

A Comparative Analysis of the Learning Mode Preferences of Students in
the Freyberg Integrated Studies Project with Students in other
Secondary Schools

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The research reported in this paper had its origins in a recently completed three year programme of school-based research and development in New Zealand called, the Freyberg Integrated Studies Project. The Project sought to demonstrate the efficacy of an integrated curriculum approach as an alternative to the traditional secondary curriculum. (See Nolan and McKinnon (1991) for a full account). This was done using a curriculum design comprised of three main design elements: integrated curricula; educational out of class activities and systematic student use of computers as analysis and processing tools. The integrated curricula themselves were developed, and implemented across Forms 3 to 6 (Grades 8 to 11) along the lines of the fourfold typology of curriculum integration identified by Pring (1976), namely correlational, thematic, student interest and practical thinking.

The curricula-in-action created an environment within which teachers were able to implement cooperative pedagogical principles broader in scope than traditional pedagogy. The latter tends to define learning simply in individualistic and competitive terms. In the somewhat more complex "new" environment, the project teachers frequently sought, and got help from other project teachers, and sometimes from the students too, especially in regard to computer use. One training method that teachers commonly used was peer observation, followed by peer review and joint planning.

Generally speaking, the pedagogy of the project was operationalised in two ways. First, teachers were encouraged to, and did, use a variety of methods and strategies which explicitly acknowledged that, in order to

be effective, learning and teaching entails reciprocity, mutual support and interrelationships as much as, perhaps more than, individual action and personal striving. Methods and strategies that came to be commonly employed were: group projects, collaborative planning, one-to-one instruction, small group discussions, conferencing and peer tutoring. Second, as a general rule, students were expected to, and did, work with, and alongside each other, and with their teachers. That is to say, they worked collaboratively, to plan learning agendas, activities, and events, and execute them, e.g. field trips, data gathering activities and whole class projects. Students frequently required help in learning how to work together, and help each other to do things and learn. The teacher's role was to provide this help by guiding and instructing students in the skills and strategies of cooperative learning.

Project students, from whom data were collected for the present research, have all participated in integrated studies programmes over three years. The extent of this participation was reduced in year three when teachers tended to revert to compartmentalised teaching of subjects in preparation for the National School Certificate examinations sat by all Fifth Form students at the end of this year. While prior to this paper no results had been reported on students preferred learning styles, it is possible to report that, in general terms, the School Certificate results achieved by Project students participating in the survey were, on average, significantly better than those of their peers in parallel classes who had followed the normal "traditional" curriculum. In terms of attitudinal development, a potentially even more important educational variable, project students were either less alienated from school or tended to express generally more positive attitudes compared with their non-project peers (again, see Nolan and McKinnon (1991) for a fuller discussion).

When all is said and done, however, the question still remains how did the students themselves regard cooperative pedagogy? An inkling of this regard may be divined from the observations of a female student on the outside looking in at the Integrated Studies students. She complained that the Integrated Studies students seemed to have many more friends than she did. This observation was followed up in a more formal interview in which the student freely took part. It became evident that she was somewhat envious. She only had one friend, another female, "to hang around in the playground with" (sic) but the Integrated Studies students had mixed sex groups much larger in size..."oh, seven or eight, I'd say....and there are boys and girls in the groups."

While not totally taken for granted, project teachers and curriculum developers tended to assume an affirmative answer to the question of cooperative pedagogy. To some extent their assumption was justified on the basis of anecdotal evidence. Older, sixth form (grade 11), students clearly understood the difference between the cooperative mode

and other learning and teaching modes because they had already experienced them earlier in their secondary schooling. Some students volunteered the view that they would never willingly go back to learning in the more traditional ways. Nor could they understand why teachers would want to teach that way.

