

Influence of the Social Context of the School on the Teacher's Pedagogic Practice

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ABSTRACT *The paper is part of a broader study which investigates the relation between differential patterns of achievement in the sciences at the secondary school level and social class, and in which a relation was found between the high level of conceptual demand of modern science courses and the underachievement of the working-class pupils. This relation is mediated by a number of sociological factors, the teacher being one of them. This study describes the assessment we made of teachers' pedagogic practice and its influence on pupils' achievement. The evidence obtained shows that teachers differ greatly in the level of conceptual demand they make of their pupils and in their ability to enable pupils to attain that level. Both of these competencies of the teacher are strongly related to the social context of the school where he/she teaches.*

1. Introduction

This paper is part of a broader study, carried out in Portugal, which aimed at relating the underachievement of large numbers of pupils in the sciences with sociological variables. That study (Domingos, 1987), which was based on Bernstein's theory (Bernstein, 1977, 1981, 1985; Domingos *et al.*, 1986), showed that the underachievement in sciences is related to social class, the lower-working-class pupils showing the lowest achievement and the upper-middle-class the highest. If competencies required by the school are separated into two groups, those requiring a high level of abstraction (use of knowledge to new situations, *U*) and those requiring a lower level of abstraction (acquisition of knowledge, *A*), differential achievement is higher in the former type of competency. It is the high level of conceptual demand of modern science courses which has increased the difference between two groups of children in the science classroom. Hence, where the conceptual level is low differential achievement between different social groups is reduced; where it is high the differential achievement is increased. Different courses, therefore, create different degrees of differential achievement: the greater the conceptual demand of a course and therefore of its level of

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abstraction, the greater the differential achievement between working-class and middle-class children.

The picture, however, turned out to be more complex: there are multiple interactions in the science classroom which can produce differential achievement related to both the family and the school. This paper focuses on the school and describes some of the findings about the teacher's pedagogic practice and its influence on pupils' achievement. In the relationship between a pupil's achievement, social background and school, the crucial variable, the teacher's pedagogic practice, is rarely systematically explored. In our study we were able to do that. As we will see, the influence of that variable is very complex and depends on the attributes of the teachers which are a function of both their training and the social context where they teach.

Our assessment of teachers required us to establish the kind of teaching-learning process in which the teachers were engaged. This involved a study of the teacher's degree of conceptual demand and a study of the efficiency of teachers in bringing pupils up to the level they set in their courses.

In the study of the teacher's degree of conceptual demand we analysed how teachers differ in distinguishing between *A* and *U* competencies in their daily pedagogical practice, i.e. in the transmission-acquisition process and in the assessment process. We also analysed how teachers differ in the weight they give to *A* and *U* competencies in their pedagogical practice and in the level of abstraction of *U* competencies they require of their pupils. The former was also used to sharpen teachers' distinction between the two types of competencies and to narrow differences between teachers' pedagogic practice.

In the study of the efficiency of teachers in bringing pupils to attain the level they set, we analysed the relation between teachers and the level of marks their pupils receive.

These assessments were equally necessary if the test scores were to provide a valid and reliable basis for the sociological comparisons between the different social groups of pupils, which was the main purpose of the study referred to above. Further, these analyses should also permit inferences about teachers' pedagogic practice (a variable whose effect on pupils' achievement we wanted to study). This will supplement other information we were able to collect about the teacher's background, training and experience.

It must be pointed out that teachers are expected by the Ministry of Education to develop in the classroom these two types of competencies, and to assess pupils' achievement accordingly. However, the teachers were asked to make that distinction according to our criterion: *A* and *U* competencies would be more sharply separated, by the level of abstraction required, as indicated above.

The paper is divided in four main sections. We will begin by assessing the teacher's degree of competence in distinguishing *A* and *U* competencies. This will be followed by an analysis of the teachers' degree of conceptual demand as indexed by the marking of their pupil's answers. Finally, we will examine patterns of achievement in *A* and *U* competencies obtained by different teacher's pupils. Based on these three analyses we will proceed to the fourth section where we will characterise and rank the teachers according to their pedagogic practice. The conclusion will attempt a synthesis of the main findings.

Each one of the three analyses required a particular methodology. For space limitations we are not describing them here in detail. For the same reason the

results are also not presented in detail. The reader who is interested should consult the main study referred above. We tried, however, to keep those parts of the procedure, results and their interpretation which seemed essential to show the dynamics of the research and to understand the conclusions we reached. The task was not an easy one and we hope we were able to produce an article which is both understandable and not too dense and heavy for the reader.

