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Student Attitudes towards an Extended Curriculum Program

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Background and Overview to the study

This research examines the attitudes of Year 7 students, towards the learning environment in their English, mathematics and science classes in a Melbourne Independent girls' school.

An Extended Curriculum Program (ECP) operated for a high ability group of students in English and maths classes; whereas science classes were mixed-ability, where teachers aimed to provide differentiated learning experiences for all students at the Year 7 level.

Background to the study

The Extended Curriculum Program (ECP) was introduced in 1999 into Melbourne Girls Grammar School (MGGS) and was largely informed by the literature and teachings of Tannenbaum, an American psychologist and gifted educator (Kelly, 2004).

It is based on a programmatic response to individual differences, the philosophy behind the ECP embraced Tannenbaum's (1983, 2000) beliefs that such responses to giftedness are educationally imperative and not optional.

Background to the study

- Tannenbaum (1983) argues that the most effective method of meeting the needs of very able students is through adapting curriculum in settings based on ability which ensures a qualitatively different learning experience.

MGGS – Extended Curriculum program

- This premise underpinned the response by this independent secondary school as they gradually introduced their program, initially involving extension classes in English, mathematics and Languages Other Than English (LOTE) at Year 7 only.
- In 2005 the program was expanded with extension classes being offered from Years 7 – 10 in English, mathematics and LOTE.

MGGS – Extended Curriculum Program

- Typically, students participate in their studies in mixed-ability classes, with a subgroup participating in one or more of their subjects in high ability-grouped classes.
- It is recognized within the ECP that different strategies are essential to provide for individual differences in learning.
- These include ability grouping for specific subjects; withdrawal for extension and enrichment; flexible pacing; acceleration; in-class grouping; mentoring; differentiated curriculum; individual plans and support (Kronborg & Plunkett, 2005).

Sample of students

- In this study, of the 95 students in Year 7 in 2006, 19 were in the ECP English class and 24 in the ECP mathematics class. 14 or 70% of the ECP English students and 18 or 75% of the ECP mathematics class participated in this study. Of these students, 21 ECP students were in mixed-ability science classes.

Student sample at independent girls school

- **58 or 62% of the 95 Year 7 students completed surveys examining their perceived self-efficacy, motivational orientation and overall satisfaction with their science classes which aimed to provide differentiated learning experiences**

Selection of students into ECP classes

- Based on performance on ability and/or achievement tests.
- Requirement level for student entry is set at above the 90th percentile.
- Additional selection criteria includes previous student reports and information and results showing evidence of particularly high indicators for one of the talent domains taught in the ECP.

Student selection for ECP program

Students are grouped according to relevant high abilities and aptitudes in talent domains specific to subject disciplines and hence, are exposed to curriculum that offers them complexity and challenge (Kronborg & Plunkett, 2006).



Initial analysis of ECP and science settings

- Initial analysis involved a comparison of student perceptions of the two different settings to determine if differences were present, with further analysis planned for between and within group effects.
- Initial results indicated that classes in high ability settings associated with the ECP were perceived more positively than mixed ability classes.
- Another interesting finding was that students who were involved in ECP classes had motivational orientations that were more likely to be associated with achievement, even in mixed ability settings.

The objectives of the study:

To investigate more fully the Year 7 student perspective of the learning environments provided within the Extended Curriculum Program (ECP) English and maths classes were compared to mixed-ability science classes to determine whether there were any perceived differences on student attitudes, motivation and self-efficacy.



Table 1: The Extended Curriculum/Advanced Learning Program in 2005. Years 7-10

10	↑↑ Naturally Progressing into Mainstream VCE 1/2 and 3/4 subjects						Advanced Provisions
	CORE EXTENDED CURRICULUM PROGRAM (Ability grouped)			OTHER FORMS OF DIFFERENTIATED CURRICULUM			Extension English Genethics competition
	Maths Extension Maths Methods Units 1/2	English Extension English Units 1/2 (if required)	LOTE Chinese 1/2 French 1/2 French ext	History C20th 1/2 Battle of ideologies 1-Feb	Science Biology 1-Feb	Geog 1-Feb	Philosophy group CSIRO student research scheme Mentor program
9	Maths Extension Accelerated Maths	English Extension	LOTE Italian Chinese French Latin	History National History	Science	Geog	Mixed teams debating
					Some differentiation		Chess Debating Public Speaking
8	Maths Extension	English Extension	LOTE Italian Chinese Latin	History National History	Science	Geog	Individual Education Plans - – integral to ECP
					Some differentiation		
7	Maths Extension	English Extension	LOTE Italian Chinese	History National History	Science	Geog	Individual Education Plans
					Some differentiation		integral to ECP

