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ABSTRACT

Quality requirements of curricula are analysed in terms of the educational effectiveness of their implementation. Improvement of educational effectiveness is seen primarily as taking place by improving the pupils' opportunity to learn, by increasing their time on task, by structuring and pacing their instruction, by clear and explicit objectives and by evaluating, feeding back and reinforcing their learning achievements. Education of minority students in the Netherlands and the quality of curricula for their education are analytically evaluated and discussed in terms of these elements of educational effectiveness. Evaluation, feedback and reinforcement, especially, are elaborated as inter-related elements of educational effectiveness, and, therefore, also as inter-related quality requirements of curricula. The analysis has implications for educational policy and development at the national and school level. (Contains 37 references.) (Author)

Educational effectiveness and curriculum: Quality requirements of curricula in minority education

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Paper presented at the Fourth International Congress for School Effectiveness and Improvement (held in January 2-5, 1991 in Cardiff, Wales)

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Educational effectiveness and curriculum:
Quality requirements of curricula in minority education

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Quality requirements of curricula are analysed in terms of the educational effectiveness of their implementation. Improvement of educational effectiveness is seen primarily as taking place by improving the pupils' opportunity to learn, by increasing their time on task, by structuring and pacing their instruction, by clear and explicit objectives and by evaluating, feeding back and reinforcing their learning achievements. Education of minority students in the Netherlands and the quality of curricula for their education are analytically evaluated and discussed in terms of these elements of educational effectiveness. Evaluation, feedback and reinforcement, especially, are elaborated as inter-related elements of educational effectiveness, and, therefore, also as inter-related quality requirements of curricula. The analysis has implications for educational policy and development at the national and the school level.

THE PROBLEM

Research on curriculum and implementation, curriculum development and curriculum theory is frequently inspired by the concept of educational innovation. Researchers, developers and theorists are more inspired by the problem how to implement changes in the curriculum, than by the problem how to contribute to better learning of the students by the curriculum. This paper addresses the problem of the educational effectiveness of curricula by an analytical evaluation of curricula and their implementation. In particular the paper aims to answer two questions:

1. What quality requirements of curricula may be derived from our knowledge of curriculum and educational effectiveness?
2. What quality requirements of curricula may be specified to make education effective also for ethnic and cultural minorities in the Netherlands?

An answer to the first question may be seen as a prerequisite for an answer to the second question. Students from ethnic and cultural minorities frequently have lower mean achievement scores compared with students from the dominant culture within an educational system. By formulating the problem of this study in terms of quality requirements of curricula in order to contribute to effective education, in particular to effective education of minority students, this study in fact aims at an explanation of the low achievement scores of those students in terms of variables of the curriculum. The study may be seen as an exercise to explain the differences in achievement as much as possible by the variables of the curriculum that may be manipulated, in order to derive conclusions how to improve education and how to make it more effective by changes in the curriculum.

METHOD

Analytical evaluation is an evaluation model that uses a theory for describing and explaining various properties of a programme and for predicting its outcomes; analytical evaluation uses a set of valuational and/or purposive criteria to judge the worth and/or the effectiveness of a programme (Alkin & Ellott, 1990; Reynolds & Walberg, 1990). The theory that is used in the analytical evaluation may be a theory that underlies the evaluated programmes, because the theory is used in the development activities. The theory to be used for description, explanation and prediction, however, does not necessarily have such a close link with the evaluated programme. The necessary requirements of a theory to be used in an analytical evaluation are requirements of empirical validation. The theory has to have a research base in which the predicted outcomes are demonstrated to be consequences of the described properties. The theory of educational productivity (Fraser et al., 1987) fulfils these requirements.

From this point of view analytical evaluation is an apt method for reviewing and integrating curriculum research with effectiveness research, thereby providing an empirical base for the analysis of quality requirements of curricula. We will concentrate on Dutch research. Curricula and their implementation may be viewed as different programmes to be evaluated. The criteria used to judge the effectiveness of such programmes may be seen as purposive criteria, that is the learning achievements as criteria for effectiveness; the criteria used to judge the effectiveness of a programme may also be seen as instrumental criteria, that is directed toward properties of instruction that are empirically demonstrated to be instrumental for learning achievements.

