DEVELOPMENT OF EDUCATION ADJUSTMENT PROGRAM (EAP) ADJUSTMENT PROFILE INSTRUMENTS

A report to the Performance Monitoring and Reporting Branch

EXECUTIVE SUMMARY

In November 2004 Education Queensland commissioned a research team from the University of Queensland to examine, report and make recommendations on the characteristics of a newly developed assessment instrument, the Education Adjustment Program Adjustment Profile (EAP profile). The terms of reference for the project included the following deliverables:

- a description of the methodologies developed to analyse the data collected during the trailing of the EAP profile;
- a description of the relationship between the EAP scores of students with disabilities and their ascertainment levels, across student groups, systems and locations;
- the likely costs associated with future data analysis methods and the long-term maintenance of analyses and quality control; and
- one or more algorithms that would enable the ranking of students according to the teaching adjustments needed, across education jurisdictions and disability categories.

This report addresses those project deliverables.

The project evolved from the development of an Education Adjustment Program intended to provide funds to enable students to gain access to education programs in the most inclusive settings possible. The EAP profile was designed within Education Queensland to assess student eligibility for adjustment support funding and was trailed state wide in Term 4, 2004. The EAP would operate in a distinctly different manner to the current approach used to support Students With Disabilities (SWDs). The current model is based upon resource distribution reliant on a consultative/diagnostic process known as Ascertainment that seeks to establish the educational needs that arise from a disability or impairment with the intent of supplementing local educational services and provision for such students.

The analyses undertaken indicate that the EAP profile has the requisite psychometric characteristics and integrity and is a valid and reliable instrument. This report, therefore, supports a change from the current funding model using ascertainment level(s) to one based directly on students' EAP profiles. Consideration was given of the need for two levels of funding, a base allocation

and an enhancement component, but no compelling reasons were found to sustain such a recommendation. Scrutiny of the analyses and the raw data suggested a uni-dimensional funding model based upon the EAP Total Score would be a significant improvement in the equitable distribution of (notional) funding to all students who qualify for support under the Education Adjustment Program.

The research team makes the following recommendations:

1. The EAP profile is amended according to suggestions made in this report and an on-line form created and trialed forthwith.
2. The EAP profile is introduced within a suitable timeframe as a means of determining the notional funding allocation to students with disabilities across Queensland and administered and monitored in accordance with existing Education Queensland procedures and protocols.
3. An EAP Total Score alone is used as a basis for the calculation of notional funding for students with disabilities.

LIST OF ABBREVIATIONS

Below is a list of abbreviations found in the report, and their definitions.

Asc	Ascertainment
ASD	Autism spectrum disorder
Consltn	(in relation to) the “Consultation” factor in the confirmatory factor analysis
EAP	Education Adjustment Program
EAP profile	Education Adjustment Program Adjustment Profile
HAL	Highest ascertainment level (determined by the ascertainment process)
HI	Hearing impairment
High	(in relation to) highest EAP profile Total Score achieved
IEP	Individual education plan
II	Intellectual impairment
Instructn	(in relation to) the “Instruction” factor in the confirmatory factor analysis
Low	(in relation to) lowest EAP profile Total Score achieved
M	mean score
OAL	Other Ascertainment Level (determined by the ascertainment process)
PI	Physical impairment
Poss	(in relation to) the maximum possible EAP profile Total Score achievable
GFI	Goodness of Fit Index (a confirmatory factor analysis statistic)
Prep	(in relation to) the “Preparation” factor in the confirmatory factor analysis
SCOLR	Students with Disabilities Central On-Line Reporting database
SD	standard deviation
SED	Severe emotional disorder
SLI	Speech-language impairment
SWDs	Students with disabilities (an Education Queensland classification)
VI	Vision impairment

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BACKGROUND

In November 2004 Education Queensland commissioned a research team from the School of Education and the Centre for Economic Policy Modelling at the University of Queensland to:

- examine and report on the characteristics of a newly developed Education Adjustment Program Adjustment Profile (EAP profile) intended to identify the adjustment needs of Queensland students with disabilities (SWDs); and
- recommend one, or a series of, algorithms that would allow for the ranking of students according to the teaching adjustments needed.

The terms of reference for the project were as follows:

- examine the reliability and validity of the EAP profile trialed in Term 4 2004;
- examine the relationship between the EAP profile and the existing ascertainment process in terms of describing student educational needs;
- develop an algorithm, or series of, algorithms that will link resource distribution with scores on the EAP profile; and
- develop one or series of algorithms that will allow for on-going statistical analysis of the EAP profile as an on-line instrument that would provide feedback to schools and districts.

Project deliverables were to include the following (listed here in summary form only):

- a description of the methodologies developed to analyse the data collected during the trial of the EAP profile;
- a report on the relationship between students' EAP scores and ascertainment level for student groups across systems and locations;
- a report on the likely costs associated with data analysis methods, and the long-term maintenance of analyses and quality control;
- a method for ranking students according to the teaching adjustments needed across all education jurisdictions and disability categories; and
- a verbal report to the contractor following completion of the final report.

A steering committee was established at the commencement of the EAP project to guide the development of the EAP and the EAP profile. Members of that steering committee consisted of representatives of Education Queensland from Curriculum Strategy Branch, Performance Monitoring and Reporting Branch, Learning and Development Branch, and Human Resources. There were also representatives of Queensland Catholic Education Commission, the Association of Independent Schools – Queensland, representatives of the Secondary,

Primary and Special School Principal Associations, and the Children's Commission.

When the research team became involved in the project, regular meetings were held with representatives of the Performance Monitoring and Reporting Branch to discuss the Invitation to Offer document and the tender document provided by the University team to Education Queensland. The research team then met with Education Queensland staff on approximately a weekly basis to discuss the data analysis and preliminary findings.

Funding for students with disabilities

Current SWD funding is based upon a resource distribution model reliant on a consultative/diagnostic process known as Ascertainment. The process is based on educational needs arising from a disability or impairment and the intent is to supplement local services and facilitate provisions for such students. Support to SWDs is ultimately provided by, or accessible through, specialist personnel.

Ascertainment

The ascertainment process was introduced by Education Queensland in the 1980s, reviewed in 1997, and revised in 2002. Ascertainment is intended to:

- identify SWDs and the resulting implications for educational outcomes;
- confirm a diagnosis of an impairment or disability in one category (or more) recognised and defined by Education Queensland for Ascertainment;
- consider and report the student's current curriculum, teaching, learning, and health and safety support requirements; and
- identify required program variations and the level of specialist educational support required by SWDs to maximise their educational outcomes.

The ascertainment process begins when a student is considered to have special educational needs arising from a disability or impairment, and requires special educational support. Consultations occur among stakeholders, including the student's classroom teacher, specialist teacher, guidance officer, parents, the student, and other relevant professionals. A medical opinion or diagnosis is often required to confirm a specific condition in one (or more) of the following categories used at the time of writing:

- Autism spectrum disorder (ASD);
- Speech-language impairment (SLI);
- Intellectual impairment (II);
- Hearing impairment (HI);
- Physical impairment (PI);
- Vision impairment (VI);
- Severe emotional disorder (SED); and

- Combinations of these categories (hereafter referred to as multiple ascertainments).

Six levels of impairment are recognised, Levels 1 through 6, the latter indicating the highest level of need.

Level 1 involves an initial consultation, an intervention with referral if needed, assessment, contact with parents, follow up, and referral to another agency, if appropriate. Level 1 is also used as a preliminary classification assigned to indicate that the student has been entered into the system and is awaiting the ascertainment process.

Level 2 involves management activities only, that is, monitoring of student performance, a review of performance, professional support of up to three hours per term but not necessarily personal contact with the individual student.

Level 3 involves the enactment of a support program, consultation and goal setting (review of teaching strategies, evaluation, resources, classroom management), the facilitation of appropriate in-class assistance (e.g., peer tutoring), and professional support of up to three hours per month.

Level 4 involves the formation of a support program, shared implementation, cooperative planning, direct assistance in program implementation, and professional support of up to three hours per fortnight;

Level 5 also involves the formation of a support program, shared implementation and modification, major input into program design and operation, a modified curriculum, and up to three hours of support per week;

Level 6 involves the development of an alternative program, the preparation of individual education plan (IEP), an alternative curriculum, and support in an integrated or segregated setting if this is considered appropriate.

Results of the ascertainment process are recorded on a school-by-school basis into the Students with Disabilities Central On-Line Reporting database (SCOLR), the live system implemented throughout Queensland schools in 2001. Notional resource dollars are allocated to a school district based upon the ascertainment levels of students in any district.

There has been a range of criticisms of the ascertainment process. These concerns have drawn attention to complications with the process itself and to inequities in the distribution of funds to school districts, school, and students.

Education Adjustment Program Adjustment Profile

In 2004, Education Queensland developed an instrument known as the Education Adjustment Program Adjustment Profile (EAP profile) that was designed to assess student eligibility for *adjustment support* funded under the

Education Adjustment Program following a finding that the student qualifies under an Education Queensland recognised funding category. It is intended that the profile will be used alongside the existing ascertainment process and will provide additional information beyond the student's diagnosis and level of need. The short- to medium-term objective is to determine the support needs of eligible students within an education jurisdiction via the EAP profile and the necessary teaching adjustments to enable students to gain access to the curriculum and participate in appropriate education programs.

The EAP profile was designed to measure:

- frequency of adjustments made across six focus areas relating to the delivery of an educational program to a specific student, namely
  - Curriculum;
  - Communication;
  - Social Participation/Emotional Well-being;
  - Health and Personal Care;
  - Safety; and
  - Learning Environment/Access;
- extent of adjustments made across all areas; and
- pervasiveness of adjustments made across all areas.

The trial instrument has 74 questions that sought an evaluation from persons who were familiar with the educational performance and needs of the students in terms of the education adjustments being made (or needed).

The number of items in each focus area varied. In addition to items dealing with specific adjustment needs, two "Overall Rating" items were included at the end of each section that sought a global estimate (on a 10-point scale) of the (a) frequency, and (b) extent of teaching adjustments required.

The EAP profile was developed and administered to a representative sample of SWDs across Queensland in Education Queensland schools and also in the non-state sector. Teacher feedback and comments were sought through consultation prior to the preparation of the trial instrument.

Structure of the report

The balance of this report is presented in the following chapters:

- Trial of the EAP profile
- Descriptive statistics
- Consistency and validity of the EAP profile
- The EAP profiles of specified student groups
- Development of funding equations
- Maintaining an EAP database
- Recommendations

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TRIAL OF THE EAP PROFILE

The initial administration of the EAP profile was conducted in 679 schools across Queensland in Term 4 2004. A stratified sampling procedure was adopted to collect data on students whose details were maintained in the Students with Disabilities Central On-Line Reporting (SCOLR) database according to their proportional representation across jurisdictions, geographic location, age, gender, disability categories, and ascertainment level.

During the data collection process, three minor adjustments to the stratified sampling procedure were made. First, if a target student was not available for inclusion in the trial, the nominated school coordinator selected another. Substitutions were commonly made of students with a higher level of need than the original target. Second, it was decided to over-represent students with hearing impairments with ascertainment levels below Level 4. Students with hearing impairment are most typically at these levels and the intent of the over-representation was to ensure that the diversity of student characteristics was available for scrutiny. Third, an effort was made to increase the proportion of Indigenous students to ensure that there was sufficient data in the trial to make comment on Indigenous students' needs.

A member of the research team held one consultation with the Program Manager (EAP Implementation Team) prior to the trial and provided some comments on the general structure of the EAP profile. Some amendments were made to the draft instrument subsequent to that meeting. The research team had no further involvement in the construction of the trial instrument or the data collection process.

Methodology

Early in December 2004, the research team received the full data from the trial via CD from Performance Monitoring and Reporting Branch, Education Queensland. Six data sets included coded responses to the EAP profile items in six files related to each focus areas (i.e., Curriculum, Communication, Social Participation/Emotional Well-being, Health and Personal Care, Safety, and Learning Environment/Access). Three additional files provided demographic details of the student sample, an item legend, and details of the participating schools.

The data sets were combined into a single file and checks made in regard to missing data and anomalies; several minor amendments were made following consultation with Education Queensland staff. Numerical re-coding of item responses was then undertaken to establish an implied interval scale that would

permit parametric statistical analysis. Data analysis was then designed to explore the characteristics of the full scale and the six area subscales according to the project terms of reference. Principal component analyses, optical scaling, and confirmatory factor analyses were undertaken to reveal the dimensionality of the sub-scales and to identify non-discriminating items.

Univariate and multivariate analyses of variance and regression analyses were performed to elaborate the psychometric characteristics of the instrument, including internal consistency, and aspects of validity.

Profiles of student sub-populations were then prepared using a range of parametric and nonparametric statistical procedures with a view to establishing the relationship between students' EAP profile scores and ascertainment information.

The sample

Table 1 shows the breakdown of students who have data entered into the Students with Disabilities Central On-Line Reporting (SCOLR) by ascertainment category and level.

Table 1
Ascertainment Categories and Levels Associated with the Students with Disabilities in the Sample (N = 1,565)

Ascertainment level	**ASD**	**HI**	**IAS**	**II**	**PI**	**SLI**	**VI**	**Total**
2	7	507		6	57	9	39	625
3	43	507			228	7	72	857
4	181	213		258	412	106	40	1,210
5	1,948	180	57	3,406	399	1,171	93	7,194
6	2,207	241	695	3,274	390	296	166	7,269
Total	4,386	1,648	752	6,944	1,426	1,589	410	17,155

The trial sample was 1,565 students. We undertook a comparison of the sample with what is ostensibly the population. It was necessary to adjust the trial sample data slightly to enable comparison as the sample contained 2 students at Level 1, and 5 students with an ascertainment of Severe Emotional Disorder (SED), a category not included in the Education Queensland documentation. The comparable sample data are shown in Table 2.

Z-tests were undertaken to compare the proportion of student in each ascertainment category in the total population and sample. These analyses revealed no statistically significant differences ($p > .05$) as follows, ASD: $Z = .66$; HI: $Z = .21$; IAS: $Z = .1.04$; II: $Z = .05$; PI: $Z = 1.16$; SLI: $Z = .1.52$; VI: $Z = 1.40$ ($Z_{crit} = 1.96$). This demonstrates comparability of category distribution across the two data sets.

Table 2
Characteristics of the SWD Sample by Level by Category

Ascertainment level	ASD	HI	IAS	II	PI	SLI	VI	Total
2		38			5		1	44
3		29			9		2	40
4	15	23		17	38	102	4	109
5	185	25	6	288	35	114	14	667
6	187	32	53	328	34	38	26	698
Total	387	147	59	633	121	164	47	1,558

NB: 151 individuals were ascertained as having more than one impairment.

At the time of drafting this report (14 January 2005), the students in the sample ranged in age from 5 years 0 months to 19 years 1 month (mean = 12.0 years; standard deviation 3.10 years). Respondents identified 1,050 males and 512 females (gender data for 3 individuals were not provided).

Of the total sample, 63 students were in living in foster care arrangements, 125 were identified as have Aboriginal or Torres Strait Islander background and, of these, 109 were of Torres Strait Islander descent.

