Assessment at Upper Secondary School: Silenced Voices of Students in an Era of Reform

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Broadfoot (1989) has looked at assessment practices in historical context to consider implications of current educational reforms in British education on procedures for assessing pupils in school. She has argued that there are four basic aims of assessment in education:
1) to publicly identify different kinds of competence,
2) to put limits on curriculum content,
3) to expedite competition over social ranks in a hierarchically organised world of job structures (and social classes), and
4) to provide "control of individual [teacher and student] aspirations and frustration through the legitimation of apparently objective educational judgements" (Broadfoot, 1989, p. 1).

The operation of ideologically based discourse within debates on matters relating to all aspects of curriculum, learning and assessment has been well documented (e.g. Blackmore, 1988; Broadfoot, 1984, Codd ??). In looking at educational reform in Britain, Broadfoot contrasted two different assessment discourses. We will follow Broadfoot's lead in talking about two kinds of assessment as dichotomous in outlook and underlying philosophy, which we refer to as the technicist versus the educative.

Technicist Approaches to Assessment

Technicist assessment assumes that learning is linear involving the acquisition of discrete pre-determined pieces of information or clearly defined skills which permits measurement techniques to be pre-specified around a set of precisely stated objectives. Assessment procedures are based on positivist assumptions whereby assessment is a value free activity that is able to make precise and objective judgements about the intellectual capacity of individuals. Precisely because it is assumed that assessment entails the pre-specification of goals and that learning is linear:

'the administration of formal tests and examinations through procedures that are totally divorced from the educational process and setting to which they are supposed to relate' (Murphy and Torrance, 1988: 7).

Technicist views of assessment are founded on ideas of possessive individualism. There is an assumption that individuals are the owners of their capabilities and should be free to operate in a society composed of other similarly free individuals (Moore, 1987). This position is expressed through an empiricist approach to education. Knowledge is seen as compartmentalisd, capable of being broken down into a series of separate

pieces which can be measured quantitatively through the operation of positivist methods of assessment. In Foucault's work on surveillance techniques of the modern state, he emphasised the importance of numbers and labels, of quantification as a means for identifying, sorting and controlling the disparate individual bodies of peoples in the subject population.

Taken to an extreme, the technicist approach assumed that only learning that can be observed is worth having. A failure to acknowledge the complexity of learning and teaching has led to the technicist development of linear models of learning that are primarily directed at achieving predetermined outcomes. Assessment is seen as providing as useful 'objective' means to report on such outcomes. Typically these technicist methods (both normative and criterion referenced) are used to make selection and control decisions about learners.

Educative Assessment

In contrast educative assessment reflects a complex view of learning, though there are different ideological paths within such assessment. One traditional discourse is centred around the promotion of the individual and their learning needs (see for example Rogers, 1983; Watts and Bentley, 1989). A second path is concerned with learning in broader terms where individuals and their socio-political and historical context are intertwined. Individual needs cannot be promoted without addressing broader issues such as assessment as a mechanism of social control (see for example Apple, 1979).

Any attempt to describe the complex learning outlined above requires methods that reach both the process and product of learning. Not surprisingly these are diverse. However, it is possible to identify several main themes that characterise forms of educative school-based assessment.

* Attempts are made to assess a range of learning incorporating cognitive and affective and motivational aspects;
* The assessment used relates directly to course-work carried out thus forming a link between curriculum and assessment;
* Students are involved in self-evaluations of their learning;
* A key purpose of assessment is the diagnosis of learning needs;
* Assessment takes account of the prior experiences both in terms of learning and wider cultural perspectives of all students.

Internal Assessment: Naturally Educative?

Close examination of various forms of assessment reveal contrasting ideological positions. Each type of assessment embodies very different perceptions about the nature of knowledge and the respective roles of teachers and learners as well as the purpose and forms of assessment. Broadfoot (1989) suggests that there is an underlying ethos of state control over individuals even in new assessment procedures which seem more flexible and "progressive". She was particularly concerned about assessment which seems more likely to provide fuel for competition over resources than to enable students to maximise their learning at their own

pace and with their own styles of learning.

Although external examinations and standardised tests are usually associated with technicist assessment it has been argued (Black, 1986; Murphy and Torrance, 1988) that internal assessment, despite providing an opportunity to fulfil an educative role (Blackmore, 1988) can sometimes operate to further reinforce the selection and control function of a technicist model of assessment. This is characteristed by its timing which is typically carried out towards the end of a course or unit of work and its prodcedures and criteria that are shrouded in secrecy. In addition technicist internal assessment yields results that are 'usually coded in a language of grades which gives (students) little constructive insight into the nature of their performance' (Murphy and Torrance, 1988 p. 14-15). Clearly information gainded in this way is unlikely to be of any diagnostic value to either the teacher or student.