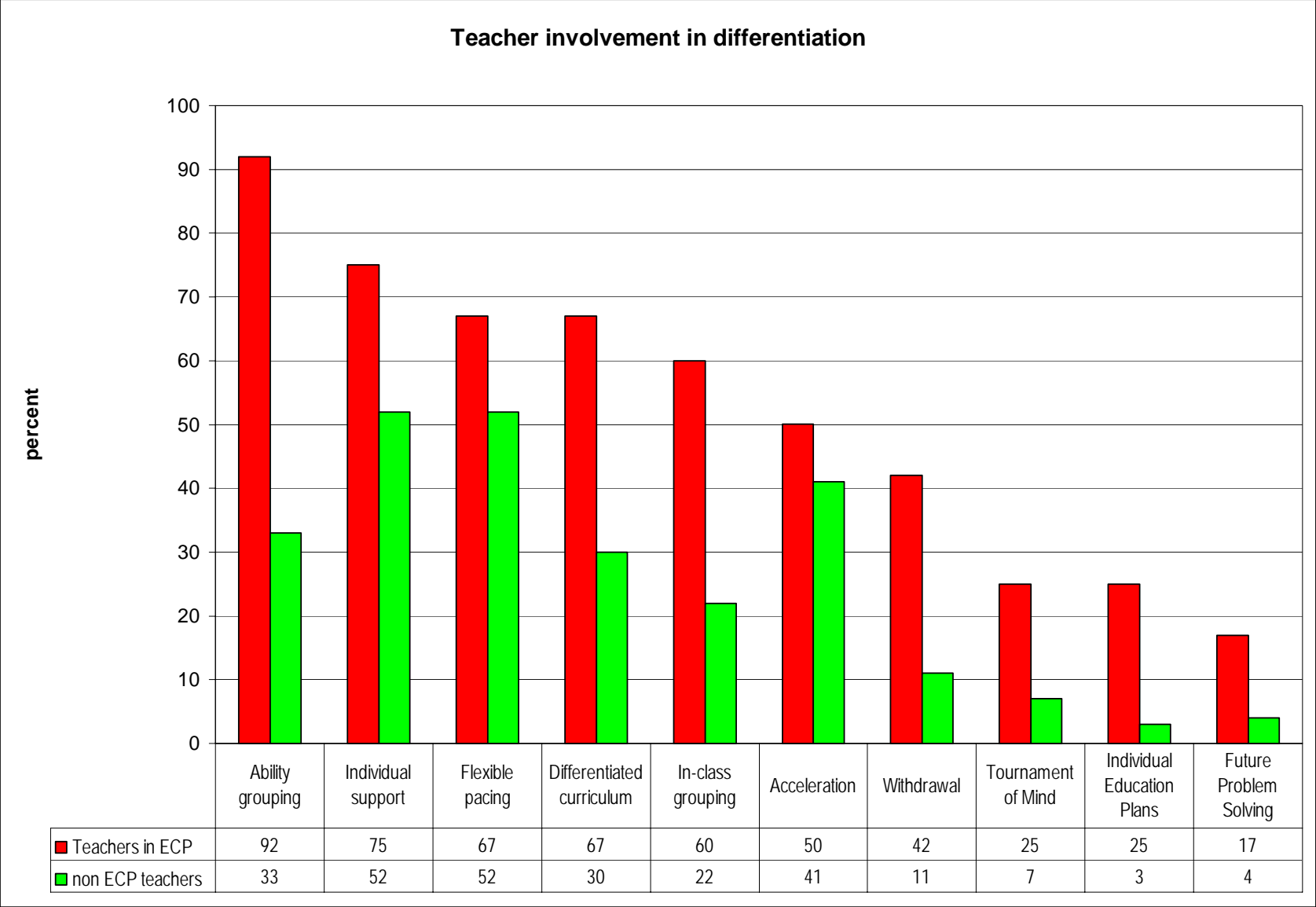
Table 1: The Extended Curriculum/Advanced Learning Program in 2005. Years 11-12

Year level	ADVANCED STUDIES (VCE)						Advanced Provisions
12	UMEP Maths			UMEP History			Extension English Genethics competition Philosophy group CSIRO student research scheme Mentor program Mixed teams debating Chess
11	Units 3 & 4 in Legal Studies, International Studies, Classical Societies and Cultures, Music Performance, Studio Arts, Dance						
11	Maths Methods Units 3/4	English Units 1/2 Literature Units1/2 (Units 3/4 if required)	LOTE Chinese 3-Apr Italian 3/4 Vietnamese 3/4	Australian History 3-Apr	Science Biology 3/4	Geog 3-Apr	Debating Public Speaking Individual Education Plans - integral to ECP

Table 3: Identified Students in ECP in 2005

	Number in Senior School	Students in ECP	% of students in ECP at year level or performing at accelerated level
Year 7	98	41 - 78 places	42%
Year 8	84	51 - 91 places	61%
Year 9	105	61 - 136 places	58%
Year 10	111	48+32(VCE1/2) = 80 girls - 155 places	72%
Year 11	128	81 girls (VCE3/4) 89 places	68%
Year 12	130	4UMP	3%

Figure 1: Teacher involvement in differentiation in 2005



ECP and nonECPStaff perception of ECP program in 2005

- **Psychologically safe environment for highly able students**
- **Legitimate method of providing for highly able**
- **'Flow-on' effects considerable**
- **Teachers self-select**
- **Consistent attempts at differentiation**
- **ECP demanding but rewarding**
- **ECP focus – student challenge**

