BUILDING TEACHER CAPACITY IN CURRICULUM AND PEDAGOGICAL DESIGN IN NORMAL TECHNICAL CLASSROOMS

This paper reports on the design of a two-year scaleable and sustainable action research intervention project. Initially working with six Singaporean Secondary One and Two Normal Technical (NT) teachers in three primary subject areas (science, mathematics and English language), the project will involve 48 teachers in its final phase. The project documents and analyses teachers' capacity to plan effective pedagogy and it offers comprehensive training to help them design, share, and improve their lessons and assessments. Wiggins and McTighe's (1998, 2005) curricular framework, Understanding by Design, forms the intervention's theoretical grounding. In helping teachers develop a set of design standards for assessing teaching and learning, the project incrementally engages teachers in various forms of collaborative planning.

The potential impact of the intervention on teachers' professional beliefs and capacity for curricular and pedagogical innovation and its potential impact on students' learning are researched. This research raises questions regarding teacher professionalism, NT students, and systemic issues around school and educational structure and reform. The paper presents the baseline research that underpins the intervention, the project design, and initial impressions on the first phase of the intervention.

Origins and Perceptions of the Normal Technical Stream

The practice of tracking students based on exam performance is a crucial element of Singapore education. Current educational pathways available in the Singapore education system, which are characterized by streaming and high-stakes national examinations, may largely be traced back to the "New Education System" recommended by the Goh Committee in 1979. In its report, the committee defended streaming as a "logical

consequence of the fact that different children have different capacities to acquire knowledge." It further stated that "the system has been structured such that only the brightest 12 to 15% of schoolchildren can cope" and so "to subject the less able students to the same regime of learning has been the chief defect of our educational system in the past" (pp. 1-5).

The Normal Technical (NT) stream was established in 1994 to provide at least 10 years of general education to the lowest scoring students (approximately 15% or 7000 students) of each cohort (Ministry of Education, 2000) who were dropping out in large numbers after only 8 years of primary schooling. The government saw the need to equip these students who are deemed less inclined to academic studies with "the requisite skills and attitudes to enable them to contribute to the national economy" (Ng, 1993). The policy intent of the Ministry of Education (MOE) was not only to provide them with differential instruction, but a particular one that prepared them for further vocational and technical training at the Institute of Technical Education (ITE) after four years of secondary education. The curriculum was focused on strengthening students' foundations in English and Maths. In addition to these, students are offered Basic Mother Tongue (Malay, Mandarin or Tamil, according to one's racial background) and Computer Applications as compulsory subjects. NT students sit for the national GCE 'N' level examinations at the end of the fourth year of secondary school.

Ten years after the inception of the programme, the MOE announced a review of the NT curriculum. To keep NT students in school and motivated to learn, recommendations have been made for curriculum and teaching to include more "practice-oriented" approaches; more curricular links to daily life applications; and more student-centred activities like group work, oral presentations, creative and hands-on activities (MOE,

2004). Learning requiring the use of IT would also be deliberately featured in the NT syllabi. Unlike in other streams, NT students have been given the benefit of taking Elective Modules (EM) designed to explore their career interests. In addition, lines between the streams have been blurred by increasing flexibility for lateral transfers in secondary school and allowing NT students to offer one or two subjects at a higher level. This host of interventions are focused on both improving motivation, attendance, and, it is claimed, pathways to academic and vocational achievement.

However, according to some recent media reports, expectations for Normal Technical students to perform academically are still very low. "They just have to sit for 'N' level exams to go further to ITE. Even then, only 80% proceed" (Ser, 2004). Since they cannot be demoted to a lower stream, students who do not pass their end of year exams simply repeat the year. If they keep failing, they are eventually "advanced" (as opposed to "promoted") to the next level at the discretion of the school because they are "too old". Such low expectations are disheartening and become structurally confirmed in part because of limited available upward mobility to the Normal Academic stream. Even when there students are able to transfer to the Normal Academic stream, a shot at doing the 'O' levels is still a rarity. As one discouraged student put it, "The jump from Normal (Tech) in Secondary 1 to Normal Academic in Secondary 2 is already so big…And even if I did make it to Secondary 5 from Normal (Tech), how am I going to cope when the subjects are so different" (Ng, 2003)?