The situation with younger third form (grade 8) integrated studies students, like their peers not in the Project, but in their first year of secondary school, is less clear. In light of prior socialisation at the primary level, many would be familiar, and comfortable, with learning and working in a cooperative school learning environment. On the other hand, it is difficult to know the extent to which students in general have internalized the value of competitive individualism extant in society at large, and generally subscribe to it. Despite academic success, gained while learning cooperatively, many students may still prefer to learn through competitive-individualistic endeavour!

Thus, some caution should be exercised in advancing specific hypotheses regarding students' preferred learning styles at each form level due to effects of confounding contextual factors such as prior socialisation. With this caution in mind, the analysis conducted here tests the following general hypotheses:

Hypothesis 1

Form 3 and 5 (grades 8 and 10) Integrated Studies students will have significantly greater preferences for cooperative learning than their normal programme peers and students in other coeducational high schools.

Hypothesis 2

In the fifth form (grade 10) there will be an apparent reduction in student preference for cooperative learning and a corresponding increase in preference for independent and possibly competitive learning environments.

Purpose

Given the hypotheses, the purpose of this paper is to: (i) report the learning style preferences of secondary school students, both in and outside of the project; and (ii) document the extent to which project students' learning style preferences were similar to, or different from, the preferences of students whose persistent experience of secondary education is more along the lines of the traditional secondary model. The findings are subject to qualification in the light of some problematic features of the instrument as reported earlier by McKinnon, Owens and Nolan (1992). In order to achieve its purpose the paper is presented in sections covering three main

sub-topics: (i) an outline of the research method used covering data collection and analysis procedures; (iii) presentation of results; and (iv) discussion and conclusions.

METHOD

DATA COLLECTION

The instrument used for data collection is the Learning Preference Scale - Students developed for use in schools by Barnes et al of Sydney University (1978). The questionnaire is comprised of 36 items with a reported three factor structure loading on the three learning style variables under investigation - competitive learning, individual learning and cooperative learning. That is to say, the items of the questionnaire divide into three groups with the items in each group collectively providing an operational definition of the three learning style variables. This factor structure remains problematic for New Zealand conditions and is the subject of further analysis.

The three student groups from whom data were collected included the following:

Group 1 - 89 third form and 44 fifth form students at Freyberg High School who participated in the Freyberg Integrated Studies Project;

Group 2 - 43 parallel third form and 56 parallel fifth form students in the normal programme at Freyberg High School;

Group 3 - 980 third form and 963 fifth form students attending four New Zealand Central Region coeducational secondary schools.

The Learning Preference data for groups 1 and 2 were collected at the end of 1990. The data for group 3 were collected during August 1992.

PROCEDURE

Scale scores for each of the cooperative, competitive and independent learning preferences were calculated using the procedure set down in the Learning Preference Manual (Owens and Barnes, 1992) and SPSS-PC v3.1.

Oneway analyses of variance with multiple comparisons (SNK) were computed for form 3 and 5 students using membership of Freyberg High School (2 groups) and the four Central Region coeducational schools (1 group) as the independent variable. ANOVAs were computed for each year group using sex and programme membership as the independent variables.

RESULTS

The results are presented in the form of two sets of three tables for each of form levels 3 and 5. Each table contains mean scores and standard deviations for females and males on each of the three sub-scales for each school setting. The school settings are designated in the tables by the variable IS where: 1 represents Integrated Studies students at Freyberg High School; 2 represents Normal-programme students at Freyberg High School; and, 3 represents students attending the four comparison coeducational secondary schools. Each table includes the results of oneway analyses of variance by school setting for females and males. In addition, the tables contain the results of an ANOVA by IS membership and Sex.

Overall, the Integrated Studies students demonstrated a greater preference for cooperative learning environments and a lower preference for competitive environments than both their normal-programme peers in the same school and their counterparts in other coeducational secondary schools. There were, however, some exceptions to this general finding, especially in regard to the learning style preferences of boys and girls. Equally interestingly, Freyberg High School students, overall, showed significantly less preference for individualistic and competitive learning environments than the students in the four comparison schools.