Figure 2: Student perception of level of challenge in individual subjects in 2005

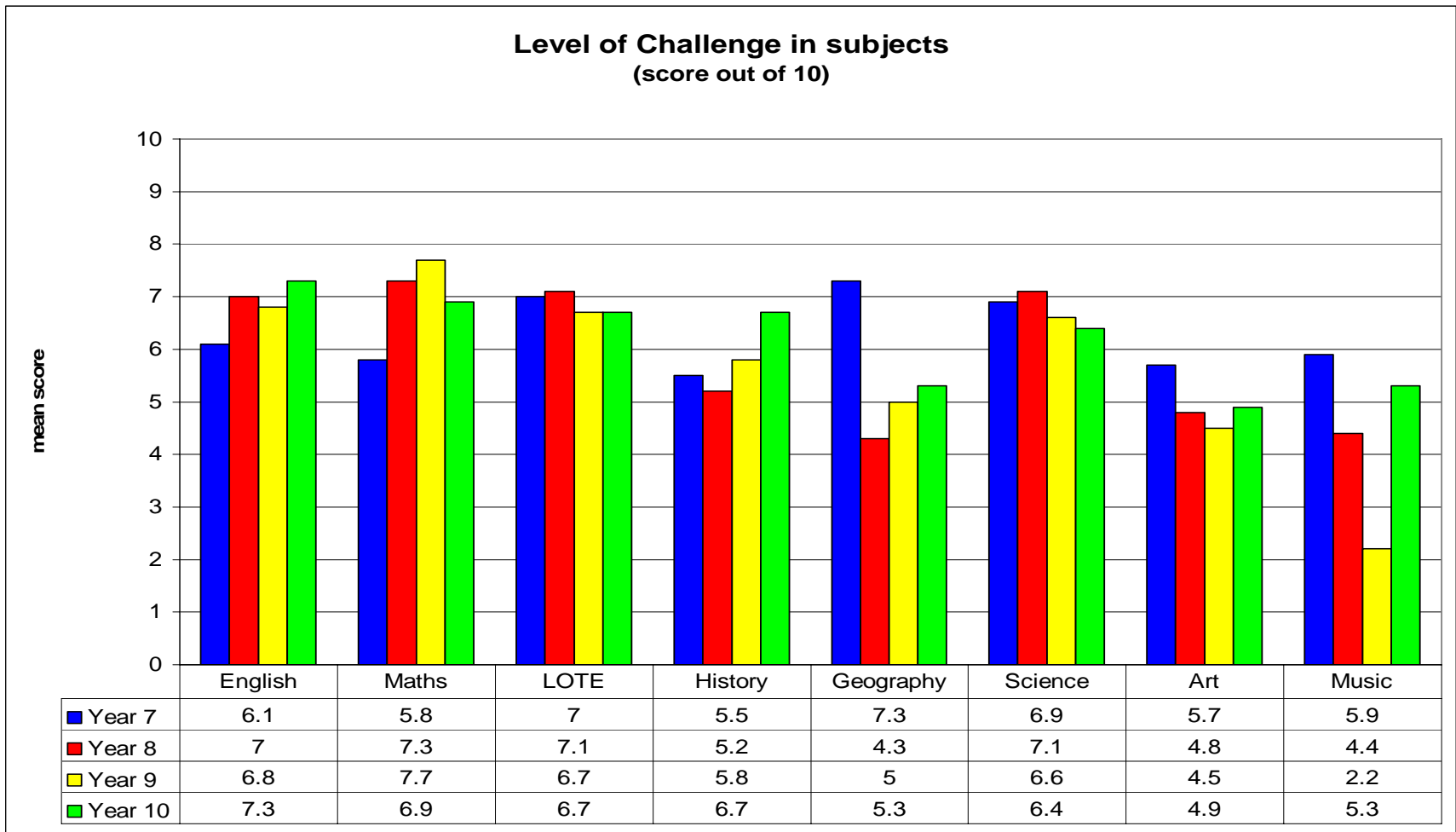


Table 6: Student beliefs in relation to ECP classes in 2005

IN ECP classes:	Year 7 (total n=20)			Year 8 (total n=29)			Year 9 (total n=24)			Year 10 (total n=15)		
	English	Maths	LOTE	English	Maths	LOTE	English	Maths	LOTE	English	Maths	LOTE
1.What I do fits my interests	3.2	3.4	3.2	3.6	3.9	3.4	3.9	3.5	3.7	3.9	3.9	3.9
2. Get good marks	4.0	4.4	3.8	4.0	4.2	3.7	4.3	4.2	4.5	4.2	4.5	4.4
3. Challenged to do my best	3.8	3.9	3.9	4.2	4.4	3.7	4.5	4.6	4.0	4.7	4.5	4.0
4. Study interesting topics	3.2	3.6	3.3	3.6	3.9	3.4	3.9	3.6	3.6	4.3	3.6	3.6
5. Encouraged to pursue interests	3.4	3.8	4.5	3.8	3.8	3.2	3.6	3.4	3.5	3.7	3.3	3.5
6. Like solving problems	2.9	3.8	3.0	3.4	3.8	3.1	3.3	3.7	3.4	3.8	3.9	3.6
7. Can choose to work in group	2.7	3.6	3.1	3.4	2.7	3.0	3.6	2.3	3.2	3.6	2.1	3.3
8. Teacher goes out of way to advise	3.2	4.1	3.1	3.3	3.2	3.5	3.4	3.3	3.2	3.3	3.6	3.3
9. Competition between students	2.4	2.3	2.4	3.6	4.2	2.7	3.4	3.7	3.1	3.9	4.2	3.5
10. Can choose to work alone	3.3	4.3	3.6	3.6	4.5	3.5	4.0	4.5	4.3	4.0	4.7	4.2
11. Look forward to classes	3.1	4.1	2.9	3.4	3.7	3.2	3.4	3.4	3.6	4.0	4.2	3.5
12. Learn from other students	3.2	3.1	2.9	3.5	3.6	3.3	3.6	3.4	3.3	4.5	3.1	3.6
13. Challenge myself trying new things	3.4	4.1	3.7	3.6	4.0	3.4	3.6	3.8	3.5	3.6	4.0	3.6
14. Give opinions during discussions	3.3	3.1	3.6	4.2	3.7	3.8	4.1	3.7	3.8	4.1	3.9	4.4
15. Teacher takes personal interest	3.2	3.6	2.9	3.4	3.5	3.1	3.2	3.1	2.9	3.5	3.3	3.4
16. Students discuss with me	2.9	4.0	3.1	3.3	3.9	3.2	4.0	3.9	3.8	3.7	4.0	3.6
17. Work fits my abilities	3.7	3.7	3.5	3.8	3.9	3.6	4.3	4.3	4.2	4.2	4.3	4.2
