Is it Better to Burn Out or to Rust?

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This study examines participant students' points of view on accelerated programmes in mathematics from four state secondary schools in New Zealand. Contrary to fears expressed by educational practitioners, this research does not support the commonly held belief that students who are accelerated will suffer from undue stress that may hinder their social and emotional development. Coupled with these findings is the fact that, almost without exception, participants felt that involvement in an acceleration programme had been beneficial to their learning needs.

Traditionally, the New Zealand education system has been characterised by a strong egalitarian view, the 'one size fits all' approach. But New Zealand has a wide range of students of varying abilities and needs. One specialist group that has been identified as having special needs are the gifted and talented within our schools. Some have questioned the need for specialist provisions for this group, arguing that they can "make it on their own" or that they are already well served by the education system (McAlpine & Reid, 1987). In recent times, however, these views have become moderated. "Teachers are becoming more aware of the consequences of not attending to the needs of the gifted and talented. Failure to recognise and meet the needs of the gifted and talented can result in their boredom, frustration, mediocrity and even hostility." (Ministry of Education, 2000, p. 6). Allied to this there is an increased acknowledgement that our gifted and talented students "... represent one of our country's greatest natural resources and that failure to support them appropriately in their schooling may see this potential go unrealised." (Ministry of Education, 2000 p. 6).

Both the National Education Goals and the National Administrative Guidelines provide New Zealand school board of trustees with a clear direction, requiring schools to identify students who have special needs and develop and implement teaching and learning strategies to address their needs (Ministry of Education, 2000). Schools should provide an "… equality of educational opportunity for all New Zealanders, by identifying and removing barriers to achievement" (National Education Goal 2). But "equality of educational opportunities" is often understood to be "the same for all" or a general homogeneous view of both students' needs and the means by which they can be addressed (McAlpine & Reid, 1987).

The provision of educational programmes for gifted and talented students has resulted in two general approaches; acceleration and enrichment. Within the context of secondary school mathematics education, the acceleration option is the more controversial. Research within New Zealand indicates that many educational practitioners and parents are concerned that students in acceleration programmes are at an unacceptably high risk of suffering social and emotional maladjustment (Townsend, 1996; Townsend & Patrick, 1993). What is not clear is whether the concern relates to the concept of acceleration per se or the effectiveness of existing programmes.

The design of current acceleration programmes is based on three general assumptions. First, gifted students differ from their peers primarily in the rate rather than the way they acquire knowledge. Second, adapting the pace of instruction or advancing grade placement will answer many of the needs of gifted students. Last, that the content of the curriculum is generally appropriate and challenging for gifted students (Southern et al. 1993). However critics have voiced concerns over the validity of these basic assumptions.

In New Zealand, critics of acceleration have argued that it does not allow students to work at their own level and pace. An accelerated student may work on material that is a year or more ahead of their age peers but the level, speed and sophistication of pedagogical delivery may not be significantly different from the class they left behind.

One of the dangers in building a case for special provisions for gifted and talented students is to overemphasise the homogeneity of the group of potential students. Presented with the same material, with little attention paid to individual needs acceleration programmes are often assumed to have the same purpose and end result for all students. (Townsend, 1996). This denies the uniqueness of talent.

In recent years more New Zealand schools have been looking at alternatives to acceleration for their gifted and talented mathematicians. As a result, in-class enrichment is now one of the most preferred means of catering for this specialist group (Townsend, 1996). Despite the advantages of catering for individual needs whilst retaining students within their age cohort, enrichment has also attracted a number of criticisms. Often it seems that everything teachers do outside the normal mathematics curriculum is labelled enrichment (Townsend, 1996).

Despite concerns, the research on the effects of acceleration (mostly from USA) suggests that gifted and talented students benefit academically from acceleration and that acceleration poses no direct risk to their social and emotional development (e.g., Benbow, Lubinski & Suchy, 1996; Kulik & Kulik, 1992). Research has also amply demonstrated that most gifted and talented children are psychosocially mature with strong personal resources and are unlikely to experience psychosocial harm (Southern et al., 1993). Apart from individual instances of poor adjustment, which may or may not have been caused by their acceleration, there is considerable evidence to show that the majority of students seem to adapt quite well to acceleration programmes (e.g., Cronbach, 1996; Gallagher, 1996). Moreover, research suggests that children who are gifted but not accelerated exhibit more behaviour problems, feel less comfortable, and have poorer attitudes towards school. “In our attempt to safeguard against the assumed harmful effects of burnout we have been incognisant of the malignant effects of rustout” (Townsend, 1996, p. 363).