THEORETICAL FRAMEWORK

To describe and explain various properties of curricula and their implementation and to predict their outcomes a programme theory is developed that links quality requirements of curricula with educational effectiveness. A theory of educational productivity (Fraser et al., 1987) and a theory of instruction (Berliner, 1987) are taken together as a framework for the interpretation of curriculum research, effectiveness research and research into the special position of ethnic and cultural minorities within education.

The theory of educational productivity is derived from Walberg (1984) and has the following groups of factors:

- student aptitude variables regarding 1. ability, 2. development and 3. motivation;
- instructional variables regarding 4. the quantity and 5. the quality of instruction;
- variables of educationally stimulating psychological environments, in particular 6. the home environment, 7. the classroom or school environment, 8. the peer group environment outside the school, and 9. the mass media environment.

This theory of educational productivity converges on the least number of factors which powerfully and consistently predict student outcomes (Fraser et al., 1987, p. 150).

For the purposes of this study some further specification of the instructional variables is necessary. Walberg specifies quantity of instruction as the amount of time students engage in learning. For our purposes this variable has to be further specified as time allocated in the school curriculum and as time on task in the operational curriculum. The quality of instruction is seen as a concept that includes several aspects, among which psychological and curricular aspects. To specify the quality of instruction we refer to the primary variables in the 'simple theory of classroom instruction' that is proposed by Berliner (1987). These variables are:

1. opportunity to learn;
2. students' engagement in learning;
3. students' experience of success;
4. pacing;
5. structuring;
6. monitoring.

These variables of effective instruction allow for a consistent prediction of student outcomes. The specification of quality of instruction by these variables is supported by research among which the research reported by Fraser et al. (1987) and IEA studies (Anderson and Postlethwaite, 1989). Although each of the variables is actually a student variable, they may be used to interpret and to explain why some teacher characteristics and behaviour and some curriculum materials do make a difference in what students learn. The variables may be used to explain effectiveness on the classroom level, the teacher level, the school level, and the curriculum level. The qualitative aspects of the variables are closely linked to the quantity of instruction: the variables mediate the allocated time into students' time on task. The variables stimulate reinforcement of correct performance; they stimulate feedback and adaptive or even personalized and individualized instruction; these are some of the largest instructional effects reported by Fraser et al. (1987).

An implication of the use of this theoretical framework as a programme theory in our analytical evaluation is that both curriculum research and effectiveness research may be focused on the operational curriculum (Goodlad et al., 1979) and on curriculum implementation (Fullan, 1985). Like teacher characteristics, the school curriculum and

curriculum materials are seen as input into the operational or implemented curriculum. Apart from the students themselves, the teacher and the curriculum are the dominant contextual factors that are of influence on the operational curriculum or the instruction. In fact the specified instructional variables may be seen as instrumental criteria to judge the effectiveness of a teacher and a curriculum.

MINORITIES IN DUTCH EDUCATION

The productivity model may be used to evaluate the position of minority students within the Dutch educational system and to evaluate the impact on educational effectiveness of their differences with students from the dominant culture. The main differences between the two categories of students will be located within the home and the classroom environment and in the quantity and the quality of instruction. With the exception of the home variables we will conclude that these differences are consequences of the curriculum and its implementation by schools and teachers. After having analyzed the quality requirements of curricula in the next section, it will be possible to conclude on curricula and educational effectiveness of minority students.

Differences in achievement

Students of ethnic and cultural minorities achieve on average much lower than comparable students from the dominant culture. These differences remain after the social economic position of parents, their occupations and their education is controlled for. These differences are mostly explained by the interaction between socio-economic factors and ethnic and cultural factors. Recent Dutch research, however, demonstrates differences between schools in the average achievements of students that are comparable in ethnic and in socio-economic aspects. These differences in school effectiveness with regard to learning achievements of students from ethnic and cultural minorities have to be explained. It is still too early for Dutch research into possible explanations (Jungbluth, 1990). An analytical evaluation of the position of minority students within Dutch schools compared with the position of students of the dominant culture in terms of a theory of educational productivity will suggest a probable explanation.