Although there has been a move in recent years to increase available students' educational pathways, low performance expectations coupled with narrowly defined vocational outcomes raise uncomfortable issues. It is impossible to talk of those at the bottom of the Singaporean educational system without acknowledging the dialectical

tensions that exist within the wider society and educational culture which play out in schools and classrooms (Luke, 2005), principally, the tension between striving for excellence at the top while attempting to provide improving standards of education for all. This is not only a current issue of Asian education systems but a matter of pressing importance in all educational systems where there are apparently widening gaps of performance between children of varied social and cultural backgrounds. Streaming or "tracking" (Oakes, 1985) is a well established, if hotly debated and contested, practice that is used in many educational systems as a way of approaching diversity of ability and achievement.

In Singapore, students placed in the Normal Technical stream carry a social stigma that comes from being identiied as being in the lowest stream in the education system. The Institute of Education has entered local lore for the corruption of its initials ITE as "It's the End." Parents' hearts sink when their children are consigned to the stream. Their children's climb up the academic ladder has only reached the lowest rung (Straits Times, 2004). Added to the anxiety of performing well in school is the discrimination against students in the lower streams face when it comes to the social scene. For example, a full-blown internet debate that highlights the divisiveness and elitism in Singapore schools started after a Raffles JC school-boy advised boys from 'neighbourhood' schools to 'quit trying to climb the social ladder by dating students from top schools' (Seah, 2004). The debate, stretched over four months, included such elitist comments as:

> "The one weaker in academics will not be able to provide nourishment for the mind and cannot engage in intelligent discussion on politics, for example. … And the more intelligent one will probably have to lower his / her standards and eventually will degenerate to the same level. … We are afraid of genetic dilution." And, "Leave the RGS[22] girl alone-lah! Leave her to other high-flying guys. It's good to know one's limits once in a while." (cited in Seah, 2004)

Perhaps the most common and injurious perception associated with NT or EM3i students is stupidity. Other negative perceptions of people interviewed on the streets are: "attitude not good, Ah Beng type"[ii], "hopeless", "can't do anything, can't go anywhere", "unmotivated", "lazy" and "ill-disciplined" (Ser, 2004).

Anecdotally, teachers have both deficit and romanticised views of the NT students they teach. Some claim that they are able to spot an NT student "in the making" early on, based on his/her family background, academic performance and behaviour in class. They say common characteristics include poor family backgrounds, not attending pre-school or kindergarten, struggling with reading, needing counselling and disruptive in class. NT students would also have likely gone through the Learning Support Programme (LSP)[iii] in primary school. Sympathetic teachers feel that the children just "need to be understood." When asked to share what their most memorable moments of working with these students were, candid responses ranged from "NT kids are angels, most helpful and quite thoughtful" to "NT kids are devils that lack motivation, have low attention span and give many class management problems." From the teachers' perspectives, students' interactive attributes are given as mostly positive (e.g. personable, warm) while their character (e.g. lazy, slow, restless, forgetful, disruptive, ill-disciplined, have poor attitude) and psychological attributes (lack of intelligence, lack of motivation, low self-esteem, short attention span, not academically inclined) are often deemed negative (Ng, 2004).

These perceptions affect the self-esteem of many NT students. One student from the pioneering cohort recalled in a media interview, "Often, the students in the other classes would point me out and say, 'He's Normal Tech', as if I was stupid and good for nothing. They upset me a lot" (Lee, 2004). Some students may even have internalised such negativities and cite reasons such as playfulness, laziness, refusal to listen to the teacher, and

not studying hard enough for their "failure." It is typical of students in the low stream to blame themselves (Oakes, 1985), leading to the worry that such students suffer from low self-esteem.

