

## Measuring engagement in classroom learning among Western Australian students using Rasch Analysis

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### Abstract

This paper is part of a larger research study into measuring classroom engagement among secondary school students in Western Australia. This paper reports on one aspect of the study; that of instrument development. Cavanagh, Kennish and Sturgess (2008) reviewed the prominent literature and proposed that the understanding of student engagement in classroom learning could be advanced by using Flow Theory (Csikszentmihalyi, 1990). The model proposes 11 facets of engagement: five relating to *student capabilities for learning*; and six relating to *expectations of student learning for understanding*. These were researched empirically to determine if it was possible to quantify student engagement using Rasch Analysis (Cavanagh and Kennish, 2009).

The refinement of the instrument from being interviewer administered to a self-report survey is described in this paper. A sample of 553 students from two Perth metropolitan senior high schools Years 8 to 10 completed the survey and the resultant data was analysed using RUMM2020.

The relationship between *learning capabilities* and *expectations of learning* was examined by plotting the scores of each student for learning capabilities and expectations of learning. The distribution of scores shows a direct relation between the two constructs consistent with the hypothesised model of engagement.

A measurement scale of the phenomenon of *engagement in classroom learning* has been developed and can be used by pedagogic practitioners. In cases where resources are being channelled into increasing student engagement or re-engaging disengaged students, the instrument will be of benefit in measuring the impact of efforts made.

The research was conducted as part of an Australian Research Council funded Linkage Project between Curtin University of Technology and the Participation Directorate of the Western Australian Department of Education and Training.

### Introduction

The paper starts with the theoretical framework underpinning the development of the student self-report instrument. Next the research questions are presented. This is followed by the methodological procedures, such as the sampling and item writing. Finally the paper presents the results of the analyses undertaken to assist with refinement and ensure the instrument was functioning as intended.

### Theoretical Framework

Csikszentmihalyi, (1990) coined the term *Flow* to describe an experience which occurs when people are engrossed in the task at hand, because the levels of skills required to meet the challenge faced are in balance, (described as "being in the flow" by athletes, musicians, etc). Shernoff, Csikszentmihalyi, Schneider and Shernoff (2003) defined engagement as high concentration, interest and enjoyment and previous investigations into school engagement and participation have used Flow Theory (see Parr, Montgomery and deBell, 1998; Shernoff, Csikszentmihalyi, Schneider and Shernoff, 2003; Schweinle, Meyer and Turner, 2006).

Cavanagh, et al. (2008) proposed that the concept of engagement in classroom learning could be explained by applying the basic principles of Flow Theory. Cavanagh, et al. (2008) applied this model to the notion of engagement and proposed that:

“... students who are engaged within a particular situation will have a balance between the perceived level of the challenge being faced and their perceived capability (or skill) to meet the incumbent requirements”. (p. 7)

In the classroom learning environment, students’ skills were defined as *learning capabilities* and the classroom challenges were defined as *expectations of learning for understanding*. Engagement in classroom learning occurs where there is a balance between a student’s *learning capabilities* and *expectations of learning for understanding*. When a student’s *learning capabilities* and *expectations of learning* are both high it is expected that more learning can be achieved. Correspondingly, when *learning capabilities* and *expectations* are lower, then less learning is anticipated. Figure 1 presents a model of student engagement in classroom learning in which the balance between these constructs is represented diagrammatically.

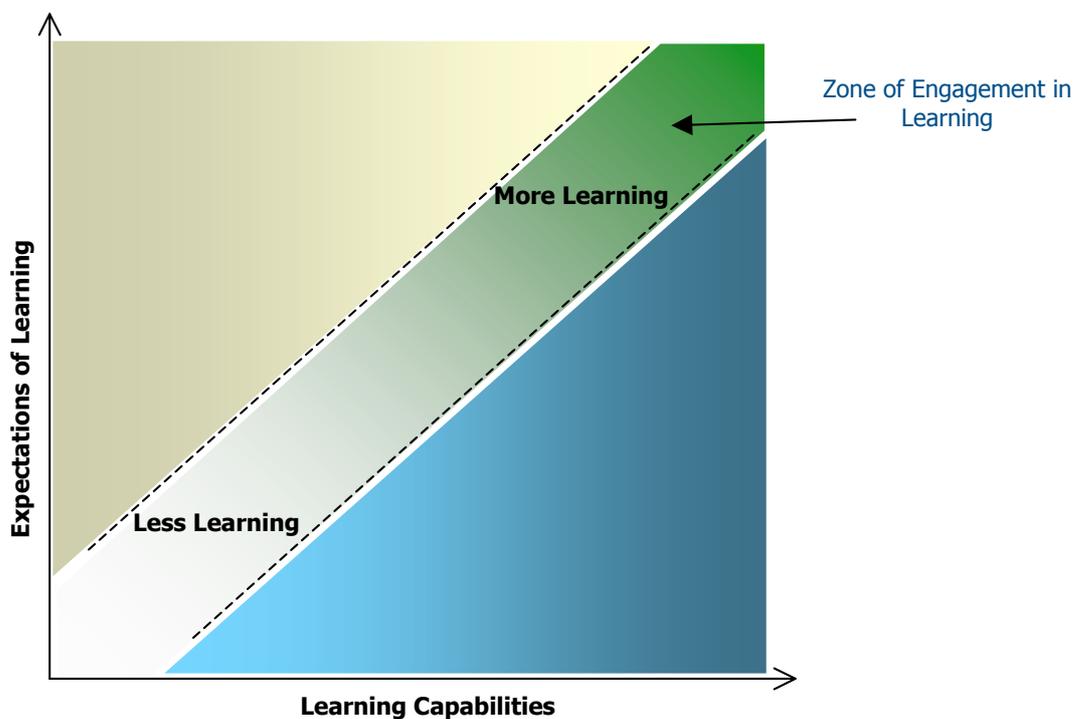


Figure 1. Model of student engagement in classroom learning.

### Research objectives

The research questions were:

- Can a linear scale that measures student *learning capabilities* be constructed?
- Can a linear scale that measures *expectations of learning for understanding* be constructed?
- Do measures of student *learning capabilities* and *expectations of student learning* conjointly indicate the higher order construct of student *engagement in classroom learning*?
- Is there a difference in student scores between girls and boys, years of schooling, subject area studied and whether a subject area class is a favourite class of a student?

## **Methodology**

### ***Sample***

The data were collected as part of a larger study on secondary school student engagement in classroom learning. The sample was 553 Secondary School students from school years 8 to 10 attending two government schools in metropolitan Western Australia. The sample characteristics are presented in Table 1 below.

Table 1  
*Sample characteristics*

	Percentage
<b>School Year</b>	
Year 8	40.7%
Year 9	36.3%
Year 10	19.9%
No Response	3.1%
<b>Gender</b>	
Males	52.6%
Females	44.7%
No Response	2.7%
<b>Subject:</b>	
English	21.9%
Maths	26.8%
Science	19.7%
S&E	29.1%
No Response	2.5%
<b>Favourite Subject:</b>	
Yes	21.5%
No	74.1%
No Response	4.3%

**Data Collection**

The *Secondary School Engagement in Classroom Learning* (see Appendix 1) is a self-report instrument utilising a four-category response scale (strongly agree, agree, disagree, and strongly disagree). It comprises two 25-item scales, one measures the *learning capabilities* of a student, and the other measures the *expectations of a student's learning for understanding*.