Significantly all the alternative educative forms of assessment referred to by Blackmore (1988) are located within the classroom (e.g. pupil self-assessment, profiling). Each allows the participation of both students and teachers in the collection and interpretation of information about student learning.

The present study looks at a particular case study of internal assessment, based on science at the fifth form level. Most students in New Zealand sit a state examination for their fifth form subjects, called the "School Certificate". A small percentage of schools in the country do, however, opt to teach "modular science", in which students are internally assessed over six modules of science including aspects of biology, chemistry and physics. As part of a larger study, we examined students' reactions to modular science, in particular, the aspects of moderation and scaling which are used by the central New Zealand Qualifications Authority (NZQA) to determine the distribution of grades for each school in science. We were particularly interested in the ways that an internally assessed, modularised subject would both challenge and perhaps reproduce the technicist assessment assumptions of the state-controlled School Certificate Examination.

The Study

To investigate the relationships between assessment, motivation and learning in an internally assessed modular high school subject, we are conducting a year-long study of fifth form science. In New Zealand fifth form is the year of a key external examination, the School Certificate, with national standards. As an alternative to this examination for fifth form science subjects of general science, biology, physics or chemistry, some schools have an accredited programme of modules covering various aspects of science. Most schools offer a range of modules, from which which students choose six for their assessment. Some students also choose to do "double science", taking 12 modules in order to be equivalent to two School Certificate science subjects.

For this study we are spending time in one secondary school in a moderate-sized NZ city over14 months. Phase one of the study covered two modules at the end of 1991. In Phase two we have covered modules at the beginning,

middle and end of the 1992 year. The school is in a mixed middle class and working class area of the city, with ethnic distributions of students in the school very similar to those in the general population. There are approximately 25 students in each class we have observed.

Each of the two authors and an additional research assistant each experienced two modules as observer-participants, taking part in the laboratory work along with the students. Each researcher tape-recorded parts of each class session to create an audio-record of teacher's explanations of key concepts as well as records of student work on laboratory work, when students were willing to have this recorded. Interviews were conducted both informally and formally with a sample of students in each module, and the teachers involved in the study. Examples of assessment, including in-class tests, homework notes, written reports of experiments were collected, along with documentation from teachers such as their class plan for the module, handouts, etc. In addition to the class test results and in-course assignment marks for each module, we also attained for each student in the study their scores on a competency-based "Science Certificate" used by the school as a way to provide a report of each student's competences in science in a presentation folder, and the results of a national "reference" test used by the NZQA as a means of monitoring national standards in modular science. We also obtained the final School Certificate mark in relevant science subjects for each student at the end of each year.

Questionnaires were given out to students in each module, asking them to comment on aspects of each module which they perceived to be difficult or easy to undertstand, which parts most or least interesting. We also asked students about their plans for future study of science at both secondary and post-secondary levels, about their consideration of science-related jobs or careers, and their interest, if any, in science in everyday life. The questionnaire also included the short form of the Approach to Study Inventory (Entwistle, 1988), a 20-item version of "Students' approach to learning" which has already been used with New Zealand students (Baker, 1990; Willis, 1990). The questionnaire was given out in general form to all fifth form students in science at the school both in 1991 and in 1992. For this paper, we will only mention results of interviews carried out with students at the end of the two modules investigated in 1991. For these interviews one of us (DW) participated in an Earth Science module, and interviewed individual students afterwards. The Earth Science module consisted of students who were taking "double science" and whose grades were better than average in the final results for the year. The other author (LB) participated in a Plants and Horticulture module, with many students who failed science as a fifth form subject. Many students from this module preferred to be interviewed in pairs rather than as individuals.

Results

Assessment for each of the six modules in fifth form science at the school usually consisted of several pieces of work: the student's completed notebook of completed lab and practical work assignments, one or two pieces of written homework (e.g., a written report of an experiment) and a final in-class test. At the end of the module students received a final

grade which was described as a "raw mark" by teachers. One teacher in the school was in charge of a computer programme which would then convert raw marks for each teacher's module (there were approximately 6-8? modules running at one time) into scaled marks. At the end of the year these scaled marks would be averaged, and the final distribution for the entire fifth form readjusted to fit the percentage of A1s, A2s down to ?? that had been assigned to the school by the NZQA. The NZQA based its allocation of accredited grades to a particular school based on scores on the "NZQA Closed ?Reference Test", a moderating test consisting of multiple-choice questions based on students' knowledge of third- and fourth-form science syllabi. Until 1992 no past forms of the test had been available for teachers to peruse. The NZQA moderating test is held in the middle of the school year each year, and results of scores on this test for each student

were available in November during 1991.