Form 3 - Learning Preferences by School, Gender and Participation in Integrated Studies

Table 1(a) COOPERATIVE SUBSCALE LPSS - FORM 3

		FEMALES			MALES		
IS	1	37.0	5.1	39	38.0*	4.0	49
IS	2	35.4	7.1	15	35.0	5.1	28
IS	3	37.9	4.3	488	36.5	5.0	488
Oneway F=2.82 (ns)				Oneway F= 3.30 (p=0.03)			
		ANOVA IS		F=3.51	(p=0.03)		
		SEX		F=16.242	(p<0.0001)		
		IS x SEX		F=2.659	(ns)		

With respect to the cooperative subscales, Table 1(a) shows that Form 3 females have a significantly greater preference than males for cooperative learning environments. There is no difference, however, between females across the three school settings (IS variables 1-3). In contrast, Integrated Studies male students expressed a significantly greater preference for learning cooperatively than their male

counterparts in the other two settings (SNK, $p=0.05$).

Table 1(b) COMPETITIVE SUBSCALE LPSS - FORM 3

FEMALES				MALES			
IS	1	30.2*	5.2	39	33.0	5.9	49
IS	2	26.1	9.0	15	31.7	5.4	28
IS	3	33.9**	5.2	488	36.3**	5.1	488
Oneway $F=23.57$ ($p<0.0001$)				Oneway $F=17.60$ ($p<0.0001$)			
ANOVA IS				$F=39.54$	$(p<0.0001)$		
SEX				$F=61.12$	$(p<0.0001)$		
IS x SEX				$F=1.834$	(ns)		

With respect to the competition subscale, Table 1(b) shows that Form 3 males have a significantly greater preference than females for learning in a competitive environment. Form 3 females in the traditional coeducational schools have a significantly higher subscale score than the form 3 females in Freyberg High School (SNK, $p=0.05$). In addition, the Integrated Studies female students have a significantly higher preference for competitive learning than their non-Integrated Studies counterparts (SNK, $P=0.05$). With respect to the male students, the traditional coeducational schools have a significantly higher sub-scale score than the Freyberg students overall (SNK, $p=0.05$).

Table 1(c) INDIVIDUALISED SUBSCALE LPSS - FORM 3

FEMALES				MALES			
IS	1	33.4	5.6	39	31.4	5.4	49
IS	2	31.6	8.9	15	31.0	6.4	28
IS	3	34.3	6.1	488	35.4**	5.8	488
Oneway $F=1.78$ (ns)				Oneway $F=16.79$ ($p<0.0001$)			
ANOVA IS				$F=14.92$	$(p<0.0001)$		
SEX				$F=4.28$	$(p=0.03)$		
IS x SEX				$F=2.78$	(ns)		

With respect to the individualism subscale, Table 1(c) shows that Form 3 males have a significantly greater preference than females for individualistic learning environments ($p=0.03$). There is no difference, however, among the females across the three school settings (IS variables 1-3). In contrast, male students in the four comparison schools (IS category 3) expressed a significantly greater preference for learning individualistically than their male counterparts in the

other two settings (SNK, $p < 0.05$).

Form 5 - Learning Preferences by School, Gender and Participation in Integrated Studies

Table 2(a) COOPERATIVE SUBSCALE LPSS - FORM 5

FEMALES					MALES		
IS	1	36.5	4.6	27	37.1	4.1	17
IS	2	35.7	6.5	29	34.5	5.0	27
IS	3	37.3	4.2	441	36.5*	4.6	518
Oneway F=2.18 (ns)					Oneway F=2.63 (ns)		
ANOVA IS F=4.31 (p<0.02)							
SEX F=7.63 (p=0.006)							
IS x SEX F=0.520 (ns)							

With respect to the cooperation subscales, Table 2 (a) shows that Form 5 females have a significantly greater preference than males for cooperative learning environments ($p=0.006$). There is no difference, however, among the females across the three school settings. It also appears that, overall, there is no significant difference in the extent of male students' preference for cooperative learning, but there is an indication that the Freyberg non-Integrated Studies students have a particularly low scale score in comparison with the male students in the four comparison schools.