If, however, we use current practice as an indicator of consensus then it appears that the debate about the relative risks and merits of acceleration is not settled (Southern & Jones, 1991). Despite the large pool of evidence supporting acceleration, it is a relatively unused option in educating gifted and talented students. Much of the reluctance to use acceleration seems to be centred on reservations about socio-emotional development rather than academic merit. There is a common concern that students will be subject to undue stress, or may develop social problems. (Townsend, 1996; Townsend & Patrick, 1993). “Students who are pushed to learn faster sacrifice their childhood on the alter of academic precocity” (Southern & Jones, 1991, p.13).

If we contrast the overwhelmingly positive research evidence of the effects of acceleration programmes with educational practitioner's reluctance to use it, it appears that the issue of whether acceleration is effective is overshadowed by whether it is acceptable.

The major goal of this study was to examine acceleration programmes in mathematics within New Zealand secondary schools, from the participant students' point of view. This study gathered information from students about their acceleration experiences in four state secondary schools. This report will discuss three of the main focus areas of the larger research namely:

- What reasons do students state, as primary motivators for participation in acceleration programmes?
- What do students see as the social/affective issues of being involved in acceleration programmes?
- Do students view their participation in a positive light?

Methodology

Students who were either currently involved in the acceleration programme or who had been involved but had dropped out of the programme were invited to take part in the project. Of those who expressed an interest a random selection were asked to take part in a series of focus group interviews. There were two focus group interviews of between six and eight students for each school, one at the junior and one at the senior level. The participants in this research were chosen because they were representative of the same experience or knowledge base. They were not selected because they reflected or represented the general school population. Indeed Mishler (1986) argues that a small group of well-informed acute observers brought together as a discussion group is many times more valuable than any representative sample.

The four participant schools in this research offered a variety of different acceleration designs and philosophies and were different in size location, decile rating[1] and character. *School A* is a large traditional single sex boys' state school, with a stated emphasis on academic success in external examinations. The school promotes the programme as a feature of the school believing that it provides: the opportunity to study a particular subject in more depth and therefore increase the chances of securing Scholarship[2] passes from year 13; and the opportunity to study a wider range of subjects in the final year at school. *School B* is a co-educational secondary school of 1100 students situated in a satellite suburb of a provincial city. The school prides itself on providing a high quality, balanced education, maximising the individual learning potential of students of all abilities. The school states that its motivation for having an acceleration programme is primarily so that students can increase their chances of securing Scholarship passes from year 13. *School C* is a medium sized co-educational school in a provincial city. It has a policy of non-streaming and prides itself on providing an equality of education for all. In recent years the school has downsized its programme from accelerating a whole class of students to only a small number, with between 4 and 8 students entering the programme at the start of year 10. The school states that its prime motivation for having an acceleration programme is twofold: to keep able students interested and motivated by providing them with a

challenge; and to broaden their subject base. The school states that securing Scholarships is not a major purpose of the programme. *School D* is a small co-educational school in a satellite suburb of a provincial city. The school prides itself on challenging students to reach their individual potential rather than competing with one another for top honours as evidenced by the majority of the top awards in the school being for all round excellence rather than first in a subject. The school does not see securing individual Scholarships as a prime objective of the programme but strongly encourages students to broaden their subject base.

Student Motivators for Participation in the Programme

Although there was no single motivational factor for students taking part in acceleration programmes, there are a number of common factors cited by students from the four schools in the research sample.

Many students appreciated the opportunity to study one or more year 13 subjects earlier than their age cohort. Two primary reasons were stated. Firstly it allowed them to repeat a year 13 subject and try and improve their mark and possibly secure a Scholarship, and secondly, it allowed them to take more year 13 subjects than normally would be possible and hence broaden their subject base. Many enjoyed the challenge of working at a higher level safe in the knowledge that they could always revert back to their normal year level if things proved too tough.

> There is an option that if you do fall too far behind you can fall back a year but you'll still be at the same level that you would have been anyway. It's sort of like a safety net.

Winsley (2000) has identified concerns from some teachers that many accelerated students are not performing at a Scholarship level. They question whether spending two years in a year 13 course to secure a mark in the 60's could be considered "successful" acceleration. However, for many participant students, it appears that acceleration is not solely about securing Scholarship passes.

A commonly reported outcome of acceleration programmes from overseas is that they allow students to reduce the amount of time spent in formal education. Two of the schools in the research sample have programmes that give students the opportunity to complete their secondary school education in only four years. School A has a programme design that allows all its accelerated students potentially to complete their secondary education at the end of year 12. Both the school and the students reported that, despite strong encouragement from the school to stay, many of the high achieving students leave at the end of year 12. School C has some students that are in a higher grade in all subjects. These students intend to leave at the end of year 12 rather than returning for a year 13 course.