18. Teacher is caring	3.3	4.3	3.4	3.8	3.6	3.7	4.0	3.9	4.1	4.1	3.9	3.9
19. Students with similar ability to me	4.3	4.0	3.9	4.3	4.0	3.9	4.2	4.2	4.0	4.6	4.5	4.5
20. Feel accepted by classmates	4.1	4.7	4.4	4.0	4.0	4.2	4.7	4.6	4.5	4.9	4.7	4.8
21. It is okay to achieve	4.6	5.0#	4.6	4.7	4.9	4.7	4.9	5.0#	4.8	4.9	4.9	5.0#
22. Students respect each other	4.4	4.9	4.4	4.3	4.3	4.2	4.7	4.7	4.5	4.8	4.4	4.6
23. Students respect teachers	3.8	4.9	4.1	3.9	4.4	4.0	4.4	4.5	4.0	4.6	3.9	4.2
24. High achievement is respected	4.5	4.9	4.4	4.3	4.8	4.4	4.9	4.9	4.4	4.8	4.8	4.7
25. Given responsibility for learning	4.3	4.4	4.2	3.9	4.1	3.9	4.4	4.6	4.1	4.4	4.2	4.2
26. I feel I am important	3.8	4.3	4.0	3.5	3.6	3.3	4.2	3.7	3.7	4.0	3.8	4.1
27. Enjoy being with likeminded others	4.0	4.9	4.6	4.0	4.1	3.7	4.6	4.5	4.4	4.3	4.2	4.4
28. Can express opinions freely	4.0	4.7	4.1	4.4	4.3	4.1	4.9	4.2	4.3	4.6	4.3	4.2
29.*Teachers expect too much of me	2.2	1.7	2.6	2.8	2.9	2.5	2.8	2.8	2.0	2.4	1.9	2.0
30. Stimulated by class discussions	3.0	3.1	3.0	4.2	3.3	3.2	4.2	3.6	3.6	4.4	3.5	3.8

Student Curriculum Survey – Year 7

Sample of the science survey questions

Never Seldom Sometimes Often Always

1. What I do in this class fits my interests	①	①	①	①	①
2. I get good marks in this class.	①	①	①	①	①
3. I am challenged to do my best in this class					
	①	①	①	①	①
4. I study interesting topics in this class.	①	①	①	①	①
5. The teacher's questions in this class help me to understand					
	①	①	①	①	①
6. I do my work in this class because if I don't I will get in trouble with the teachers.	①	①	①	①	①

Figure 1: Student perceptions of enjoyment, interest & teacher support in Year 7 classes