Students were distributed across regular and special needs education settings. Five hundred and sixty-five attended regular classes, 155 were in special classes, 674 were in special education units, and 171 attended special school. There were 1,418 students in Education Queensland schools and 147 in the non-state sector. It should be noted that students in the non-state sector were sampled as it is anticipated that Education Queensland will include these students in its fiscal planning in 2006.

Numerical coding

Originally, the EAP profile data from a sample of 1,565 SWDs were entered into digital files primarily in alphabetic form. Most items sought a response in terms of the relative frequency of adjustments (e.g., “Once per semester”, “On about a weekly basis”, “Continual and constant”). Variation in the number of response options existed throughout the instrument (one to four alternatives with the additional “Not applicable”). There was some variation in the temporal descriptions (e.g., “Continual and constant”; “More frequently than once per day”) across the six focus areas.

The research team recoded the data into a numerical form (“Not applicable” was left as a blank) based upon an implied interval scale as follows:
1: Once per semester
2: From once per term to once per month
3: On about a weekly basis
4: On about a daily basis
5: More frequently than once per day

6: Continual and constant

It was assumed that those making judgments about the frequency of adjustments recognised that they were being asked to respond along a continuum ranging from “very infrequently” to “continuously.” Extent and pervasiveness of adjustments were reflected in the nature of the adjustments being considered (e.g., Monitoring of health status; Administration of specialised health care procedure that require specific training)

3
DESCRIPTIVE STATISTICS

In this section, we report the general characteristics of the EAP profile. We provide details of the distribution of scores and the dimensions that appear to form the structure of the instrument. Throughout, the research team were concerned only with matters related to the terms of reference, not a detailed description of the characteristics of the sample or explanation of particular distributions were only included when this was necessary to inform or clarify the analysis of the EAP profile.

Total and subscale scores

An EAP Total Score for each student was calculated. This was based on item responses summed across the instrument but excluded the 12 "Overall Rating" items that appear at the end of the focus areas. These additional 12 items asked respondents to consider the overall frequency and extent of adjustments made and, as such, could be taken as alternative ways of describing earlier ratings and, therefore, were not fully independent of the those items.

The EAP Total Score represents the *magnitude of adjustments* needed across the six focus areas. EAP Total scores ranged from 2 (indicating the most minimal adjustments) to 343. The distribution is shown in Figure 1 below. The mean score was 168.4 (SD = 64.07) out of a possible 345.

The curve over the distribution shows the relationship between the scores and a predicted normal distribution.

A second distribution was generated which included the 12 Overall Ratings. EAP Total Scores ranged from 12 to 463 (Figure 2). The mean score of this distribution was 236.7 (SD = 89.56) out of a possible 465.

Pearson's Product-Moment correlation coefficient was calculated to show the relationship between the two sets of total scores. This was r = .99 (p < .001, 1-tailed), a near perfect correlation. It was decided that only the EAP Total Scores (i.e., excluding Overall Ratings) would be used in further analyses.

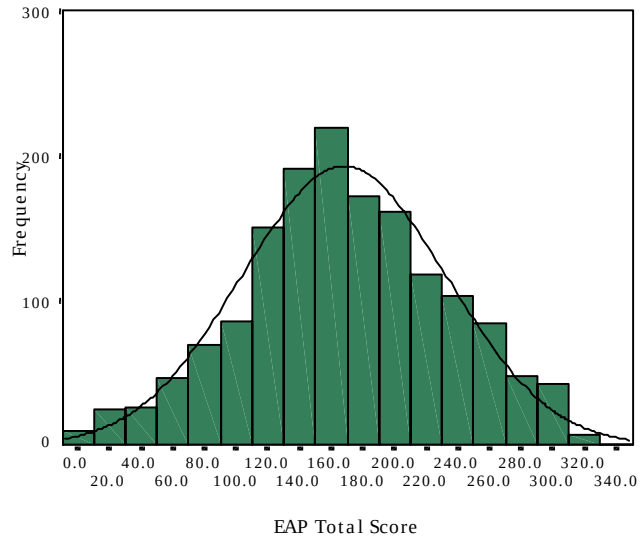

Figure 1: Distribution of Students' EAP Total Scores Excluding "Overall Ratings"

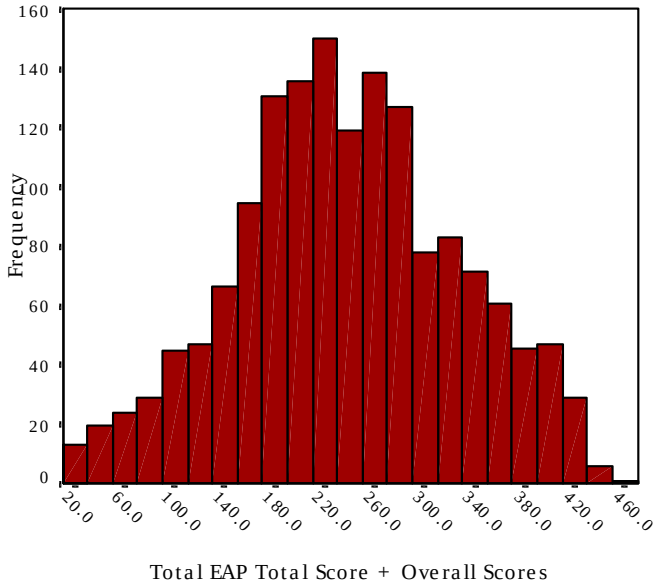

Figure 2: Distribution of Students' EAP Total Scores Including "Overall Ratings"

Table 3 gives the summary of means (*M*), standard deviations (*SD*), lowest score achieved (*Low*), highest score achieved (*High*), and maximum possible scores for each scale (*Poss*), plus the EAP Total Score.

Table 3
Means, Standard Deviations, Lowest Score, Highest Score, and Maximum Possible Scores for Each of the EAP Focus Areas and EAP Total Score

Focus area	*M*	*SD*	*Low*	*High*	*Poss*
Curriculum	48.8	15.77	0	70	70
Communication	46.5	18.42	0	91	91
Social/emotional	28.7	15.00	0	56	56
Health	7.7	8.70	0	37	37
Safety	17.5	12.00	0	52	52
Environment	21.1	10.45	0	39	39
EAP Total Score	168.0	64.55	0	343	345

Four students scored zero indicating that they required no educational adjustments whatsoever. One of these students had vision impairment and was ascertained at Level 2 and the other three had hearing impairment, two at ascertainment Level 2 and the third at Level 3.

Distributions for each of the subscales (excluding the Overall Rating items) are shown in Figures 3 to 8. The curve over the distribution shows the relationship between the scores and a predicted normal distribution.

The distribution of scores in each area emphases the common need of students. Figure 3 is a negatively skewed distribution showing that the bulk of curriculum adjustments are relatively extensive with few students receiving low total scores.

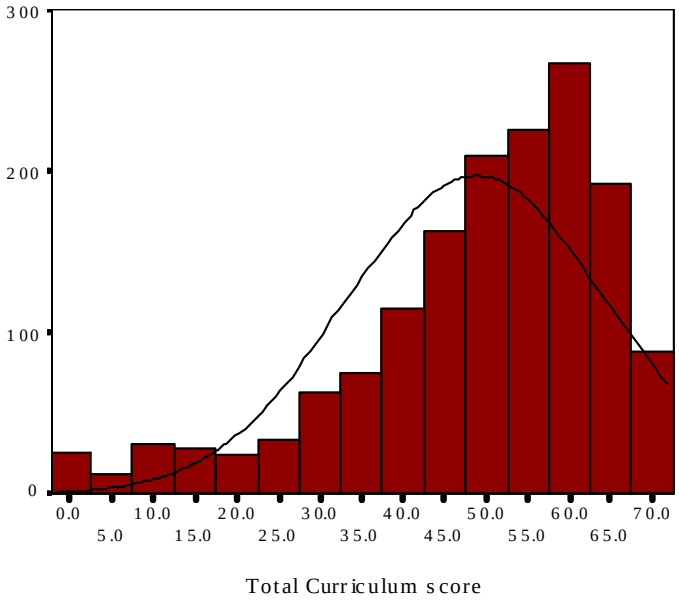

Figure 3: Distribution of Students' Total Curriculum Adjustment Scores

In contrast, Figure 4 shows a close to normal distribution for communication adjustments with the exception of the slight elevation at the low end, representing those students who require no language or communication adjustments.

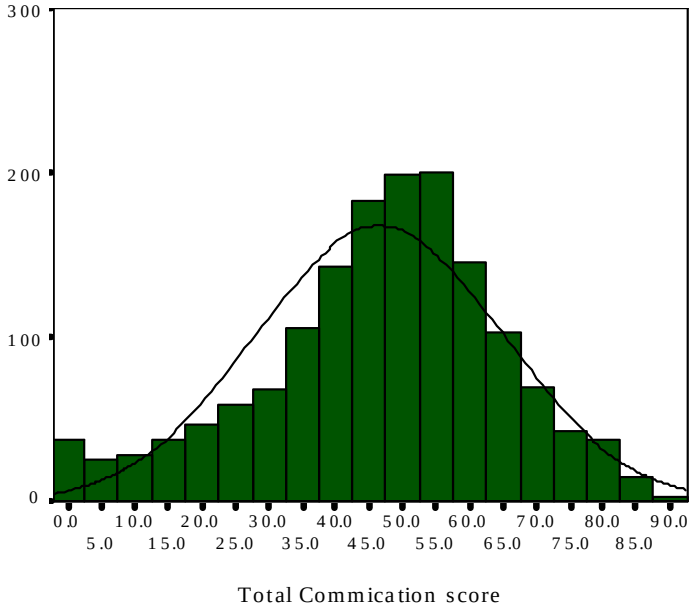

Figure 4: Distribution of Students' Total Communication Adjustment Scores

Figure 5 is the flattest distribution showing a relatively even spread of students across this range of subscale scores. This suggests that social participation and emotional well-being are issues for most.

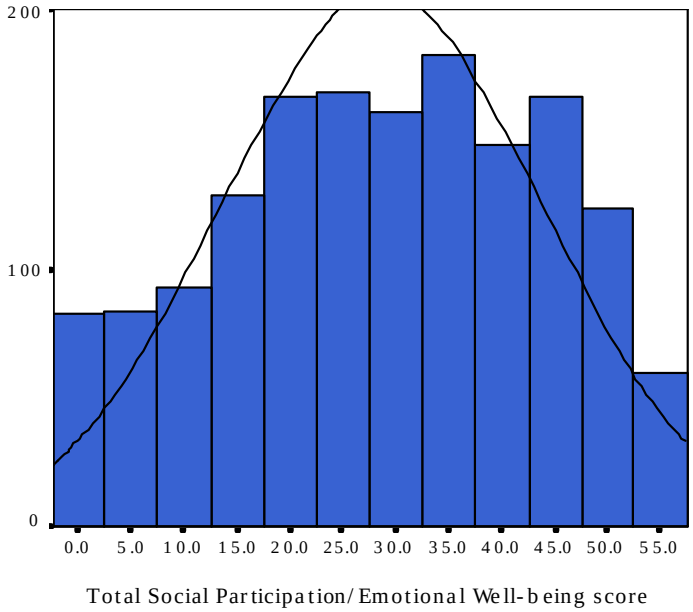

Figure 5: Distribution of students' Total Social Participation/Emotional Well-being Adjustment Scores

Figure 6 presents a highly positively skewed distribution showing that most students with disabilities require few health and personal care adjustments. A similar, although not as pronounced, pattern of scores is shown in Figure 7 for Safety adjustments. Health and personal care adjustments are more likely for students with physical impairments. Safety adjustments might be made as a consequence of the violent or aggressive behaviour of some children, and for others adjustments, but for a different reason. For example, these adjustments might be necessary for a child in danger of accidental injury because of impairment, such as very limited vision.

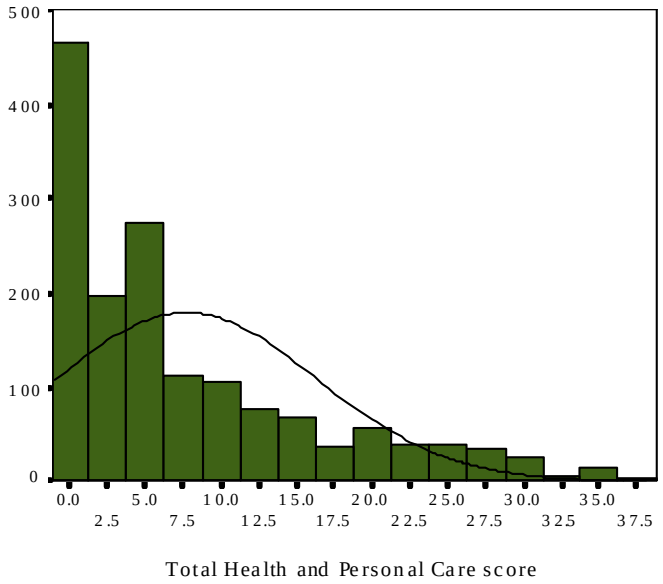

Figure 6: Distribution of Students' Total Health and Personal Care Adjustment Scores

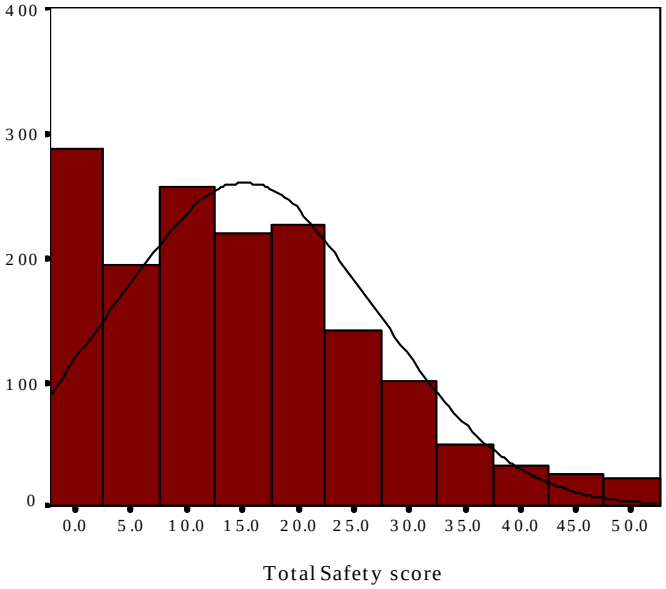

Figure 7: Distribution of Students' Total Safety Adjustment Scores

Although somewhat haphazard, the distribution of Learning Environment/Access scores shown in Figure 8 approximates a normal curve.