2. Sample

The sample was composed of 1300 secondary school pupils (middle and upper school), 11 teachers and eight schools. The schools were located in big cities and in towns in the country, they were all comprehensive and had either a predominantly working-class population (referred as working-class schools) or a mixed class population (referred as middle-class schools). The teachers were all female (X_1, X_2, \dots , teachers in big cities; Z_1, Z_2, \dots , teachers in the country; X_2, X_3, X_4, X_6 , teachers in middle-class schools; X_5, X_7, Z_2 , teachers in schools with a predominantly working-class population but where a complete social hierarchy could still be found; Z_1, Z_3, Z_4 , teachers in working-class schools without that hierarchy). They represented an whole range of ages and experience (X_4, X_5, X_6, Z_1 , young and less experienced teachers; $X_1, X_2, X_3, X_7, Z_2, Z_3, Z_4$, not young and more experienced). The subjects studied were biology and related areas. The measures were based on the tests constructed by the teachers. Two tests were given to pupils in each of the three terms of the academic year. In each test 50% of the questions were constructed to measure *A* competencies and the other 50% were intended to assess *U* competencies.

We would like to make clear the reason why we used teachers' own tests instead of standardised tests. Shortly we would say that we not only wanted to verify whether or not a given set of contents and competencies had been developed in the classroom but our own main intention was to find out why pupils failed with respect to the scientific content and competencies actually developed in the classroom.

3. Teacher's Degree of Competence in Distinguishing *A* and *U* Competencies

The teachers' degree of competence in distinguishing *A* and *U* competencies was measured by statistical methods which were complemented by a more qualitative method of evaluation. In devising a method to measure that competence we assumed that, since tests reflect the teacher's pedagogical practice, having teachers classifying each other's questions would not only give us a degree of their agreement in recognising *A* and *U* questions, but would also give us a measure of their pedagogical practice. For if one teacher's *U* questions are another teacher's *A* questions then we feel justified in inferring that such differences in discrimination will have a bearing on the emphasis and perhaps focus of the teacher's pedagogic practice.

We measured reliability [1] in discrimination twice during the year: at the end of the second term and at the end of the year. The objective of the first analysis was: (a) to find out how far teachers were from each other in the criteria they had been using; (b) to find out how far teachers were from the criteria created for the purpose of the research where this study is included; (c) based on (a) and (b) to

try to improve teachers' recognition criteria. The objective of the second analysis was to find out if any improvement had taken place in the recognition criteria, i.e. to see if teachers were nearer each other and nearer the criteria which had been set. In both analyses an ordering of teachers was established on the basis of their relative values of reliability.

The third-term marks indicate the level achieved by the pupils as a result of one year of learning. These marks are, therefore, the most relevant results and they are the crucial marks to be taken into account. Therefore it seemed wise to improve teachers' recognition criteria for the third term. It is true that, by improving the discrimination of teachers prior to the third term tests, we have introduced errors in any comparison of the marks on the basis of the three terms. We have, however, attempted to ensure that, for the crucial third-term testing, the conditions for greater reliability between teachers existed.

The statistical analysis of the teachers' reliability in classifying test questions in *A* and *U* competencies allowed us to verify how far teachers were from each other and how far they were from the criteria useful for the purpose of the main study. By the end of the second term, with the exception of two teachers (Z_4 and Z_1), all were near to each other, but still distant from the researcher's criteria. By the end of the year, however, all teachers were much nearer to these criteria.

Comparison between the two evaluations shows that a very great improvement took place; indeed it was the best we could expect, taking into account the difficulties entailed in the *A* and *U* classification. Teachers' reliability, in this respect, is much higher than it was before, and it is probably near the maximum possible. We have reduced a major source of error and this permits us to have some confidence in the marks accorded to pupils on the basis of the teachers' division between *A* and *U* competencies. The third term marks, which indicate the level eventually achieved by pupils in both groups of competencies and which are, therefore, the most relevant for the analysis of the relation between sociological variables and achievement, could thus be accepted with a higher degree of confidence. The final ordering of teachers according to *A-U* distinction can be seen in Table I.

TABLE I. Ranking of teachers in three different dimensions

Dimensions	Teachers										
	← Higher					Lower →					
	1	2	3	4	5	6	7	8	9	10	11
<i>A-U</i> distinction	X ₇	X ₃	X ₆	Z ₃	Z ₄	X ₁	X ₂	X ₄	Z ₂	Z ₁	X ₅
Conceptual demand*	X ₇	X ₃	X ₂	X ₅	X ₁	Z ₂	X ₄	Z ₃	Z ₄	X ₆	Z ₁
<i>A/U</i> ratio	X ₇	X ₅	Z ₁	X ₃	X ₂	X ₄	Z ₂	X ₁	X ₆	Z ₃	Z ₄

*This ranking is of course based in the values for *U* competencies.

It is important to note that the measure of the teacher's degree of competence in distinguishing *A* and *U* competencies also allowed us to appreciate the conceptual demand of the teachers in their pedagogical practice.

Two important assumptions underlie the procedures we followed in assessing teachers' reliability.

First, we assumed that tests made by teachers were valid in the sense that they reflect teachers' pedagogical practice in the development of the relevant competencies. In our meetings with teachers we drew their attention to the importance of constructing valid tests. Those teachers who were not acquainted with the practice of constructing a valid test were shown how to use a table of specifications (Domingos *et al.*, 1981) in order that the emphasis given in tests to different types of competencies (and contents) corresponded to the actual process of transmission which had taken place. We therefore assumed that tests given by our sample of teachers were valid tests, especially those that were given to pupils in the third term, when teachers could be considered to have understood the concept of validity. Thus we consider that our teachers' tests tested competencies likely to have been developed in the classroom.