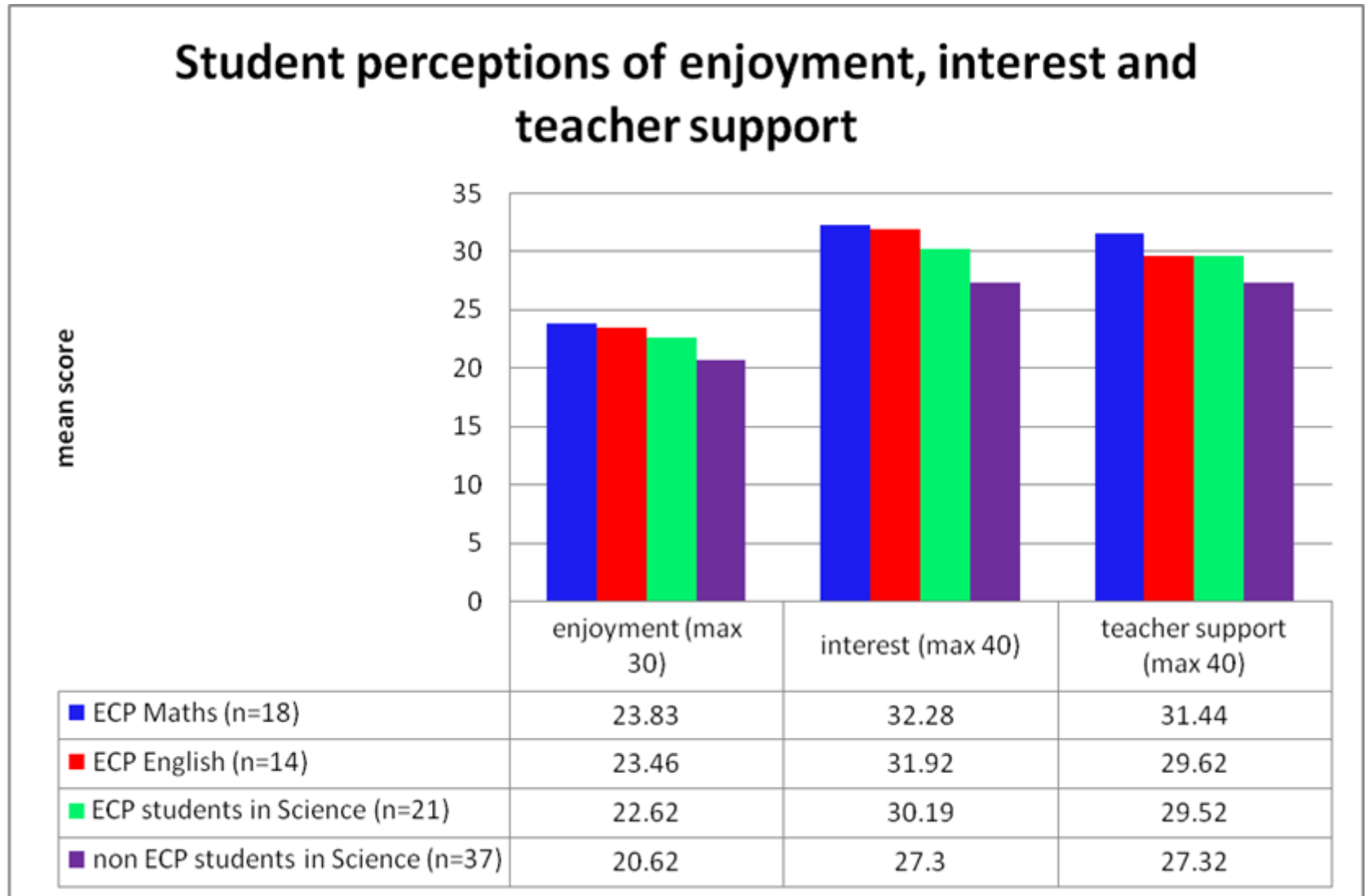