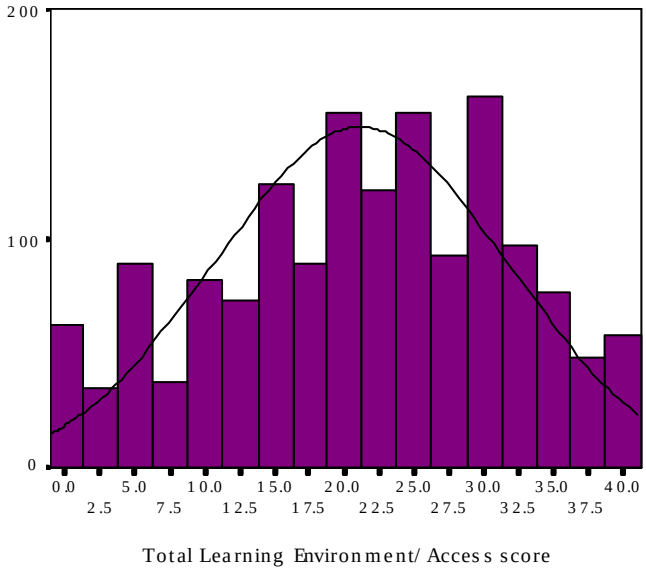

Figure 8: Distribution of Students' Total Learning Environment/Access Adjustment Scores

Pervasiveness and Intensity of adjustments

It will be recalled from an earlier notation that the EAP profile was designed to measure frequency, extent, and pervasiveness of adjustments. The EAP Total Score reflects a *quantum* of adjustment, that is, the number of adjustments (pervasiveness) and how often those adjustments are made (i.e., frequency of adjustments). *Pervasiveness of adjustments* was thought to be uni-dimensional as it refers only to the total number of adjustment made across the six focus areas, in other words, the number of items given a value by respondents. The distribution of pervasiveness of adjustment scores is given in Figure 9.

Intensity of adjustments was also considered. It was calculated by dividing the EAP Total Score by the *Pervasiveness* score. Figure 10 shows that distribution.

Pearson's Product-Moment correlation coefficient was calculated for the relationship between the EAP Total and Pervasiveness scores and found to be $r = .95$ ($p < .001$, 1-tailed) and between EAP Total and Intensity $r = .82$ ($p < .001$, 1-tailed). Neither appears to provide additional information or clarification and show a more restricted range of score than EAP Total Score. No further analysis was undertaken using either.

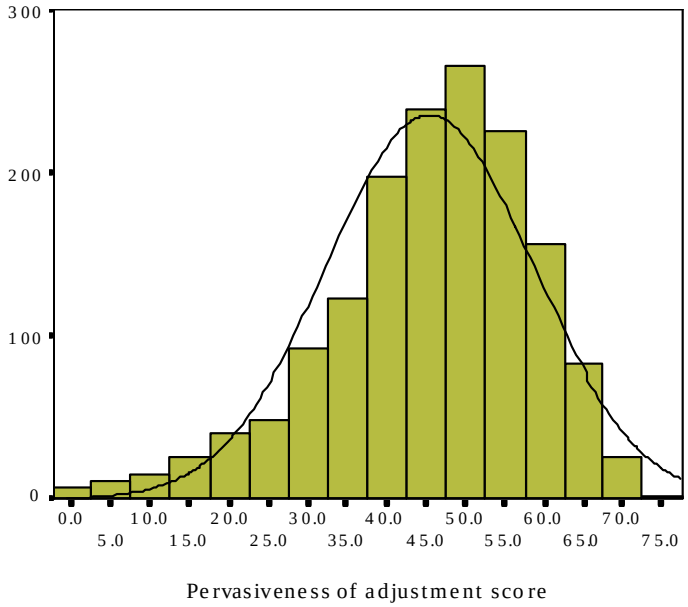

Figure 9: Distribution of Pervasiveness of Adjustment Scores for the Total Sample

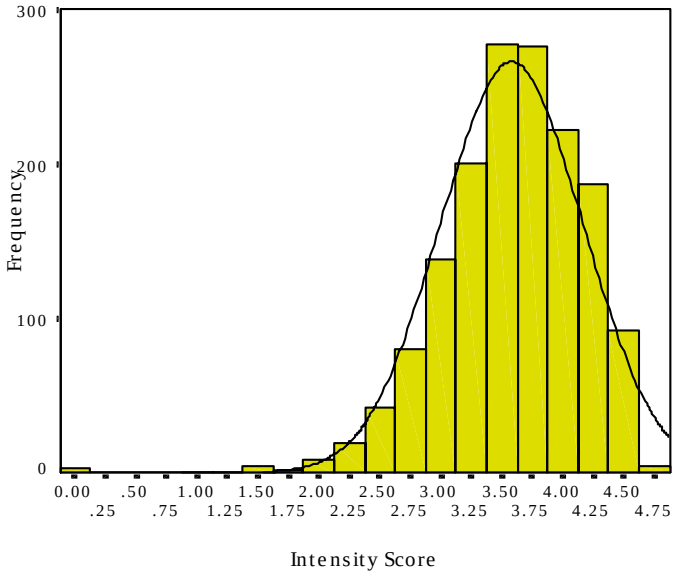

Figure 10: Distribution of Intensity of Adjustment Scores for the Total Sample

Component analysis of the EAP profile

No information was provided to the research team in terms of a theory or model upon which the EAP was based. Practical procedures and actions appear to underpin the profile structure. The items reflect what teachers do to support students in a range of teaching-learning environments and the six focus areas are named according to the purpose of actions taken. It was important, therefore,

to establish the structure of the instrument to determine if these focus areas reflect discrete and consistent perceptions of what adjustments are made, or needed.

Principal components analyses were undertaken using items in each focus area, one area at a time. Principal components analysis (factor analysis) is based upon the assumption that second order constructs (factors), smaller in number than the number of items in the instrument, are responsible for the relationship between scores on items. In other words, factor analysis connects those items that respondents score in a consistent way and identifies a statistical structure within the data set (i.e., factors). Factors represent new, hypothetical variables and, as such, can be named.

Principal components analyses produces a factor loadings for each item equivalent to correlation coefficients in that the higher (or lower) the number, the greater is the relationship between the scores on the item and the factor. Tables 4 to 9 below provide factor analytic solutions for the six focus area. Factor loadings < .300 are commonly considered to be of minimal interest because they contribute little to the “best” factor solution. Prominence is given to the factor on which a loading is highest.

Table 4 provides the principal component analysis with orthogonal Varimax factor rotation for the Curriculum subscale. Orthogonal rotation produces factor solutions that are, conceptually, at 90% to each other (i.e., unrelated). Three factors were extracted with eigenvalues > 1.00, according to the convention.

Examination of the items in each factor cluster suggests factor labels, although these are open to interpretation.

Factor 1 included items that are related to the support needed by teachers and schools to provide the programs required to assist students. The factor might, therefore, be called ***program support***.

Factor 2 items include those that are specific to the delivery of the program and appear to relate to ***instructional strategies***.

Factor 3, to items that refer to the ***preparation*** that is required in the planning and program design phase.

Table 4
Rotated Component Matrix for Curriculum Area Items

	Factor		
Item number/description	1	2	3
15 Data informs programming	.725		
13 Ongoing assistance	.704	.338	
09 Pre-teach of concepts	.612	.396	
10 Instruction outside class	.608		
14 Adjusted assessment	.600		.336
12 Extensive teaching support	.590	.459	
07 Extra time allowed		.849	
08 Specific instruction given		.801	
11 1-to-1 or small groups	.502	.536	
04 Lesson content adjusted		.502	.433
02 Planning is adjusted			.745
03 Cater for assistive technology			.719
01 Consultation occurs			.712
06 Materials adapted	.423		.512
05 Special materials needed			.471

Seven items in the Communication area provided only one or two response options (items 3, 4, 7, 18, 19, 36, & 38). This meant that there was either zero variance across the data set or that correlation coefficients could not be computed with other variables thereby prohibiting analysis. These items were removed to enable principal component analysis (see Table 5).

Three factors with eigenvalues > 1.00 were extracted, again using the Varimax criterion for rotation.

Factor 1 reflects ***instructional strategies***.

Factor 2 reflects ***program support***.

Factor 3 refers to ***consultation***. This factor is defined by one item and it is not considered an ideal solution.

Table 5
Rotated Component Matrix for Communication Area Items

	Factor		
Item number/description	1	2	3
14 Visual aids incorporated	.816		
13 Visual aids provided	.805		
12 General strategy changes	.779		.325
08 Minor adjustments to program	.759		
16 Teach language conventions	.736		
11 Teach social language skills	.682	.377	
09 Specific language skills trained	.667	.371	
02 Specialised goals required	.580	.479	
10 Specialist produced programs	.324	.856	
06 Alternative communication		.832	
05 Assistance with amplification		.606	.470
15 Other agencies involved		.490	
01 Consultation occurs			.871

In the area of Social Participation/Emotional Well-being (Table 6), three factors were extracted using the same process. The factors reflect ***instructional strategies*** (Factor 1), ***consultation*** (Factor 2), and ***administrative adjustments*** (Factor 3).

Table 6
Rotated Component Matrix for Social Participation/Emotional Well-being Area Items

	Factor		
Item number/description	1	2	3
10 Social engagement prompted	.733		
09 Focus on dealing with disability	.724		
07 Progress reporting required	.654	.350	
08 Teaching about friendships	.649		.374
11 Self-regulation taught	.592		.358
12 Behaviour management plan	.571	.378	
02 Referral to community program		.708	
13 Follow-up community progs.		.618	
03 Formal support plan used	.326	.616	
01 Consultation occurs	.444	.494	
04 Schoolwide adjustments made			.824
06 Management plan varied	.321		.717
05 Review of student participation		.490	.600

Only two factors with eignvalues > 1.00 were extracted using the Health and Personal Care items, Factor 1 refers to ***consultation*** and Factor 2 to ***program support*** (Table 7).

Table 7
Rotated Component Matrix for Health and Personal Care Area Items

	Factor	
Item number/description	1	2
08 Special health care training	.782	
01 Consultation occurs	.767	.363
03 Complex case management	.757	
02 Consult health professionals	.735	.450
07 Health care assistance given		.770
05 Personal care program made		.731
06 Health status monitored	.529	.635
04 Personal care program made		.607

Two items in the Safety focus area provided only one or two response options. (Items 9, & 10). These were removed to enable principal components analysis. Table 8 shows the two-factor solution with Factor 1 reflecting ***instructional strategies*** and Factor 2, ***program support***.

Table 8
Rotated Component Matrix for Safety Area Items

	Factor	
Item number/description	1	2
06 Data collected on safety	.804	
07 Technology training needed	.794	
08 Alternative activities needed	.733	.340
03 Review of risk management	.695	
04 Handling/lifting portfolio used	.690	
01 Consultation occurs	.681	.346
02 Supervision of environment		.844
11 Alternative transport used		.839
05 Safe behaviour programs used	.522	.531

A two-factor solution based on eigenvalues > .9 was generated for the items in the Learning Environment/Access area (shown in Table 9). Factor 1 reflects ***instructional strategies*** and Factor 2, ***consultation***. As indicated earlier the labels are open to interpretation.

Table 9
Rotated Component Matrix for Learning Environment/Access Area Items

	Factor	
Item number/description	1	2
5 Adapt teaching strategies	.814	
4 Adapt equipment/environment	.799	
7 Program delivery supported	.666	.364
8 Specialised equipment needed	.569	
1 Consultation occurs		.822
2 School wide info about access		.733
6 Specialist input about strategies	.347	.649
3 Adaptations to teaching plan	.473	.636

It appears that the six solutions reflect related second order dimensions. It seems, for example, that the Curriculum and Communication factors reflect similar dimensions, and comparable factor structures are found in the Social Participation/Emotional Well-being and Learning Environment/Access items, and in the Safety and Health and Personal Care analyses.

Optical scaling procedures were employed to clarify any commonalities among the orientation of items in the focus areas based upon the evaluations made by respondents. The joint plot of category points can be seen in Figure 11 based on categorical principal component analysis. This Figure shows the relationship between the focus areas drawn as a two-dimensional graphic overlay (the dimensions represent a statistical space, not a concept).

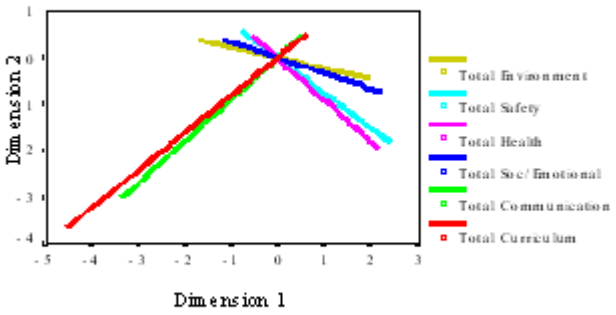

Figure 11: Variable Principal Normalisation Plots of the Six Focus Areas within the EAP Profile

The overlap confirms the parallel orientations of the items in the three focus area sets. In other words, the items ask respondents to consider similar adjustment dimensions.

In contemporary statistical analysis of data similar to those provided to the research team, there is a procedural “gold standard.” Exploratory factor analysis is undertaken to establish potential dimensions within a data set, optical scanning allows for clarification of commonalities, and confirmatory factor analysis ratifies and conceptual models.

Confirmatory factor analysis was, therefore, performed on the data sets from each focus area. We provide just one as an example. This analysis, shown in Figure 12, relates to the Curriculum and Communication areas.

In confirmatory factor analysis, a model is build that is presumed to describe or account for the empirical data in terms of relatively few dimensions. The model is typically based on a priori information about the data structure in the form of a specified theory or hypothesis or knowledge, in the present case, from earlier data analysis. Analyses reported in Tables 4 and 5 and Figure 11 link the Curriculum and Communication domains. Confirmatory factor analysis focuses on the inherent factor structure within the data and matches this against the model. In other words there is an analysis of observed and latent variables on the basis of substantive considerations rather than mathematical convenience.

We proposed three dimensions in the data “Preparation,” “Consultation,” and “Instruction” and items that should conceptually define those dimensions. The analysis used the AMOS.5 structural modelling program and the results support this prediction. The Goodness of Fit Index (GFI) of the EAP Curriculum and Communication items approaches the ideal, GFI = .906. It is highly statistically significant. Looking at Figure 12, it is important to note the causal influence that “Extra Time” (significant beta weight .58), “Specific Instruction” (.50), and “Minor Adjustments” (.50) have on the “Effective Instruction” (Instructn) factor. The arrows point from the ellipse “Instructn” to those three variables on which it is dependent so the causal relationship is in the reverse direction of the arrows.

Across the three factors, “Preparation” (Prep), Effective Instruction (Instructn), and “Consultation” (Consltn) are all highly interactive (beta values .64 to .76). The item relating to materials (6_Use_Materials_1) has the highest beta value (.73) in the Preparation factor, although all variables in this factor also are strong and significant causal influences (beta values all above .50). For the factor Consultation, planning (“2_Planning_1”) has the most influence (.68).

While this analysis might seem academic, the Figure clearly shows the importance of preparation in the delivery of programs for students with disabilities. This is generously refected in the education literature attesting to the success of inclusion of students with disabilities in regular classrooms. Here, it shows that those who responded to the EAP profile clearly recognised the implications of planning in the development and delivery of education programs for SWDs.