The *learning capabilities* scale comprises the facets of self-esteem, self-concept, resilience, self-regulation, and self-efficacy. The *expectations of learning for understanding* scale comprises explanation, interpretation, application, perspective, and empathy. There are five items for each facet. These were written so the first item in the group was expected to be easier to affirm than the subsequent items. The item wording was based on previously developed construct models (see Cavanagh, 2009).

As an example, the facet of resilience is shown in Table 2. Students with low levels of resilience would be expected to agree with only one or two of the statements, whereas students with high levels of resilience would be expected to (strongly) agree with four or five of the statements.

Table 2  
*Hierarchical statements for 'resilience'*

Level of facet	Statements
Less resilience	Everyone faces problems at some time
↓	I can overcome small problems
	I don't admit defeat easily
	I bounce back after having difficulties
	Big challenges bring out the best in me
More resilience	

## **Data Analysis**

Scores were entered into the computer program RUMM2020 (Andrich, Sheridan, Lyne & Luo, 2003). Data were then analysed using the Rasch Rating Scale Model (Andrich, 1978a & 1978b) to test the measurement properties of the data. Initial analyses was performed of the data from each of the two sub-scales (*learning capabilities* and *expectations of learning for understanding*) to identify how well the data fit the Rasch model. An iterative process was then undertaken in which data that did not fit the model well were deleted.

Data to model fit was tested by:

- Estimating thresholds to see if the response categories were selected logically. A threshold is where the likelihood of a respondent selecting one of two response categories (e.g. Disagree and Agree) is equal. The Category Response Curves graph produced by RUMM2020 show the information required to assess whether the response categories are being used logically (ordered threshold) or illogically (disordered thresholds).
- Estimating residuals – the difference between the actual response and the expected response predicted by the model. The closer to zero the residual, the better the fit to the model. Residuals  $< \pm 2.5$  (a default value used by RUMM2020) indicate that the data fit the model well.
- Estimating summary test-fit-statistics to show overall item person interaction, item-trait interaction and reliability indices.

In addition, item difficulty locations were calculated to show the difficulty the students had in affirming each item in a facet comparison to the other four items. The construct model used for item writing specified this arrangement and the final scales needed to comply with this requirement. An associated requirement was construction of parsimonious scales comprising a small number of well-targeted items for each facet.

## **Results**

### **1. The learning capabilities scale**

The thresholds for the response categories were examined to determine how the response categories were used by the students. RUMM2020 generates Category Probability Curves. Figure 2 presents the Category Probability Curves for Item 2 “I am pleased with myself”.

The probability of a response category being selected is plotted on the vertical axis and student location is plotted on the horizontal axis. As the learning capability of students increase the probability of the student selecting a particular response category changes. Students with low logit scores (-3) have a probability of 0.65 of selecting “0 - Strongly Disagree” response and 0.35 probability of selecting “1 - Disagree”; whereas students with a logit score of just over 2 have a probability of selecting “2 - Agree” of 0.5 and “3 - Strongly agree” of 0.5.

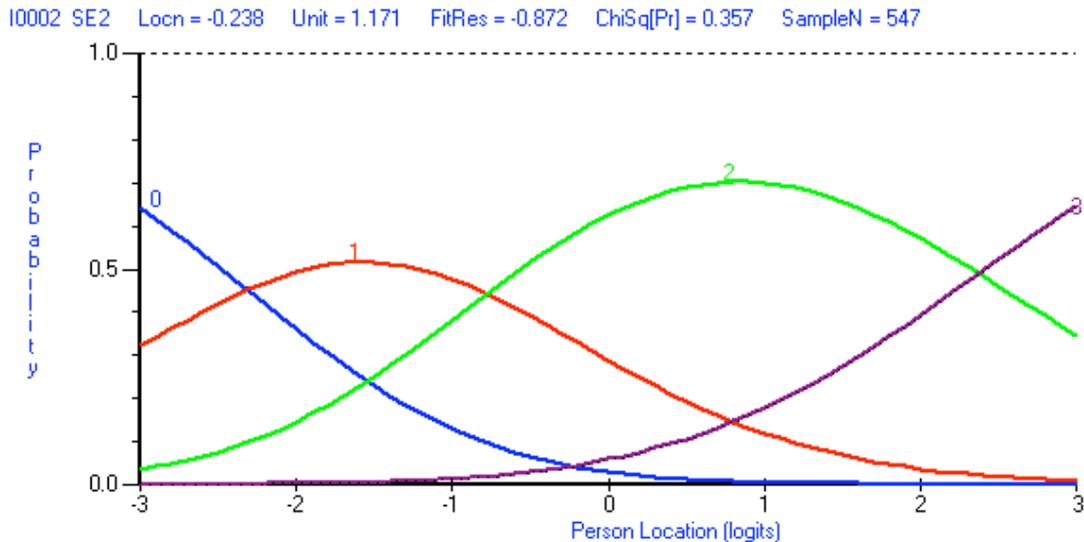


Figure 2. Category Probability Curves for Item 2 “I am pleased with myself”.

The Category Probability Curves for item 21 “I try when I need to” are presented in Figure 3. The probability of selecting Categories 0 and 1 were equal for students with a learning capability score location of -0.3 logits whereas students with the lower learning capability score location of -1.6 logits had an equal probability of selecting Categories 1 and 2. The shape and ordering of curves suggests the response categories were chosen in an inconsistent manner. A similar disordered distribution of curves was revealed for Items 1, 11, and 16.

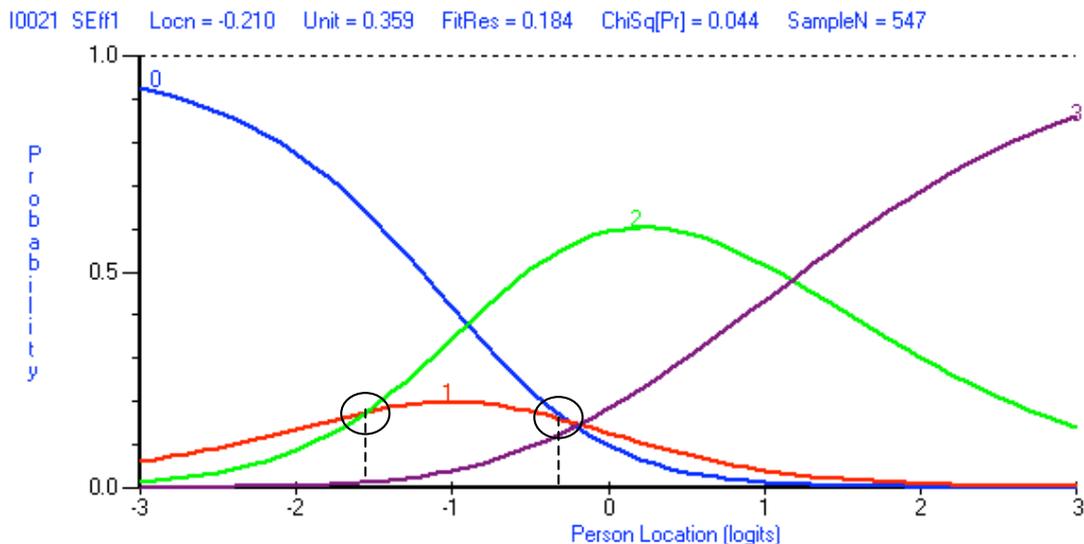


Figure 3. Category Probability Curves for Item 21 “I try when I need to”.