While the MOE do not profile of those who drop out, social workers claim that many were from the Normal Technical stream (Tan, 2005). Yet, personal interviews of students uncover a spirit of defiance, a determination to prove others wrong. This is perhaps best captured in the indignant phrase, "I Not Stupid", as iconised in the title of a popular movie about the trials and tribulations of EM3 students in Singapore. There is also the plea for teachers and others not to give up on them: "We may be slow, but we can learn!" (Ser, 2004)

Not surprisingly, stories of NT students who "'made good' despite the odds" capture local media attention. Students like Samy s/o Samugam, who successfully negotiated the convoluted education pathways set out for them in the lowest stream to make it to the university, are lauded as a role model for others. He is "living proof" of MOE's rhetoric that there are pathways to excellence for every student, along both the academic and practice-oriented routes of learning (Shanmugaratnam, 2005). Samy's story may be inspirational, but it is still an exception to the rule. The media highlights the resilience of such students while downplaying the structural constraints facing them as they traverse the long route to "success." The ITE courses available to NT students are those easier to get into, less popular and lead to lower-skilled jobs (e.g. Office Skills and Beauty Therapy). After 1-2 years, they are awarded the NITEC certificate. It takes two more years for the Higher NITEC certification before qualifying for the three-year diploma at a polytechnic. The timing requirements are more demanding on male students as they would need to do National Service some time between completion of the NITEC certificate and beginning of the

Polytechnic Diploma. Their mobility in the job market is limited by the qualifications they possess, but many nevertheless see the long pathway as unrealistic and enter the market with low-skilled jobs to have a head start. Imranshah, former top N-level student from the first cohort now studying part-time for his diploma in electronic engineering, lamented that he wished he could have entered polytechnic straight after secondary school, "It would have been much faster and by this age (24), I'd already have got my diploma" (Lee, 2004). His was a case of need to contribute to the family finances, a reason not uncommon in the experience of many NT students.

Success is largely attributed to the individual's own willingness and capacity to work hard: "I believe if a person is determined to get something done, he can do it. How we respond to failure actually shapes us," said David Ho, one of the top two NT students in 2004's N-level exams (Ho, 2004). Conversely, it may be argued that those who do not do well have only themselves to blame. This leads to a slew of deficit theories attempting to explain the "underperformance" of NT students. The student's home or family background – "single-parent", "broken", "dysfunctional" and "poor" families – amounting to lack of familial support is often cited as the reason why a child is not doing well in school. Teachers also overwhelmingly cite the home as a contributing factor for students' low literacy (Ng, 2004).

NT Student Profile

NT classrooms consist of diverse, rather than homogenous, students. Although they have been categorically lumped as the weakest students academically, the performance gap among students may be quite wide, with accompanying differences by subject. MOE and CRPP research indicates that when compared to the demographic makeup of other streams,

Malays, boys, and children of the lower social class are disproportionately represented in NT classroom .

According to Sax (2005), the failure to recognize and respect sex differences in child development has done substantial harm over the past thirty years – "many administrators and teachers don't really appreciate that girls and boys enter the classroom with different needs, different abilities, and different goals." Although there is a decrease in the percentage of male students over the past five years, males consistently outnumber females in the NT stream by a ratio of approximately 6:4. The gender imbalance in the NT stream may have implications on social interaction, classroom climate, and teacher's expectations, pedagogy, and management style. However, data on percentages of female vs. male NT teachers is hard to find. Seemingly disproportionate numbers of male teachers are assigned to the NT classrooms. While this may be the consequence of logistical, timetabling requirements, it may also indicate there is also some tacit assumption that male teachers are better able to "control" NT classes (personal communication with Tampines Secondary principal).

Slightly more than three quarters of NT students reside in HDB flats with four rooms or less. If residence type is taken as proxy for socioeconomic status, then the majority of NT students are from low SES backgrounds. Only 16% of students who qualified for the Gifted Education Programme live in similar residence types. Seemingly, children from privileged homes are more likely to be found in other streams (Chia, Toh, & Li, 2005). While students' performance in national exams is related more to their socio-economic backgrounds than race, multiracial composition of the NT stream is skewed. The percentage of Indians in the NT stream did not fluctuate significantly over the past five years, but there has been at least a 10% increase in the number of Malays during this period. At the same

time, the percentage of Chinese students has decreased by 15%. Malay students have historically and underachieved in Singapore (Rahim, 2000).