Differences in aptitude

There is no research base to expect differences in principle on the student aptitude variables: ability as measured by the usual intelligence tests; development as indexed by chronological age; and motivation as indicated by personality tests. There are, however, differences in ability in terms of prior achievement, as measured by the usual standardized tests, and in terms of motivation as indicated by the students' willingness to persevere intensively on learning tasks. Differences in prior achievement are inherent in the frequently described differences in achievement. Differences in the students' willingness to persevere intensively on learning tasks may be interpreted as a consequence of feedback and reinforcement: students of ethnic and cultural minorities have less experiences of success. The fact that in Dutch educational research the development of culture fair intelligence tests is a recent activity, complicates the issue.

Differences in environment

There are of course differences in environment. Not all differences, however, have negative influences on learning achievements. Also no research is available on possible

differences as regards the peer group environment outside the school and the mass media environment.

The educationally stimulating psychological environment of the home is in many aspects comparable between both categories of students. The interest, the support and stimulation by parents is comparable. In some minority groups the parental support is even exceptionally high (Weide & Van der Werf, 1990).

An important characteristic is the language spoken in the home environment. Recent Dutch research demonstrates that this factor may be the single most important difference of the home environment that explains differential achievement between students of different ethnic and cultural minorities on the one hand, and between minority students and students from the dominant culture on the other hand. When the effects of the language spoken at home are taken into account the socio-economic position of the parents as indicated by their occupation and their education, regardless of their ethnic and their cultural background, explains the differences in achievement in comparable amounts. Achievements of Dutch speaking minorities are comparable to the achievements of the Dutch students in the same socio-economic classes (Jungbluth, 1990; Weide & Van der Werf, 1990). Students who do not speak the Dutch language in their home environment, have therefore a serious handicap in their school careers: they start with a handicap and, as will be seen in the next subsection, this handicap is reinforced at school.

There are also differences in the classroom or school environment between minority students and students from the dominant culture. Minority students tend to be concentrated in particular schools. This is a consequence of different processes. The catchment area of the schools is influenced by a tendency of minorities to live in the same neighbourhoods. Another process is the tendency of Dutch parents to avoid schools with a high proportion of minority students when choosing a school for their children. A third process is the attraction of schools with a high proportion of minority students for other students of the same minorities. As a consequence of such processes so-called 'black schools' come into being. As a consequence of the particular properties of the Dutch freedom of education also schools for specific religious groups of ethnic minorities are founded, especially Islamic schools for minorities of Turkish and Moroccan origin (Jungbluth, 1990). Some people expect extra handicaps for students of these 'black schools'. As will be seen in the next sections, homogeneous 'black schools' however have some possibilities for improvement of their effectiveness that schools with a heterogeneous student population do not have. Especially the maintenance of a positive learning climate and of expectations of high achievement is much more difficult in schools with a heterogeneous student population compared with schools that relatively homogeneous.

Differences in instruction

On average minority students spend less time on subjects on which achievement is measured by the usual standardized tests. Also on average minority students receive instruction of less quality compared with students from the dominant culture. These differences in quantity and quality of instruction are dictated by the school curriculum, are influenced by the language handicap, and are stimulated by teacher expectations.

Most school curricula in the Netherlands allocate time to educate minority students in their own language and culture, while the total amount of allocated time is the same for minority students as for students from the dominant culture. Minority students therefore get less time allocated for learning the subjects that are measured in the usual tests. It has to be supposed, but it is not yet known, that the benefits expected of education in their

own language and culture do not balance the drawbacks of less allocated time. Suggestive for this supposition is the finding of a zero correlation between education of minority students' own language and culture and their achievements on basic skills (Driessen & Jungbiuth, 1989). It is not to be wondered that their achievement is also lower compared with other students.

