

Dealing with Heterogeneity in Teaching

Sphere of activity and its challenges

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1. Introduction to the Problem Area

Teachers in modern schools – unlike the home tutors of bygone times – are not dealing with single pupils but rather, as we know, education takes place with twenty to thirty children, that – this is also a truism – vary considerably in their educational needs as well as their capabilities and pre-qualifications. This leads to the difficult question of how this heterogeneity can be dealt with in the shape of interindividual differences.

Fundamentally there are different forms of reaction (cf. Weinert 1997):

- *Ignoring differences in learning and achievement (passive form of reaction):* Differences in learners' capabilities and pre-qualifications can be *ignored* when planning lessons by the teacher orientating the lessons to a fictive average pupil and setting his progress in learning and achieved results as the standard for the pace and level of difficulty of (usually synchronized for all pupils) teaching.
- *Adaption of pupils to the demands of the lessons (substitutive form of reaction):* Differences in learners' capabilities and pre-qualifications can be *reduced* by grouping them from the start – at the administrative level – in such a way that the groups are as homogeneous as possible with regard to the chosen criteria. Or special programmes (support courses, practice in learning strategies) are used to improve the learning capabilities and qualifications of weaker pupils so that they match the demands of the lessons.
- *Adaption of lessons to the relevant differences between the pupils (active form of reaction):*
 - Lessons can be adapted to the differences that are relevant for learning by offering differentiated lessons that take learners' differing needs and capabilities and pre-qualifications into consideration.
- *Specific support for individual pupils by adaptive lesson planning (proactive form of reaction):* In this fourth strategy, in addition to an adaptive style of teaching emphasizing individualization in phases of written work and practice, there are differentiated achievement targets (i.e. differentiation between a basic curriculum for all pupils and a differentiated extension curriculum).

In the German education system the first two above-mentioned strategies have traditionally been dominant. However, particularly in the last few years they have been increasingly the subject of criticism (cf. Altrichter et al. 2009):

- (1) The main cause was the results of international comparative studies (such as TIMSS and PISA), which proved able to reveal considerable deficits in the German education system in dealing with heterogeneity in schools and education: The differences between strong and weak pupils – meaning the variation of achieved results – were extremely great and in addition, to a large extent associated with the pupils' social background. Moreover, the large number of weak learners that did not even manage to reach Level of Competency 1 in the respective fields was particularly alarming, which points to considerable defects with regard to appropriate support for weaker pupils.
- (2) Public opinion and teachers have in the last few years increasingly had the feeling that heterogeneity in society and education is growing; and therefore also learner groups – despite all the attempts to make them more homogeneous – are becoming more and more heterogeneous. Plausible explanations for this are to be found not only in international developments (globalization, migration, the end of the industrial society) but also in processes of individualization in society, leading to greater variation, particularly in language capability at entry and parental upbringing prior to education due to changing lifestyles.
- (3) At the same time the development continues of what was begun by the New Education movement: pupils are increasingly regarded more as individuals that have the right to be perceived and supported in all their particular characteristics. From the didactic point of view this subject orientation is especially encouraged by the spread of constructivist educational theory and didactics, which see teaching as based on the learning activity of individual pupils.

According to the background briefly (and by no means completely) outlined here, there have in the last few years been growing demands for change and a new way of thinking. Heterogeneity should no longer be ignored or regarded as a burden but rather the chances arising from it should be seen and used (cf. for example Bräu/Schwerdt 2005). As a result, Weinert's (see above) last-mentioned strategies are becoming more important on the level of didactic-methodological activity. Teaching should not and must not any longer be orientated only towards an imaginary average pupil but rather processes are required by which lessons are attuned and differentiated far more than in the past to the various capabilities and pre-qualifications of the pupils in a learner group: No longer should the pupils – and this can be seen as a fundamental change in perspective - have to adapt to the lesson, but the lesson must be geared to the different needs and abilities of the learners.

These demands are certainly by no means new and the concepts thereby broached are really known to all teachers. For it is basically the case that here processes and methods are being demanded that have a long tradition both in General Didactics under the keywords “internal differentiation” and “individualization” of lessons and in teaching and learning research under the term “adaptive teaching”: “If teaching is to support each individual pupil to the best possible degree(...)” – as Klafki/Stöcker (1976, 503) stated more than thirty years ago – “then it must be planned on the basis of internal differentiation”.