Secondly, we assumed that, if we have teachers classifying each others' test questions, that would not only give us a measure of their ability to distinguish questions within two types of competencies, but most important, would give us a measure of their pedagogical efficiency in the transmission of these two different types of competencies. This would mean that if we succeeded in bringing teachers nearer to each other and nearer to the intended criteria when classifying test questions, they would also be nearer in their pedagogical practice. It would also mean that the third-term marks would have similar meaning for all teachers and that, therefore, the sample could be treated as a whole.

All our statistical findings led us to think that this aim had been attained and that, therefore, we had reached reasonable control of this variable (different criteria used by different teachers) when treating our sample of pupils as a whole.

However, during the process of the collecting and the treatment of the data a qualitative assessment of the teachers also took place. A continuous series of observations of teachers' tests, teachers' classification of tests and teachers' behaviour in meetings, together with a more subjective judgement of teachers through our previous personal knowledge of them and/or informal talks with them, provided us with additional data and with an additional analysis. Important points of this analysis are the following:

(a) A close analysis of the tests given by each one of the teachers show that the level of demand in *U* questions (even in third-term tests) varied enormously from one teacher to another. In other words, while some teachers' tests create a whole range of conceptual demands in their *U* questions (from those requiring a not very high level of abstraction to those requiring very high levels of abstraction [2]), some other teachers' tests show that their *U* questions test only the lowest levels of these competencies. Teachers X_1 , X_2 , Z_2 , and especially X_3 and X_7 , are good examples of the former; teachers X_4 , X_6 , Z_3 , and especially Z_1 and Z_4 , are good examples of the latter; teacher Z_1 , in fact, has virtually no real *U* questions in her tests (see (b) below). The importance of this observation is that it points to the fact that even when a fair degree of agreement in classifying questions is reached, a fair degree of agreement in the pedagogical practice does not necessarily follow. On the basis of this information we could establish a new and different ranking of our teachers. This ranking, although apparently more subjective, is important. In the analysis which follows we will use other qualitative information together with other quantitative data on the basis of which we will produce an adjustment of the ranking we obtained from our previous analysis.

(b) Although the existence of random factors [3] does not allow the complete

agreement between teachers *even* when teachers are similar to each other (e.g. teachers X₃ and X₇), a delicate analysis of the classification of each teacher's questions by *other* teachers shows that there are *some* teachers where the majority of their *U* questions were consistently classified by most teachers as *A* questions. The most flagrant case is that of teacher Z₁, where almost all (or even all in some tests) of her *U* questions were considered *A* questions by virtually all teachers. This of course means that the agreed percentage of 50% *U* questions and 50% *A* questions was not achieved. As we have previously assumed that there is a relationship between the level of the question *and* the focus of the pedagogic practice, we will therefore argue that teacher Z₁ developed in the main *A* competencies. Further, the concentration on factual knowledge would associate this teacher with a more traditional approach to science teaching.

It is interesting to point out the discrepancy which appears to exist between this last point and the conclusions we reached through our statistical analysis. In that analysis we noted that teacher Z₁ (taken as an example) was much nearer to other teachers in the second evaluation compared to the first. Now, after our more subtle analysis, she is placed at a great distance from any other teachers. The interpretation of these two different findings is clear. In the third term, teacher Z₁ is more able to distinguish *A* and *U* questions when faced with *other* teachers' tests than she was before. However, she does not design *U* questions in her own tests or more precisely she does not develop this type of competency in her daily pedagogical practice. We suggest, on the basis of the evidence, that teacher Z₁ either is unable to teach at the level demanded by the higher competencies, or working-class country pupils act selectively on the focus of her teaching, or both [4]. This point is subject to a deeper discussion in the main study we have referred to (Domingos, 1987). It is also the case, but to a lesser degree, that a few teachers (e.g. Z₄), although able to recognize *A* and *U* questions, set in their tests *U* questions which either are low level *U* questions or do not belong to this category. Later analysis will provide further evidence for this statement.

The above should not lead us to conclude that after all no significant improvement took place. The statistical measures and our detailed analysis of the questions set by the teachers shows that on the whole an improvement did take place. Teachers knew better the researcher's criteria which on the first evaluation were only effectively known by teachers X₃ and X₇, i.e. they were better able to draw the line between *A* and *U* competencies; teachers were also nearer to each other. Unfortunately, however, this improvement did not necessarily lead to a change in their practice.

In fact, as we have seen, and as it will be seen later in the paper, the teachers' teaching style remained unchanged and as a consequence *the conceptual demand made of pupils by teachers varied. The degree of demand within U competencies shows great variation between teachers.* There is one teacher (Z₁) whose conceptual focus is so low that the majority of teachers classified her *U* questions as *A* questions. However, by the third term there was a high level of agreement between teachers in the discrimination between *A* and *U* questions.

This shows *the limitations of considering the sample as a whole*, and such limitations were taken into account when interpreting the data on the relationship between achievement in different types of competencies and our social groups.