In addition to the moderating test, students in Farflung College also sat another multiple-choice general test of science at the beginning of the school year. This test, the Wellington Science Certificate, was a more general test of knowledge of basic science concepts. Farflung College used the results of this test in its computer programme which scaled each module's marks as the year progressed, before the results of the moderating test could be known.

Interviews with students at the end of the 1991 modules showed that some students had no idea about the whole process of the moderating test and the way it was used in scaling.

LB: So what about the test that you did earlier in the year, um, whether that is something

Laura: yeah, at midyear.

LB: Do you think that affects the marks that you got?

Jeannie (laughing) : I hope not!

Laura: I didn't do it. So um, I don't

Jeannie: I can't actually remember all that much, it was, I think it was multi-choice mostly.

and later in the interview:

Jeannie: they were saying, oh we've got this, to do this science exam and it, coz they were saying that science is all internally assessed so I was thinking oh well this must be just something carried on from third and fourth form, nothing to do with my fifth form marks. And now I'm being told that it IS (laughs). Yeah it is a worry.

LB (to Laura) : How do you react to that?

Laura: Um, it doesn't bother me. It was such a long time ago, just (laughs).

These students showed a marked passivity to the idea of the scaling as a mysterious process arranged outside the school.

LB: ...how the system works, it's just amazing really.

Laura (laughing) : Where did it come from?

LB: So you don't have any ideas about how that, how that works or, do you think it affects you or the way you study or the marks you get?

Jeannie (after comment from Laura): yeah, just do what they ask you to do

and come back with the mark and oh yeah, ok (laughs), don't really
Laura: doesn't really matter
Jeannie: yeah
Even for a student who did understand how the moderating test worked, it was often described as a process carried on in some faraway place where test scores come from.
James (smiling) : In the middle of the year we sat a test
DW: right

J: that gave us the marks that was just what we learnt in science over third and fourth form I think and up until fifth form and just and then that got sent away and the results from that come back and they just have like there's so many 80%s so many 40%s or whatever and they find out the top people in the school all the way down.
One focus of the interviews was to investigate the effects of moderating and scaling procedures on the motivation of students for learning in science.
Many students expressed strong feelings of disquiet about scaling, particularly for students whose high marks had been lowered through the scaling process.
Hannah: I get scaled down so much I've been scaled down about 20 marks before and it's a bit disheartening coz it's a whole grade's go down. so I've been scaled down from 95 to about 78 and um it's just a bit, you know, you think you've worked really hard and then you think, oh, then you get scaled down 20 marks and then while other people get scaled up. (from LB's interview with Hannah and Julie)
One student in each module mentioned the case of a male student whose marks had been greatly lowered by scaling from "90" to an "A2".
Kimberly: this is a real pain because I've been pulled down from A1 so many times and I feel I really deserve those A1s I've worked hard for them and like another module some a guy got 90% and he only got an A2 because it was scaled down so far, and that sort of thing I don't think that's fair. I mean of course I don't mind being scaled up but I would be happy with an A2. Fair's fair. (DW interview with Kimberly)
Concern over being scaled down affected both girls and boys in the modules.
Bruce: Coz I've got marks like this module I think I've, Ms X said my real mark was 84% or something which in the book it says it should be an A1 but because I don't think I did very well in the test it would be scaled down, probably two, two grades.
LB: Because of something you did earlier?
Bruce: yeah, coz of the test we did at the beginning of the year.
Geoff: yeah (LB interview with Geoff & Bruce)
The scaling process had strong effects on the continuing motivation of students throughout the six modules.
Bruce: yeah, I'm definitely working harder now than I was then and it's bringing my marks down, you know to the, where they are in the test is I think, where it is but, yeah
LB: So even though you're working harder, you feel like your mark is lower,

is that right?
Bruce: yeah
LB: because of the scaling thing?
Bruce: yeah
Most students said that they had continued to work hard for the last module of the year, even if they felt it was "hopeless" because their grades were already set for the year. However, students expressed contradictory views about the value of their efforts, based on a number of factors which students seemed to take into consideration. For example, two students thought that their past performance would affect their current assessment in the current module because of teacher expectation or "halo" effects, especially when the student has had the same teacher a number of times.
LB: When you um started this module did you feel that your grade was already set for the whole year or (pause) that it could still change?
James: Um, probably could change but it would be uh a bit hard. Coz I've had Mrs X, this is the the fourth time I've had her this year.
LB: uh hm. And so why would that be hard?
James (tearfully): well, she would um probably know or expect me to do so much.
One student thought there would be an expectation effect even with different teachers.
LB: Did that, did that affect you, Julie, did you , did you feel like things were set by the time you started the module?
Julie: Oh, yeah, it's like many, I don't know, you always think at the beginning there's no mark, it's like if I get a range of marks on your report so, it always ends like the teacher's of course just written down