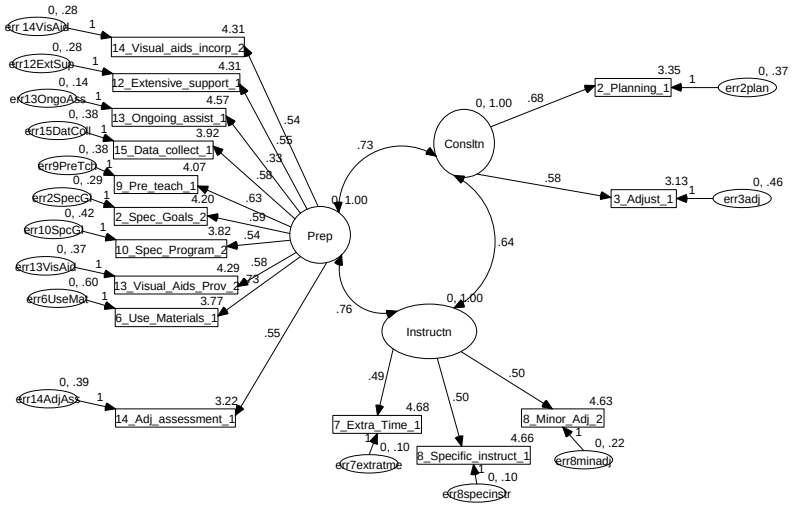

Figure 12: A Path Diagram of a Confirmatory Factor Analytic Solution Based Upon the Curriculum and Communication Items

The analysis involves selective insertion and removal of items to establish the best fit of the data to the theoretical or conceptual model under examination. Blank spaces in the Figure above reflect the removal of items that did not contribute significantly to the solution. The small ellipses pointing to the boxes are the error variables (e.g., err8specinstr = .10) that can be calculated and give the model its statistical accuracy. Confirmatory factor analysis also helps to demonstrate content validity if the observed items can produce the latent content factors. As Figure 12 demonstrates the content factors of Preparation, Consultation, and Instruction can be formed from the data set

4
CONSISTENCY AND VALIDITY OF THE EAP PROFILE

Newly developed instruments must satisfy several criteria to ensure that they collect information consistently (across administration occasions) and provide information on the target areas of knowledge sought. These criteria relate to reliability and validity.

Reliability and Internal consistency

Reliability refers to the ability of an instrument to yield data in a consistent way. The most common evaluation is test-retest reliability that involves determining the correlation between scores following two administrations of the instrument, generally undertaken about two weeks apart. Such data were not available in the present study. Determining internal consistency is a second way to examine the integrity of an instrument. Internal consistency relates to the relationship between items and a total score and can be judged by calculation of an alpha coefficient or split-half procedures. In the present study, we considered the former.

The alpha coefficients for the focus areas are given in Table 10. Alpha coefficients are based upon the relationship between all items in a scale thus requiring responses to all. In the present study, students may not have required adjustments in all focus areas and, thus, there were considerable missing data. Additionally, some items provided only one response option with zero variance. These instrument characteristics limit the scope of item analysis. This is especially apparent in Communication, Health and Personal Care, and in Safety areas. Notwithstanding this, the Alpha coefficients provide evidence of suitable consistency.

Table 10
Alpha Coefficients, Cases and Items on which they were Calculated for the Six Focus Areas

Focus area	Alpha	No. cases	Number of items (items removed due to zero variance)
Curriculum	.859	393	15
Communication	.959	9	15 (items 22, 23, 26, 38)
Social Participation/Emotional Well-being	.844	164	13
Health and Personal Care	.784	42	8
Safety	.855	9	8 (items 77, 78)
Learning Environ/Access	.808	284	8

Validity

Validity refers to the ability of that instrument to measure what it is intended to measure or perform the intended function. There are four forms of validity commonly considered during an instrument's construction: *content*, *concurrent*, *construct*, and *predictive*.

Content validity. Content validity refers to the extent to which the items represent the range or spread of information contained in the target domain and is typically determined by expert judgments of the suitability of the instrument to perform its function. For example, if a test were designed to assess arithmetic operations, it would need to assess an individual's performance on each operation (add, subtract, multiply, divide) and experts would judge the extent to which the items spanned appropriate knowledge.

The EAP profile was constructed using information collected from practising teachers and other stakeholders in the students' lives. The items represented existing practices within schools. Following preparation, the full draft version of the instrument was referred to school staff for comment. Overall, the content was thought to reflect the range of adjustments that might be made for students with disabilities although there were some comments that suggested a persisting dissatisfaction with the capability of the instrument to reflect the severity of student needs. Overall, reference group responses were supportive of the final version.

Concurrent validity. Concurrent validity is judged by the way in which an instrument provides information about known characteristics or phenomena based upon a criterion, generally scores from an existing instrument. A new IQ test, for example, would have concurrent validity if it provided an IQ assessment similar to that obtained on another test, such as the Stanford-Binet or WISC. In the present project, students were identified as having a certain level of need as a result of the ascertainment process (i.e., Levels 1 through 6). The concurrent validity of the EAP profile could be confirmed if the results of the EAP Total Score reflected similar student characteristics.

Figure 13 shows the mean EAP Total Scores based upon the students' highest ascertainment levels. Here, data were recoded to show students with multiple impairments, given a "7" in the data and shown as "Multiple" in the Figure. It is worth recalling that Level 1 refers to very low special education needs (or that the student is awaiting ascertainment; Level 2 primarily involves monitoring the student's progress; Level 3 relates to in-class support mainly provided to the teacher; Level 4 refers to in-class support to both student and teacher; Level 5 involves some withdrawal support and the preparation of an Individualised Education Plan (IEP); and Level 6 involves development and enactment of a full IEP.

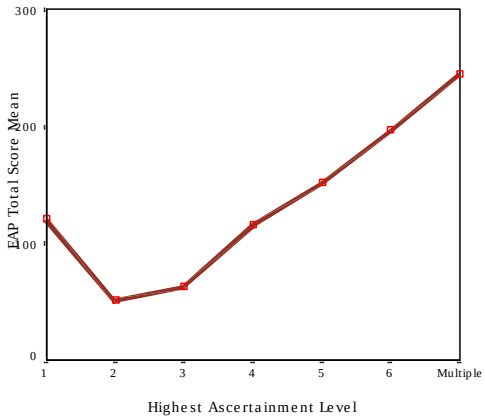

Figure 13: Mean EAP Total Score for Students at Their Highest Ascertainment Level

Figure 13 confirms expected relationships between special need adjustments required at each ascertainment level. Figures 14 through 19 show a similar pattern for each EAP focus areas ("Mean" on the y-axis refers the relevant focus area mean score for each ascertainment group).

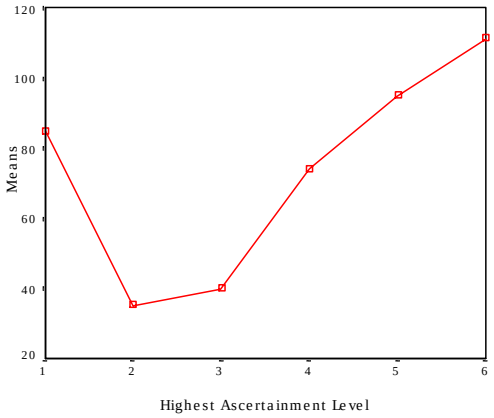

Figure 14: Mean Curriculum Adjustment Scores for students at their highest Ascertainment Level

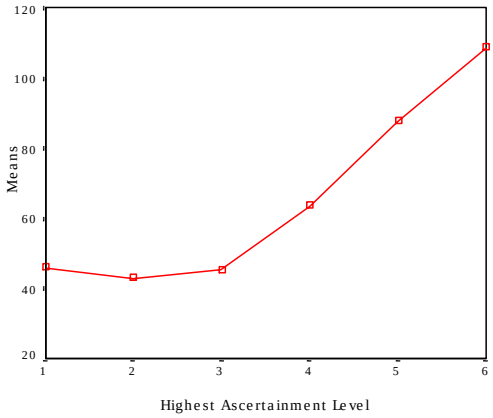

Figure 15: Mean Communication Adjustment Score for students at their highest Ascertainment Level

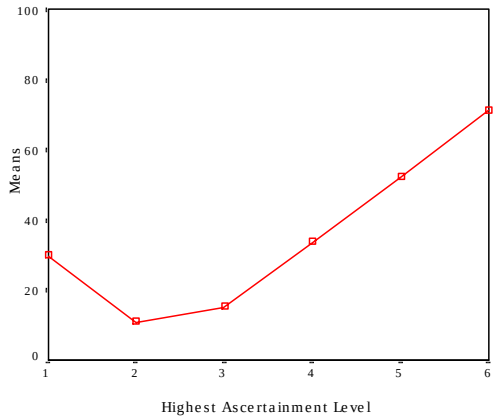

Figure 16: Mean Social Participation/Emotional Well-being Adjustment Score for students at their highest Ascertainment Level

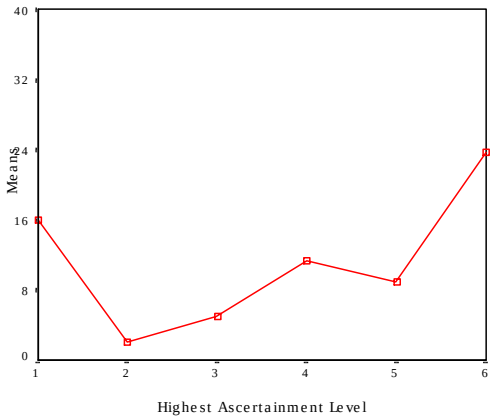

Figure 17: Mean Health and Personal Care Adjustment Score for students at their highest Ascertainment Level

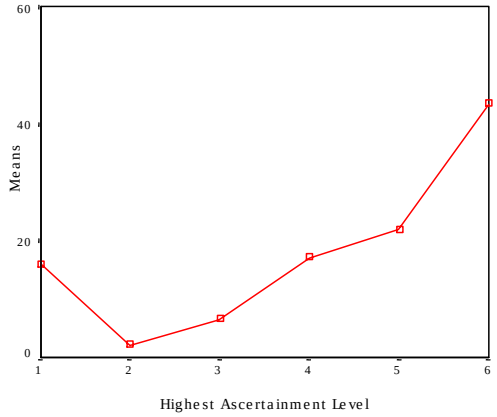

Figure 18: Mean Safety Adjustment Score for students at their highest Ascertainment Level

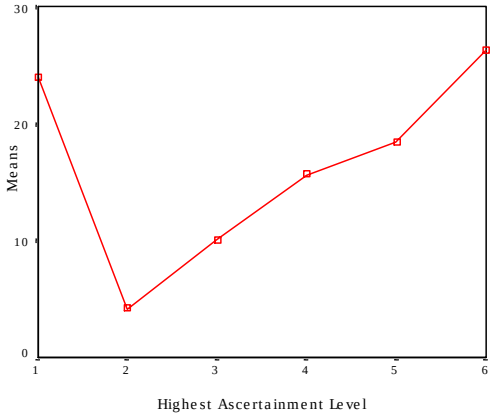

Figure 19: Mean Learning Environment/Access Adjustment Score for students at their highest Ascertainment Level

These data show an increase in EAP Total Scores with increasing ascertainment level and that the EAP profile is sensitive to the known special education needs of SWDs.

Construct validity. Construct validity refers to the capability of the instrument to reflect known characteristics or phenomena within the data considered against an independent indicator. An IQ test, for example, would have construct validity if it discriminated between individuals known to have very low, average, and very high intellectual ability. In the present case, analysis of the EAP profile data should reflect characteristics or phenomena associated with students known to have certain impairments or disabilities.

Figures 20 to 26 reflect the general high level of support and adjustments that are required by students with IAS, the relatively low level of support and adjustments that are required by students with HI, and the relatively consistent support across all areas for students with vision impairment. There are a number of indicators that suggest impairment-specific needs such as the high degree of support in:

- Communication for students with HI;
- Health and Personal Care for students with PI;
- Curriculum and Communication for students with SLI; and
- Social Participation/Emotional Well-being adjustment for students with SED.

In addition, there is a relatively low degree of support required in:

- Health and Personal Care and Safety for students with SLI; and
- Communication and Social Participation/Emotional Well-being adjustments for students with PI.

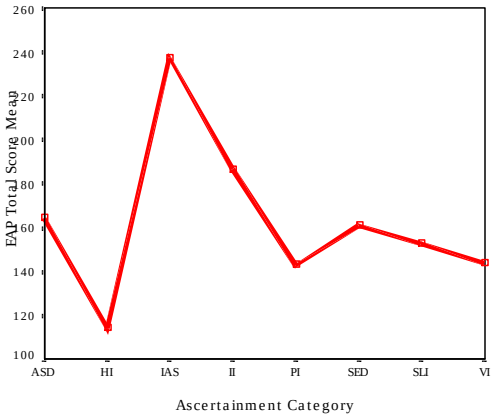

Figure 20: Mean EAP Total Score for Students by Primary Ascertainment Category

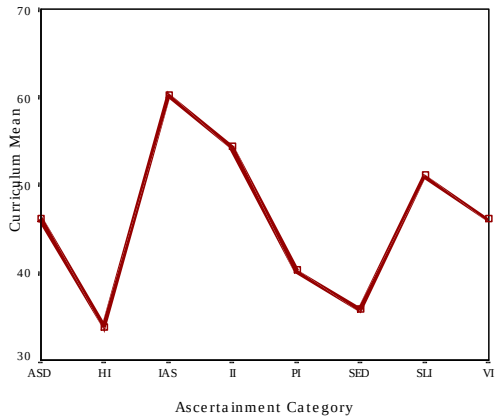

Figure 21: Mean Curriculum Adjustment Score for Students by Primary Ascertainment Category

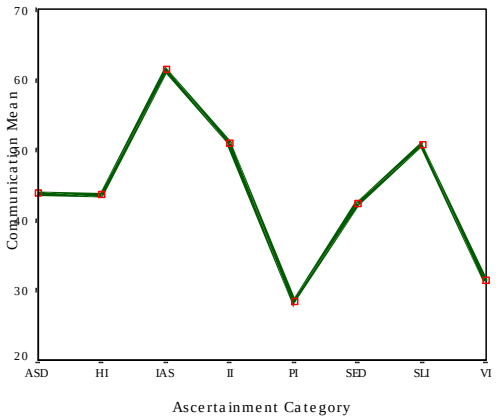

Figure 22: Mean Communication Adjustment Score for Students by Primary Ascertainment Category

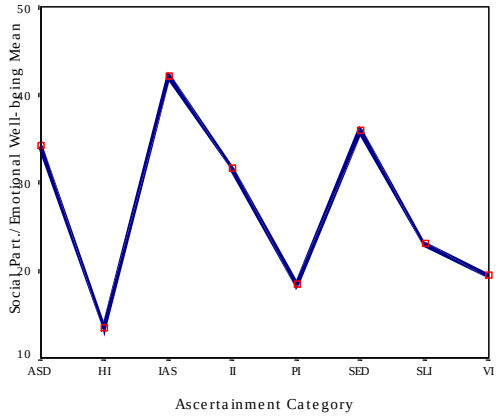

Figure 23: Mean Social Participation/Emotional Well-being Adjustment Score by Primary Ascertainment Category

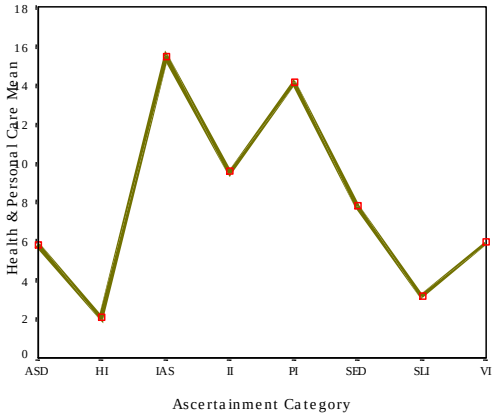

Figure 24: Means Health and Personal Care Adjustment Score for Students by Primary Ascertainment Category

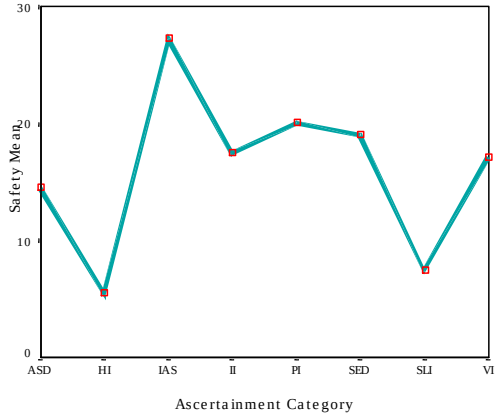

Figure 25: Mean Safety Adjustment Score for Students by Primary Ascertainment Category

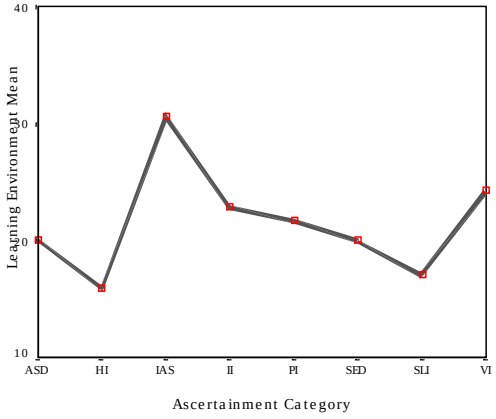

Figure 26: Mean Learning Environment/Access Adjustment Score by Primary Ascertainment Category

Predictive validity. Predictive validity is determined by correlating test scores with an outcome measure. This was not possible within the timeframe of this project but is recommended as an extension to the data analysis exercise. A case could be made based upon Figure 13 that the EAP scores predict the Level 2 to 6 ascertainments.