Finally we would like to examine a further source of discrepancies between

teachers (of which we were previously aware) and which became evident in the first meeting we held with the teachers when they met to classify questions.

U questions are questions which, by definition and no matter the degree of conceptual demand they entail, deal with *new* situations. To make this more explicit we should say that, when a teacher designs a *U* question, he/she should have developed the respective competency beforehand in the classroom but the situation given to the pupils in the test *must be new*. However, we cannot always rely on every teacher creating a question based upon new situations rather than familiar ones. From this it follows that *only* the teacher herself can have a secure knowledge that a question is *A* or *U* for she is the only one who knows if the situation is new. Put in extreme terms it might seem that the comparison between teachers we have been making has no meaning, but this of course is not the case. In fact what we have called here *A* questions are usually designed in a way which is both simple and direct so that any teacher should be able to say it is *A*. However, this does not always turn out to be the case, especially where teachers have not had an adequate training. This can lead to a disagreement between the teachers arising out of the way the question is presented rather than a disagreement arising out of misrecognition of the type of question. To avoid these errors, our teachers were asked, after the first evaluation, to avoid designing 'beautiful' questions (with a sophisticated construction) when measuring *A* competencies so that other teachers would not be misled when classifying them. A further reason for this procedure was to ensure that *A* questions were not so elaborated in their construction that the understanding of their meaning required in itself *U* competencies. Although these steps were taken, it is probable that some degree of the disagreement found between teachers is due to this factor. Such disagreement shows ignorance of what happens in other teacher's classrooms rather than a disagreement based upon failure to discriminate. On this basis, we suggest that the general reliability obtained either by statistical measures or by qualitative assessment is possibly greater than those measures have shown.

To conclude this part, we should stress how important it was to complement the statistical analysis with a qualitative assessment which, although more subjective, revealed subtleties which not only modified our statistical judgement but also opened up productive lines for future analysis.

4. Teacher's Degree of Demand in the Marking of Pupils' Answers

Simultaneously with the process of establishing the consistency of teachers in distinguishing between *A* and *U* questions, another test was devised to compare the 11 teachers when marking answers given by pupils in their normal classroom context. The degree of agreement in the marking of pupils' answers was measured at the end of the year. The main objective of this procedure was to verify the degree of similarity of the criteria used by different teachers in the marking of pupils' tests. As third-term marks constitute the most relevant results of the level achieved by pupils, and because teachers were nearer in their ability to distinguish *A* and *U* competencies, only third-term tests were used to measure the teachers' degree of agreement in marking.

The analysis we have carried out allowed us to place the teachers on a benevolent/strict dimension.

A major conclusion can be drawn from our analysis: *Teachers differ greatly on*

their marking of answers to questions assessing *U* competencies; they differ much less on their marking of answers to questions assessing *A* competencies (with the exception of two teachers, the excessively 'strict' X_7 and the extremely 'benevolent' Z_1). The final ordering of teachers according to their conceptual demand (based in the values for *U* competencies) can be seen in Table I.

We believe that differences in benevolence or strictness are not simply a sign of a particular style of acceptance of pupils' answers but reflect a context of teaching in which teachers differ in the conceptual demands they make of their pupils, with reference to the pupils' development of *U* competencies. Strict markers, we hypothesise, relative to generous markers make a higher level of conceptual demand. From this, it would follow that *the degree of strictness or benevolence is an index of a differential pedagogical practice and this, if true, has profound sociological implications.*

On the basis of our findings here, we infer that teachers X_3 and X_7 direct their teaching to high levels of conceptual demand whereas teachers X_6 , Z_1 , Z_4 and even teachers Z_3 and X_4 direct their teaching to lower levels of conceptual demand. This inference is reinforced by our finding in the previous part. The case of teacher X_6 is interesting. We found earlier in the analysis that she was very able to discriminate *A* from *U* questions but her own tests showed that her *U* questions tested in the main a very low level of *U* competencies. We now find that teacher X_6 is very benevolent from which we would infer that she makes a low level of conceptual demand, which turns out to be the case. This makes clear that we cannot infer from the ability to discriminate between *A* and *U* questions the degree of conceptual demand.

These findings on the whole support our earlier conclusion: *the degree of conceptual demand within U competencies shows great variation between teachers.* Now we can see that there is also some, although small, *variation between teachers in the demands they make when they are teaching A competencies.*

We inferred from our findings that patterns of marking would be related to the teachers' characteristics and to the sociological context where they teach. A tendency to be 'benevolent' or at least less 'strict' was an attribute of:

- (a) the youngest and less experienced teachers, i.e. Z_1 , X_4 , X_6 (an exception is teacher X_5);
- (b) teachers who teach in schools in the country, i.e. Z_1 , Z_2 , Z_3 , Z_4 ;
- (c) teachers who teach in schools with a predominantly working-class population, i.e. Z_1 , Z_2 , Z_3 , Z_4 (exceptions are teachers X_5 , X_7).

Figure 1 shows the interrelations between young teachers and teachers working in the country and in working-class schools.