To understand this disordering better, the frequencies for all categories for all items was examined. This found that the two lowest response categories of “0 - Strongly Disagree” and “1— Disagree” were generally infrequently selected. Data from these two categories were combined for all items on the scale which overcame the disordering of thresholds for Items 1, 11, 16 and 21, and presented students with response options more in line with their levels of engagement.

Next a comparison was made as to how well the observed values fitted with the values predicted by the measurement model. RUMM 2020 generates an Item Characteristic Curve (ICC) for each item (see Figure 4 for Item 3 “I am proud of what I have achieved”). On this display, the student *learning capabilities* scores are plotted on the horizontal axis. These locations (measured in logits or logarithmic odds) ranged from -3.0 for students with low levels of *learning capabilities*, to +3.0 for students with more *learning capabilities*. The values predicted by the model are plotted on the vertical axis and the relation between the expected values and student scores is the s-shaped ogive. The coordinates of observed values for nine class intervals of students are plotted on the same axes. The observed scores for the nine class intervals of students were very close to the respective values predicted by the model showing the data fitted the model well. The fit residual for this item was very low at 0.02 ( $\pm 2.5$ ). By default RUMM2020 identifies fit residuals as extreme when they exceed  $\pm 2.5$ .

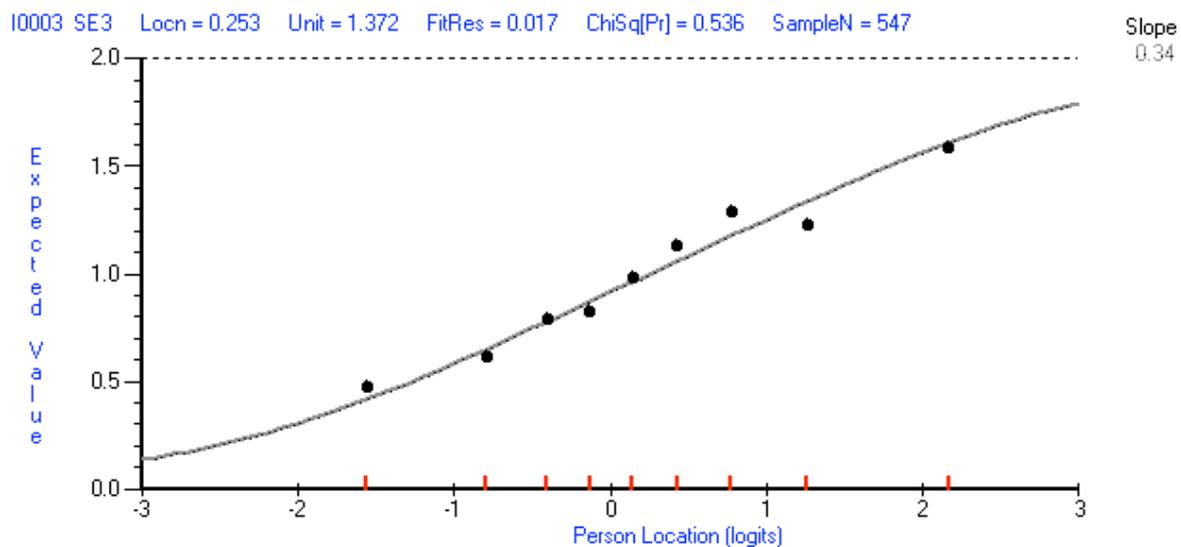


Figure 4. Item Characteristic Curve for Item 3 “I am proud of what I have achieved”.

Seven of the 25 items had fit residuals  $> \pm 2.5$  and these data were removed prior to further analyses

Finally the remaining items were examined for their location, with the aim of retaining three items per facet. It was felt that three items would be sufficient to measure the facet adequately provided they elicited data which fit the model well and presented students with a range of difficulty of affirmation commensurate with their *learning capability*. The item locations for the five items comprising self-regulation are shown in Table 3 below.

Table 3  
Individual item locations for the facet of self-regulation

Item number	Descriptor	Item difficulty location
16	SR1	-0.74
17	SR2	-0.09
18	SR3	0.30
19	SR4	0.49
20	SR5	-0.23

When items 18 and 20 were removed, the remaining three items had difficulties ordered from easy to hard as specified in the construct model and a range of difficulties from -0.74 logits to +0.49 logits. With the exception of the *self-concept* facet, three-item sub-scales were

constructed. The *self-concept* facet was problematic because four of the five items had very large fit residuals ( $>\pm 2.5$ ) and had already been removed. Hence, it was decided that the facet of self-concept would be removed from the scale.

The final *learning capabilities* scale is presented in Table 4 below.

Table 4  
*Learning capabilities scale*

	<b>In this class and in this subject...</b>		Location*
Self Esteem	SE1	I am OK	-0.53
	SE2	I am pleased with myself	0.12
	SE5	I am confident about my ability to perform well	0.33
Resilience	R2	I can overcome small problems	-0.80
	R3	I don't admit defeat easily	0.43
	R5	Big challenges bring out the best in me	0.66
Self Regulation	SR1	I make an effort	-0.69
	SR2	I am clear about my strengths and weaknesses	-0.07
	SR4	Improvements in my learning come from me	0.50
Self Efficacy	SEF1	I try when I need to	-0.72
	SEF3	I can easily identify what will be difficult	-0.24
	SEF5	I never give up	1.01

\*The differences in the locations of the items in Tables 2 and 3 are because they are from different stages (the penultimate and the ultimate) of the instrument developed process.

The summary test of fit statistics calculated by RUMM2020 for this scale are shown in Table 5. Firstly, the item-person interaction measures the extent to which the students have been rated in a logical and consistent manner. The fit residuals for both items and persons are within acceptable ranges for the mean scores and standard deviation (means should be close to zero and standard deviation should be close to 1), indicating a good overall data to model fit. Secondly, the item-trait interaction indicates the consistency of the item 'difficulties' across the range of different items on the scale. The Chi Square probability value  $<0.05$  suggests the scale is not measuring a uni-dimensional trait; however this is sensitive to large sample sizes and not to be taken too literally. Thirdly, the Separation Index indicates the degree to which locations of persons are spread across a continuum, i.e. students with higher locations attracted higher scores on the items and those with lower locations attracted lower scores on the items. Ideally this index will be close to 1.0; in this case a separation index of 0.79 indicates that the power of the test-of-fit was good.

Table 5  
*RUMM summary test-of-fit statistics – learning capabilities scale*

ITEM-PERSON INTERACTION				
	ITEMS		PERSONS	
	Location	Fit Residual	Location	Fit Residual
Mean	0.00	0.03	0.28	-0.44
SD	0.60	1.04	1.14	1.56

ITEM-TRAIT INTERACTION		RELIABILITY INDICES	
Total Item Chi Squ	137.86	Separation Index	0.79
Total Deg of Freedom	96.00	Cronbach Alpha	N/A
Total Chi Squ Prob	0.00		

LIKELIHOOD-RATIO TEST		POWER OF TEST-OF-FIT	
Chi Squ		Power is GOOD	
Degrees of Freedom		[Based on SepIndex of 0.79]	
Probability			

Figure 5 below presents the item map for the *learning capabilities* scale generated by RUMM2020. The Student capability scores and item difficulty locations are plotted on the same logit scale (range -4.0 logits to +4.0 logits). The display enables comparison of the scores of individual students and also of the difficulties of items. It shows a good match between the distribution of item difficulties and the distribution of students' *learning capability* scores.

