodate the requests since they benefit from having more pupils. They also benefit from classifying difficult children as having disabilities.

A further means of reducing school-initial differences is to create elementary preventive groups (of 3-8 children) for children displaying the greatest phase

A further means of reducing school-initial differences is to create elementary preventive groups (of 3–8 children) for children displaying the greatest phase delay in the pre-school year.

delay in the pre-school year. Two versions can be envisaged: a subgroup version and a whole-class version. An elementary preventive subgroup is part of a kindergarten class and participates in daily special activities of 30–60 minutes' duration aimed at developing the basic components of the personality (basic motives, skills, and abilities, lexical knowledge and key competences). An elementary preventive class is an independent kindergarten class composed of children displaying the greatest developmental delay in their pre-school year (6–7-year-olds).

The contribution of the already excellent Hungarian kindergarten services to the development of basic skills can be further intensified by introducing continuous criterion-referenced programmes helping children's development. The most important condition of, and, at the same time, opportunity for this is enhancing the role of tales, story-telling, nursery rhymes, songs, group and individual conversations and group games. Research has revealed a developmental gap of one and a half years in cognitive and social abilities between young children who are never exposed to stories in their home environments and those whose carers read or tell stories to them almost every day (NAGY, 1980). Kindergarten children should ideally be given the opportunity to listen to favourite short tales at least twice a day (three times a day if they show a developmental delay). Teachers can benefit from a handbook series on the methodology of developing basic cognitive skills with the objective to prepare children for school (see the list of references at the end of the chapter for available volumes).

Last but not least, a further option is to adapt the curriculum and methods of the first two years of primary education to the range of developmental levels characterising children when they start school. As we have seen in *Figure 2.2*, not even a successful experimental kindergarten programme can ensure that a hundred per cent of participating children attain the level of development currently needed for success at school (in that experiment 6 per cent of the children did not attain this level and failure rates may be substantially higher in underdeveloped regions). We have not yet mentioned children attaining the intermediate level of the index: they are at risk of being unsuccessful at school and can greatly benefit from appropriate support in their first and second years.

In the first two years, regular school programmes should extend to the afternoon — possibly for all children but definitely for children from disadvantaged backgrounds — or schools should provide on-site afternoon care services. Schools have experimented with several options to relax the rigid organisation of schooling in the first few years. An increasing number of kindergartens have relinquished rigorous seating orders and inflexible timetables in favour of a more relaxed and caring atmosphere characterised by learning activities in the form of lively, energetic group games.

7. The renewal of primary education should be supported by a diagnostic assessment programme. This programme has a dual purpose: it is to assist individual development by providing learner-level feedback and its aggregated re-

A diagnostic assessment programme assists individual development by providing feedback and its aggregated results can be used to establish reference norms.

For a diagnostic assessment programme to fulfil its function all those concerned must have confidence in the system. The objectives are not to be achieved by handing out penalties or rewards but by creating a system of incentives encouraging genuine achievements.

sults can be used to establish various reference norms. Diagnostic assessment as a direct tool of criterion-referenced education is a method of learner-level evaluation by definition. As such, it is reliant on the longitudinal documentation of individual progress.

An appropriate diagnostic assessment programme should therefore involve yearly testing (and more frequent assessment for certain skills, if possible) to monitor every child's progress at least until the end of year 6. It is a lengthy and complex task to set up such a feedback system. The first hurdle is to develop appropriate diagnostic assessment tools that not only identify the stage of development attained by a given student but also reveal any learning difficulties the student may have. Student-level feedback may have three types of reference measure. The results may be compared to the given students' earlier results (longitudinal, ipsative assessment). This method is used to track the pupil's actual progress over time. A second possibility is to compare results to pre-defined objectives, the criteria to be met (criterion-referenced assessment). Finally, a pupil's results may be evaluated relative to the average performance of a given population or sample (norm-referenced assessment). The proposed diagnostic programme should make use of all three types of evaluation but further experimental research is needed to define the precise function of each type.

A diagnostic assessment programme cannot fulfil its function unless all those concerned – learners, teachers and parents – have confidence in the system. For this reason, the programme must not be used as a direct reference for penalisation or reward. A system of incentives should nevertheless be developed to encourage genuine achievements. To set up a national programme – and link data to create a longitudinal database – test results must be stored electronically. This calls for measures to prevent problems of data privacy and security.

The programme should provide schools with student-level results and feedback should indicate the extent of underperformance and the necessary compensatory actions. The assessment results should show where each learner is at and highlight the areas that need intensive development. Pen and paper tests will be sooner or later replaced by computer-assisted testing. Computerisation may allow cheaper, better and faster assessment. In 2006 the PISA test of scientific literacy could be optionally administered on computers and in 2009 an option will be available to read electronic texts. The renewal of education calls above all for an intensive professional development programme for teachers. An environment must be created where a variety of education methods are used and the assessment system is suitable for providing feedback on the efficiency of each of these methods.

8. The strategies outlined above cannot fully eliminate the possibility that the developmental delay characterising students from highly disadvantaged backgrounds and those genetically prone to slower than average development

increases to such an extent by the end of the fourth year of primary school that these children cannot avoid a developmental failure at the next stage of education. We can expect 4–6 per cent of pupils to be in this position. Since the usual solutions of retaining these pupils or classifying them as having disabilities are of questionable effectiveness, they should instead be given preventive compensatory instruction in groups of 3 to 12. Preventive instruction can take a number of different forms. For example, these students could be promoted to fifth year and take an extra class each day to focus on the prior knowledge required for the topic of the following day. For the most critical cases of developmental delay preventive instruction should be planned for an entire school year.

■ COSTS AND TIMING

The process of renewing primary education will probably take about ten years. It calls for steady, unremitting development rather than spectacular, all-at-once reform measures. The development process should not terminate with the end of the renewal programme: the renewed primary education should be a programme open to newly emerging technologies and methodological innovations.

As the first phase of renewal, existing diagnostic and development tools should be used systematically. There are tools in the field which are suitable for the diagnostic assessment of children about to start school or in their first years of primary education. The first goal is to introduce the systematic use of these tools: the current practice of recommendation, for instance, should be replaced by a mandatory requirement to monitor children's progress and record the results. Additionally, existing tools and tools currently under development should be widely propagated.

The currently available pen and paper tests of the diagnostic criterion-referenced assessment system are impractical and too costly to use in a nationwide assessment of pupils in years 2, 4 and 6. Computer-assisted online testing should be introduced instead, the costs of which, however, are difficult to estimate. Preparations for the introduction of online testing can commence in parallel with the initial phase of renewal.

Teachers should learn the principles of diagnostic assessment, the methods of criterion-referenced education and the above mentioned varied activity-centred methods of instruction. An intensive professional development programme is needed to achieve this goal.

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