We can see more clearly from Fig. 1 that our sociological inferences about the distribution of benevolent teachers turns out to be confirmed. *Benevolent (or at least less strict) teachers are either young, teaching in working-class schools or in the country with the exception of teachers X_5 and X_7 .* Teacher Z_1 combines the three characteristics: young teacher in a working-class school, in the country. She is also the most benevolent marker.

We will now consider the exceptions. Teacher X_5 was trained the year before in a middle-class school by the 'strict' teacher X_3 , who considered X_5 a highly competent teacher. Teacher X_7 is the more important exception for she makes, according to our analysis, the highest degree of conceptual demand of the whole

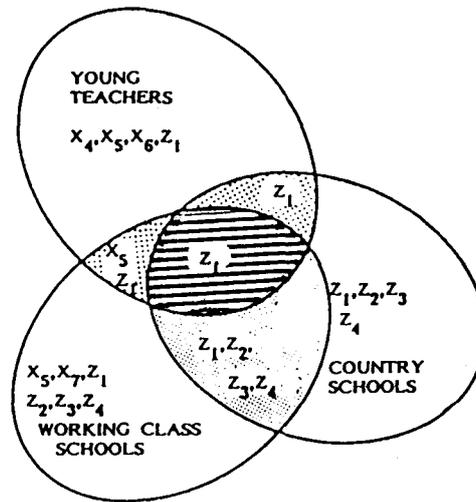


FIG. 1. Diagram of interrelations between young teachers, teachers working in the country and teachers in working-class schools.

sample (only followed by teacher X_3), yet she teaches in a working-class school. Her *curriculum vitae* shows that she has taught for most of her teaching life in middle-class schools, she has been a teacher-trainer and she has carried out research. It would seem that the standards of teacher X_7 are independent of the context in which she now teaches and are more related to the context of her previous experience.

We are not at this stage able to make a definite conclusion as to which of our variables—country, working-class school or young—is dominant. However, it is clear that young teachers, independent of the location of their teaching, make relatively a lower level of conceptual demand and that, in general, teachers in the country and working-class schools also make, relatively, a lower level of conceptual demand. It is likely that as the years go by, a young teacher, in general 'benevolent', becomes 'strict' if he/she is in a middle-class school and maintains his/her benevolence if he/she is in a working-class school. This means that the achievement of some groups of pupils is dependent upon the context in which they are taught and/or the experience of teachers. In other analyses (Domingos, 1987), we were able to check on these conclusions.

It is difficult to know whether teachers have low expectations of their pupils and so modify their conceptual demands or whether the pupils fail to meet high demands and so the teachers accordingly lower their demands, or both. Further, we do not know whether the pupils do not fulfil the expectations of the teachers because they are not interested in school and/or because the teachers have not developed an effective pedagogical practice and so settle for a low level of demand which makes life 'comfortable' for both teacher and taught. Teachers Z_1 , Z_3 and Z_4 have nearly always taught in schools in the country and therefore have no experience of other kinds of schools and pupils. Teacher Z_2 , who is less benevolent than the other three (although less strict than some other teachers), has taught for some years in a large city middle-class school just before the year of our study. Her professional history may also account for her reduced benevolence. Analyses of the relation between social class and gender and achievement

of pupils (Domingos, 1987), show that the pattern of achievement of the pupils of teacher Z_2 indicates that she *must* make some conceptual demand of her pupils.

We shall see that the very 'strict' teacher X_7 in a working-class school produces a relatively high level of achievement in her pupils (this will be developed in the next section). This leads us to believe that teachers' pedagogic practice is a crucial variable. *A teacher with a sound knowledge of educational psychology and teaching methods (like teacher X_7) improves achievement, including that of working-class pupils.* However, at the same time, *the gap between advantaged and disadvantaged pupils (gender, class) increases* (Domingos, 1987). It would seem that a greater sociological sensitivity on the part of such a teacher would enable such differences to be reduced.

5. Patterns of Achievement in A and U Competencies in Different Teachers' Pupils

We have argued that differences in the teachers' marking of U questions (benevolent/strict) is an index of the level of conceptual demand of their pedagogic practice. We have found that 'benevolence' in marking is related to age of teacher, class context of the school and location (country). We have presented some evidence to suggest that the teachers who are exceptions, X_5 and X_7 , differ from their set in terms of their training (X_5) and professional career (X_7). We have hinted that there is a relation between the inferred degree of conceptual demand and pupils' achievement. We examined this possibility through another type of analysis where we looked at the relation between teachers and the level of marks their pupils received. In that analysis we were concerned with:

- (a) Marks teachers assigned to pupils in A and U competencies in the third term.
- (b) Relationship between A and U marks in the third term, i.e. the A/U ratio.
- (c) Progress of the pupils throughout the year, i.e. relationship between marks assigned in the three terms of the year, both in A and U competencies.