Minority students who do not speak the Dutch language in their home environment, need extra time for the same amount of learning that is expected of other students. In fact, less time is being allocated. As a consequence of their language handicap their allocated time will also not as efficiently as with other students be transformed into time on task. Minority students therefore get less opportunity to learn, do not engage as actively in learning, and have less experiences of success compared with other students. As a consequence of processes of feedback and reinforcement the pacing and the structuring of their learning and instruction will be less adequate than with other students; they also will be less motivated.

Dutch teachers have a tendency to adapt their expectations of the achievements of handicapped pupils toward a lower level (Jungbluth, 1985). In as far as learning handicaps are not a consequence of a student's aptitude, but a consequence of a student's home environment or a consequence even of instructional variables, teachers' tendencies to lower their expectations may be evaluated as illegitimate discrimination between students. These tendencies may frequently be explained out of compassionate impulses. But, however it may be, the lower expected level of achievement tends to lower the factual achievement. That is frequently demonstrated by effectiveness research (Levine & Lezotte, 1990). It may be explained by the adaptations to a lower level of expectations the pacing, the structuring, and the monitoring processes of the instruction. Such adaptations tend to diminish the students' opportunity to learn and the students' experiences of success. The feedback mechanisms that are inherent in instruction, tend to reinforce these tendencies toward lower achievement levels.

To give minority students equal educational opportunities, that is to give them equal chances for an achievement level that is dependent only on their inherent aptitude, some necessities have to be recognized. It is necessary that as soon as possible the students' mastery of the Dutch language is comparable to the mastery of Dutch speaking students; it is necessary that minority students get more time allocated to compensate for their handicap; and it is necessary that teachers do not give in to their understandable, but counter-effective compassionate impulses to adapt their expectations. Students of some minorities, especially of Asian origin, demonstrate these necessities by maintaining high achievement standards and by compensating for their handicap in spending extra time on education by way of homework and otherwise.

QUALITY REQUIREMENTS OF CURRICULA

The conclusion of the foregoing evaluation is that the quantity and the quality of the instruction of minority students is less than the quantity and the quality of instruction of other students in the Netherlands. In this section curriculum research is analyzed and interpreted both with regard to the operational curriculum (the processes of learning and instruction) and with regard to the implementation processes, whereby curriculum documents are transformed into operational curricula. The analysis focuses on three concepts of curriculum and instruction: the structure of the curriculum content; the differentiation within the curriculum; and the interrelated elements of evaluation, feedback

and reinforcement within the curriculum. We differentiate between the school curriculum and curriculum materials or textbooks.

The implementation of the curriculum

A prerequisite of the analysis is an implementation of the curriculum in order to make the instruction as effective as possible. Either schools and teachers have to adapt their curriculum and textbooks in order to implement effective instruction for as many as possible of their students, especially their minority students; or schools and teachers have to develop a school curriculum and to choose curriculum materials that are geared toward effective instruction for as many as possible of their students. It is therefore not necessary to choose between a perspective of adaptation or a fidelity perspective in curriculum implementation (Fullan & Pomfret, 1977).

Educational innovation of course requires frequently new professional behaviour of teachers, especially new instructional routines. In-service training is mostly seen as a solution for such new routines. In-service training, however, is frequently only effective for a very short period. For the long run supplementary measures are necessary. If there is no programme to stimulate teachers to adopt new behaviour on the long run, they tend to fall back on old routines (Westerhof, 1990). In Dutch research on curriculum implementation two techniques are being investigated. By specifying planning routines for exemplary units of the curriculum teachers are able to stimulate time on task of their students (Van den Akker, 1988). Also classroom consultation of the teachers by experts seems a promising method to let teachers adopt new routines (Snippe, 1989).

Structuring of the curriculum

Bringing structure in the curriculum is meant to facilitate the structuring of the process of learning and instruction in order to let the students know what they have to do and what they have to learn. This means bringing structure in the educational content and the educational objectives.