5
EAP PROFILES OF SPECIFIED STUDENT GROUPS

The terms of reference required an analysis of the EAP profile scores for a number of target groups. We have dealt generally with all students surveyed in during the trial and also students from each disability category. In this section we deal with age and gender differences, Indigenous students, students in care, students in various education settings.

Age differences

The sample was divided into five age groups (5 to 8 years inclusive, 9 year to 11 years inclusive, 12 years to 14 years inclusive, 15 years to 17 years inclusive, and 18 years and above). There roughly corresponded to Preschool to Year 3, Years 4 to 6, Years 7 to 9, and Years 10 to 12. The distribution of students by age and setting is given in Table 11.

Table 11
Distribution of Students by Age and Class Placement

	Age group				
Location	5-8 yrs	9-11 yrs	12-14 yrs	15-17 yrs	18+ yrs
Regular class	134	210	162	57	2
Special class	32	57	41	22	3
Special unit	119	177	219	148	11
Special school	46	43	41	36	5
Total	331	487	463	263	21

It can be seen that the number of SWDs declines from age 12 years with the most notable drop occurring in regular classes, and the least (proportionately) in special schools. These data might suggest that SWDs in regular school settings tend to leave school when they are legally able, while those with the highest support needs remain in school for more than one semester after the usual high school leaving age.

The elaborate this further, Table 12 shows the distribution of the oldest students (18+ years) by highest ascertainment level in the four educational settings. In this Table “7” refers to students with multiple ascertainments.

By comparison, in the 15-17 years group, there was 1 student at Level 2, 3 at Level 3, 14 at Level 4, 105 at Level 5, 116 at Level 6, and 23 with multiple ascertainments.

Table 12
Distribution of Oldest Students (18 Years Plus) by Highest Ascertainment Category and Level Across Education Settings

	Ascertainment Category/Level										
	ASD			II		SED	VI	SLI		IAS	
Location	5	6	5	6	7*	5	6	5	6	6	7
Regular class	1	1									
Special class	1		1			1					
Special unit		4	2	1	1		1	1	1		
Special school				1	2						1

* 7 = multiple ascertainments

Multivariate analysis of variance was conducted using EAP Total Score and scores from the six focus areas. Figures 27 to 33 show the relative position of the five age groups in regard to the adjustments in these seven variables.

As can be seen in Figures 27 to 33, there is a general decline in adjustments made over the primary school years (except in the Curriculum area). This reaches a low point during Years 7 to 9 and returns (in most areas) to the original high level of adjustments across the senior high levels (the one exception being Communication).

While the dip is graphically dramatic in Figure 27 (and also in the latter Figures), the only statistically significant difference is between students in 5-8 years and 12-14 years groups.

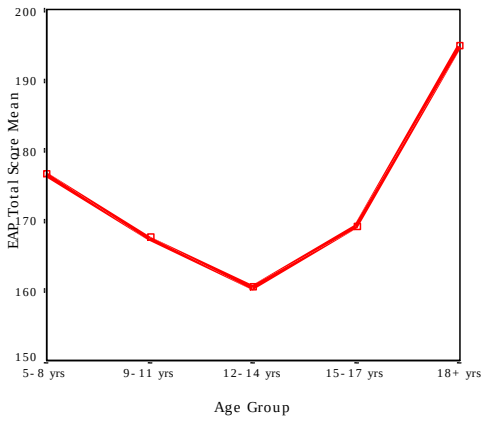

Figure 27: Mean EAP Total Adjustment Score by Age Group

In Figures 28 to 31, there are no statistically significant differences between the age groups in the Curriculum (Figure 28), Social emotional (Figure 30) areas.

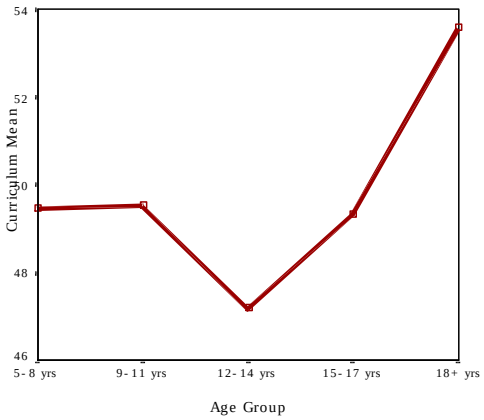

Figure 28: Mean Curriculum Adjustment Score by Age Group

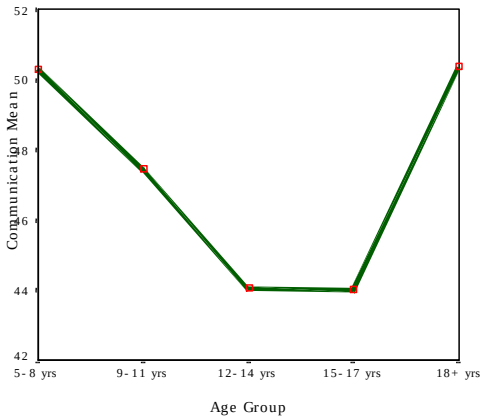

Figure 29: Mean Communication Adjustment Score by Age Group

In the Communication area, there are statistically significant differences between 5–8s and 12–14s ($p < .001$) and between the 5–8s and the 18+ groups ($p < .001$).

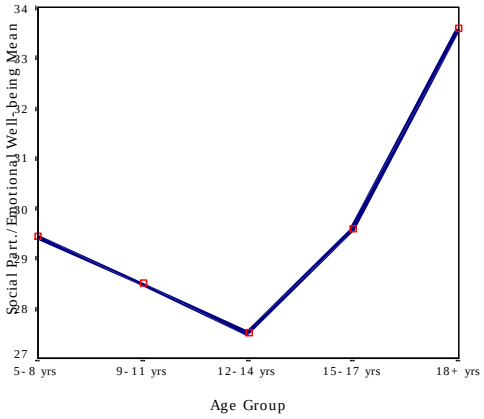

Figure 30: Mean Social Participation/Emotional Well-being Adjustment Score by Age Group

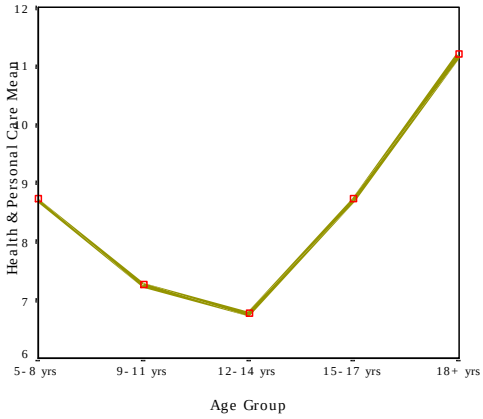

Figure 31: Mean Health and Personal Care Adjustment Score by Age Group

In Health and Personal Care, there is a statistically significant difference between 5–8s and 12–14s ($p < .05$). While there are statistically significant main effects for age in Safety and Learning Environment/Access, post hoc analyses comparing individual groups revealed not statistical significant results.

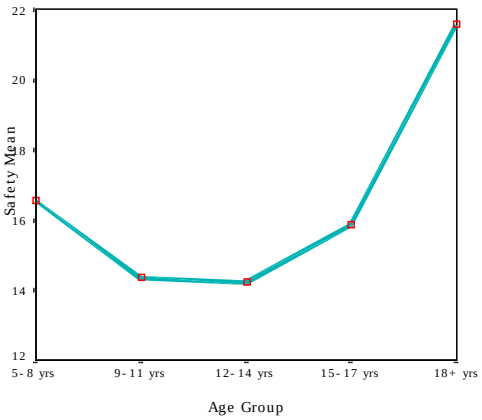

Figure 32: Mean Safety Adjustment Score by Age Group

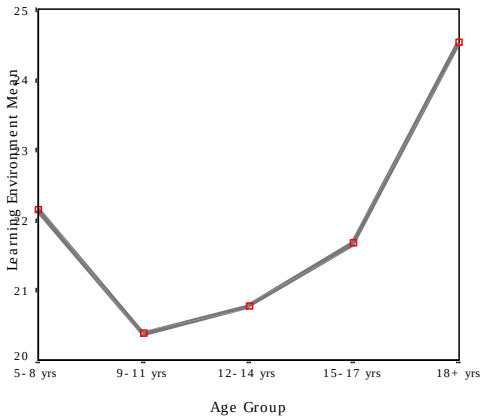

Figure 33: Mean Learning Environment/Access Adjustment Score by Age Group

Gender differences

Multivariate analysis of variance was conducted using EAP Total Score and scores from the six focus areas. The multivariate statistic was significant (Wilk's Lambda = 10.30, $p < .001$) allowing examination of the univariate statistics. Table 13 shows three statistically significant differences between the gender groups with the boys needing more Curriculum and Social Participation/Emotional Well-being adjustments than the girls, and the girls more Health and Personal Care adjustments than boys.

Table 13
Distribution of Students by Gender Across Focus Areas

	Gender group	
Focus area	Male *M*	Female *M*
Curriculum	49.5	47.6*
Communication	47.0	45.4
Social Participation/Emotional Well-being	29.9	26.2***
Health and Personal Care	7.3	8.6**
Safety	15.2	15.1
Learning Environment/Access	21.0	21.4
EAP Total Score	169.9	164.2

* $p < .05$
** $p < .01$
*** $p < .001$

Indigenous students

Interest has been expressed in identifying any differences between Indigenous and non-Indigenous students. It will be recalled that an effort was made to

maximise the number of Indigenous students in the trial sample. While 125 were included, there is a disproportionate representation of Aborigines to Torres Strait Islanders. This makes a comparison tentative.

Data from the Student Information section of the EAP questionnaire were recoded into a categorical variable and multivariate analysis of variance was undertaken. The multivariate statistic was significant (Wilk's Lambda = .978, $p < .01$) allowing examination of the univariate statistics. Table 14 shows the results.

Significant differences ($p < .05$) were found in the ***Curriculum*** area between non-Indigenous (Group 1) and Torres Strait Islanders (Group 3) (shown as * in the Table). Differences were also found between Groups 1 and 3 (*) in ***Social Participation/Emotional Well-being*** and in the ***Safety*** area between Groups 1 and 3 (*) and 2 and 3 (†), and in the ***Learning Environment/Access*** area between Groups 1 and 3 (*).

Table 14
Comparison EAP Total Scores of Students from Non-Indigenous (n = 1,378), Aboriginal (n = 16), and Torres Strait Island (n = 109) Backgrounds by Focus Area

Variable	Non-Indigenous *M* (*SD*)	Aboriginal *M* (*SD*)	Torres Strait Island *M* (*SD*)
Curriculum	49.1 (.45)*	53.7 (3.99)	44.3 (1.51)*
Communication	46.5 (.50)	53.0 (4.61)	44.3 (1.77)
Social Part/Emot Well-being	29.0 (.40)*	31.3 (3.71)	22.5 (1.42)*
Health and Personal Care	7.9 (.24)	10.1 (2.18)	5.9 (.83)
Safety	15.4 (.32)*	20.1 (2.99)†	11.6 (1.15)*†
Learning Environ/Access	21.4 (.28)*	23.3 (2.60)	17.7 (.99)*
EAP Total Score	169.4 (1.73)	191.4 (16.09)	146.3 (6.16)

There were no significant differences between groups in the Communication and Health and Personal Care areas.

Overall, the data show that Aboriginal students receive a higher level of adjustment than the other two groups. It should be acknowledged, however, that the sample of Indigenous students is not representative of either Indigenous group, making these results tentative at best.

Students in care

Of the 1,565 students in the sample, there were 63 children in foster care with a mean age of 12 years 8 months (*SD* = 3 years 8 months). These students had a mean EAP profile Total Score of 197.7 (*SD* = 65.36), which is statistically higher than the sample average (*M* = 168.4; *SD* = 64.07) ($Z = 3.63$, $p < .05$). Of these

students 35 (56%) lived in metropolitan areas, 7 (11%) lived in regional cities, 18 (29%) lived in rural settings, and 3 (5%) lived in remote communities. Given the relatively small sample size and the spread of these students across impairment categories it was not possible to conduct further analyses to show any specific patterns in these children's needs.

Regional location

One issue of continuing concern is the potential for an uneven distribution of (notional) funds to rural or remote communities when compared with metropolitan areas. The data provide no direction in this regard. There is an uneven pattern of SWDs across regions and this is shown in Figure 34 below. The only difference in EAP Total Score means is between regional (2) and remote (4) locations.