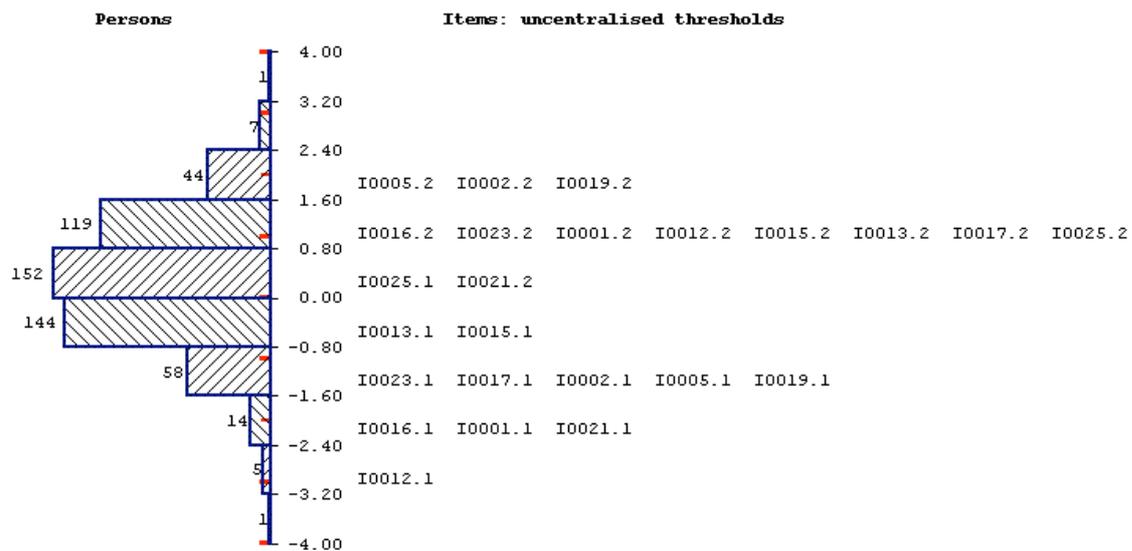


Figure 5. Item map for the learning capabilities scale.

## 2. The expectations of learning for understanding scale

Firstly, the response categories were examined for disordered thresholds. Whilst none of the data from items for the *expectations of learning for understanding* scale indicated disordered thresholds, there was a low frequency of use of the two lowest response categories. For consistency between the two scales the response categories for Strongly Disagree and Disagree were collapsed.

Next a comparison was made as to how well the observed values fit with the predicted values of the measurement model. The Item Characteristic Curves chart (ICC) for each of the items was examined. The ICC for Item 50 “Be willing to change my own views to show respect to others” is presented in Figure 6 below. When the observed scores for nine class intervals of students were plotted, these were not close to the respective values predicted by the model. The fit residual was 4.311 ( $>\pm 2.5$ ). Two items had fit residuals in excess of 2.5 ( $>\pm 2.5$ ). These two items were deleted from the *expectations of learning for understanding* scale.

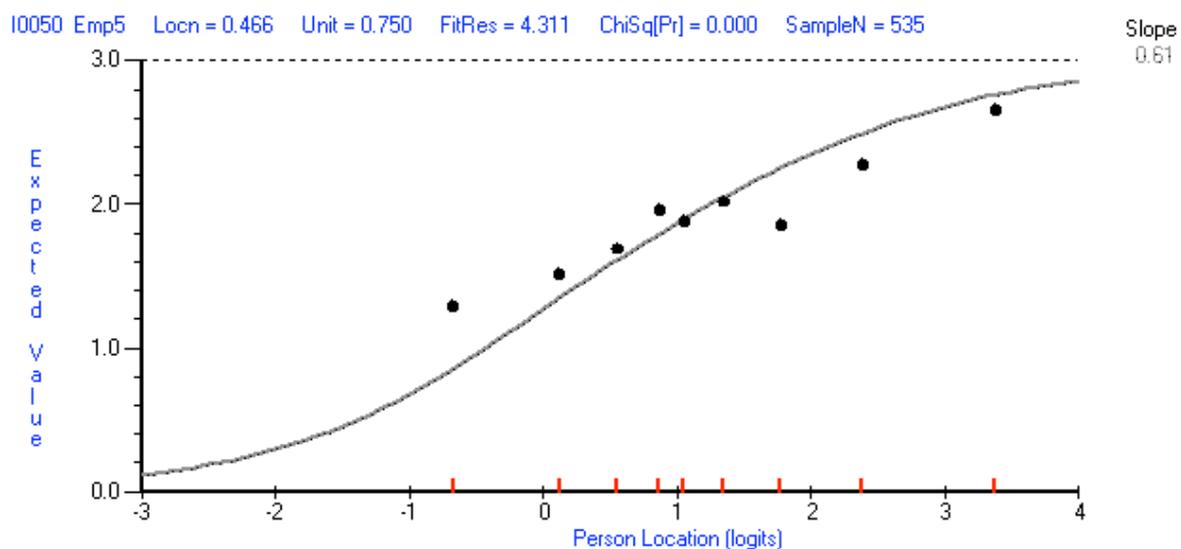


Figure 6. Item Characteristic Curve for Item 50 “Be willing to change my own views to show respect to others”.

Finally the remaining items were examined for their location, again, with the aim of retaining three items per facet, which would be ordered in terms of their location on the scale. The final *expectations of learning for understanding* scale is presented in Table 6 below.

Table 6  
Expectations of learning for understanding scale

	In this class and in this subject I am expected to ...		Location
Explanation	EXP3	Use my own ideas to explain what I've learnt	-0.12
	EXP4	Connect different ideas together	-0.13
	EXP5	Find new explanations for what I am taught	0.17
Interpretation	INT2	Show I know the work correctly	-0.47
	INT4	Show different ways of understanding the work	0.24
	INT5	Find simple explanations for things that are very complex	0.21
Application	APP1	Practise using what I've learnt	-0.51
	APP3	Use what I've learnt to do things outside of the class	0.23
	APP5	Find new ways to use what I've learnt to solve problems outside of the class	0.60

Perspective	PERS 1	Be positive towards learning about things that are new for me	-0.93
	PERS 3	Think about the views of the experts when I'm learning new things	0.39
	PERS 4	Be critical of the views of others in a fair way	0.51
	Empathy	EMP1	Try to understand the views of others
	EMP2	Try to be unbiased in understanding the views of others	0.05
	EMP3	Show how I know others feel differently from me	0.25

The summary test of fit statistics calculated by RUMM2020 for the *expectations of learning for understanding* scale is shown in Table 7. Firstly, the item-person interaction was found to be within acceptable ranges indicating a good overall data to model fit. Secondly, the Chi Square probability value >0.05 suggests the scale is uni-dimensional. Thirdly, the Separation Index of 0.89 was extremely high, indicating that the power of the test-of-fit was excellent.

Table 7  
RUMM summary test-of-fit statistics – *Expectations of learning for understanding* scale

ITEM-PERSON INTERACTION				
	ITEMS		PERSONS	
	Location	Fit Residual	Location	Fit Residual
Mean	0.000	-0.85	0.29	-0.83
SD	0.432	0.91	1.55	2.33
ITEM-TRAIT INTERACTION		RELIABILITY INDICES		
Total Item Chi Squ	116.17	Separation Index	0.89	
Total Deg of Freedom	120.00	Cronbach Alpha	N/A	
Total Chi Squ Prob	0.58			
LIKELIHOOD-RATIO TEST		POWER OF TEST-OF-FIT		
Chi Squ		Power is EXCELLENT		
Degrees of Freedom		[Based on SepIndex of 0.89]		
Probability				

Figure 7 below presents the item map for the *expectations of learning for understanding* scale generated by RUMM2020. It shows a good match between the distribution of item difficulties and the distribution of students' *expectations of learning for understanding* scores.