The problem is rather more that although these demands are without doubt well-founded there are, however, apparently still considerable problems in putting them into practice. If empirical findings of educational and teaching research are to be believed (cf. in the survey Wischer 2007), teaching practice in the last decades appears to have become more varied in respect of methods, yet if the question is asked to what extent educational paths that are adapted to individual learning capabilities and pre-qualifications are being opened up, a sobering conclusion is reached: teachers do try increasingly to give lessons which are more varied in their methods and which activate the pupils; the implementation of elements that are more complex in their organization, that allow for more differentiated suitability for the learners seems, however, still to be rare and to be carried out only to a rather limited extent.

How can this discrepancy between well-founded expectations and the almost non-existent or only very limited implementation of these demands be dealt with? And above all also: what is necessary and what is helpful to support individual teachers to see the heterogeneity of their learner groups as actually an advantage and to learn to use it in a productive way. Practical advice or recipe-like instructions or also technology seem very seductive here because they are attended by the hope that this could lead to clear orientation for their own actions. At the same time, there are considerably more arguments in favour of the fact that practicable instructions for this complex subject are not at all easy to find and in addition by no means guarantee success. If specialist literature is consulted, it will be seen that there is no lack of well-meant advice for the question of how to deal with heterogeneity in education. Should someone set out to find advice, he will find available an almost immeasurable and constantly growing supply of manuals and books about methods, offering more than enough – possibly even too many – alternatives.

Rather than giving here once more a list of possible alternatives and good advice, the rest of this paper will approach a number of selected problem areas, some of which arose within the framework of TIPP. Here the main concern is to provide *opportunities for reflection* that essentially aim to avoid overtaxing those trying them out as a result of unrealistic expectations, without them abandoning their aspirations to change their way of teaching.

2. Reflection of selected problem areas

2.1 Differentiated perception of heterogeneity

A central pre-condition for a productive way of dealing with heterogeneity is to perceive learners' different needs at all. Admittedly, discussions in specialist scholarly discourse are very controversial on the question of which dimensions of heterogeneity should be considered. In the context of learning at school, heterogeneity – it must be emphasized - denotes merely the dissimilarity of pupils as regards their fundamental capabilities and pre-qualifications and the conditions for their learning, without laying down any characteristic features in detail.

If the numerous new articles on the topic are studied (cf. for example Bräu/Schwerdt), it is noticeable that mostly from a pedagogical-normative perspective the individuality of each child is the basis for consideration, which results in heterogeneity being described in an almost endless number of dimensions. This leads to long, almost unmanageable lists of attributes that teachers are supposed to bear in mind. Among others are mentioned for example:

- ability
 - age
 - gender
 - social, family, economic and cultural background
 - biographical experience
 - style of learning
 - psychological and physical constitution
 - language competence
 - immigrant and educational background
 - interests, talents and motivational orientation
 - belief in self-efficiency
- and many more of the like

It requires only a quick look at such a list – this one is by no means complete – to realize that while the focus on the individual child that is expected here is indeed desirable, it does, however, soon come up against limits in the capacity for perception. Were a teacher to attempt to constantly bear in mind all the dimensions of heterogeneity that are possible (and recommended in specialist literature), this would mean creating a degree of complexity on the level of perception that is not really achievable and in addition would lead to a degree of insecurity on the level of practical activity: it is important to point out that it is not for lack of good will that teacher perception is directed towards the collective average pupil and not the individual child but for reasons of capacity.

However, it would, conversely, be just as problematic to ignore heterogeneity completely, citing overwork, or to limit it to academic ability as is often still the case in day to day education. What at first sight appears to be academic ability is – as has once again been tellingly shown by international comparative studies – always also influenced by other attributes (in particular social and cultural origin). The question at this point is how to deal with this dilemma.

TIPs:

- Basically it will have to be a matter of finding an appropriate balance between
 - reduced or limited perception, which prevents adequate support
 - and a degree of complexity that leads to an incapacity to act.
- Beginner teachers should be aware that differentiated perception of heterogeneity normally requires many years of experience and routine. According to a stage model by Fuller and Brown (1975) of the development of teacher competence, it is not until the third and final stage – “routine stage” – that a level of competence is achieved that enables adequate perception of individual pupils’ interests and needs.
- A first major step should be to submit one’s own perception to critical scrutiny and thus become aware of it. The following key questions may be helpful here:
 - Which dimensions of heterogeneity do I focus on?
 - Which do I see as an opportunity, which as an advantage?
 - Which attributes of heterogeneity have played an important part in the planning of my lessons?
 - And which dimensions should and could I pay more attention to in future?
- Regarding the problem of complexity it may also be very helpful to realize that not every attribute of heterogeneity is equally relevant for the planning of learning and teaching processes in a narrower sense or directly. Here it is particularly interesting that in programmatic discourse a large number of lines of difference are mentioned but *previous knowledge in a specific field* as the “far and away most significant learner attribute“ (Helmke 2009, 248) is rarely taken into consideration although it is the attribute that is comparatively easy to measure and then to take into consideration. Elisabeth Stern (2004, 39; quoted in Helmke 2009, 252) formulated the following key questions that are directed at the attribute of previous knowledge and can provide orientation for the planning of a teaching unit or a single lesson:
 - Which routines need to be mastered?