We examined the teachers' pedagogic practice by comparing the extent to which their scores for A competencies approximate to a J curve and the scores for U competencies approximate to a Gaussian curve. Our justification for these criteria is based upon an analysis of patterns of achievement in different types of competencies (Domingos, 1987). A competencies represent the minimum level of objectives to be attained and so these competencies should be achieved by the majority of pupils. For U competencies we should consider two rates underlying their acquisition: the possible learning rate and the demand rate. When there is an equilibrium between the two rates, stable curves of the Gaussian type appear. The extreme values of skewness we found in some teachers' pupils scores can be interpreted as corresponding to a failure of that equilibrium. On the other hand, because U questions were criterion-referenced, U marks are not expected to be high. Very high marks in mixed-ability classes would indicate some kind of failure on the part of the teacher. On the other hand, the marks should not be very low.

The assumption which lies at the basis of the analysis of the relationship between A and U marks is that, because U questions were criterion-referenced, U marks are not likely to be very high but A marks should be high and approaching a J curve. Thus the ratio A/U should be always higher than one and highest for better teachers. This assumption has of course evident shortcomings derived from

the discrepancies which we have found between different teachers (e.g. *U* questions which do not test *U* competencies, etc.).

The analysis of the pupils' progress was carried out for teachers X_3 and X_7 only.

The three analyses referred to above allowed us to add a further dimension to the characterisation of teachers' pedagogical practice. We noted before the importance of the level of conceptual demand by different teachers. Here we were able to see the extent to which teachers enabled their pupils to develop *A* and *U* competencies.

Our major conclusion is that *there is a great difference between teachers in their competence to enable pupils to master A competencies and to develop U competencies.*

Teacher X_7 is the only one whose general teaching in *A* competencies produced scores approaching a *J* curve; she is at the top of the scale ordering teachers according to the degree to which their pupils mastered *A* competencies. Teacher X_7 also shows a balance between the rate of conceptual demand and the rate of learning, in *U* competencies. If we consider the high level of demand she makes in these competencies (together with teacher X_3 , who is the most demanding) and the fact that she teaches in a working-class school, where we would expect a lower level of achievement (Domingos, 1987), we see that here again, as for *A* competencies, teacher X_7 is at the top of the scale which orders teachers according to their effectiveness in enabling pupils to acquire *U* competencies. She is immediately followed by teacher X_3 .

The relationship between *A* and *U* marks again places teacher X_7 at the top of the scale. We can see the final ordering for *A/U* ratio in Table I.

Based on our previous analyses it is evident that the meaning of any placement on the scale will not be the same for each teacher. Thus, for instance, teachers Z_3 and Z_4 are placed at the bottom of the scale because they gave low marks either in *A* or *U* competencies whereas teacher X_6 is there because she gave high marks in both competencies.

Despite the apparent difficulties in giving an unambiguous meaning to any position on the scale, previous analyses in the paper give us a principle of interpreting the meaning of any position. As an example, we can concentrate on teacher Z_1 , who is placed as one of the first in this ranking and appears, therefore, as one of the most efficient teachers. However, we have good reasons to believe that this teacher should be at the bottom of the scale. First, her ratio does not represent a valid *A/U* ratio because most of her *U* questions do not test *U* competencies. This fact, by itself, should place her in the low ratio group. However, she is very 'benevolent' in *A* competencies which for her require very elementary knowledge. This explains the high marks in *A* competencies. On the other hand, her marks in what she calls *U* competencies should be still higher (given that they are mostly *A* competencies) to follow her pattern of achievement in *A* competencies. Thus, she should be placed at the other extreme of the ranking, as the *A/U* ratio should be low.

It is clear that over and above the question of the competence of a teacher in helping her pupils to attain a *given* level (the level he/she has set for the course), *is the social context of the school which is a powerful factor influencing the teachers' pedagogical practice.*

Teachers who teach in working-class schools and/or schools in the country tend to be less effective (with the exception of teacher X_7). Teachers who are young and inexperienced, not surprisingly, also affect the attainment of their pupils.

Based on the relation between *A* and *U* marks, we ranked teachers, although here the unambiguous meaning of this ranking could only be understood by complementing the data with information obtained in the previous analyses in the paper.

6. The Characterising and Ranking of the Teachers' Pedagogic Practice

As we have pointed out before, many surveys of the relationship between pupils' achievement, social background and school rarely explore systematically the crucial variable—the teacher's pedagogic practice. In the present case, the sample was sufficiently large, the information, both objective and subjective [5], was unusually sensitive. Further, the researcher had detailed knowledge of the content of the syllabuses, the context of the schools, the interaction of the teachers in their assessment of *A* and *U* competencies and the marking of test questions. All these different aspects were available to enter into our final characterisation of the teacher's pedagogic practice. This knowledge is important in itself for it makes us aware of the vital role of the teacher. It also enabled us to interpret the relations between family background, gender, type and location of school and pupils' differential achievement (Domingos, 1987).