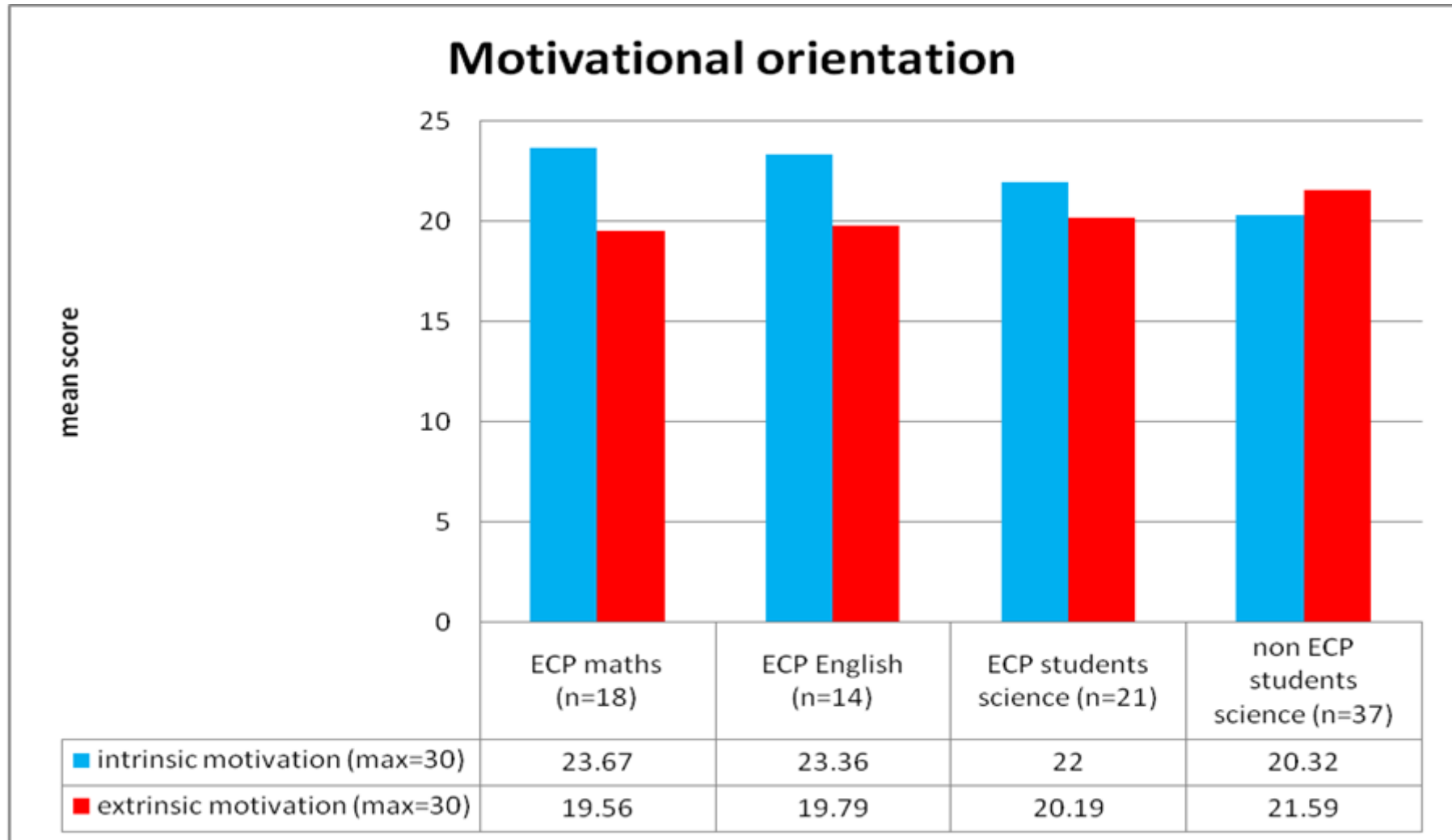