what the other one has so. They probably haven't! (girls laugh)
(LB's interview with Julie and Hannah)
Though her final laughing comment was a disclaimer for her statement, Julie seemed to be expressing some concern about the effect of previous module marks on her current work.
Finally, there were a number of bizarre misconceptions from various students about the modulating process. At least one student got the idea that only 5 of the 6 modules would "count" for the final grade.
Steve: I knew I pretty much flunked that one and I had a lot of stuff to catch up on in my other subjects so I thought well, you know, there's not use me still thrashing out this one, where, you know, those other ones are only a week away.
DW: Right
Steve: So I pretty much gave that one up.
DW: So you knew you'd passed
Steve: eah
DW: You weren't aiming for an A1 or anything?
Steve: Oh, Yeah, I wasn't aiming for an A1. Also I'm not sure how many they judge either. I think they could judge 5.
DW: Oh, is that right?
Steve: I'm not sure. I took the risk that that is the case.
Unfortunately this idea was not correct, as we learned from the teacher,

since all six modular marks would count equally for the final grade.
A number of comments in the interviews suggested that students linked the idea of scaling based on the moderating test directly to the idea of moderation via an intelligence-type test.
DW: and how do they decide what's, how do they decide how many are going to get 1s and A2s?
Maggie: oh, we had a moderating test I think it was, about 6 months ago. [ ] and they work out I suppose how brainy the fifth form is or something (laughs) I'm not really sure, eh?
James linked the moderating test, correctly, to the idea of a set normal distribution of marks.
DW: How do [the teachers] actually decide whether the marks are going to be scaled or not? What do they base their decision on?
James: I think they use one of those mean [ ] little graph things (demonstrates normal curve in the air)
D: like a normal distribution?
J: yeah, I think that's what they use and the marks are pretty low in the class, then they'll scale them up if they are high they'll scale them down.
Kimberly focussed on the idea that the moderating test was based on content which had not been explicitly covered at school, which she clearly thought was not a fair process, though she seems to consider that personal interest in science would be the crucial factor for performance on the moderating test rather than an idea of "intelligence".
Kimberly: I mean different teachers teach different parts of science and they are giving a whole test for something that hasn't been based on the syllabus, and it also comes down to what you personally, if you personally like science, if you sort of had a good look at it you can't study for that sort of test it's
DW: yeah
K: I don't think it's a good idea.
Other students may have expressed disquiet at the unfairness of the moderating procedures for their personal outcomes, but at the same time accepted the legitimacy of the test as a school procedure. In the interview excerpt below, Bruce again complained about the unfairness of scaling which reduced his grades.
Bruce: sometimes I get a bit annoyed when you see like people who are getting, when they're only allowed to give you sort of like two A1s in the module and and like 3 or 4 people get above the grade I suppose you get for an A1 with their raw marks, but people have to get scaled down. Slacks me off about these people. Always seem to get the high marks, but never mind, but yeah [ ]
LB: So why, why do you think they do that?
Bruce: What? (laughs) um, you mean scaling or what?
LB: No, just why particular people, can you...

Bruce: I don't know, there's some people who seem to have um natural ability to learn more, some people work hard...

Though here Bruce expresses negative views of the scaling process as unfair, he also appears to have accepted as legitimate the place of the moderating test in selecting particular students entitled to do well because of the "natural ability", even when a larger number of students have achieved at similar levels of success.

Discussion

The interesting difference between the NZQA Moderating test and the Wellington Science Certificate Test appears to be that, while the latter is based on factual science concepts which could be memorised, the Moderating test was designed to be a more "process-oriented" (anonymous quote from Ministry of Education representative) measure of scientific reasoning, rather than factual content.

Educative outcomes are more likely to result when in-course assessment is concerned not only with the product of learning but also with its process. In-course assessment appears to be an obvious way of encouraging high quality learning. However, as practised, school-based assessment does not always deliver such benefits to teachers and learners. Terms such as in-course or school-based assessment indicate nothing other than the assessment location (i.e. it takes place within the school and typically within a class rather than through external examinations). Not only is nothing revealed about methods of assessment or the skills or knowledge that are assessed but underlying ideologies are unacknowledged. So that while in-course assessment is a key element in innovative democratic forms of assessment (Blackmore, 1988) it may in some settings only serve to reinforce existing technicist notions about the nature of learning and its measurement. As Blackmore argues:

'It cannot be assumed, however, that any particular mode of assessment alone can guarantee a democratic or rewarding learning experience or fair outcomes. This would suggest that methodologies have intrinsic value' (p. 51).