An adequately structured curriculum has a clear arrangement of the subject matter in small units that may be mastered by the students, allows for continual monitoring of the learning process with the help of tests and observations, guarantees adequate learning time, and, in the case of inadequate achievements, provides the teachers with possibilities to let students as yet master the content unit. A Dutch educational opportunities project provided for better learning of students with social handicaps in learning, although the aims of the project to let handicapped students achieve as high as the average achievement of Dutch students could not be reached (Slavenburg, 1986; Slavenburg et al., 1989; Van Tilburg, 1987).

An adequately structured curriculum for low SES students contains also an emphasis on the acquisition of basic skills along with high expectations of student performances. These are longstanding effective schools correlates (Edmonds, 1978; 1982; Levine & Lezotte, 1990). Recent Dutch research demonstrated also that minority students in schools with a strong emphasis on basic skills achieve better than minority students in schools with less emphasis on basic skills (Hübscher-Post, 1990).

Differentiation of the curriculum

Pacing is a variable in Berliner's 'simple theory of classroom instruction' that will be stimulated by adequate differentiation of the curriculum. Pacing means adapting the pace of instruction to the students' pace of learning. The teacher has to speed up or slow down

the pace according to the students' aptitudes. The ultimate consequence of this concept seems to be personalized and individualized instruction. Although curriculum programmes with personalized and individualized instruction have strong effects, such programmes seem to be practical only in small groups. A more moderate differentiation between groups of students instead of between individual students seems to be more practical. Such differentiation leads to adaptive instruction and uses techniques of personalized instruction combined with techniques of working in small groups; programmes of adaptive instruction also have strong effects (Fraser et al., 1987, pp. 157-159).

Dutch research into differentiation of the curriculum and adaptive instruction shows ambiguous results. Research of a programme for adaptive instruction with a differentiated curriculum for mathematics for the age group 12 to 16 demonstrated positive effects on achievement (Herfs et al., 1990). Research of differentiation in Dutch elementary schools demonstrated higher average achievements in non-differentiated classrooms compared with students who were differentiated along individual lines or along lines of prior achievement. Only curricula that were structured in small content units along with tests to check the individual student's mastery of the subject matter and that provided curriculum materials to repeat insufficiently mastered contents and curriculum materials to provide opportunities to enrich their learning to students with a sufficient mastery of the subject matter, were demonstrated to have positive effects on average achievement (Reezigt & Weide, 1989). A probable explanation of these ambiguous results may be found in efficient classroom management, especially the management of students' time on task, and in the provision of continual monitoring instruments to evaluate students' progress thereby maintaining high expectations of performance; these characteristics are inherent in the curricula demonstrated to be effective.

As an adequate structure of the curriculum influences students' opportunities to learn, so an adequate differentiation of the curriculum influences the students' engagement in learning. An adequate differentiation requires an arrangement of the subject matter in small units, a provision of tests and other instruments for continual monitoring of students' progress, and a provision with curriculum materials for recapitulation or enrichment. A curriculum that is differentiated along those lines, will also provide teachers with opportunities for adequate management of students' time on task. For low SES and minority students an emphasis on student acquisition of basic skills and the maintenance of high standards will be additional quality requirements of differentiated curricula.

Evaluation in the curriculum

Providing for instruments to monitor students' progress and to check their mastery of the units of subject matter are proven to be a quality requirement of an adequate structure as well as for adequate differentiation of the curriculum. There are some reasons to deal with the evaluation of students' progress in a separate subsection. Student evaluation is a necessary element of all instruction. It is especially a prerequisite of programs with the strongest instructional effects on learning, like reinforcement, acceleration, cues and feedback, and other programmes that build on the strategy of mastery learning (Fraser et al., 1987, pp. 157-159). It is also a consistent and strong effective schools correlate (Edmunds, 1978; Levine & Lezotte, 1990). Lastly, it is a prerequisite in maintaining high expectations of student performance.