Figure 2: Student perceptions of motivational orientation in Year 7



Confidence in ability to achieve

The measure used in this study to determine self-efficacy in relation to achievement was based on a School Questionnaire measure developed by Kerr, Kurpius & Harkins (2005) as a part of their ten years of gender equity research at Arizona State University.

Students were asked to identify how confident they felt in their ability to achieve a grade of 'A' in each subject they were studying.

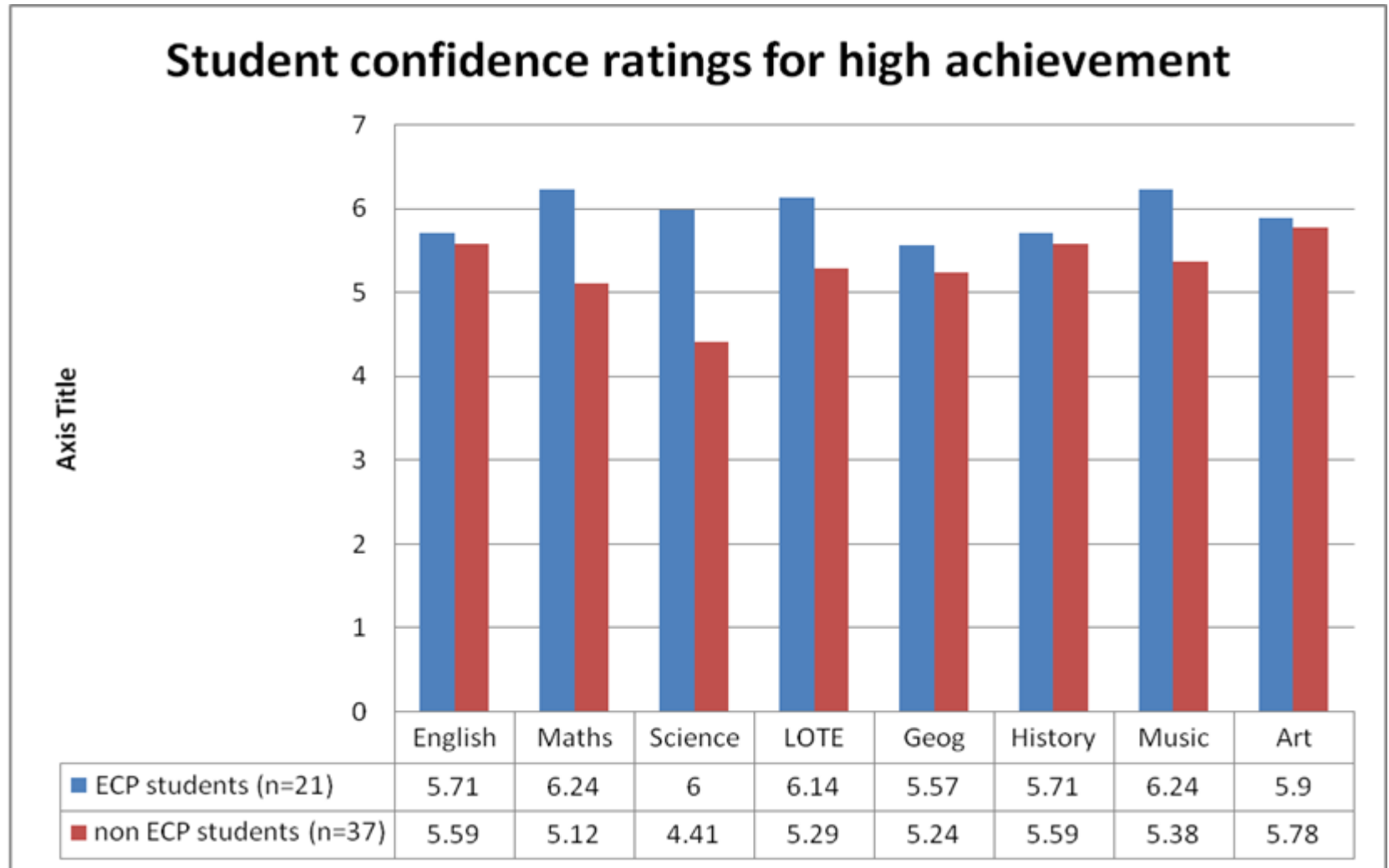
Confidence in ability to achieve

Although, it would be expected that students who were participating in extension classes would be more likely to be confident in their ability to achieve high scores, this is not necessarily the case, especially with females (Pajares & Valiante, 1999).

Nonetheless a high level of confidence or belief in self has been associated with both achievement and motivation (Schunk & Pajares, 2004) and this was certainly evident in this particular study.

Student confidence ratings (from a low of 1 to a high of 7) in gaining an A for each of their Year 7 subjects indicated that in each instance ECP students were more confident in their ability to achieve an A than nonECP counterparts

Figure 4: Student ratings for confidence to achieve an “A” in these subjects



Statistically significant differences in confidence ratings

ECP students rated their confidence to achieve more highly than nonECP in relation to:

- **LOTE:** ECP(\underline{M} =6.14, \underline{SD} =1.19) nonECP(\underline{M} =5.29, \underline{SD} =1.33)
 $t(53)=2.38$, $p<.02$, eta squared=.09).
- **MUSIC:** ECP(\underline{M} =6.24, \underline{SD} =.99) nonECP (\underline{M} =5.38, \underline{SD} =1.59)
 $t(53)=2.45$, $p<.01$, eta squared=.10).
(Statistic for unequal variances used due to significant result in Levene's)
- **MATHS:** ECP(\underline{M} =6.24, \underline{SD} =.77) nonECP (\underline{M} =5.12, \underline{SD} =1.78)
 $t(47)=3.17$, $p<.003$, eta squared=1.5).
(Statistic for unequal variances used due to significant result in Levene's)
- **SCIENCE:** ECP(\underline{M} =6.00, \underline{SD} =1.04) nonECP(\underline{M} =4.41, \underline{SD} =1.43)
 $t(53)=4.43$, $p<.000$, eta squared= .26).