NT students largely come from homes that do not speak English as the first language and with one or more parents with lower than average educational qualifications. Having parents who are not fluent in English was a characteristic of underachieving students (Ow Report, 1992). Low competence in English language is one of the most commonly cited reasons given by students for their inability to understand lessons in school (Chang, 1997). Not speaking English at home disadvantage NT students because they are less likely to get help from home. Further, every other NT student is likely to have a father whose highest educational qualification is secondary school and/or mother whose highest educational qualification is primary school. Parents' highest educational qualification on student achievement is but one factor of the "combined familial resources," which also include financial, social and cultural capital that have implications on the success of the NT student as he/she navigates the educational terrain (Kang 2004).

% within year

		NT Exam Year						
		1997	1998	1999	2000	2001	2002	Total
Age	15	.1%	.2%	.2%	.2%	.3%	.2%	.2%
	16	54.7%	71.3%	78.3%	83.0%	86.9%	86.5%	76.0%
	17	27.1%	18.5%	14.8%	12.3%	9.6%	9.5%	15.7%
	18	17.6%	9.7%	6.3%	4.4%	3.2%	3.5%	7.8%
	19	.4%	.2%	.2%	.2%	.1%	.3%	.2%
	20	.1%	.0%	.1%	.1%		.1%	.1%
	21	.0%		.0%				.0%
	22	.0%						.0%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The MOE age distribution data also illustrates the diversity of students in the NT cohort. As well, the time it takes to complete the stream varies significantly. Significantly,

there were once more "over-aged" students taking the NT exam in 1997 (only 54.7% were 16 year olds in 1997 compared to 86.5% 16-year-olds in 2002) when the first cohort completed the stream. This was largely due to the incorporation of previously Extended and Monolingual stream students at that time into the new NT programme. Age is used as one of the criteria for advancement to the next level, that is to say, a student who has failed Secondary One twice will automatically be "advanced" (as opposed to "promoted") to Secondary Two because s/he has reached the age limit for that level.

NT Pedagogy

The NT classroom pedagogy in Singapore has been criticized as being too academically oriented, too strongly streamed, and examination-driven with a curricular overemphasis on science and mathematics (Luke et al, 2005). While this conforms to how Asian pedagogy is characterized in general: 'chalk and talk', didactic, worksheet and exam-driven, and transmissionist (Gopinathan, Ho, et al. 2001).

Overall, Normal Technical (NT) students' reports of what goes on their classrooms do not seem to significantly vary with those of other streams. Where they do stand out is in the increased amounts of activity based and vocationally oriented work. Putting aside problems with how students' (and teachers') constitute project work, there is a small to medium likelihood of more "project work" within the NT stream. Another difference is that quantity of homework in this stream is significantly less than in the others. And, compared to other streams, these students indicate that there is greater connection to the "real world" in their curriculum.

NT English instruction appears to have the most significant subject area differences across streams. Students face greater levels of direct and explicit instruction and review, including the degree to which their behaviour in monitored, in English. NT

students appear to face lower levels of memorization in Math but higher levels in English than other students. In Math, they seem to experience fewer lectures, drills and a weaker disciplinary focus. The pacing of lessons is significantly slower in NT Math. While in English the trend to fewer lectures persists, students report the use of more worksheets and a tighter focus on skills. Classroom discussion in NT English is slightly less frequent but is reportedly uncommon across all streams. And, NT students indicate some greater interest in English than in other subjects and they express a concern for being successful in both English and Math.

Some pedagogical practices are unique to NT; others are not completely attributable to either subject or stream specific trends (Luke et al, 2005). Comparing these students' responses within the NT data alone, the salient features of the curriculum are worksheets, behaviour and time on task management, drill and review, with less focus on integration of subject matter, the acquisition of meta-languages and analysis. Teacher directed and explicit instruction is consistent over all subject areas. NT teachers seem more inclined to use monologue and IRE patterns for instruction, which together made up 43% of the English and 70% of Mathematics lessons observed. Interestingly, only 30% of science teaching consisted of IRE discourse patterns and teacher monologue. And while the high level of direct instruction is common in English lessons across all streams, NT English students spend more time doing small group work than other subject areas. Correspondingly, lesser amounts of time are spent on individual seatwork in NT as compared to other streams. In the NT curricular review (MOE 2004), group work is recommended as a stream appropriate pedagogic practice. Interestingly, 40% of the total time in English lessons was spent on group work, in comparison to only 2% in Mathematics and 2.5% in Science. The high incidence of group work in the NT English data does not,

however, reveal the nature and quality of student engagement or learning that took place in these classes.