Let us start by summarising the main findings contained in this paper. First, we improved teachers' discrimination in distinguishing between *A* and *U* competencies. Second, we reached some important conclusions about their level of conceptual demand. Third, we analysed the patterns of achievement of a teacher's pupils. Let us ignore for a moment the qualitative assessments we made throughout the paper and concentrate only on the objective measures. On the basis of these, we can rank teachers according to three dimensions:

- (a) the measure of their competence in distinguishing *A* and *U* questions;
- (b) the measure of their degree of 'strictness' or 'benevolence', i.e. the higher or lower level of conceptual demand;
- (c) the measure of their competence in bringing their pupils to develop *A* and *U* competencies.

Table I (p. 354) summarises these rankings. The analysis of Table I shows that the three groups in which each dimension can be divided (indicated by a vertical line) are not perfectly equivalent, although there are teachers who appear consistently in the same group (lowest, mid or highest). Figure 2, in which these three measures are graphed, complements the table. An analysis of both allows a characterisation of teachers. For ease of understanding we represent only two dimensions of the graph; the third axis is below and should be visualised as vertical to the plan defined by the two axes above. Thus we have a three-dimensional image. As it is difficult to read a three-dimensional graph off a two-dimensional image, the positions have to be visualised.

Let us first consider the two dimensions—conceptual demand and *A/U* ratio. In principle, the level of conceptual demand should be related to the relation between *A* and *U* scores. We would then expect one of the following three situations:

- (a) a teacher is in the above-right quadrant;
- (b) a teacher is in the below-left quadrant;
- (c) a teacher is around the centre.

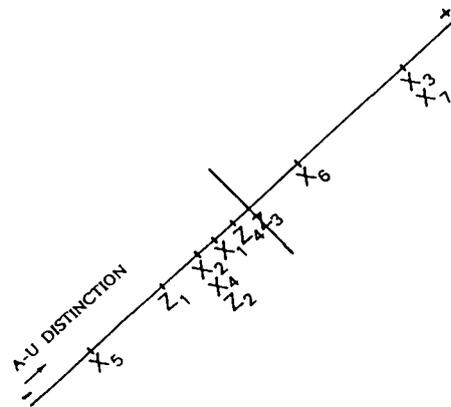
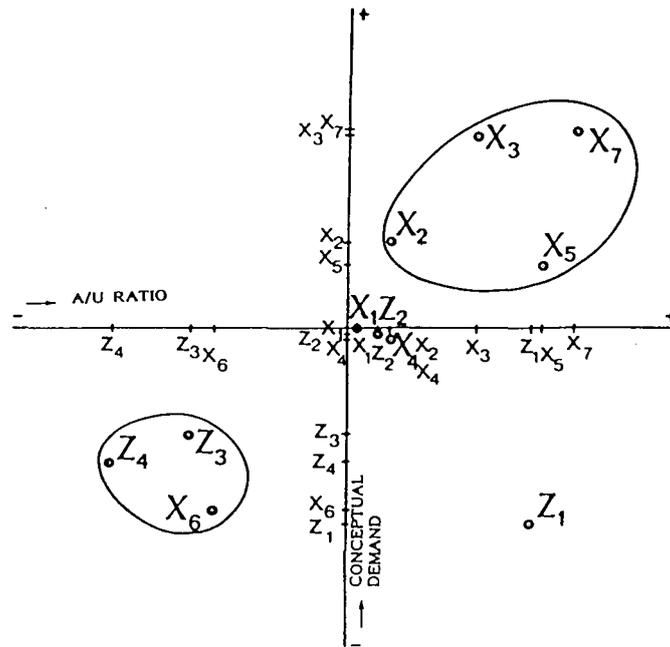


FIG. 2. Characterisation of teachers through the use of three different measures.

Teachers X₂, X₃, X₅ and X₇ are in position (a); teachers X₆, Z₃ and Z₄ are in position (b); teachers X₁, X₄ and Z₂ are in position (c). It is clearly evident that teacher Z₁ is 'out of place', i.e. she cannot make a low level of conceptual demand and *at the same time* have a high A/U ratio; a contradiction which has become more and more evident throughout this paper. This confirms our previous qualitative (and subjective) judgement.

Let us now consider the third dimension, competence in discriminating between A and U competencies. In principle, one of these three situations should occur:

- (a) a teacher is placed in the back-right upper octant;
- (b) a teacher is placed in the front-left lower octant;
- (c) the teacher is around the centre.

Teachers X_3 and X_7 are in position (a) and teacher X_2 is near to it; teachers Z_3 and Z_4 are near to position (b); teachers X_1 , X_4 and Z_2 are in position (c). It is clearly evident that teachers Z_1 , X_5 and X_6 are 'out of place'. This roughly confirms what had been said before.

Let us now take into account both quantitative and qualitative assessments, i.e.:

- (a) teacher's conceptual demand;
- (b) competence of the teacher in enabling pupils to achieve *A* and *U* competencies;
- (c) researcher's knowledge of the contents of each teacher's syllabus, the structuring, level, *A/U* discrimination of each teacher's tests, teachers' discussions at meetings, their professional history and, much more subjective, knowledge of the teachers through informal relations with them;
- (d) information on teachers' pedagogic practice, obtained through other analyses (Domingos, 1987).