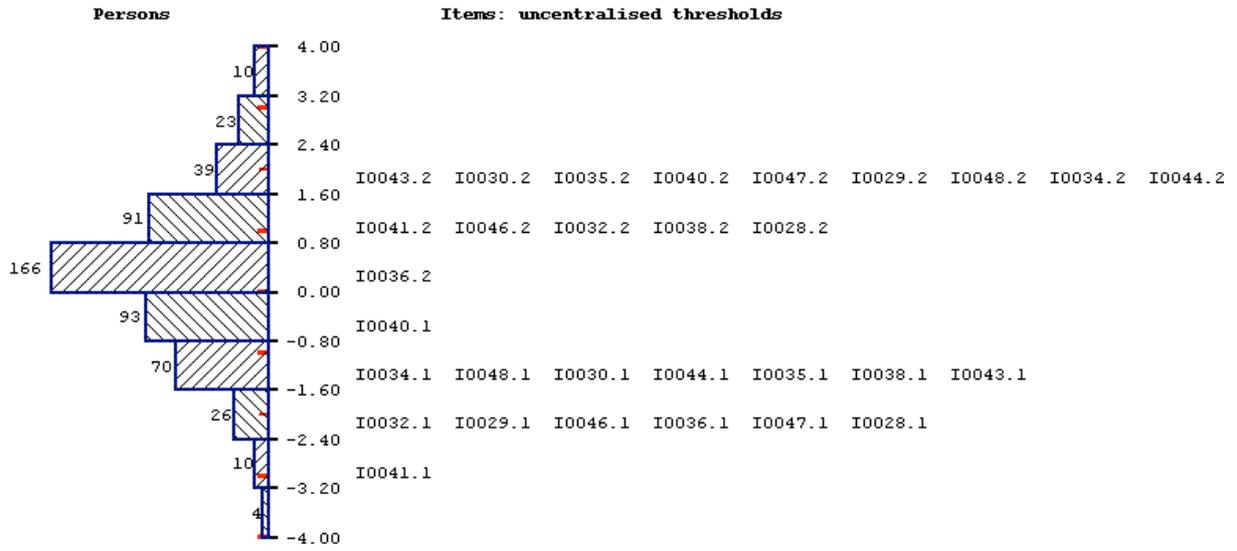


Figure 7. Item Map for the expectations of learning for understanding scale.

### 3. The relation between learning capabilities and expectations of learning – a plot of engagement

The scores of each student for *learning capabilities* and *expectations of learning for understanding* scales were plotted on the same graph (see Figure 8 below). By using the standard error in each student's score generated from the Rasch analysis, 95% confidence interval bands were produced (Bond & Fox, 2007). The locations and distributions of the coordinates shows a strong and direct relationship between the two measures which is consistent with the Figure 1 construct model of engagement.

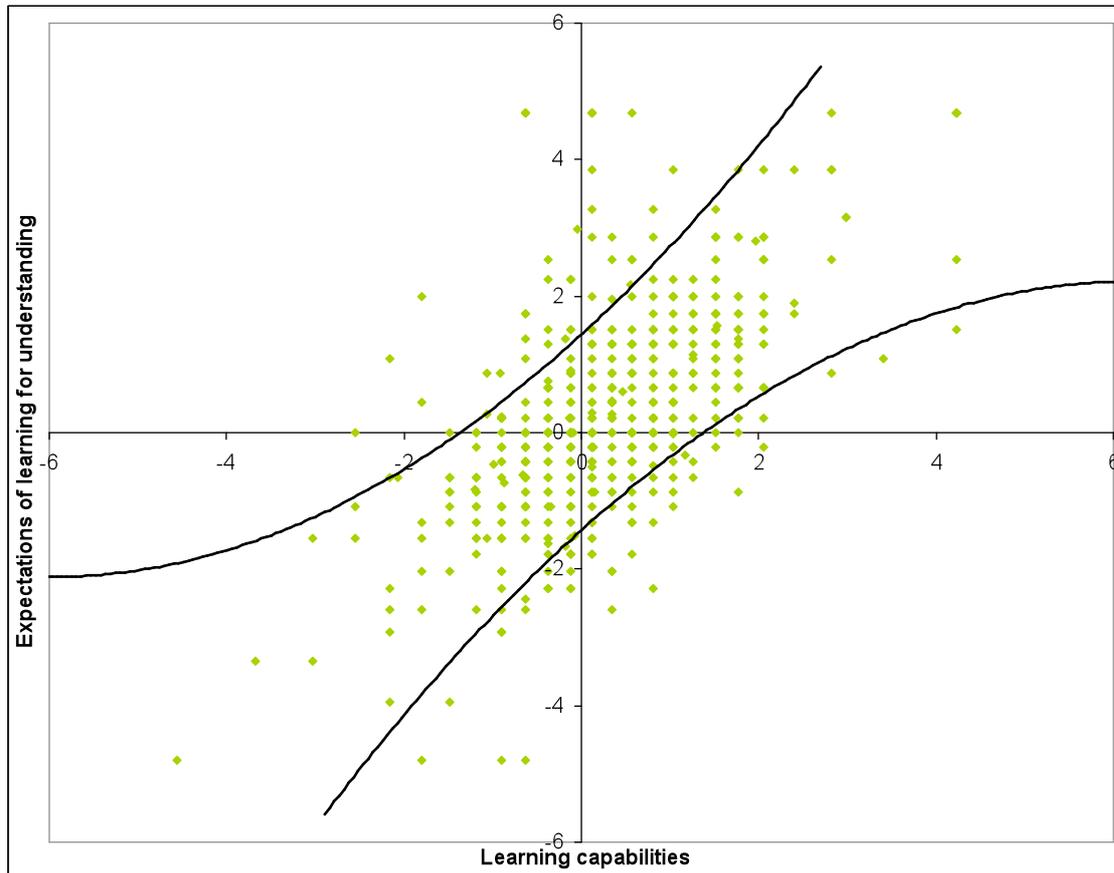


Figure 8. Scatter plot of person scores for learning capabilities and expectations of learning for understanding.

#### 4. Variance in scores for different groups of students

RUMM2020 displays the distributions of scores for different groups of students. The display is termed a person frequency distribution.

Gender: There were no statistically significant differences between the scores of boys and girls ( $F = 3.31, p < 0.05$  for *learning capabilities*; and  $F = 0.02, p < 0.05$  for *expectations of learning for understanding*). Figures 9 and 10 present the person frequency distributions for each gender.