- Which terms need to be understood and which facts must be known so that a particular lesson can be useful?
- What sort of knowledge could some pupils already have?
- Which sort of knowledge can be used as a starting point?
- Where could misunderstandings arise?
- What possibilities are there to express a particular subject?
- How can the presentation of the lesson be made more visual?

2. 2 Personal Attitudes and Subjective Convictions

Dealing adequately with heterogeneity is by no means only a technical problem but rather – as is frequently mentioned in current discussion – is closely connected with fundamental subjective convictions and attitudes (cf. for example Graumann 2002): as long as teachers – to put it simply – regard heterogeneity as a problem and not as normal or even advantageous, little will change in teaching. The significance of subjective theories is undisputed in research (cf. for example Helmke 2009, 117); it is assumed that they have a considerable influence on teacher activity. At the same time a closer look reveals a number of problems in connection with the expected change of attitude, which should not be overlooked:

(1) A change of attitude regarding questions of heterogeneity is full of pre-requisites for it requires a fundamental re-thinking of previous ways of thinking and mentality concerning one's ideas about people and society, notions both of teaching and learning, and of sameness and difference as well as one's understanding of one's own role.

(2) As a result, attitudes to heterogeneity are on the one hand closely associated with teacher personality – one's own biographical experience – but on the other hand may by no means be reduced to no more than a variable of personality. Subjective convictions and attitudes are at the same time certainly to a considerable extent influenced by professional demands. Institutional conditions in particular and the function logic of schools (e.g. the principle of selection and curricular parameters) may be mentioned here as significant factors that undoubtedly make a positive perception of heterogeneity difficult.

(3) Focussing strongly on teachers' attitude as the decisive variable for successful innovation soon gives the impression that dealing differently with heterogeneity is above all a question of volition and not a question of the fundamental ability to do so (obs. Wischer 2007). Linked to this is the danger of individualizing and psychologizing the description of the problem, which may not only (quite justly) lead to rejection by teachers but also to a high level of demands and the associated problems of how to act being ignored.

TIPs:

- Despite the problems mentioned above arising from a restricted agenda regarding questions of attitude, it is necessary to submit one's own attitudes and values to critical scrutiny. The reason for that is not only that these attitudes direct teaching activity but also that reflection is required because people are normally not aware of these attitudes. It would be especially relevant to reflect on areas such as: theories of learning and giftedness, ideas about the responsibility and functions of education (support vs. selection), attitudes to sameness and difference, one's own notions of normality and understanding of one's own role.
- Particularly in respect of the professionalization of teachers in the first and second stages of their training, reflection of subjective convictions and attitudes represents a necessary but also difficult requirement. A starting point for this is provided by forms of biographical learning; concrete methods and suggestions are provided by the compilation of material "Kompetenztraining "Pädagogik der Vielfalt" (cf. Sielert/Janeke, Lamp, Selle 2009).

2.3 Reflection of Options for one's own Activity

As has already been suggested concerning the question of teachers' attitudes, professional activity is embedded in an institutional context that offers differing favourable or unfavourable options. Surveys of teachers on the question of chances of putting internal differentiation into practice (cf. Roeder 1997; Kunze/Solbacher 2008) have demonstrated repeatedly that from the teachers' point of view it is the general institutional framework that impedes their good intentions. This includes among other things class size, curricula, the customary 45-minute timetabling structure, lack of material as well as more time and effort for preparation and – particularly in classes up to GCSE level – the principle of specialist teachers for each subject. These references to institutional conditions may readily lead to rejection of any reform; however, it is just as unhelpful to ignore them. Matthias von Saldern (2007, 42) is quite right to refer to the danger of a restricted agenda when he states that in connection with present demands for a different way of dealing with heterogeneity the focus is primarily on the individual teacher's teaching without questioning whether and to what extent the general framework offers adequate and favourable conditions.