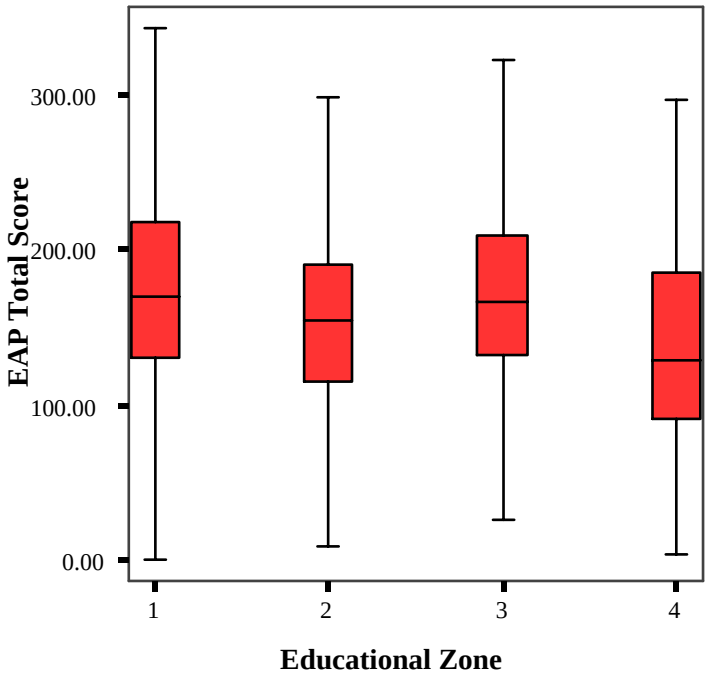

Figure 34: Mean Learning EAP Total Score by Education Zone (1 = metropolitan; 2 = regional city; 3 = rural area; 4 = remote community)

The distribution of students with impairment across grades is similar across regions, and for educational setting (i.e., regular, special class/unit); there are no special schools located in remote regions. The notable dip in mean EAP Total Score in regional cities (a pattern repeated across the six focus areas) might be explained by the fewer students with ascertainments of Levels 4 to 6 in regional cities and also fewer student with ASD, II, PI, and VI than in other regions. It will be noted from Figures 20 to 26 that the students with ASD and II are among those with the highest EAP Total Scores and students with ASD, IAS, and II tend

to be located in metropolitan and rural locations. However, further exploration would be needed to determine the reasons for differences between locations and this could not be achieved from the available data.

Education setting and jurisdictions

The EAP profile has been shown to discriminate students with different classifications and ascertainment levels. It should, therefore, show differences in the adjustments required by students in different teaching-learning setting. It would be expected, for example, that students included in regular classes would have fewer adjustment needs than those in attending special school. Indeed, the data suitably discriminates between education locations, as shown in Figure 35 below.

It would seem that the EAP profile is able to discriminate student needs effectively across all setting and, should a funding model be generated on the basis of EAP Total Score, no student in a special school or other setting should be disadvantaged.

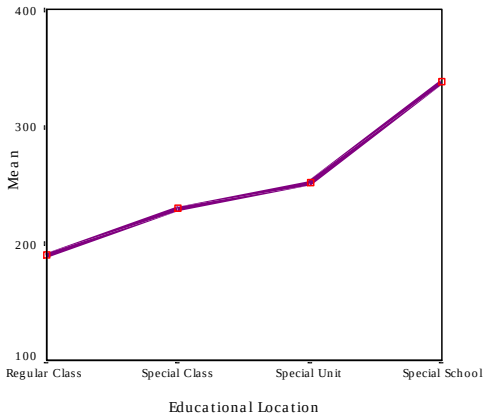

Figure 35: Mean EAP Total Score by Educational Location

In terms of education jurisdiction, an expected result was found in that students with the highest level of adjustment needs are predominately located in Education Queensland schools (Figure 36).

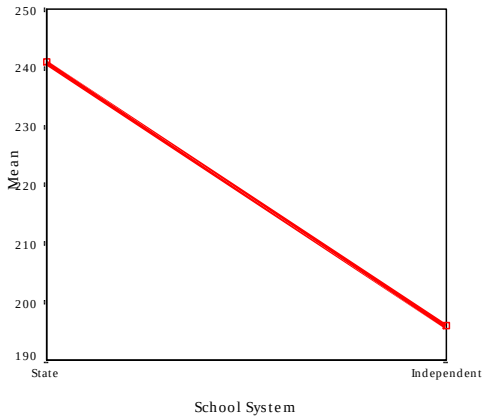

Figure 36: Mean EAP Total Score by Educational Jurisdiction

Given the relatively small sample from Catholic and independent schools it was not possible to conduct further useful analysis of the data other than providing an indication of the distribution of students in each jurisdiction (Table 15). A code of "7" refers to students with more than one ascertainment classification.

Table 15
Distribution of Students by Highest Ascertainment Level ("7" Refers to Multiple Impairments) by Education Jurisdiction

	Ascertainment Level							
System	1	2	3	4	5	6	7	Total
Education Qld								
n	1	44	39	91	596	616	31	1,418
% within level	50.0	100.0	97.5	83.5	89.1	91.9	100.0	90.6
Independent								
n	1	0	1	18	73	54	0	147
% within level	50.0	0.0	2.5	16.5	10.9	8.1	0.0	9.4
Total	2	44	40	109	669	670	31	1,565

In the following section we consider the suitability of the EAP profile as a basis for the allocation of funds to school districts to support students with disabilities.

6
DEVELOPMENT OF FUNDING EQUATIONS

At present, funding for special needs support is determined by the students' ascertainment level (or levels if a student has multiple classifications). The notional funding allocation is based on teacher and teacher aide support. Students with one ascertainment category receive a notional dollar allocation and those with more than one ascertainment are given additional support for each classification. Although information setting out the current arrangement was not provided to the research team, the consortium that reported to Education Queensland in January 2003 (*A Resourcing Methodology for Students with Disabilities* by Ashman, Bayne, and Mangan) provided a relevant breakdown in their Table 3.12 and this is reproduced below (Table 16). The research team understands that the present distribution of funds might not be as straightforward as shown in the Table but it does provide an indication of the support given in various settings and the relevant notional dollar value. This Table might provide a benchmark for comparison with an alternative funding model.

Table 16
Average Notional Costs ($) of Services to Students with Disabilities, 2001

	Classes											
	Special Schools			Units			Classes/Centres			Mainstream		
	4	5	6	4	5	6	4	5	6	4	5	6
HAL	10,109	17,819	23,641	5,056	13,002	18,793	4,711	12,624	18,393	4,260	11,527	16,855
OAL	1,947	6,367	8,884	1,947	6,367	8,884	1,947	6,367	8,884	1,748	5,711	7,972

Source: Education Queensland document *Towards a Resourcing Methodology*
NB: HAL = Highest ascertainment level; OAL = Other ascertainment level

A common criticism of ascertainment-based funding is the disparity between the support needed by students within the same category and at the same level. In other words, one student ascertained II-6 might need much higher support than another also classified II-6. Additionally, a student with ASD-6 may need a substantially different form of support than another who is classified as VI-6.

Another criticism relates to the restriction of funding to students with an ascertainment of 4, 5, and 6 only. It is assumed that schools can already accommodate the needs of students with less serious support needs.

This disparity between ascertainment-based allocation and need can be normalised at the level of the School District and school. Districts might recognise the plight of one school (or more) due to their geographic location or the socio-economic status of the neighbourhood in which they are located. Within a school, a principal may choose to assign funding to a particular student (i.e., teacher, aide, or resources), or to a special program in which SWDs (and perhaps other students) are involved.

While this normalisation process averages funding and largely allows schools to meet the needs of SWDs, the notional dollar allocation to Districts bears little resemblance to the way in which resources are applied at the level of the student. The issue often raised in the field concerns the inequity of the current funding model.

Notwithstanding the filtering mechanism involved in normalisation process, two important questions remain. Is the existing ascertainment process an appropriate mechanism for funding SWDs? If not, is the EAP profile a suitable alternative? We turn now to consider these questions.

Ascertainment and the EAP instrument

Firstly, we consider the relationship between the ascertainment category and levels and the EAP profile. Earlier, we used ascertainment as a basis for establishing concurrent validity. Ascertainment is essentially a diagnostic tool. School staff and other stakeholders establish the educational needs of the student based (in most cases) on a medical diagnosis. The EAP profile goes a significant step further by focusing on the actual adjustments (or needed adjustments) in planning, program development, implementation of teaching strategies and programs, and the monitoring of student progress.

Ascertainment levels and EAP Total Scores are related notions in that they address student characteristics and needs and are, not surprisingly, moderately correlated (r = .61). However, there is considerable anecdotal evidence from school personnel to question the current funding allocations based upon levels (4 to 6) and the correlation coefficient reflects the fact that approximately 36% only of the variation in scores is attributable to the positive relationship between the two variables. In other word, there are other causes that account for the similarities and differences between students.

The relationship between ascertainment level and the EAP Total Score shown in Figure 37 exemplifies the concern often expressed by school personnel. The spread of EAP scores across ascertainment levels makes it quite apparent that the needs of one student at Level 6 are not necessarily the same as another.

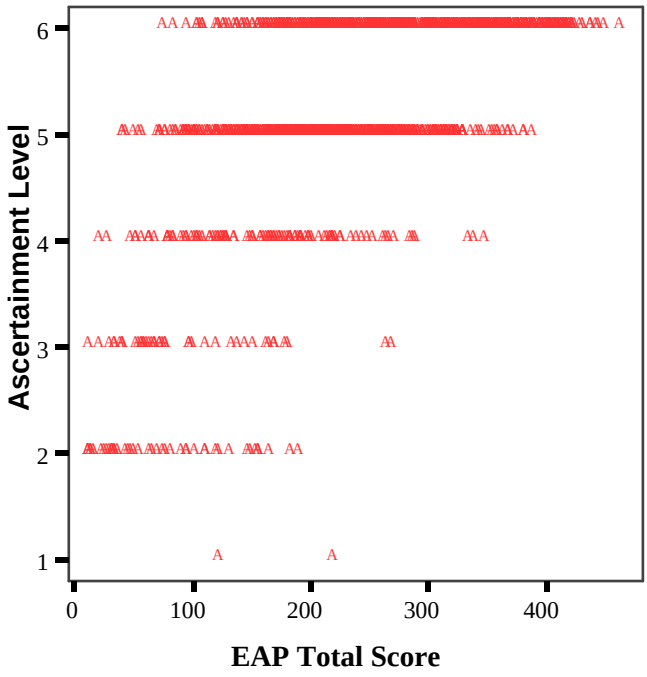

Figure 37: Distribution of Students at the Six Ascertainment Levels According to EAP Profile Total Score

This Figure alone would suggest that ascertainment level is an inequitable and inappropriate basis upon which to allocate (notional) funding support for SWDs.

It is accepted that students with specific diagnoses will require support or adjustments differentially. This is shown in Figures 21 to 26. That most SWDs require adjustments in a number of areas is accommodated within the EAP Total Score. That is, pervasiveness and the intensity of adjustments are reflected in that score.

To clarify the distribution shown in Figure 37, students with one ascertainment classification only were compared on EAP Total Score. This is given in Figure 38. As can be seen, at all Ascertainment levels, there are differences between categories. For example, the magnitude of adjustments for students with hearing impairment at Level 6 (EAP Total Score) is 187.6 with a relatively high standard deviation (*SD* = 48.08) reflecting the spread within that distribution. For a student with IAS, it is 242.2 with a similarly high standard deviation (*SD* = 49.96).

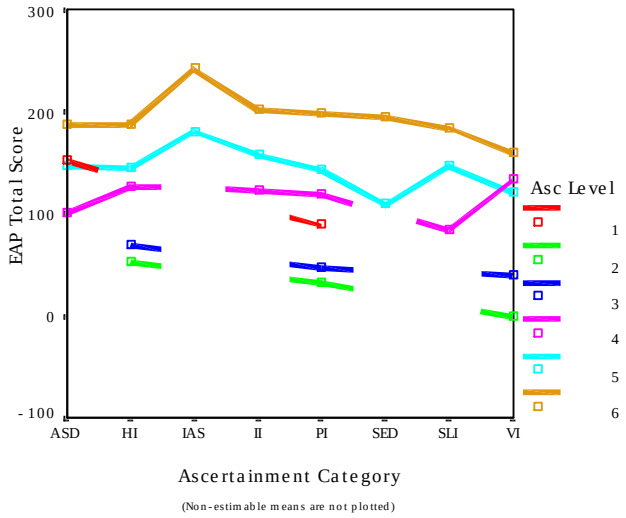

Figure 38: Mean EAP Total Score of Students with One Ascertainment Category Only by Ascertainment Level Score by Age Group

The current ascertainment-based funding model takes into account students who have multiple impairments (i.e., > 1 ascertainment classification) by provided addition funding under an "other ascertainment" code. In the present sample, there were 151 students with multiple impairments. The breakdown of their impairments is shown in Table 17 with an indication that there are students with more than two ascertainment classifications (> 2 in the Table).

Table 17
Distribution of Impairments for Students with More than One Ascertainment Category

Highest ascertainment level*	Second Ascertainment Area							
	HI	II	PI	ASD	SLI	VI	> 2	*N*
Autism Spect. Disorder (ASD)	2	2	3				1	8
Hearing Impairment (HI)			1	1	1	2		5
Int. Imp. & Autism (IAS)	1	1	8				2	12
Intellectual Impairment (II)	13		42	15		8	27	105
Physical Impairment (PI)	4	2		1		4		11
Speech/Lang. Impairment (SLI)		1	2				1	4
Visual Impairment (VI)	2		3				1	6

* Highest Ascertainment Level was arbitrarily assignment in 47 cases as those students had two ascertainments at the same level

A distribution similar to the one shown in Figure 38 was generated for the students with multiple classifications based on highest ascertainment level (Figure 39). Note that, overall, these students have higher EAP Total Scores than those with only one ascertainment category/level (Figure 38). The overwhelming majority of these students have intellectual impairment.

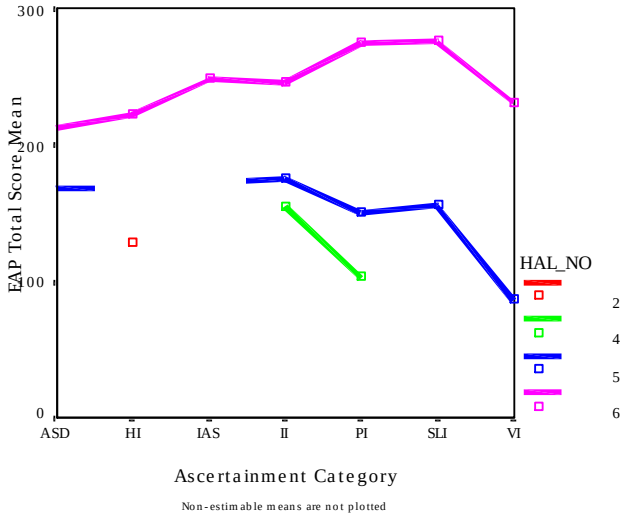

Figure 39: Mean EAP Profile of Students with More than One Ascertainment Category by Highest Ascertainment Level (HAL_NO)

The data in Figures 38 and 39 demonstrate the power of the EAP profile to discriminate between those students with relatively low support/adjustment needs and those with high and very high needs. We explore this issue further in the next section.

Students with the highest magnitude of adjustment

A comparison of Figures 38 and 39 suggests a division between those with single and multiple impairments. A proposition could be put, therefore, that there might be a base level of support required by all SWDs and an additional level of support (an enhancement contribution) provided to those with the highest level of need, or a qualitatively different level of need. To explore this issue, the research team identified those students with the highest magnitude of adjustment.