Despite the above examples the majority of students are not accelerated to a point where they are able to leave secondary school with a full complement of year 13 passes from year 12. A number of participants indicated they felt students were unwise to leave secondary school early, arguing that they should use year 13 to improve on their secondary school qualifications, or broaden their academic base.

> What's the point of just getting one year ahead anyway, you could broaden out rather than just going up.

Accordingly, this research supports Macleod's (1996) view that reducing time spent in formal education is not the primary focus for accelerated students within New Zealand secondary schools. The question remains, if the aim is not to be truly accelerated and hence reduce the time spent in formal education, then it may well be that other types of programmes could be equally, or possibly more, beneficial to the learning needs of our gifted and talented students.

Students' perceptions of the school's motivation for having an acceleration programme varied. Many students perceived that the prime reason that their school has an acceleration programme is to maximise the learning potential of individual students. For some though, they perceive the school's interests to be more self-serving. A number of participants felt it was easier, from the school's point of view, to teach classes where the very able students have been removed. Others felt that the school was using the success of its high achieving accelerated students to raise its profile in the wider school community. Some students argued that although this did happen, they did not agree that it was the prime reason for the school having an acceleration programme.

Social Affective Issues

Contrary to fears identified by educational practitioners, this research does not support the commonly held belief that students who are accelerated will suffer from undue stress that may hinder their socio-emotional development. Students in this study perceive that they have a normal adolescent social and emotional development.

Participants in this study perceive that parents, teachers and peers tend to have higher expectations of accelerated students than non-accelerated students. These expectations include: higher academic achievements, a better work ethic, higher work-output and a better standard of behaviour. Many participants found these perceived higher expectations to be motivational factors and they increased their workload and effort accordingly. In some instances they felt that this was necessary to repay the faith people had placed in them by selecting them for the acceleration programme.

> Being put into a programme like this, it makes you think, they think I can do this so I'll show myself that I can do this as well. You work for yourself to show that their faith was justified.

Despite these perceptions of higher expectations, participants felt that their teachers do not call on them to answer more questions in class than non-accelerated students, indeed they feel they are not generally identified by the school as being accelerated students.

For a few students, however, these perceived expectations seemed to be unfair and a number of students reported increased levels of anxiety attempting to meet these higher standards. This research did not examine the expectations of parents, teachers and non-accelerated peers, so it remains unclear whether these groups actually do have significantly higher expectations of accelerated students or whether this is just the perception that students in this research hold.

Participants commented that they valued teachers they felt had the enthusiasm and skills to maximise their learning. They enjoyed it when the teacher discussed some of the mathematical principles in more depth or used a variety of pedagogical techniques to enhance their learning. They felt that their skills and abilities were being recognised and they were generally treated as if they were one year older. Participants commented that

this increased their sense of self-worth and confidence. These views are in accord with studies by Benbow et al. (1996) in which accelerated students reported that the greatest emotional benefit of acceleration programmes was the acknowledgement of their abilities and increased self-confidence.

Students perceive that inclusion in the programme has not affected their friendship base and they reported being comfortable being in classes with older students. The balance of the evidence suggests that friendships are determined more by the indirect effect of grouping accelerated students into classes and that students will naturally make friends with other students in their class, regardless of ability level.

> I don't think it has anything to do with it. You are friends with somebody not because they are bright or intelligent but because you like the same things as them. If they judge you because you are intelligent then you shouldn't be friends with them anyway.

Senior students also commented that as they grow older and the number of in-class and out-of-class interactions increase, so their friendship base increases and diversifies to include not only same age non-accelerated students, but also students of other ages as well. Participants reported that, in general, they are not bullied because of their inclusion in the programme and the vast majority of dealings with non-accelerated students are generally good-natured.

Do Students View Their Participation in a Positive Light?

Almost without exception, students felt that participation in the acceleration programme had been beneficial to their learning needs. Interestingly this included those students who had dropped out of the programme and reverted back to a normal year level course. Participants who had repeated a year did not seem to regret their involvement in the programme and in general perceived that their involvement had given them an advantage over non-accelerated students.

> I felt because I did year 11 twice that I understood the maths really well. Other people kept getting left behind.

Indeed they reported no stigma or ill feeling from either the school or other students towards those who repeat a year. For some their interest in mathematics had not changed significantly, although they attributed their continued interest to their participation in the programme, arguing that if they had not been involved in the programme then they would have become bored and their interest would have suffered as a result.

This has been identified within the research literature as a potential outcome of not providing for gifted and talented students (Ministry of Education, 2000). It is also interesting to note that no significant problems with compacting the curriculum or gaps in knowledge were identified by most students in the research sample.