For Dutch education there are some special reasons. Dutch replications of effective schools research have ambiguous results. Leadership for instance has no or only weak

effects (Hoeben, 1989; Van de Grift, 1990). Also other effective schools correlates are ambiguously replicated in Dutch research (Scheerens, 1989). Only frequent monitoring in order to feed back and reinforce student progress and a productive school climate are consistent effective schools correlates in Dutch education (Hoeben, 1989; Brandsma & Knuver, 1990). Teacher practices in student evaluation, however, are frequently inadequate. Research of these practices in elementary arithmetic education demonstrated these practices to be especially inadequate with regard to the determination and assessment of achievement (Jansens, 1986). Other research seems to confirm the inadequacy of evaluation practices (Wesdorp, 1979; Lazar-Moorison, 1980). If evaluation practices are inadequate, feedback and reinforcement of student progress will also be inadequate.

Adequate student evaluation requires determining students' prior achievement, monitoring students' progress in small subject units, and evaluating their progress over longer periods of time. Curricula that are adequately structured and differentiated, provide teachers with instruments for these three kinds of evaluation. Such curricula make it also clear that teachers do not implement the curriculum if they do not use the provided evaluation instruments. Research on differentiation demonstrates that, if teachers are so stimulated, they indeed evaluate student progress in a more adequate way and students indeed achieve better (Reezigt & Weide, 1989; Herfs et al., 1990).

Adequate evaluation of student progress with appropriate instruments contributes to students' experiences of success and thereby reinforces their progress. An emphasis on appropriate instruments for monitoring and evaluating student progress as a quality requirement of curricula and research of such curricula contribute to the solution of a problem identified by Levine & Lezotte (1990, 15): the lack of agreement among researchers and analysts on how to define monitoring and evaluation of student progress in practice in order to provide guidance concerning how or how often it should be utilized.

MINORITY STUDENTS AND EDUCATIONAL EFFECTIVENESS: CONCLUSIONS

With help of the theory of educational productivity we have identified the language spoken in the home environment of minority students as the single most important factor responsible for their educational handicaps. We have also identified a tendency of teachers to lower the standards of performance they expect of minority students; this adaptation of standards tends to reinforce the already existing handicap of minority students. Furthermore we have seen that minority students need more time to compensate for their handicap; instead of allocating more time in order to provide them with opportunities to learn the same subjects as other students, to minority students in Dutch education is allocated the same time while they are expected to master more subject matter (their own language and culture) compared with other students. Although Dutch education aims at equal opportunities for minority students, the implemented means seem to be counter-productive for this aim.

Analyzing quality requirements of curricula we have concluded that the requirements of an adequate structure, of adequate differentiation, and of adequate evaluation reinforce each other. They also stimulate teachers to pace, structure and monitor the learning of their students in order to provide them with adequate opportunities to learn, to engage them in learning and to provide them with experiences of success. An adequately structured and differentiated curriculum with appropriate provisions for evaluation allows teachers also to strongly emphasize basic skills for low SES and minority students, while

maintaining at the same time high standards of performance. Curricula with these properties also stimulate an efficient management of the time on task of all students, but in particular of low SES and minority students.

Curricula with the described properties seem to be necessary to stimulate the educational opportunities of minority students. However, it does not seem probable that curricula with such properties are sufficient. The allocation of time and the management of time on task seem to require extra measures. Education of minority students in their own language and culture remains important for the students' cultural identity and to provide them with learning experiences that connect to the culture of their home environment. The possibility to allocate time for this education outside the regularly allocated time in school is therefore investigated and discussed at present. Such differentiation of the school curriculum could have positive effects on the average achievement of minority students. Other possibilities to manage the amount of time may be found: extend the homework, stimulate parent involvement in supporting the homework, train teachers in efficient time management, etcetera. School curricula have to provide for all these properties.

A strong emphasis on basic skills is another requirement of the school curriculum that is particularly effective for low SES and minority students. A more narrow focus on basic skills stimulates the efficient management of allocated time for the students' mastery of the most important subjects. Not using these opportunities for efficient management of the available time in curriculum and instruction of minority students could very well mean that the costs of education in their own language and culture are much higher than the expected benefits.

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