As noted above, teachers generally do most of the talking during lessons. An average 80% of that is spent on curriculum related talk. Comparing across streams, NT students face slightly more regulatory talk than other stream students. While the data shows that the amount of regulatory talk in NT classes is not significantly higher than in other streams, anecdotal evidence of NT pedagogy reveals otherwise. One NT teacher commented, "The first year when I was teaching the NT I was so vulnerable you know, every time they kind of like defy me or they don't listen to what I say I will just break down. I think I am much better this year but I think this year I also break down once, with [the class]" (NT teacher interview, 8.03.05). Teachers' organisational talk, which may include providing students with instructions on activities and organising students into groups, took up 15% of classroom time.

NT teachers' use of texts and presentation of knowledge in English, Maths and Science is consistent with a traditional, teacher-centred pedagogy. Science teachers were more likely to use IT in their classrooms than their English and Maths colleagues. Textbooks and worksheets were also commonly utilized. Understandably, science lessons had significant more amount of hands-on work than other subjects. NT English teachers used the whiteboard and textbook comparatively more often than NA and EXP stream English teachers. In the NT stream, the teacher is the source of authoritative knowledge across all subjects. Knowledge is transmitted in a basic/rote fashion in all core subject areas. In the NT stream emphasis is firmly placed on accepting presented knowledge as truth. The learning of basic skills is emphasised. There are few opportunities created for students to question the validity of given facts. Students are required to reproduce information, rather

than actively produce and construct knowledge. NT students are not encouraged to contextualize new knowledge, either theoretically or practically. Te NT curriculum is strongly classified, with knowledge highly differentiated and separated into traditional subjects.

Research in the Normal Technical Stream

This intervention builds on the findings of earlier CRPP sponsored action research projects. Premised on the core assertion that Normal Technical students received a very narrow and limiting instruction that they did not find useful and is, in fact, alienating, which is one of the major findings in CRPP's NT related research, these initial interventions focused on describing teacher developed programs for secondary one and two students. In 2004 and 2005, CRPP researchers working in a neighbourhood school investigated the impact on the students' and teachers' involved through small-scale action research projects. These interventions attempted redesign the curriculum by shifting teachers' thinking about pedagogy by increasing their repertoire of pedagogical methods and attempting to model a different approaches in working with NT students. Pedagogical change did appear to happen in some subjects, especially science. But, in general, in most classrooms with the exception of computing, pedagogy and curriculum remained shaped by teachers' deficit perceptions of student's inability to learn and to conduct themselves in an 'appropriate' manner.

Course Description:

This course provides in-service teachers the professional knowledge and skills to design and facilitate effective curriculum and assessment to Normal (Technical) students in Maths, Science and English. Its objective is to connect the *Understanding by Design* (UbD) framework with professional development intervention. Teachers will learn and practically apply the concept of "backward design" in planning and enhancing their instructional process so as to achieve desired results in student learning. Working specifically within the NT classroom and curriculum, this course will help teachers clarify learning goals, devise assessments that reveal student understanding, and craft engaging learning activities.

Throughout the course, each teacher will work closely with a member of the research team and their peers to review and iteratively improve their unit/lesson designs to meet UbD design standards.

Learning Outcomes:
This course will enable participants to:
 use the three stages of backward design in developing a unit: articulate understandings and essential questions, seek assessment evidence and plan appropriate learning activities;
 use a set of design standards to analyse, critique, and improve curriculum, assessment, and instructional designs through a process of peer review
 implement their designs and share successes and failures with peers and researchers.