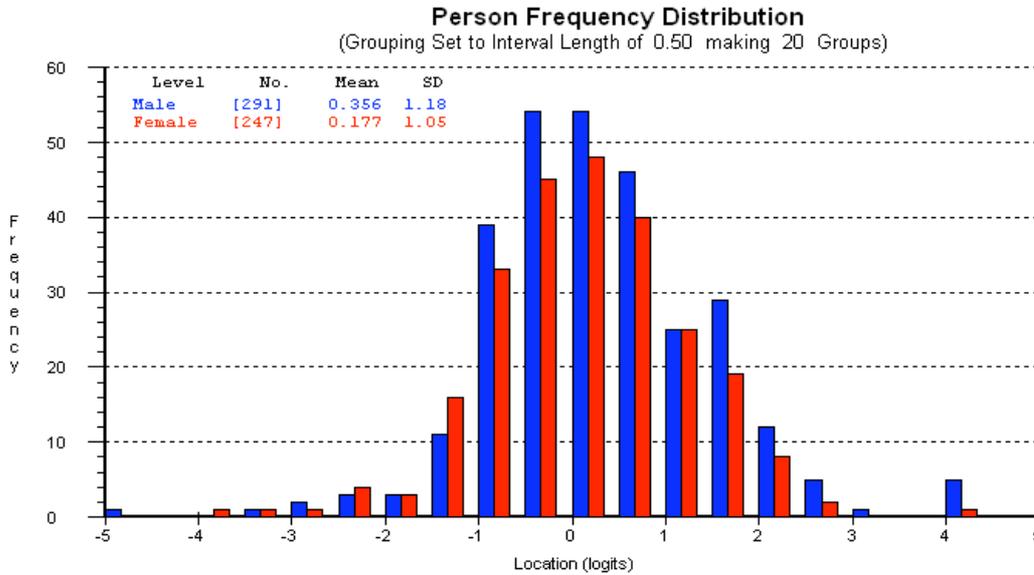


Figure 9. Person frequency distribution for the *learning capabilities* scale by gender.

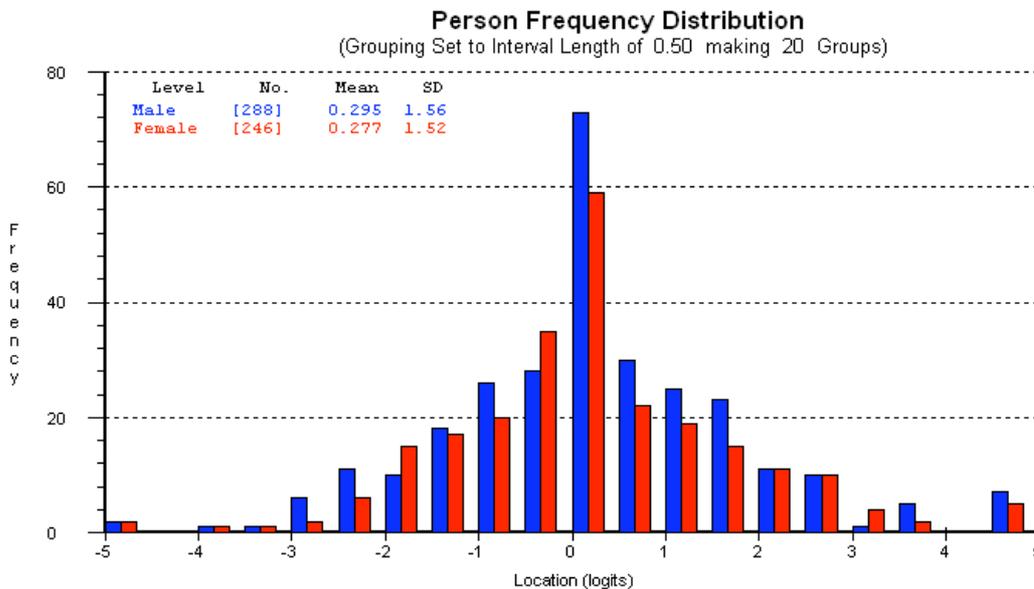


Figure 10. Person frequency distribution for the *expectations of learning for understanding* scale by gender.

School Year: Students rated their both their capabilities and expectations higher when they were from Year 10, and lower when they were from Years 8 or 9. ( $F= 5.91, p>0.05$  for *learning capabilities*; and  $F= 3.66, p>0.05$  for *expectations of learning for understanding*). These differences are illustrated in Figures 11 and 12 below.

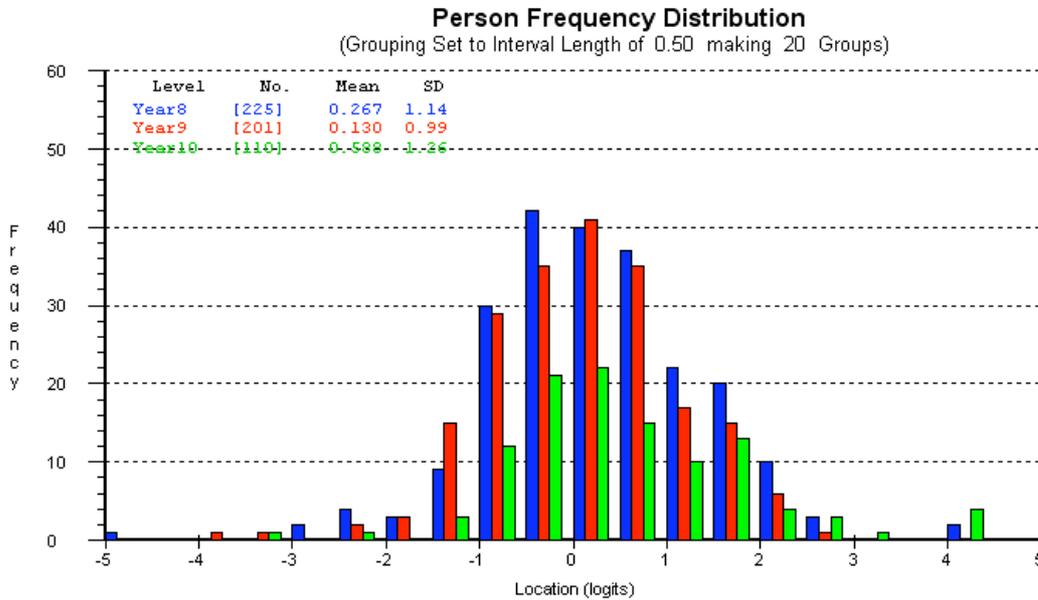


Figure 11. Person frequency distribution for *learning capabilities* scale by school year.

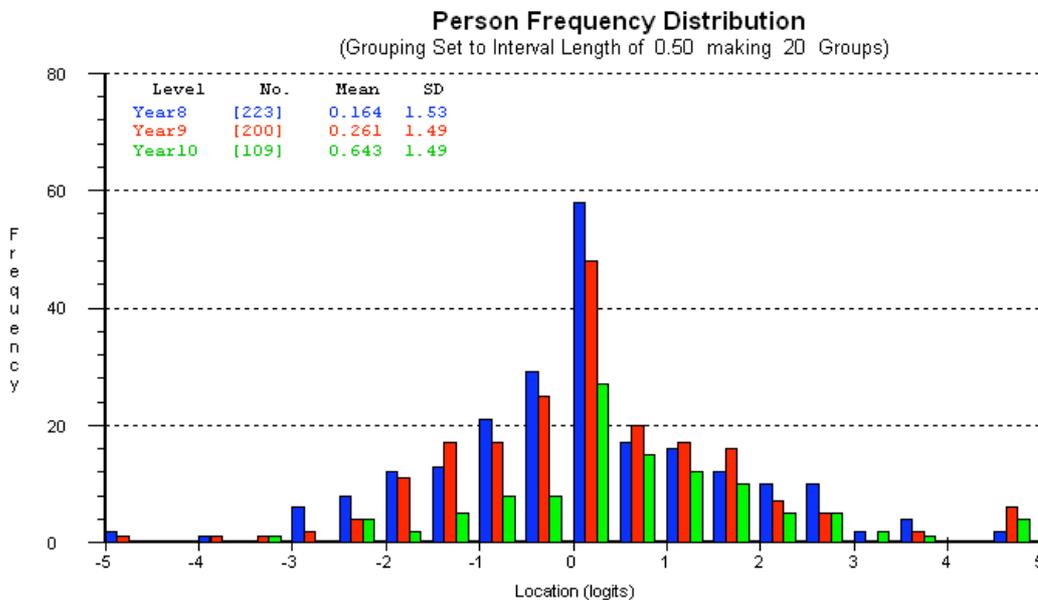


Figure 12. Person frequency distribution for the *expectations of learning for understanding* scale by school year.