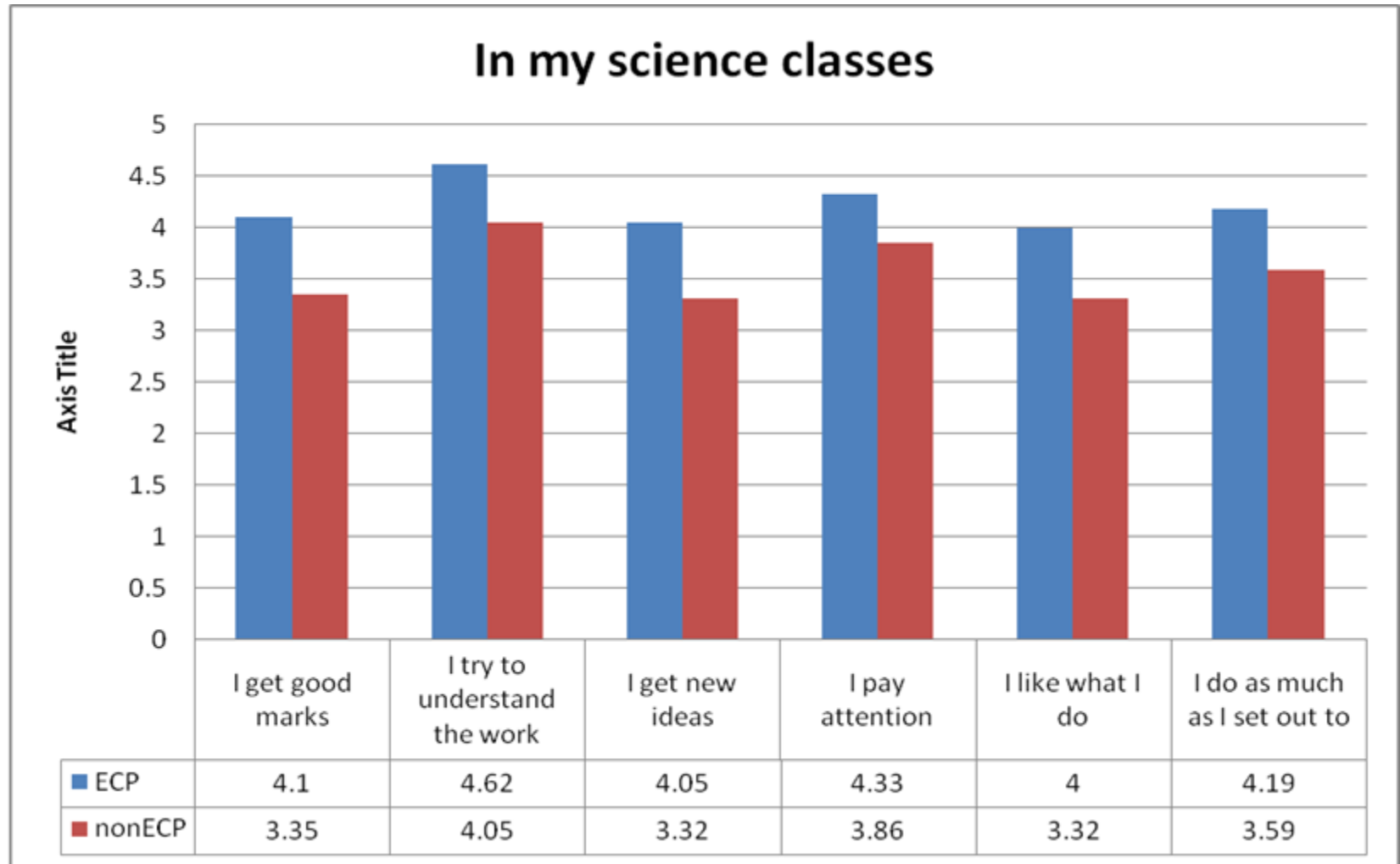
- Interestingly, confidence ratings in ability to achieve highly were most similar between the two groups in English, history and art subjects.
- Yet, students' abilities between English groups in ECP and nonECP classes vary significantly (Kelly, 2006).

Student ratings for aspects relating to science classes

Almost all of the questions relating to the science classes attracted slightly higher ratings from the ECP students, but only a number of these were statistically significant.



Figure 5: Student ratings for aspects relating to science classes



Student ratings for aspects relating to science classes

- **Q2. I get good marks in this class:** the ECP group rating ($\underline{M}=4.10$, $\underline{SD}=.53$) was higher than the nonECP rating ($\underline{M}=3.35$, $\underline{SD}=.63$), $\underline{t}(47)=4.74$, $\underline{p}<.000$, eta squared= .29). (Statistic for unequal variances used due to significant result in Levene's Test).
- **Q22. I try to understand the work in this class:** the ECP group rating ($\underline{M}=4.62$, $\underline{SD}=.59$) was higher than the nonECP rating ($\underline{M}=4.05$, $\underline{SD}=.88$), $\underline{t}(56)=-.26$, $\underline{p}<.01$, eta squared=.001).

Student ratings for aspects relating to science classes

- **Q37. What I do in this class gives me interesting and new ideas:** the ECP group rating ($\underline{M}=4.05$, $\underline{SD}=.74$) was higher than the nonECP rating ($\underline{M}=3.35$, $\underline{SD}=.97$), $t(51)=3.18$, $p<.005$, eta squared=.15). (Statistic for unequal variances used due to significant result in Levene's Test).
- **Q38. I pay attention in this class:** the ECP group rating ($\underline{M}=4.33$, $\underline{SD}=.65$) was higher than the nonECP rating ($\underline{M}=3.86$, $\underline{SD}=.95$), $t(56)=2.00$, $p<.05$, eta squared= .07).

Student ratings for aspects relating to science classes

- **Q65. I Like what I do in this class:** the ECP group rating ($\underline{M}=4.00$, $\underline{SD}=.84$) was higher than the nonECP rating ($\underline{M}=3.32$, $\underline{SD}=1.11$), $\underline{t}(56)=2.43$, $\underline{p}<.01$, eta squared=.10).
- **Q70. I do as much as I set out to in this class:** the ECP group rating ($\underline{M}=4.19$, $\underline{SD}=.81$) was higher than the nonECP rating ($\underline{M}=3.59$, $\underline{SD}=.93$), $\underline{t}(56)=2.46$, $\underline{p}<.01$, eta squared=.10).

Implications

- The findings from this study suggest that highly able students prefer the type of differentiated learning environments that are able to be provided in classes which are based on ability grouping.
- The students in this study rated their ECP classes higher than mainstream science classes which provided differentiated learning experiences.
- High ability students' attitudes towards mainstream science classes were still more positive than those of students with no involvement in ECP math or English classes.

Implications continued:

- **This may be indicative of a more general positive approach to learning as a result of spending at least some time in an ability setting.**
- **Additionally, ECP students had motivational orientations that appear to be conducive to academic achievement, with a higher focus on intrinsic motivation rather than extrinsic rewards.**