With these cautionary points in mind it has nevertheless been demonstrated that the implications for an educative form of school-based assessment extend beyond the adoption of a range of assessment methods. In the first place, its assumptions are consistent with recent research findings on the nature of learning. This research has documented the resistant nature of students' ideas, the importance of commitment and self determination for the development of real learning (White, 1992). Secondly, the integration of process and product enables meaningful diagnostic information to be collected by teachers and students. In addition, the educative assessment model described here is supported by principles of democracy and social justice.

"Think global, act local" is the conservationist's t-shirt epigram that I like the most. We can see the importance of knowing what issues students are dealing with in various classrooms around our countries, while never losing sight of the idea that it is our local knowledge that matters, knowledge of our community groups, or our job & family structures, of the needs of the workforce in small shops and large industries, and that it is

teachers that provide this link between the world and its large adult concerns and the school and the skills pared down, essentialised and made meaningful to young people who need to be preparing flexibly for the world we adults will only get a glimpse of.

Based on constructivist theory Bowden (1990) describes high quality learning as involving a search for meaning and the formation of relationships between what is learned and individual experience. Learning is therefore not merely an increase in the amount of one's knowledge but a change in student conceptions with the result that the world is viewed differently.

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The construction of the new National Certificate in New Zealand is an educational reform innovation which is designed to make the qualifications structure more flexible. The Certificate will incorporate levels from both secondary and tertiary study in a modular framework. In our case study in the secondary school reported here, we were interested to see how a subject which is taught as internally assessed modules would balance the pressures between technicist and educative assessment philosophies.

We hoped that such information would be useful in considering possible fishhooks that might snag the implementation of the National Certificate in ways that might work against its hoped-for flexibility. two-Theis based, Farflung College, Four female and two male teachers have been involved in the project.

Plant Cultivationwhich includedultimately Some Student Interview FindingsL Jeannie and Laura made further comments about the moderating test.

In the excerpt below, Bruce correctly referred to the Wellington Science Certificate test at the beginning of th year as a moderating test. In fact, the school was unusual (compared to other schools) in using this test as a "first guess" for estimating distributions of grades for each module, as a presumed approximation to the official moderating test from NZQA, whose results would not be available till the end of the year.A number ofyAA disquieting anomaly we discovered in our time at Farflung College was that the Wellinton Science Certificate was used as an approcximation for tdtermining distributions of student grades for each module. yet the assessment principles underlying the WSC appeared to be quite different to those underlying NZQA reference test. WWSC seems to beare memorisableNZQA

or some underlying "scientific ability" In neither case, however, is the test used to determine the distribution of grades in a school based on relevant, local content actually covered by students motivated and immersed in their science learning. Interview excerpts we have presented were but a small sample of the discontented rumblings we listened to from both students and teachers about the moderating syst;em. What are the prospects of internal assessment which is educative, iven the normative pressures towards national moderating and scaling of outocmes? Our overall findings thus far suggest that scaled, internally assessed courses limit motivation to study in areas beyond those covered by the eresearch 9i.e., science) and further that such assessments can be detrimental to beliefs about personal competneicies, even for those students committed to their learning.
would appear in modular science in New Zealandnecessarilyhas some resonance for internal assessment and grounded knowledge claims. While it may be important for students to grasp larger principles of scientific reasoning and particular problem solving strategies, we hope students do not losethe grounding of these concepts ini crucialf job andstudents
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Assessment that is educative is most
likely to be internally assessed, but, as we have shown, educative assessment innovations of teachers can be sabotaged by tehnicist assessment pressuress to rank sctudents on national norms, using simple tests so that every student can be placesd on the same uni-dimensional scale of "natural ability".
We discovered some disquieting anomalies about "internally assessed"science in our secondary school fieldwork. A local competency-based test, g(WSC) early proximation for eudent grades for each module. Y In neither case, however, habeen chers about the moderating systgl moderating and scaling of outas even beyond those covered by our research (,,moderated assessmenten, thateducators : mall shops and large industries. We think it is teachers that provide the importantstudents at school and thewiderof adults in the wider worldchnicist assessment pressures to rank sthat every student can be place The educative possibilities in the proposed National Certificate

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forms of assessment created by teachers within the modules (which we have not had time to document here) were overshadowed by the moderation systemwhich scaled students' grades according to the Closed Reference T The

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