A criterion used to identify “high scorers” is to select those individuals who have scores two standard deviations above the mean score. In the present distribution this would mean a cut-off score of 296 yielding 31 cases only. A cut-off for the top 100 would have been a score of 269 (i.e., 1.58 *SD*) and the top 80, 277 (1.70 *SD*). The last was chosen. Table 18 shows a comparison of the constitution of the top 82 (from the 277 cut-off point).

Table 18
A Comparison of Students with the Highest Magnitude of Adjustments with a Single or Multiple Impairments

Variable	Single impairment	Multiple impairments
Sample size	38	44
Age (in months)	150.5	139.9
Category (number of cases)		
Intellectual impairment	14	35
Speech and language impairment		1
Autism spectrum disorder	4	3
Hearing impairment	1	6
Vision impairment	1	23
Physical impairment	4	37
Intellectual and autism spectrum disorder	14	5
Serious emotional disorder		
EAP focus area (mean score)		
Curriculum	66.4	64.0
Communication	74.8	75.2
Social	50.1	48.7
Health	25.6	28.1
Safety	37.5	44.0
Learning environment/Access	37.5	36.9
Total	291.8	296.8

There are no statistically significant differences between the two groups on any variable. This finding, thus, goes some way toward confirming anecdotal comments by schools personnel that some students, notably those with Level 6 ascertainment with severe to profound intellectual impairment, could more accurately be classified as “Level 12,” implying that there is a range of support need within Level 6 that is not captured by the current ascertainment-based model. That is, a 6-zone banding notion fails to address the extent of the issues and so it produces a ceiling effect, masking the full picture of the students’ educational needs.

A question remains about the distribution of EAP scores, in other words, whether there is any point or points on the scale where level of support might increase or decrease dramatically. This does not appear to be the case as the EAP Total Score is normally distributed (see Figure 1) and a graph showing the “line of best fit” across the EAP Total Score data is relatively smooth (Figure 40). There is a group of students with low scores at the bottom end, a much larger group in the “high hump” in the middle of the normal curve, and another small group at the top end.

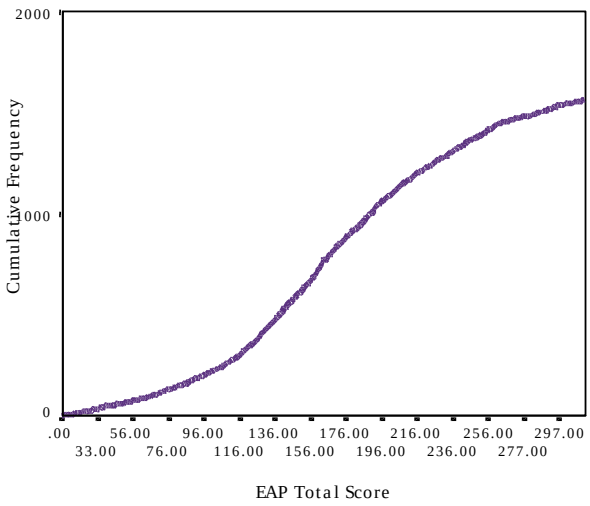

Figure 40: A Plot of Cumulative Frequency by EAP profile Total Score

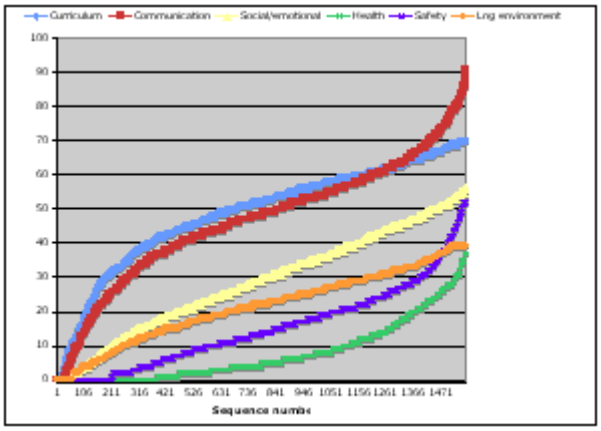

Figure 41: A Plot of Cumulative Frequency by Each EAP Focus Area

Some variations exist when the six focus areas are considered. It can be seen in Figure 41, a greater proportion of individuals require curriculum and communication adjustments and a small proportion require adjustments in Health and Personal Care, Safety, and Learning Environment/Access matters.

Could EAP Total Score represent the best measure of need across SWDs? The answer is likely yes.

The correlations between Total Score and the six sub-scales are generally high: with Curriculum (*r* = .82), Communication (*r* = .83); Social Participation/Emotional Well-being (*r* = .82); Health and Personal Care (*r* = .66); Safety (*r* = .80); and Learning Environment/Access (*r* = .82). The lower correlation coefficient between EAP Total Score and Health might suggest that students with health needs might be disadvantaged if EAP Total Score was the basis for funding. This is unlikely.

The sample was divided into four groups and an analysis of variance undertaken by group, by EAP Total Score with significant differences being found for the group effect, $F = 396.28$, $df = 3, 1561$, $p < .001$. Significant statistically differences were found between all groups using Scheffé post hoc analyses, $p < .001$. Results are shown in Table 19.

Table 19
A Comparison of Students with four levels of Health Care Adjustment

			EAP Total Score		
Group	Health Score range	*N*	*M*	*SD*	Range
1	0	381	118.8	50.23	0-254
2	1-5	481	148.0	48.76	4-261
3	6-15	423	185.5	45.70	33-269
4	16-37	280	243.0	50.74	77-343

While the range of scores is broad across all groups, students with multiple handicaps predominate in Groups 3 and 4. Students with a single ascertainment category in Group 4 are predominately at Level 6 ascertainment. Only 21 students with multiple ascertainments appear in Groups 1 and 2 (2.4%).

A single algorithm for resource distribution, or more?
To attempt identification and quantification of the real dollar value of specific educational adjustments needed by different children would be mammoth and largely impractical. For example, how would one establish the real cost of weekly stakeholder consultations needed to plan a suitable curriculum for a specific child? Would the cost be the same for all children? What is the cost of providing full assistance several times per day to a student in terms of mobility, transfers and positioning? Without such detailed analysis, we are left with the challenge of establishing an estimate of the demands placed upon schools.

Ascertainment is largely a classification procedure and the funding model that flows from it fails to take into account the adjustments required at any ascertainment level to enable SWDs to be supported in whatever teaching-learning setting is thought to most appropriate for their education. In summary, the documentation provided in this report supports an argument that the present Level 1 to 6 model is inequitable. Figure 37 is particularly salient to this argument.

The EAP profile has many advantages over ascertainment as it provides for the identification of both intensity and pervasiveness of adjustments required across six focus areas.

The EAP profile deal with the magnitude of adjustments and seeks data on the frequency and effort required to enhance learning. It is an estimate only but one

that permits comparison across impairment categories and across education settings. Furthermore, the data presented show that the EAP profile has content, concurrent, and construct validity. Within some limitations, it is internally consistent. The structure of the instrument (globally and in the six focus areas) is predictable and coherent to the extent that items in each scale deal with preparation/planning, implementation of teaching strategies, the monitoring of student performance, and appropriate instructional support. Figures 11 and 12 shows three distinct domains on which the six focus areas project.

The research team has deliberated at length about the inclusiveness of the EAP profile in terms of dealing with all disability/impairment groups and the various levels of support needed by these groups at the school level, and the level of the individual student. A suggestion has been made that a general allocation might be made to cover the majority of educational adjustments that are required within a teaching-learning setting to assist SWDs, and an enhancement component added where the needs of an individual extend well beyond the provision allowed by the base allocation.

The notion of an enhancement component appears to be most appropriate when there is an inequity inherent in the allocation model. For example, in the ascertainment-based model, the additional contributions by way of Other Ascertainment Levels (OALs) is proper as it takes into consideration the added demands of a second (or in some cases, third) classification. It is also conceivable that specific hardships might be experienced by some schools by virtue of their remote geographic location or by the especially disadvantaged circumstances of the community in which they are located.

Our analyses of the EAP profile and its capacity to quantify the actual (or required) adjustment needs of students provides no compelling reasons for a 2-dimensional funding model (e.g., base allocation and enhancement contribution). In other words, we find no need for a separate enhancement contribution at this stage.

The analyses we have undertaken endorse EAP Total Score as the most appropriate metric on which to base a funding formula thereby doing away with the need for complicated or cumbersome calculations or multi-scale decisions associated with disability categories, education jurisdictions, or other categorical variables (e.g., gender, cultural background). The EAP Total Score discriminates students with the highest support needs from others across impairment categories and ascertainment levels. It identifies students attending special schools as the single group requiring the greatest extent of adjustment but, importantly, moves away from six bands toward the actual magnitude, extent, and pervasiveness of adjustments needed by individual students.

In summary, the analyses we have undertaken provides no evidence that any group of students would be significantly advantaged or disadvantaged if EAP

Total Score was the primary element upon which funding was provided for SWDs. The crucial point is that school personnel make adjustments to ensure that students have access to the curriculum and participate in appropriate education programs, and these adjustments have both a personnel and resource implications.

The comments made here in no way suggest that the trial EAP profile is without limitations. We suggest amendments to its structure and wording in the final section. Furthermore, there is still a need to confirm some psychometric characteristics of the instrument including test-retest reliability and predictive validity. Based upon what we already know, it is our view that the EAP profile will pass these tests.

We turn now to consider the basis on which notional funding allocations might be made to assist SWDs in the future.

Students and notional dollars

As indicated in Table 1, the SCOLR database contained 17,155 students currently attending Queensland schools with an ascertainment at Level 2 through 6. It will be recalled that Level 1 is reserved (mostly) as an identification category for those awaiting the completion of the Ascertainment process. Performance Monitoring and Reporting Branch informed the research team on 25 January 2005 that $279,059,000 was the notional sum allocated in 2004 to support the 15,673 students who are ascertained at Levels 4, 5, and 6 (excluding any costs associated with early schooling and special transport). The remaining 1,482 receive no allocation (Levels 1 to 3).

The trial sample of 1,565 students represents 9.08% of the total population of SWDs in 2004 and, therefore, a $25,343,860 commitment to the sample is indicated (i.e., 9.08% of $279,059,000). It is our recommendation that consideration be given to the proposition that no cut-off point for funding be considered as there is with the ascertainment-based model (i.e., Levels 4 to 6 only). The EAP profile identifies adjustment required and, as SWDs are already thought to have learning support needs beyond what can be provided through regular class instruction procedures and strategies, distribution of funds to all eligible students would seem no only equitable but in accordance with social justice principles.

If students were to be provided with notional funding based on the EAP Total Score, all students (all Levels, 1 to 6) would receive a notional allocation. We base our calculations in this report on the assumption that *no additional funds are made available*. If the same level of funding were to remain (i.e., $279,059,000), a dollar value per EAP Total Score point would become the basis for funding. This dollar value was calculated using the sample data at $96.77, derived by

dividing $25,323,680 by the Sum of EAP Total Scores for the sample (i.e., Σ = 261,904 points).

Following this procedure, a dollar value cap on the allocation to SWDs would apply. This cap might be amended on review based upon the number of SWDs in the system, perhaps upon a proportional increase in the total student population.

The mean allocation for the sample would be $16,276 (*SD* = $6,253) and the distribution would emulate Figure 1 but with a dollar value rather than EAP Total Score as in Figure 42 below.

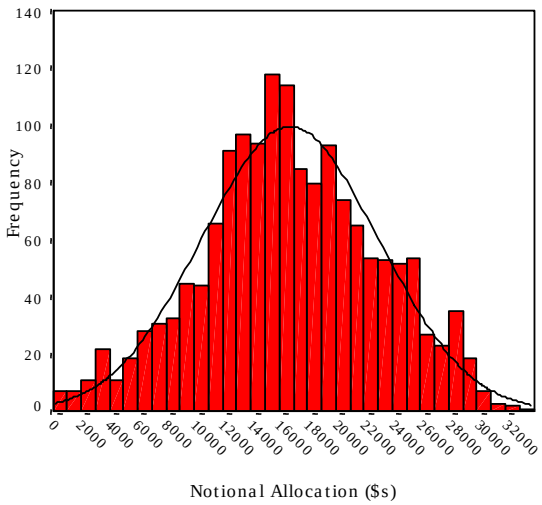

Figure 42: Distribution of Notional Funds to SWDs Based Upon EAP Total scores

As shown in Figure 35, there would be difference in the student allocation across settings. These data are given in Table 21.

Table 21
Notional Allocations to Students in Various Education Settings (Rounded to Whole Dollars)

Location	*n*	Mean ($s)	*SD* ($s)	Minimum ($s)	Maximum ($s)
Regular class	565	13,019	5,659	0	28,770
Special class	155	15,827	5,083	1,937	28,092
Special unit	674	17,315	5,403	1,259	31,289
Special school	171	23,349	4,946	9,590	33,226
Total (*N*)	1,565	16,276	6,253	0	33,226

It can be seen from Table 21 that the maximum and minimum allocation to students across these four settings varies greatly. Using Table 16 as a reference, the allocation to students attending various setting using the proposed model would be at roughly the same level as at present. We recognise, however, that some students would receive more or less currently. The important consideration is that the notional allocation would be based upon actual adjustments reflecting

needs, not classification. For completeness of data reporting, we include Table 22, which gives a breakdown by ascertainment category and level. For simplicity of presentation, values have been rounded to whole numbers.

Table 22
Notional Mean Allocations to Students in Various Ascertainment Categories and Levels Based on EAP Total Score

Highest Ascertainment (Asc) Code	Asc Level	*n*	Mean ($s)	*SD* ($s)	Minimum ($s)	Maximum ($s)
Autism Spectrum	1	1	14,724	.	14,724	14,724
Disorder	4	15	9,752	492	775	19,374
	5	185	14,214	5,058	2,422	24,799
	6	187	18,178	4,955	5,425	29,933
Hearing Impairment	2	38	5,325	3,986	0	12,496
	3	29	6,754	4,722	0	20,149
	4	23	12,340	3,730	5,425	18,890
	5	25	14,089	4,786	2,809	22,571
	6	32	18,605	4,841	8,331	30,127
Intellectual	5	6	17,533	2,340	15,402	21,215
	6	53	23,598	4,527	12,206	30,902
Impairment/Autism	4	17	12,114	5,482	4,262	24,896
Intellectual Impairment	5	288	15,359	4,053	5,037	26,542
	6	328	20,803	5,072	7,362	33,226
Physical Impairment	1	1	8,621	.	8,621	8,621
	2	5	3,139	2,816	194	7,072
	3	9	4,596	3,050	1,550	10,849
	4	38	11,464	5,353	1,550	25,477
	5	35	14,021	5,151	5,812	28,092
	6	34	20,380	6,316	7,265	28,867
Severe Emotional	5	2	10,607	6,644	5,909	15,305
Disorder	6	3	18,922	5,017	15,693	24,702
Speech & Language	4	12	8,218	4,628	3,294	18,212
Impairment	5	114	14,287	3,928	5,812	23,830
	6	38	18,352	4,767	10,462	27,802
Vision Impairment	2	1	0	.	0	0
	3	2	3,923	69	3,875	3,972
	4	4	12,956	4,966	7,265	18,018
	5	14	11,479	4,884	2,809	19,083
	6	26	16,770	6,676	6,103	31,289

We are mindful of three limitations inherent in our calculations. First, the figures in Table 16 are out of date and there has been a considerable increase in funding over the past three years. Second, the calculations above are based on funding of students from ascertainment Level 1 through 6. This being the case, additional funds might be necessary to support students at Levels 1 to 3. Third, a sample does not always accurately represent the characteristics of a population. It is simply an estimate and, as such, the data upon which we have made our calculations may need some modification to accommodate the real characteristics of the population.

