AFFECTIVE DEVELOPMENT IN PRIMARY STUDENTS: AN INSTRUMENT FOR TEACHER AND STUDENT USE IN THE MEASUREMENT OF AFFECTIVE DEVELOPMENT IN PRIMARY SCHOOL STUDENTS

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This study resulted in the development of two instruments for teacher and student use in assessing the affective development of year 5, 6 and 7 Primary school students. Eighty-seven teachers rated the students in their class on a set of 22 affective characteristics which they deemed important to develop in their students as a result o+f their teaching. Factor analysis of these ratings resulted in two factors. Twenty-two teachers wrote classroom descriptors for the 11 characteristics making up the two factors which formed the basis for the instruments The descriptors were validated and the reliability of the two instruments was determined using a 25% sample of the children in these 22 classes. These instruments will help sensitise teachers to achieve a more appropriate balance between cognitive and affective objectives in their classrooms, and where there is dialogue between teacher and student following the student's self evaluation, will result in student empowerment.

> Affective issues play a central role in mathematics learning and instruction. ... Although affect is a central concern of students and teachers, research on affect in mathematics education continues to reside on the periphery of the field. If research on learning and instruction is to maximize its impact on students and teachers, affective issues need to occupy a more central
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> (McLeod, 1992, p. 575)

In a major report prepared by the Schools Council for the National Board of Employment, Education and Training concerning Australia's teaching profession and the problems confronting schools, the authors asserted that:

> Yet no matter how frequently and cleverly schools and systems are restructured, little of import will change until the working relationships between teachers and students become more effective and productive.
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> (1990, p.49)

It is our view that in part we, as educators, have brought the problem upon ourselves. We have been so convinced that schools exist to "push in" the essential content, process and skills of our disciplines, particularly mathematics and the sciences, that we have been deaf and blind to the human drama enacted before our very eyes. Day by day our students in many and various ways try to tell us that they are more than just "heads" to be filled with the school curriculum, but being "moulded in our own image" have feelings, attitudes, beliefs and needs. Perhaps above all they want to be valued and feel that, within school especially, their opinions count and their needs can be met. And day by day we ignore them.

It is our contention that how we feel is almost always more important to us than what we know, and that since behaviour is frequently determined more by how we feel about a situation than by what we know about it , the affective dimension of our lives will play a major role in our everyday living. Tyler (1973) comments in this regard that the most profound challenges to our society are not cognitive. They are challenges to our social unity, and to our individual righteousness, to our ethical standards and to our moral values, to our courage and to our compassions. If our schools dwell too much on cognitive outcomes, they will fail to contribute as they should to meeting those other important challenges. In this regard Tyler is supported by the research of Knight (1974), Wright and Headlam (1976), Popham (1978), Black and Dockrell (1980), Glasser (1986), Braithwaite (1988), and Kohl (1991).

What we are addressing here is the balance between cognitive and affective goals in everyday classrooms. Annesley and Clark (1990) have argued, and supported their argument from an extensive review of the literature,

that what enhances the relationship between teachers and students and promotes a view of school that leads to student empowerment, is a situation where there is in each classroom a balance between the pursuit of cognitive and affective goals and where each goal is pursued as both a means and an end of education. They stress that neither should be seen as subservient to the other but many times will be blended naturally into each other during the teaching of any particular lesson.

Because we hold and support the view that little of import will change in schools until there is a change in teacher - student working relationships, and that some intervention is necessary to encourage a greater balance between cognitive and affective outcomes, we sought to design an assessment instrument for charting student growth in the affective domain which could be used by teachers and students. In this way students would learn to make judgements about their own development in this area of classroom learning. Indeed, since teacher judgements deriving from this instrument are essentially for formative purposes it seemed to us that a teacher and student could compare judgements, and this would allow each to share their perceptions on a wide range of affective outcomes. This interchange can only make the student feel that he or she is a partner rather than a recipient in the educational enterprise, thereby improving morale.

THE STUDY

The present study sought to investigate the portability of the Secondary school instrument developed by Annesley and Clark (1990) to the upper part of the Primary school.

The Sample

One hundred and ten teachers in grades five, six, and seven in 24 Primary schools in Townsville and Cairns were invited to participate in the study. Seventeen of these schools comprising two Roman Catholic and eight State Primary schools in Townsville and seven State Primary schools in Cairns formed the final sample. Eighty-seven teachers completed an initial survey questionnaire.