Table 2(b) COMPETITIVE SUBSCALE LPSS - FORM 5

FEMALES					MALES		
IS	1	33.5	5.3	27	31.3	8.0	17
IS	2	31.0	5.2	29	32.7	7.1	27
IS	3	34.7*	5.5	441	36.1**	5.5	518
Oneway F=6.69 (p<0.002)					Oneway F=9.86 (p=0.0001)		
ANOVA IS F=14.59 (p<0.0001)							
SEX F=12.90 (p<0.0001)							
IS x SEX F=2.02 (ns)							

With respect to the competition subscales, Table 2(b) shows that Form 5 males have a significantly greater preference than females for learning in a competitive environment ($p < 0.0001$). Form 5 females in the four

comparison schools also have a significantly higher subscale score but only over their normal programme peers at Freyberg (SNK, $p=0.05$). With respect to the male students, the comparison coeducational schools have a significantly higher sub-scale score than the Freyberg students overall (SNK, $p=0.05$). Overall, females and males in the four comparison schools have significantly higher preferences for competitive learning environments ($p=0.0001$).

Table 2(c) INDIVIDUALISED SUBSCALE LPSS - FORM 5

		FEMALES			MALES		
IS	1	35.7	4.7	27	33.8	5.5	17
IS	2	33.2	5.2	29	33.2	6.5	27
IS	3	35.6*	5.1	441	34.5	5.4	518
Oneway $F=2.94$ (ns)				Oneway $F=0.83$ (ns)			
		ANOVA IS		$F=3.21$	$(p<0.05)$		
		SEX		$F=10.40$	$(p=0.001)$		
		IS x SEX		$F=0.406$	(ns)		

With respect to the individualism subscales, Table 2 (c) shows that Form 5 females appear to have a significantly greater preference than males for individualistic learning environments ($p=0.001$). There is no difference, however, among the males across the three school settings (IS variables 1-3). In contrast, it appears that female students in the four comparison schools are expressing a greater preference for learning individualistically than their female counterparts in the non-Integrated Studies setting at Freyberg. Overall, males and females in the comparison schools have a significantly higher individualism scale score than students at Freyberg High School ($p=0.05$).

DISCUSSION

The evidence from the data reported in this paper indicates that competitive individualism is alive and well in the New Zealand secondary school system. There is also evidence, however, that it may be possible to develop programmes that demonstrate to students the value of cooperation as another means by which they can learn effectively at school and derive enjoyment from this learning. The extent to which the preference for cooperative learning in the Integrated Studies context can be attributed to the curricula initiated at Freyberg High School remains problematic. It would be tempting to suggest that there is a causal relationship, but as in all realistic educational research this relationship remains something to be sought after rather than a demonstrable fact.

The fact of the matter is, though, that the way to effective learning and teaching in the future may well lie with cooperative pedagogy more than it does with the individualistic and competitive emphasizes of both past and contemporary secondary education. The Freyberg Integrated Studies project, and other educational projects like it, are demonstrating ways by which a broadly defined cooperative pedagogy may be developed and made to work effectively in secondary schools. In the learning environments created by these projects, not only are the principles and precepts of cooperative pedagogy being applied in practice, such is their nature that they provide scope also for the utilisation of individualistic and competitive learning styles to be employed where appropriate. In this respect, cooperative pedagogy appears to provide scope for diversity of learning styles in a way that the overly heavy emphasis on competitive individualism, characteristic of most secondary education, does not.

This finding appears to be important. As theorists and researchers of many persuasions have consistently pointed out, the requirements that young people must generally meet in order to work, and live, in contemporary society and, maintain its democratic character, are more likely to be developed through the use of collaboration and cooperation than by individualism and the competitive attitudes that appear to have so heavily dominated educational, social and work practices in the past. Yet, many people of influence and power in the community, and in education, persist in promoting the notion that competitive individualism remains our salvation!

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