Subject Area: The person scores for the four subject areas showed no statistically significant differences for either capabilities or expectations. ( $F= 1.15$ ,  $p<0.05$  for *learning capabilities*; and  $F= 0.89$ ,  $p<0.05$  for *expectations of learning for understanding*). Figures 13 and 14 present the person frequency distributions for the four subject areas.

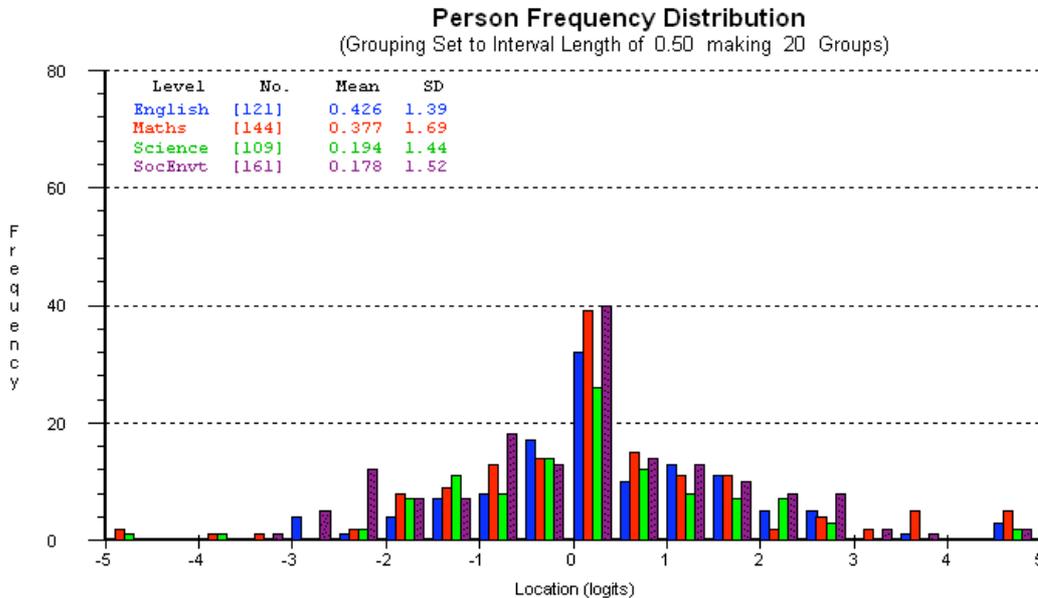


Figure 13. Person frequency distribution for *learning capabilities* scale by subject area.

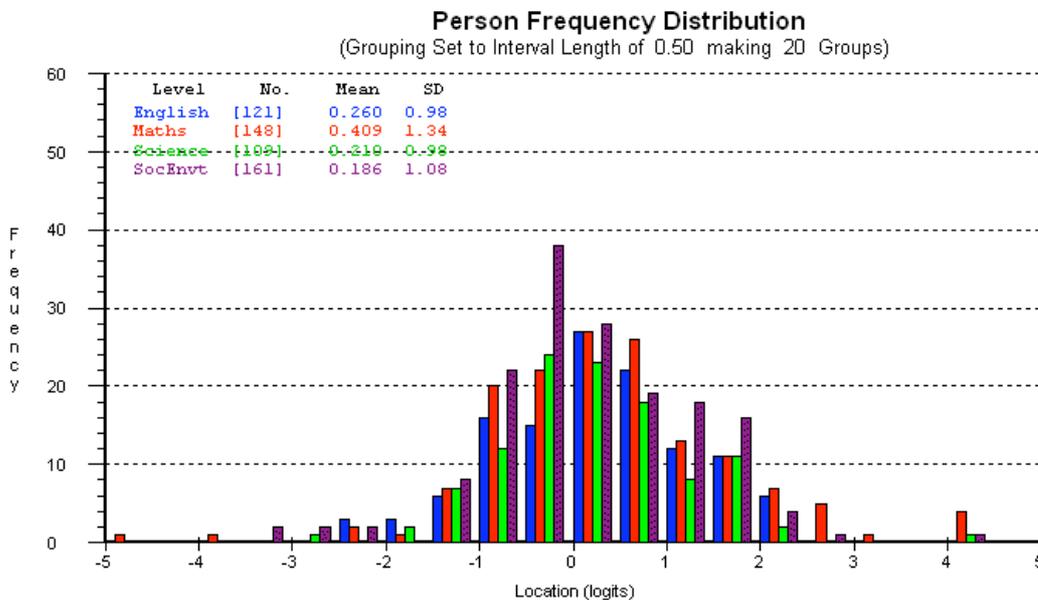


Figure 14. Person frequency distribution for the *expectations of learning for understanding* scale by subject area.

Favourite subject rating: As would be expected, students rated their capabilities and expectations higher for their favourite subjects than for their non-favourite subjects ( $F = 23.69$ ,  $p > 0.05$  for *learning capabilities*; and  $F = 21.24$ ,  $p > 0.05$  for *expectations of learning for understanding*). Figures 15 and 16 present the frequencies of the scores for the *learning capabilities* scale for students who rated the subject their favourite or not. The mean score for students rating their favourite subject was statistically significantly higher than those rating a subject that was not their favourite.

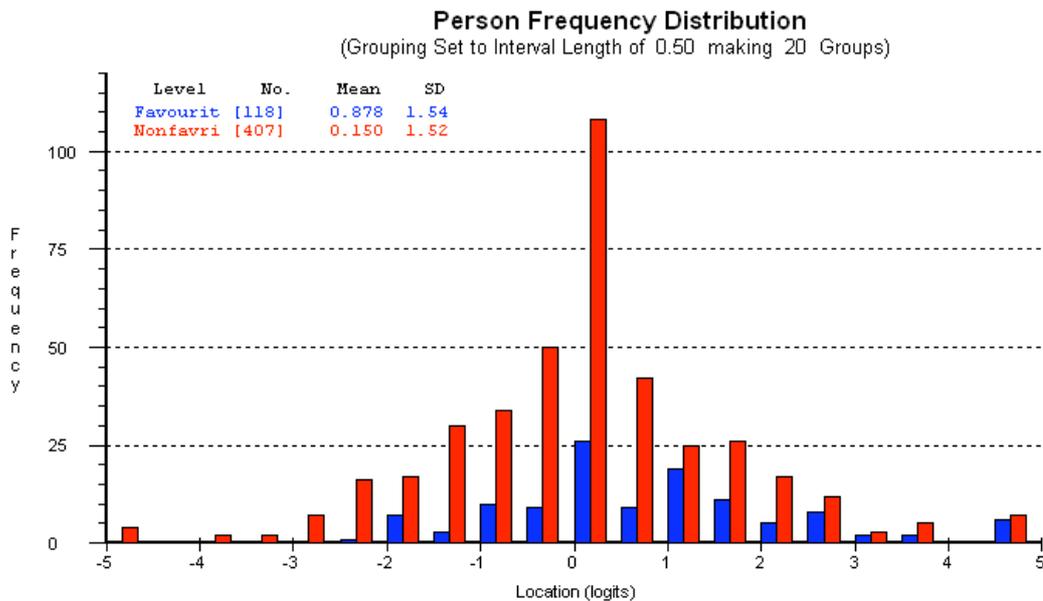


Figure 15. Person frequency distribution for *learning capabilities* scale by favourite subject rating.