Schedule
Week 1 (6 Feb): What is understanding?
Introductions (matching RAs w/ teachers)
Q & A
Course outline
Discussion: What are the goals for their students? What do they want students to take away in 5 or 10 years' time? How do they plan for that?
Video: "6 facets of understanding" video (get from Madonna) – 50 min
10-min free-write response to the video (paper and pencils) and share (what do you want out of UbD? Surface NT discourses)
pp. 23 of workbook as summary
Lecture on what constitutes backward design – summary on p. 12; egs. 10 & 11 (before-after Geometry); design template p. 16 and 14 as outline of what we'll be doing.
Hmk: Read pp. 25-27 (FAQs about backward design). Bring planning materials to share w/ researchers in next week's session. Invite sharing session with RAs about their planning & reflections on how their planning and their teaching work together.

Week 2: How we learn
Alignment: The logic of backward design (workbook template pp. 15-16)
Chapter 1: What is Backward Design? (Refer to 3 stages summary in workbook p. 12)

Week 3: Backwards Design: Stage 1
Identifying desired results
Focusing on the "big" picture
Framing essential questions
Chapter 2: What is a Matter of Understanding?

Week 4: Purposeful curriculum
Overarching & topical understandings
Chapter 3: Understanding Understanding

Week 5: Evaluating effective curriculum
Applying design filters

Analyzing an understanding-based curriculum

Week 6: Backwards Design: Stage 2
Determining acceptable evidence
What is evidence of understanding?
Chapter 5: Thinking Like an Assessor

Week 7: Exploring assessment options
Transforming understanding into performance
Developing final products and performances

Week 8: Curriculum methods of delivery
Differentiating instruction to meet the needs of each student
Due: Purpose statement, Assessment rubric, unit timeline

Week 9: Backwards Design: Stage 3
Planning learning experiences & instruction
Curriculum based on real-world problems and products

Week 10: Considering multiple intelligences and learning styles in curriculum design
Creating curriculum that is both engaging & effective
Chapter 11: Putting it all Together

Week 11: The role of technology in curriculum
Individual work time on curriculum units
Due: Lesson plan sample with required criteria

Week 12: Integrating community resources in curriculum
Individual work time on curriculum units

Week 13: Future perspective:
Sharpening our focus on designing quality curriculum for the 21st century.

Week 14: Evaluating curriculum: self-assessment
Reflecting on, assessing & refining individual curricular units

Week 15: Presentations
Sharing evidence of learning & evaluating understanding

Week 16: Presentations
Final units due

Resources:
Text(s): Wiggins & McTighe, *Understanding by Design (2nd edition),*
New Jersey: Prentice-Hall, Inc. 2005.

Wiggins & McTighe, *Understanding by Design Professional Development Workbook,* New Jersey: Prentice-Hall, Inc. 2004.

Evaluation:
Students in this course will be evaluated on participation in class discussions, collaboration with research assistants in their classwork, participation in local presentations on the intervention project and small assignments.

Reference

Cazden, C. B. (2001). Classroom Discourse: The Language of Teaching and Learning. Portsmouth, NH: Heinemann.

Centre for Research in Pedagogy and Practice. (2005, July 15). Presentation to MOE. Internal publication.

Chang, A. (1997). The motivation, self-esteem, study habits and problems of Normal Technical students. Singapore: NIE Centre for Educational Research.

Chia, S-A., Toh, E., & Li, X. (2005, July 9). Can bottom-rung kids climb up? The Straits Times Insight section, S8-9.

Clay, M. (1985).

Curriculum Planning and Development Division, Ministry of Education. (2001). English Language Syllabus 2001 for Primary and Secondary Schools. Retrieved November 29, 2005, from http://www.moe.gov.sg/cpdd/doc/English.pdf

Ho, A. L. (2004, December 21). O-level scholarship for top Normal (Tech) student. The Straits Times. Retrieved November 23, 2005, from Lexis-Nexis database.

Kang, T. (2004). Schools and Post-Secondary Aspirations among Female Chinese, Malay and Indian Normal Stream Students. In Lai A.E. (Ed.), Beyond rituals and riots: ethnic pluralism and social cohesion in Singapore, p. 146-171. Singapore: Eastern Universities Press.

Lee, L. (2004, March 22). Normal Tech doesn't mean the N… The Straits Times. Retrieved November 23, 2005, from Lexis-Nexis database.