A number of students commented that their involvement in the programme had a range of positive affects that were not subject specific. The first of these was an increase in self-confidence and self worth. A number of students reported that they felt proud to have been selected for the programme, adding that it felt good to know that other people had confidence in their ability to do well in the programme. A second positive effect was that it heightened students' expectations of future career paths. Participants were considering a wide range of future career choices and most were considering some form of tertiary

training. Interestingly, few were considering mathematics based careers, although a number were considering careers where a strong mathematical background would be an advantage.

Two things are clear: Firstly, a high level of interest in mathematics is not necessarily a prerequisite for success in the programme, although one could hypothesise that the higher the intrinsic level of interest in the subject the more likely one is to succeed; and secondly, involvement in mathematics acceleration programmes appears unlikely to increase students' innate interest in mathematics.

Implications and Conclusions

The major implication of this research is that the fear held by educational practitioners, that undue stress will cause socio-emotional harm in accelerated students, is not supported by the perceptions and experiences reported by participants in this research. Accordingly, teachers and schools should not automatically discount acceleration as a possible provision for meeting the needs of their gifted and talented students based solely on unjustified fears about students' social and emotional wellbeing.

This research also has implications for schools looking to develop or modify their provisions for gifted and talented students. When schools are considering using an acceleration programme, they should address the issue of the proposed goals of the new programme. The current research did not formally examine the schools' motivations and goals of acceleration programmes. However, the schools in the research sample essentially appeared to have two types of goals for their students: long-term goals of either securing Scholarships, or broadening a student's year 13 subject base, or short-term goals of motivating and challenging able students. The question of long and short-term goals is critical to the discussion because they will affect the number and type of students identified as well as the design of the acceleration programme.

If a school has long-term goals that can only be realised towards the end of a student's secondary education then they should be selecting only those students whom they know will be advantaged in the long run by inclusion in the programme, for example, students who will secure Scholarship passes or perhaps broaden their senior subject base. In contrast, if a school also has short-term goals for students who participate in the programme then it can afford to accelerate more students, even though a large number of them may well not continue with the programme through to year 13.

This research highlights the fact that some students are only accelerated for a short time, repeating either their year 11 or year 12 courses. Feedback from students suggests that they do not regret being involved in the acceleration programme and indeed feel that it has given them an advantage over non-accelerated students who took these courses only once. Many perceive that the workload and comprehension of the material is a lot easier the second time around. If taking two years to complete a course does advantage some students, then this may have implications for the number and type of students who are selected for acceleration programmes. Since some students commented that the junior curriculum is often too easy, but find they have difficulty at the more senior levels, perhaps there is scope for programmes that provide the opportunity to study at a higher level until they reach a point where they are no longer comfortable academically.

This research project is intended to provide an overview of the range of possible perceptions of accelerated students' experiences within New Zealand secondary schools. The findings of this study contribute to our understanding of the effects of existing acceleration practices from the participant students' point of view. To that end, the reader is cautioned to consider the above conclusions and discussion points within the context of the situation from which they were drawn and limit the extent to which they apply the findings of this study to other school acceleration programmes.

This research is based on the perspectives of participant students and should be examined in light of their unique perspective on acceleration programmes, but it should be remembered that someone watching a magician will always have a different perception of what they witness, than the magician themselves. Accordingly, although the students speak in generally positive terms about their involvement in the acceleration programmes, it is beyond the scope of this research to determine whether alternative programmes may well have been as, if not more, effective than the acceleration programmes studied here.

This research has not debated whether acceleration should occur, nor has it examined other provisions made for gifted and talented students and compared and contrasted them with established acceleration programmes. This body of research has focussed on the type of acceleration programme most commonly found in New Zealand and we should not forget that there are a range of other options available for schools to meet the needs of their gifted and talented students. It is merely one piece of a much larger jigsaw puzzle.

As a concluding remark I think it is important to remember that the two main approaches for catering for our gifted and talented students, namely acceleration and enrichment, are not mutually exclusive (Townsend, 1996). Gifted learners have different learning needs compared with typical learners. Therefore curriculum must be adapted to allow for accelerated and advanced learning as well as enriched and extended experiences. The challenge is not to determine which of theses two strategies to employ in schools but rather to provide an integrated programme that gives flexibility in meeting the learning needs of a highly varied population. An integrated approach will utilise the strengths of both techniques. Acceleration and enrichment may be regarded as legs that support the same chair, the development of the educational potential of our gifted and talented students.

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[1] The decile rating of a school is a measure of the socioeconomic status of the contributing families on a scale of 1 (low) to 10 (high).

[2] An individual subject Scholarship pass is awarded to students who score 86% or greater in the end of year 13 national Bursary exam.