Ranking and allocation

Some concern might be expressed about major changes to the notional allocations to individual students, or about the total allocation that might be assigned to a specific school. Under the proposed system, all students identified as SWDs and would receive support based on their EAP profile score. The research team undertook a limited comparison of actual and proposed funding using 100 individuals drawn from the 1,565 database being mindful of the three limitations noted above and that our conclusions are based on approximations

The students. As there might be variations in funding level to individual schools, four schools were identified (by school number only) and chosen for inclusion in the comparison because the database contained several students from each. Two schools contributed six students each; another, eight students; and another, four. The database was then sorted by ascertainment category and five students were selected from each ascertainment level (except for SED for which only two were selected due to the small sample), drawing also from the three region categories (n = 43). The remaining 57 students (of the 100) were randomly selected.

The characteristics of this test case sample are shown in Table 23. The Mean EAP Total Score was 153.8 (SD = 77.5); the means of this sample and of the total sample are statistically different (Z = 2.28, p < .05) indicating that this subgroup has lower overall adjustment needs than the total sample of 1,565. The analyses reported below must be considered with this in mind.

Performance Monitoring and Reporting Branch provided the notional dollar allocation for each student. Twenty-two students had zero allocations; they were students enrolled in a non-state school and, therefore, did not attract Education Queensland resources (n = 7), or had a highest ascertainment level less than 4 (n = 15).

The total funding for these 100 test case students under the present (ascertainment-based) model is $832,674.43. The proposed model (based on EAP Total Score) would allocate $1,494,026.01. The difference is likely an artefact of the sample. Recall that the funding total is capped for the total sample at $25,343,860. That the test case sample would receive more simply means that others in the trial sample (of 15,565) would compensate by way of reduced funding because they had lower adjustment needs.

Table 23
Characteristics of Students in the Allocation Comparison Sub-sample by Regions and Setting

Region/Setting	ASD	HI	IAS	II	VI	*n*
Metropolitan area	17	4	4	12	3	64
Regional area	2		1		2	10
Rural area			1	6	2	14

Remote area		7		3		12
Regular class	8	10	1	6	4	49
Special class	1			3		9
Special unit	10		2	11	3	37
Special school		1	3	1		5

NB: Multiple ascertainments were possible

The research team examined the profiles of the 13 students who were most affected by the new funding model. Five sustained funding cuts of between $6,200 and $1,300. Two of these had multiple ascertainments (II-6/PI-6; PI-5/HI-1). The others were PI-6, ASD-6, and VI-6. Individual focus areas scores (with one exception, the student with II-6/PI-6) were generally low, indicating that these students were coping well in their current education location (three in regular classes, two in special units). The student with II-6/PI-6 was not inordinately disadvantaged, with her allocation dropping from approximately $19,900 to approximately $17,600.

Eight students gained significantly under the proposed model, from about $12,000 to about $18,000. Three of these received zero allocation under the present model (two attended non-state school and the other was classified ASD-1 and was yet to be ascertained). All eight students had a single classification and, based upon their focus area scores required considerable adjustments in their teaching-learning environment. It would seem as though their funding level under the Ascertainment model was less than might be justified by their need.

Overall, it appears as though these shifts in allocation using the EAP model produced a more equitable distribution of (notional) dollars and, therefore, more consistent with social justice principles than the ascertainment-based approach. How would individual schools fare?

In the test case sample, there were 12 schools represented by more than one student. Table 24 shows the number of students in the sub-sample attending each school, the notional funding allocation under the present (ascertainment-based) model, the allocation under the EAP model, and the difference.

Table 24
A Comparison of Notional Funding Allocation to Twelve Schools

School	No. of SWDs	Present model ($s)	EAP model ($s)	Difference ($s)
Smithfield State High	2	33,361	43,882	10,521
The Kumbari Avenue	2	26,337	39,523	13,186
Dakabin State High	2	13,454	28,964	15,510
Flagstone State	6	54,420	70,521	16,101
Woombye State	2	12,173	29,352	17,178
Our Lady of Lourdes Primary	2	0	18,696	18,696
Cherbourg State	2	22,625	43,398	20,773
Jinibara State	4	49,533	70,328	20,795

Gatton State	2	18,341	40,104	21,763
Miami State High	2	26,908	57,831	30,924
Doomadgee State	6	0	49,210	49,210
Capalaba State High	8	69,620	121,184	51,564

Of particular note are the allocations to Cherbourg and Doomadgee State Schools. The two girls at Cherbourg have intellectual impairment; one is 12-years old with II-5 Ascertainment; the other 10 years old with II-6 Ascertainment. Doomadgee is advantaged under the proposed model as the three boys and three girls in the sub-sample all have HI-2 Ascertainments, which would attract funding hitherto not available. The current model seems especially harsh in the case of these schools.

As indicated earlier, the test case sample does not provide a complete picture of potential funding gains and losses. It is a snapshot of a single group of students. Each of the schools would be advantaged by the change in model *only if these students are all of the SWDs in those schools*. This is unlikely. Because this analysis does *not* take into account changes in funding to all SWDs attending the test case schools, it is not possible to judge what the balance of funding changes might be.

Conclusion

It is important to emphasise at this point that the research team was engaged to undertake analysis of the EAP profile trial and, on the basis of those data, to make recommendations on alternative funding mechanisms. The information provided in this report confirms the need for a change from the current, narrow funding model using ascertainment level(s) to one based directly on students' Education Adjustment Program profile. Our analysis of the psychometric characteristics of the profile and scrutiny of a distribution model based upon the EAP Total Score suggests that the EAP profile is a significant improvement over the ascertainment process. The profile is based upon actual adjustments to the students' teaching-learning environment, all of which place increased demands upon the school they attend, their teachers, and other education personnel.

Perhaps the two greatest advantage of funding based upon the EAP profile are the redress of inequities inherent in the present model, and the straightforwardness of application.

In the regard to the first of these, while students with multiple ascertainments gain additional (notional) dollars for Other Ascertainment Levels (OALs), those with single ascertainment but extremely high needs receive no compensation for level of need. It is incumbent upon school districts and individual schools to make allowances for the demands that these students place upon the education system. Another considerable advantage is the allocation of support to students with ascertainments below Level 4 who, under the present arrangements, receive

no additional support. Our analyses show that many of these students require important adjustments to their teaching-learning environment and that an allocation of support to the schools they attend is fully warranted. It is possible that some additional allocation might be required to continue the present level of funding but we estimate that this should be modest.

In regard to the second, the EAP profile is a relatively straightforward instrument to complete requiring the involvement of stakeholders aware of students' educational circumstances and the adjustments that are already in place and those that might be required in the future. Data can be collected locally via electronic forms and access can be gained centrally. Simple calculations can be made using the existing students' databases on which to allocate support.

7
MAINTAINING AN EAP DATABASE

In this section, we comment briefly upon the trial instrument and the mechanisms that will allow for on-going statistical analysis of the EAP. First, we turn our attention to the instrument.

Education Adjustment Program Adjustment Profile (EAP profile)
In general terms, the EAP profile is a well-constructed and secure instrument in terms of its capability of providing information upon which variations can be made to students' teaching-learning environments and the provision of support to enable those adjustments to be achieved. The research team is comfortable with the structure of the EAP profile to the extent that the focus areas deal with the variety of adjustments that are needed for the broadest range of student characteristics.

Analysis of the instrument was complicated by the configuration of individual items. Specifically, there is a lack of consistency in the number of response options available within and across focus areas and the level of response required. An example can be drawn from pp. 3 and 4 of the trial instrument. Item 1 has five options: "Once per semester"; "From once per term to once per month"; "On about a weekly basis"; "On about a daily basis"; "Not applicable". Item 4 also has five options but they are not consistent with Item 1: "From once per term to once per month"; "On about a weekly basis"; "On about a daily basis"; "More frequently than once per day so that content varies very significantly form that taught to age peers"; "Not applicable".

We recommend that a consistent range of options be given across the instrument. Examples are given in the margin of the trial instrument to assist those completing the form and these might be extended to enable respondents to judge the level of adjustment required by the target student. We would favour a consistent implied interval scale along the following lines:
1: Rarely, if ever
2: About once a year
3: About once per semester
4: From once per term to once per month
5: On about a weekly basis
6: On about a daily basis
7: More frequently than once per day
8: Continual and/or constant

The algorithm would be adjusted so that the number of items would be subtracted from the EAP Total Score before the funding level was established

(on the basis that a students would receive a minimum of “1,” “Rarely, if ever,” for all items and yet have no adjustments made or required).

Applying this scale would allow for complete analysis of the instrument and overcome difficulties associated with the elimination of items without variance in response (see e.g., Item 7 on p. 8). Slight re-wording of this item would permit the use of an interval scale.

We also turned our attention to the need for the “Overall Ratings” that are included at the end of each focus area. Our analyses suggest that these items could be eliminated from a future instrument. In some cases, “Total Overall Ratings” provides similar information to EAP Total Score, for example, compare Figure 43 below with Figure 35 (reproduced below)

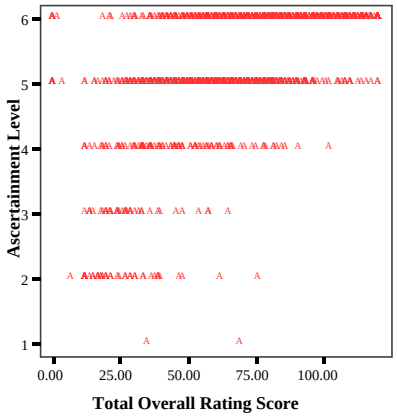

Figure 43: Distribution of Students at the Six Ascertainment Levels According to Total Overall Ratings

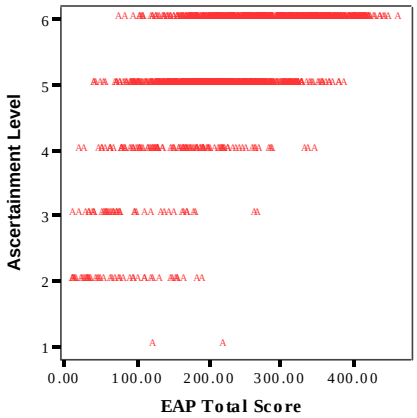

Figure 35: Distribution of Students at the Six Ascertainment Levels According to EAP Profile Total Score

In other areas, the Total Overall Ratings imposes limits on the distribution. For example, the distribution shows a ceiling effect, thereby failing to discriminate students with the greatest adjustment needs (see Figure 44). Using Total Overall Ratings as the basis of a funding model would repeat the same problem found with the use of Ascertainment Level. We believe that Figure 43 demonstrates a fatal flaw associated with that score.

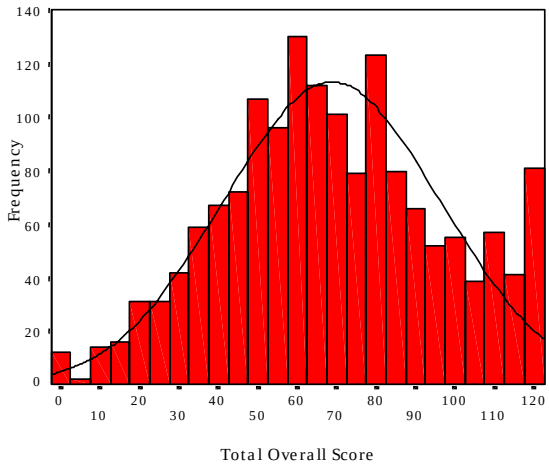

Figure 44: Distribution of Students' Total Overall Rating

It should be noted here that no student scored the maximum possible EAP profile Total Score of 345. We recommend, therefore, that Overall Rating items be dropped from future versions of the EAP profile.

Some minor adjustment might be necessary throughout the EAP profile to enable the use of the scale we suggested above. In addition, providing additional age- and impairment-related examples in the margins would be helpful. The research team is willing to provide input on an informal basis should this be thought to be of value. It is only a trivial point but we would also suggest that students' cultural identity be set within one, rather than three, questions. Respondents could be asked to indicate "1" – "Non-Indigenous background," "2" – "Aboriginal background," "3" –Torres Strait Island background." This would streamline the Student Information record.

Ongoing statistical analysis

The option we have outlined above for the establishment of a notional funding allocation for students with disabilities should require minimum change in existing Education Queensland systems and procedures and, hence, create a relatively minor imposition on staff. It would be cost-effective to the extent that the SCOLR database already exists and there is an existing procedure for establishing SWD funding and the notional total funds available for distribution to School Districts for SWDs in any given year.

The immediate requirement would be the amendment of the trial EAP profile instrument along the lines described in the previous section. Following that, an on-line version of the questionnaire would be constructed and trailed. The responses to this version would be downloaded to the central facility and permit:

- the calculation of an EAP Total Score for each student;
- the sum of all EAP Total Scores at a given point in time;

- calculation of the EAP point value (notional total funds allocation to SWDs divided by the sum of EAP Total Scores);
- the assignment of notional funding for each SWD based on EAP Total Score; and
- the sum of notional funding for distribution to each School District.

There is a potential for school personnel to generate reporting bias, that is, to assess the student adjustments being made or needed beyond what is occurring or actually required. If this situation arises, the sum of EAP Total Scores would increase with a commensurate drop in the EAP point value.

There are difficulties associated with reporting bias as it may not be a phenomenon practised by all schools. Some may be more conservative in their judgments of adjustments made and needed, than others. This might be addressed through inservice training on the use of the EAP profile and also through a state wide monitoring procedure similar to the one used in ascertainment monitoring (although this is might only be necessary if bracket creep is observed). The difficulty with bracket creep is more than just movement of scores along the x-axis (as might be apparent if Figure 1 began to look like Figure 9 or 10). It involves a movement toward a ceiling effect that reduces variability and could disadvantage those students with the highest level of need.

It is also possible that there might be an increase in the number of students becoming eligible for funding under the EAP. Currently there is little incentive for a school to seek ascertainment for students currently ascertained at Levels 1 through 3, as there is no funding implication. If students with mild impairments are brought into the equation, it is conceivable that more will be entered into the SWD system.

It is impossible to foresee all the consequences of a change in the SWD funding model. We advocate for such a change but urge that the implementation process be considered as a “work in progress” and that the execution is staged and monitored carefully to ensure equity and transparency. The database established during the trial might be considered as a baseline for monitoring bracket creep. A biannual or annual review might assist refinement over the forthcoming three school years.

8
RECOMMENDATIONS

Based upon the information provided above, the research team makes the following recommendations:

1. The EAP profile is amended according to suggestions made in this report and an on-line form be created and trailed forthwith.
2. The EAP profile is introduced within a suitable timeframe as a means of determining the notional funding allocation to students with disabilities across Queensland and administered and monitored in accordance with existing Education Queensland procedures and protocols.
3. An EAP Total Score is used as a basis for the calculation of notional funding for students with disabilities.