The Survey Questionnaire - Part A

The Survey Questionnaire was in two parts. Part A of the Survey Questionnaire was designed: (i) to determine the current situation in a sample of Primary schools in North Queensland regarding the development of affective characteristics at the upper grade levels; (ii) to gain some background details on the teachers participating in the study; and (iii) to ascertain what teacher educators can do at both preservice and inservice levels to assist teachers in developing the affective characteristics of the children they (will) teach. Results from Part A are not reported in this paper but can be found in Annesley and Putt (1992).

The Survey Questionnaire - Part B

Part B of the questionnaire sought information from the teachers concerning the affective characteristics they would like to develop in their students through their teaching. The list of 22 affective characteristics in Part B (see Table 1) together with a definition for each characteristic was compiled from those generated by Annesley and Clark (1989) together with those affective outcomes which were included in the current State Primary school syllabus documents for the various subjects. Respondents were asked to indicate each of the characteristics which they desired to see developed in their students as a consequence of their teaching. They were also given the opportunity to add other characteristics which were not on the list but which they regarded as important.

Insert Table 1 about here

The data indicated that there were no significant additions to the original list of 22 affective characteristics supplied to teachers. This was an interesting outcome since it suggested that the original list of 22 characteristics was comprehensive and had a measure of face validity.

The 87 teachers were invited to rate each student in their class on a scale from 5 (most satisfactory) to 1 (least satisfactory) on each of the 22 affective characteristics. Sixty-eight of the 87 teachers (a 78% response) returned ratings for each student in their class on the 22 characteristics. This represented a total of 1740 students being rated. Correlations between each of the variables are shown in Table 2. A principal component factor analysis was run on the data using both orthogonal and oblique rotations. A scree plot of Eigenvalues (as originally proposed by Cattell (1966)) and the Eigenvalue-one criterion (proposed by Kaiser (1960)) both suggested that a two factor solution best described the data. The first three Eigenvalues were 14.472, 0.963, and 0.285.

Insert Table 2 about here

The first factor was comprised of the 6 characteristics - Enjoyment of learning, Independence, Initiative, Appreciation of Language, Appreciation of Mathematics, and Curiosity. Inspection of these characteristics suggests aspects of general classroom attitudes that impact on academic performance. The second factor was comprised of the 5 characteristics - Caring for others, Obedience, Honesty, Courtesy, and Responsibleness. These characteristics are of a much more personal nature and could be components of a social behaviour factor. The criterion which was used for grouping characteristics was that the factor loadings obtained from the normalised varimax rotation should be at least 0.72. The oblique rotation yielded a similar result to the varimax. It would have added "Self Esteem" to factor 1 and left factor 2 unchanged.

A comparison of the two factors and the characteristics within each factor obtained from the Primary teachers in this study with that of Secondary teachers in a similar study reported by Annesley and Clark (1989) is illuminating. In their research with State, Catholic and Independent Secondary schools using some 122 teachers and 2044 students they also reported a two factor solution. Three of the six characteristics in the first factor were the same as for the Primary teachers namely, Enjoyment of learning, Independence and Initiative. The remaining characteristics for the Secondary teachers were, Positive attitude, Self motivation and Participation, while for the Primary teachers they were, Appreciation of Language, Appreciation of Mathematics and Curiosity. It is not hard to see reflected in the last three characteristics of the Primary school a "picture" of the essential curricula of that sector of education.

Of the five characteristics in the second factor, four were common to the Primary and Secondary teachers namely, Obedience, Honesty, Courtesy and Responsibleness. The fifth characteristic in factor two for the Primary teachers was Caring for others, while for the Secondary teachers it was Self discipline.

Having established a two factor model, the next task was to develop a draft of the instrument for rating students on the two factors. This involved a subset of the teachers writing a series of classroom/school behaviours (descriptors) for each characteristic within each factor. The behaviours were to be written in a way that would allow a teacher to assign a student to a position on a 5 to 1 scale for that characteristic where 5 is most satisfactory and 1 is least satisfactory. Twenty-two teachers were selected from the 68 who completed the matrix task (eight from Cairns and 14 from Townsville).

The researchers and the teachers met one afternoon after school in each centre to arrive at consensus on the descriptors for each of the levels of each characteristic associated with the two factors.

INSTRUMENT VALIDATION

While reliability forms one important dimension of an assessment instrument's characteristics, an even more important dimension is its validity, since it matters little if the instrument is consistent in its measurement characteristics if it does not measure what it purports to measure. A considerable amount of time was spent in determining the content and construct validity of the Measure of Affective Development in Primary School Students (MAPS). In essence we have followed a philosophy espoused by Salvia and Ysseldyke: "In a real sense,

one does not validate a test, one conducts experiments to demonstrate that the test **is not** a valid measure of the trait or construct." (1988, p.139)

Each of the teachers was supplied with a copy of the descriptors for the 5 points on the scale for each factor, and were asked to indicate whether each statement was acceptable or whether it could be improved. These suggestions were considered by the researchers in compiling the final version of the instrument for use in establishing its reliability.