TIPs:

- In view of the well-founded but considerable demands regarding a productive way of dealing with heterogeneity on the one hand and the numerous problems there are in putting them into practice, it is absolutely essential to get as a realistic a picture as possible of the existing options and limitations i.e. to sound out one's own available scope for activity. As von Saldern (2007) suggests, perceived resistance and

limitations should be examined to establish whether it is a matter of limitations set from without and to what extent they are self-restrictions. Only then can rejection of well-founded demands for innovation by pointing to institutional restrictions and thus abandonment of one's own scope for activity and potential for creativity be prevented.

- A useful method for analysis of one's own scope for activity, which has been tested within the framework of TIPP, is the so-called force field analysis, which is suitable for depicting the driving (supporting) and restraining (impeding) factors in a situation (there are numerous representations of this process on the internet).

2. 4. Requisite Teacher Competences

Internal differentiation puts – as was pointed out by authors in the nineteen-seventies despite all their euphoric hopes (cf. Klafki/Stöcker 1976) – considerable demands on teacher activity. Beck et al. (2008, P. 41), speaking here of adaptive teacher competence, differentiate for example between four competences. There is a necessity for

- “extensive *professional knowledge*, able to be used flexibly, where the teacher is able to operate freely and react easily and quickly (*specialist competence*);
- the ability to appraise learners' capabilities and pre-qualifications (previous knowledge, style of learning, pace of learning, weaknesses etc) in relation to what is being taught at the moment and to assess the results of their learning (*diagnostic competence*);
- extensive methodological – didactic knowledge and capability including the teacher knowing the advantages and disadvantages of the didactic options that can be implemented and the conditions under which they can be successfully implemented (*didactic competence*) and
- the ability to manage a class in such a way that the learners – as a fundamental pre-condition for learning progress and success – can contribute active and sustained work on the subject of the lesson, without excessive disruptive other activity, (high level of time-on-task) (*class management competence*)” (my italics, B.W.).

If we look at the above-mentioned competences, it soon becomes obvious that here the abilities involved concern the central core areas of teacher activity but at the same time require considerable capabilities. While the necessary specialist knowledge can mainly be acquired during university studies, the other competences only evolve in the course of a process of many years of practical development: teacher competences – as for example Ewald Terhart (2004) points out – do not evolve “in the shape of an abrupt qualitative leap forward from nothing to completeness. On the contrary, they develop gradually through certain preliminary modes or preliminary stages to the individually achieved maximum”.

TIPs:

- Not only beginner teachers should bear in mind that recommendations for dealing differently with heterogeneity as a whole – because of a multiplication of learning processes that take place at the same time and an accompanying multiplication of necessary decisions – lead to an increase in complexity in the already complex field of activity of teaching.
- This leads to a dilemma concerning recommendations for teaching practice and then concerning one's own lesson planning: methods of internal differentiation appear on the one hand to be likely to be especially successful if they are as extensive as possible and are implemented consistently. On the other hand, this, however, also contains the risk of over-taxing by increasing complexity.
- With regard to these problems, it seems advisable to adopt a strategy of small steps in which one's own competences and those of the learner group should be of prime importance. The numerous methods and recommendations on how to proceed that are available should be used not as a yardstick for one's own practical work but as suggestions and source of information.

2. 5 Requisite Pupil Competences

Internal differentiation makes heavy demands not only on teacher competence but also on pupils: different but simultaneous learning processes can only be put into practice when learners – alone or in groups – are able and willing to organize their learning process themselves. Pupils require therefore first of all adequate motivational orientation and secondly competences in self-directed learning. It is by no means automatically the case that both are present and particularly the requisite learning competences have to be developed, which requires time for instruction and practice.

The necessity of ensuring that the requisite pupil competences are secured is emphasized by the fact that open, individual-oriented learning arrangements otherwise by no means offer all pupils the same chances for learning. It has been confirmed by numerous empirical investigations that pupils

- (1) with a low level of intelligence and of previous knowledge
- (2) with a high level of anxiety, unfavourable attitudes and motivational orientation (confidence in success vs fear of failure) and
- (3) from disadvantaged social strata

are more likely to profit from (highly) structured teaching with fixed parameters while high-achieving and motivated learners are more able and more willing to self-direct their learning (cf. for example Helmke/Weinert 1997).