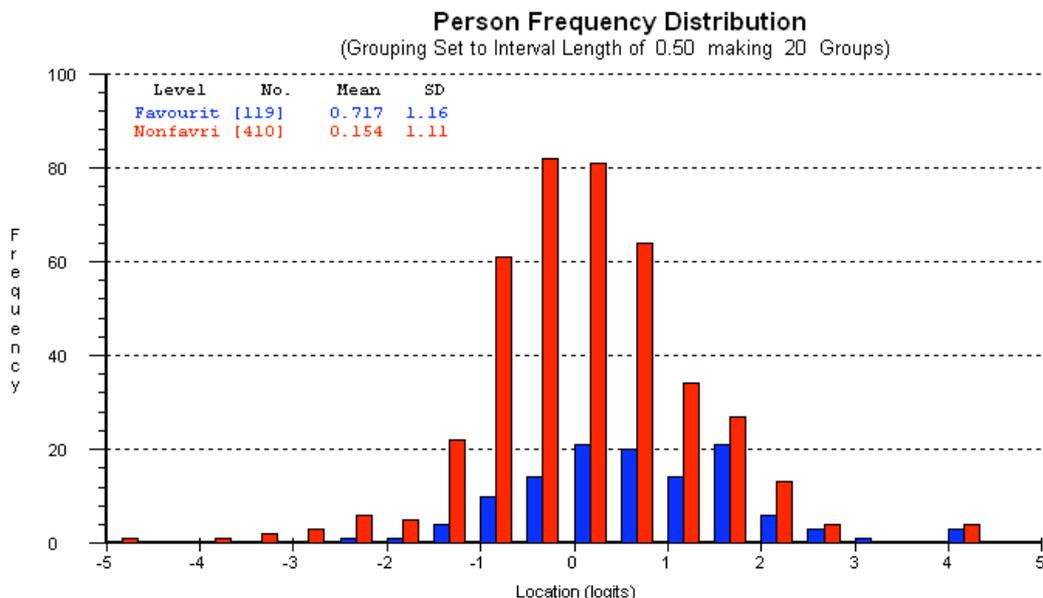


Figure 16. Person frequency distribution for *expectations of learning for understanding* scale by favourite subject rating.

## Conclusions

The paper has mainly focused on the analytical and technical issues of scale development and testing. The data was analysed using RUMM2020 to investigate whether a parsimonious instrument could be developed that can measure student *learning capabilities* and *expectations of student learning for understanding* on linear scales. Two scales could be developed and scores from each were plotted pair-wise to show *student engagement in classroom learning*.

In the next phase of the study the self-report survey instrument will be administered to a large number of secondary school students in Western Australia, along with a scale which measures features of the classroom learning environment. The results will provide useful information on the relationships between the classroom learning environment and student engagement in classroom learning.

It is hoped that such a self-report instrument, which is simple to use will be useful for classroom practitioners and administrators who wish to examine where and how to make changes to increase student engagement and/or re-engage disengaged students.

## References

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## Appendix 1

### SURVEY OF STUDENT ENGAGEMENT IN CLASSROOM LEARNING

School .....		Office use only	<input type="text"/>
Year .....			<input type="text"/>
Student gender (tick box) .....	Male <input type="checkbox"/> .....Female.... <input type="checkbox"/>		<input type="text"/>
Subject .....			<input type="text"/>
Is this my favourite subject? (Yes or No) .....			<input type="text"/>

#### INSTRUCTIONS

- If you **strongly agree** with the statement, please tick 4  
 If you **agree** with the statement, please tick 3  
 If you **disagree** with the statement, please tick 2  
 If you **strongly disagree** with the statement, please tick 1

<input checked="" type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
<input type="checkbox"/> <sub>4</sub>	<input checked="" type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input checked="" type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input checked="" type="checkbox"/> <sub>1</sub>

#### PART A: How I see myself in this class

In this class and in this subject		Strongly Agree	Agree	Disagree	Strongly Disagree
SE1	I am OK	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SE2	I am pleased with myself	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SE3	I am proud of what I have achieved	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SE4	I am confident to make choices and decisions	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SE5	I am confident about my ability to perform well	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
In this class and in this subject		Strongly Agree	Agree	Disagree	Strongly Disagree
SC1	I am aware of what others do	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SC2	I compare myself with others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SC3	Competing with others is OK	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SC4	Comparing myself to others changes what I do	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SC5	I am one of the best students but still want to improve	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
In this class and in this subject		Strongly Agree	Agree	Disagree	Strongly Disagree
R1	Everyone faces problems at some time	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
R2	I can overcome small problems	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
R3	I don't admit defeat easily	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
R4	I bounce back after having difficulties	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
R5	Big challenges bring out the best in me	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
In this class and in this subject		Strongly Agree	Agree	Disagree	Strongly Disagree



		e			
SR1	I make an effort	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
SR2	I am clear about my strengths and weaknesses	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
SR3	I know how to learn better	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
SR4	Improvements in my learning come from me	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
SR5	I am in control of my learning	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1

In this class and in this subject

		Strongly Agree	Agree	Disagree	Strongly Disagree
SEF1	I try when I need to	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SEF2	I need to be successful	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SEF3	I can easily identify what will be difficult	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SEF4	I don't give up easily	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
SEF5	I never give up	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>

**PART B: What is expected of me**

In this class and in this subject, I am expected to

		Strongly Agree	Agree	Disagree	Strongly Disagree
EXP1	Talk or write about things	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EXP2	Share my own ideas with others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EXP3	Use my own ideas to explain what I've learnt	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EXP4	Connect different ideas together	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EXP5	Find new explanations for what I am taught	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>

In this class and in this subject, I am expected to

		Strongly Agree	Agree	Disagree	Strongly Disagree
INT1	Repeat what I have been told	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
INT2	Show I know the work correctly	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
INT3	Explain to other students how the work can be done	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
INT4	Show different ways of understanding the work	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
INT5	Find simple explanations for things that are very complex	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>

In this class and in this subject, I am expected to

		Strongly Agree	Agree	Disagree	Strongly Disagree
APP1	Practice using what I've learnt	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
APP2	Use what I've learnt to complete new tasks	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
APP3	Use what I've learnt to do things outside of the class	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
APP4	Use what I've learnt to solve problems outside of the class	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
APP5	Find new ways to use what I've learnt to solve problems outside of the class	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>

In this class and in this subject, I am expected to

		Strongly Agree	Agree	Disagree	Strongly Disagree
PERS 1	Be positive towards learning about things that are new for me	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
PERS 2	Think about my own views when I'm learning new things	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
PERS 3	Think about the views of the experts when I'm learning new things	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
PERS 4	Be critical of the views of others in a fair way	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
PERS 5	Develop an understanding of the subject that goes beyond the classroom and school	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>

In this class and in this subject, I am expected to

		Strongly Agree	Agree	Disagree	Strongly Disagree
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		y Agree	e	e	y Disagre e
EMP1	Try to understand the views of others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EMP2	Try to be unbiased in understanding the views of others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EMP3	Show how I know others feel differently from me	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EMP4	Show sensitivity and concern for the views of others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>
EMP5	Be willing to change my own views to show respect to others	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>1</sub>