We can now rank the teachers of our sample in a meaningful way. We must point out that the ranking takes into account the social composition of the school; a given level of success in a working-class school is more difficult to attain than the same level in a middle-class school. There is some correspondence in the ranking between the objective scales and this final scale. The final ranking of teachers is shown in Table II.

TABLE II. Teachers' ranking according to competence

Teachers	Competence										
	← Max.										Min. →
Scale number	1	2	3	4	5	6	7	8	8	10	11
Identification	X_7	X_3	X_2	Z_2	X_5	X_1	X_4	Z_3	X_6	Z_4	Z_1

The above scale was the one we eventually used when teachers were entered as a variable in the relationship between sociological variables and achievement in the main study we have been referring to.

The characterising of teachers, described here, although important in itself, as pointed out before, was crucial for that study. In it we were aware of *the role of the teacher in concealing the true relationships between sociological variables and achievement*. For example, when the sample was treated as a whole, the influence of a variable like gender or social class could hardly be noticed; only when each teacher's pupils were treated as a subsample could that influence be perceived. We have seen in this paper *how great are differences between teachers*; for example, teachers X_7 and Z_1 , who both teach in working-class schools and who have between them a large proportion of the sample, are at the extremes of the dimension of level of conceptual demand and are at the extremes of our scale. The knowledge we were able to get, through the study described in this article, about the pedagogic practice of the teacher, was essential for interpreting the relations between other sociological variables and achievement.

7. Conclusion

The analysis which we have carried out suggests that *the realised 'competence' of the teacher is strongly related to the school context where he/she teaches*. It is that social context which makes teachers develop courses with a low or high level of abstraction to match what they consider to be attributes of the school population they encounter. A working-class school and/or a school in the country acts selectively on the conceptual level of the teaching so as to produce a reduced conceptual demand and focus of the pedagogic practice.

It is likely that a young and inexperienced teacher, who makes a low level of conceptual demand, may become less demanding if he/she teaches in a working-class school and/or a school in the country. As we said before, this means that the achievement of some groups of pupils is dependent upon the context in which they are taught and/or the experience of teachers. If we look at the several dimensions we have considered, both in the objective analysis and in the qualitative assessment, we would like to suggest that the level of abstraction selected for a course is directly related to the social context of the school, whereas the competence to enable pupils to attain a *given* level in *A* and *U* competencies is directly related to what is commonly understood as teacher competence. Both selected level of abstraction and competence to bring pupils to a given level are influenced by the social context and the so-called common competence of the teacher.

Thus, if we consider the teachers' pedagogic competence they may be well trained in the design of a curriculum which entails the necessary level of demand and they may have a sound basis in educational psychology to enable them to transmit effectively the competences to *many* of their pupils, but, as we were able to see, such a competence *per se* may widen the difference between disadvantaged and advantaged groups (Domingos, 1987). It is only when the teacher is *aware of the role of the sociological context of teaching* that he/she will be able to *take steps to narrow the gap between these groups of children*. He/she will also be able to *take steps to correct the depressing effect of that context upon the level of conceptual demand* and upon the principles of marking. Such sociological knowledge is a necessary condition for the raising of the level of achievement of working-class children.

We believe that *teachers who make a very low level of conceptual demand have failed to understand the sociological implications* of the transmission–acquisition process they are promoting. Their pupils, already disadvantaged when entering the school, will be more so in the process of selection which takes place both inside and outside the school.

It is important to note how the same general syllabuses designed by the Ministry of Education can lead to such a different grading of courses in different schools and with different teachers. Some might claim that these differences are a sign that teaching is responding to the needs of local communities. Indeed, in order to accomplish context-specific teaching practice, the above argument has been used for the abolition of national examinations in Portugal. However, this apparently wise measure, defended by progressive teachers and educationalists, may, according to our finding, *widen the gap between the kinds of teaching children receive in big cities and working-class and/or country schools*. If undiscovered, this gap will legitimate selection procedures for entrance to further education, university

[6] and occupations. A child who steps into a school disadvantaged may leave it still more disadvantaged.

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NOTES

- [1] The term 'reliability of a teacher' is used in this paper to mean the degree of agreement of a teacher with other teachers with respect to the classification of questions into *A* and *U*.
- [2] The highest competencies of the cognitive domain in Bloom's Taxonomy of Educational Objectives.
- [3] Random factors, together with the difficulty of drawing a firm line between *A* and *U* competencies, explain how it is that during the meetings all teachers changed their classifications of *A* and *U* questions with respect to a small number of their own questions.
- [4] We can now understand how misleading it can be to take one behaviour as a sign of understanding: if the ability to distinguish *A* and *U* questions by teacher Z_1 had been taken as a sign of effective understanding of *A* and *U* competencies, we would have committed a serious mistake.
- [5] We are here referring not only to information described in this paper but also to information obtained from other analyses (Domingos, 1987).
- [6] Although a systematic study has as yet not been carried out, the results of the national exams in the last year of secondary school show that the pupils of big cities and/or middle class schools always have the highest marks; as a consequence now, more than ever, it is these pupils who are not only overrepresented in the University but who have access to high status subjects leading to dominant occupational positions.

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