TIPs:

- Individualization and differentiation in teaching are not – as programmes sometimes suggest – equally suitable for all groups of pupils. Forms of Open Teaching and direct instruction should therefore not be played off against each other, empirical results suggest rather that a combination of differentiating processes and direct instruction – i.e. teacher-directed teaching – may be considered as particularly likely to be successful and to be able to be put into practice.
- Pupils' differing capabilities and pre-qualifications in the question of learning competence underline the necessity for a systematic practice of such competences in order to avoid placing the above-mentioned groups at a greater disadvantage. If open learning options are offered, the following questions should be kept in mind:
 - Do all pupils have the learning competences that are necessary in order to be able to use an open option?
 - What additional structural aids to learning are necessary?
 - How can they be offered?
- Above all, those specialist subject teachers teaching a learner group for only a few periods/lessons will, in view of the necessary pupil capabilities and pre-qualifications, have to be prepared for difficulties in implementing differentiating learning arrangements. Therefore developing steps for lesson planning together with other teachers – with the intention of a systematic development of learning competences (cf. for example Czerwanski et al. 2002/2004) – appears to be ultimately essential. To do this, it is not always necessary to involve all the teaching staff, it may well be possible first to try out cooperation with other teachers that teach in the same learner group.

2. 6 Contradictory Demands in dealing with Heterogeneity

The difficulties in dealing with heterogeneity that are frequently not considered in programmes of recommendations but are at the same time frequently mentioned by teachers may, if regarded from an analytical angle, arise from fundamental contradictions in teaching activity. Profession theories use the term antinomies or paradoxes and mean that it is here a question of problem complexes in which demands clash that are in essence incompatible but which, at the same time, teachers are required to cope with (cf. observations by Wischer 2008).

When dealing with heterogeneity and also putting internal differentiation into practice, two areas of conflict above all play a part:

1. Selection and Support

A primary area of conflict exists in the antimony of support and selection, which may also be described as the contradiction between the pedagogical and selection-oriented obligations of education: While the pedagogical obligation is aimed at supporting all pupils in such a way that they can develop their potential to the best possible degree, society also expects education to be responsible for measuring pupil results according to uniform standards in order to then confer (unequal) qualifications. The dilemma that is linked to this was described thus by a teacher for a TIPP survey: "I know perfectly well that if I give a pupil a grade 3 (= C) and another one gets a 3 as well, that has to be seen to be of the same standard. Anyway, everybody thinks when they see a 3 that he has achieved exactly the same as the other pupil with grade 3. And that's where the problem starts if one of them has been given work that suits his level and then he works really well and achieves super results but those results are on a completely different level from those of the other pupils. And so I can't give him a 1 (= A)".

2. Individual Norm vs Group Norm

Demands for internal differentiation normally place pupils' individual learning progress in the foreground because the emphasis is on supporting each individual to the best possible degree. It is easy to overlook the fact that this concern may be in conflict with aims that are directed not at the individual (individual norm) but at the distribution of criteria within a learner group (group norm). One of teaching's aims is also that, for the purpose of creating equal opportunities, differences should be eliminated or at least reduced to such a level that it is possible for all pupils to learn together. If both aims are to be taken into equal consideration, the central question arises of how to achieve as high a level as possible of individual learning progress without increasing the gap between the pupils' results. Research on the concept of learning that will achieve its aims demonstrated in the nineteen-seventies that it is not possible to achieve both aims without some reduction (cf. Weinert 2001): allowing additional time for slower learners to learn – as is planned in this concept – partially reduces differences in achievement but the need for additional time does not become significantly less. Since the slower learners permanently require a (sometimes considerably) higher time budget, a solution has to be found for the problem of how the quicker ones can use this time. This conflict, known as "time-achievement-equality-dilemma", (Arlin 1984, 66) means that either the pace of teaching has to be reduced for these learners so as to keep the amount of additional learning time within limits or the divergence of achievement becomes – if the quicker ones make optimal use of the "waiting period" – so great that it becomes difficult to teach the class all together (cf. also Rauin 1987).

TIPs

- An important fact: contradictions within the field of educational activity have their causes in structures and therefore cannot be solved by one side.
- Problems arise when one side is ignored and blanked out.
- From the profession theory perspective, it is important to point out that both sides in the situation should be aware in order to find a balance between them. However, it is not possible to give a general answer as to what such a balance should be like.
- An important first step would be to be aware of these contradictions for one's own pedagogical activity. The force field analysis mentioned in item 3 will be helpful here.

Bibliography