Luke, A. (2005, November). CRPP intervention plan: Moving from the core to pedagogic change. Draft for internal circulation.

Ministry of Education. (2004, September 29). Press release: Review of the Normal (Technical) Course. Retrieved November 29, 2005, from http://www.moe.gov.sg/press/2004/pr20040929a.htm

Ministry of Education. (2000). Report of the Committee on Compulsory Education in Singapore.

Ng, C. F. (1999). The learning style of Normal (Technical) students in a neighbourhood school. Unpublished M.A. in Applied Psychology, National Institute of Education, Nanyang Technological University, Singapore.

Ng, I. S. P. (2004). Perspectives on streaming, EM3 pupils and literacy: views of participants. Unpublished B.A. thesis, National Institute of Education, Nanyang Technological University, Singapore.

Ng, J. (2005, December 20). Better N(T) students get a shot at O levels; A change in guidelines allows students like Nigel Tan to transfer to academic stream. The Straits Times. Retrieved December 27, 2005, from Lexis-Nexis database.

Ng, J. (2003, December 19). Technical details bar Academic hopes; With strict criteria, no Normal (Technical) student has ever made it to Sec 5, unlike Academic ones. The Straits Times. Retrieved November 23, 2005, from Lexis-Nexis database.

Ng, M. (1993). The Normal (technical) course. Videorecording. Singapore: Curriculum Development Institute of Singapore.

Ng, W. (2005). The elite, the gifted, and the scholar-bureaucrats of Singapore: The hows and whys of this educational elitism. Retrieved November 22, 2005, from http://thethirdweireading.blogspot.com/2005/09/singapore-educational-elitism.html

Oakes, J. (1985). Keeping Track: How Schools Structure Inequality. New Haven, CT: Yale University Press.

Ow, C. H. (1992). Self-Help Tradition at Work. Singapore: Chinese Development

Assistance Council.

Rahim, L. Z. (2000). The Singapore Dilemma: The political and educational marginality of the Malay community. Kuala Lumpur: Oxford University Press.

Sax, L. (2005). Why Gender Matters: What parents and teachers need to know about the emerging science of sex differences. Doubleday.

Seah, C. N. (2004, February 15). Shaping elitist mindset. Sunday Star.

Ser, D. (2004). I really not stupid. Videorecording of 'Get Real' episode. Singapore: Channel NewsAsia, MediaCorp News.

Shanmugaratnam, T. (2005, September 10). Speech at SINDA's 14TH Academic Excellence Awards Ceremony, Nanyang Polytechnic Auditorium, Singapore. Retrieved November 22, 2005, from http://app.sprinter.gov.sg/data/pr/2005091002.htm

Siew, K. H. (2001, February 20). Are schools elitist and entrenching the widening income gap? Retrieved November 22, 2005, from "Not the Forum Page" section of the old Sintercom http://www.newsintercom.org/?itemid=126

Tan, T. (2005, April 1). Fewer students are dropping out of school; Early intervention by social workers and schools has reduced the problem. The Straits Times. Retrieved

November 23, 2005, from Lexis-Nexis database.

ThinkCentre. (2002, August 16). Do EM3 and Normal Technical Students get a fair go? Retrieved November 22, 2005, from http://www.thinkcentre.org/article.cfm?ArticleID=1658

Yen Feng. (2005, October 17). N(Tech) kids go for lessons in shops, bakeries. The Straits Times. Retrieved November 23, 2005, from Lexis-Nexis database.

(2004, October 18). Entree it is for ITE. The Straits Times Commentary. Retrieved November 23, 2005, from Lexis-Nexis database.

[i] The lowest stream available in primary school.

[ii] Ah Beng = An uncouth Chinese boy. Stereotypically, he speaks gutter Hokkien and likes neon-coloured clothes, spiky, moussed hair and accessories such as handphones or pagers, all of which are conspicuously displayed.

[iii] The Learning Support Programme (LSP) is an early intervention programme aimed at providing additional support in literacy skills. Now into its 11th year of implementation, the programme is targeted at P1 & P2 pupils who are educationally at risk. Participants are screened before being placed in the programme.