RELIABILITY TRIAL - TEACHERS' TASK

Having established a valid set of descriptors, test-retest reliability of the instrument was determined. For each of the 22 teachers involved in this phase a random sample of 25% of the students in each class was taken. The teachers rated the sample of students on both factors on two occasions separated in time by three weeks. Ratings were obtained on 122 students from 18 of these teachers.

Pearson correlation coefficients for the teachers' ratings on each factor were 0.85 for Factor 1 and 0.85 for Factor 2. These data provide evidence of the reliability of the assessment instrument which has been developed for the affective domain, especially when account is taken of the lack of experience of most teachers in working in a quantitative manner in this area of schooling. The reliability coefficient of 0.85 for Primary teachers is in keeping with that obtained by Annesley and Clark (1990) on their Measure of Affective Development in Secondary students (MOAD). They reported a reliability coefficient of 0.80.

When teachers used the instrument the second time they were given the opportunity to raise issues about the instrument and also to make any comments they wished. The issue which was raised most often by some of the teachers related to the constraints imposed by the format of the instrument.

RELIABILITY TRIAL - STUDENTS' TASK

In an earlier study Annesley and Clark (1990) invited a sample of Secondary school students to assess their own progress in the affective domain by rating themselves on the same instrument that their teachers had used to rate them. It was decided to use a similar procedure with the random sample of 122 upper Primary school students in the present study. The sets of descriptors were altered so that each statement was written in the first person. For example, Factor 1, level 5 was as follows:

5. * *I am almost always an excited and enthusiastic learner, and I take pleasure in pursuing most subjects.*

* *I am almost always confident to think, plan and work independently.*

* *I am almost always self-directed in making decisions and taking action, and I require minimal supervision and guidance.*

* *I almost always seek language experiences and find enjoyment and interest in their many forms.*

* *I almost always find enjoyment in maths activities and I often pursue maths topics further.*

* *I am almost always motivated to know more about a topic to enhance my own knowledge.*

This was done so that students could more easily relate to each statement. The students were asked to rate themselves on both occasions that their teachers had rated them.

Pearson correlation coefficients for the students' ratings on each factor were 0.66 for Factor 1 and 0.65 for Factor 2. The reliability coefficient of 0.66 for Primary students is comparable to 0.70 obtained with 316 secondary students reported by Annesley and Clark (1990) on their Measure of Affective Development in Secondary students (MOAD).

On the first reliability trial the students were also asked to write any comments they wished about the rating task after they had completed it. The number of students who responded was 102 or 84 %.

When the students rated themselves a second time three weeks later, they were asked also to underline those words in each of the statements for both factors which they had difficulty understanding. The final version of the student instrument incorporated simpler words for some of those identified.

On the second reliability trial the students were asked to write on things they liked and disliked about the task. Some of the comments showed a high level of maturity by some students in this age group. Clearly, they appreciated the opportunity to examine the affective side of their school lives.

CONCLUSION

Black and Dockrell (1980), in an earlier attempt to work with teachers in the affective domain, observed that when teachers make judgments in this area they appear to employ what Bruner and Taguiri (1954) have called "naive implicit personality theory'. Taguiri (1961), in an extensive review of "Person Perception" describes implicit personality theory as:

> a concept used primarily in connection with individual differences in person perception to refer to the assumptions we make about the nature of other persons ,... these assumptions presumably affect the way we perceive and understand others, much in the same way our conceptions about any phenomenon influence **what** we perceive, and **how** we perceive it and understand it. (p. 423)

Support for Bruner and Taguiri's (1954) theory was evidenced by a two factor solution which contained 11 of the 22 original affective characteristics judged by teachers as being important to develop in their students through their teaching.

We believe that use of the Secondary and Primary measures of Affective Development will help sensitise teachers to achieve a more appropriate balance between cognitive and affective objectives in their classrooms, provide a reliable and valid measure of student growth in the affective objectives, and where there is dialogue between teacher and student following the student's self evaluation, will result in student empowerment. Clearly, there is much that links the Primary and Secondary sectors of schooling in the area of assessment in the affective domain. The fact that there is now a reliable and valid assessment instrument available for both Primary and Secondary teachers and students is a further link between Primary and Secondary schools.

DIRECTIONS FOR FUTURE RESEARCH

There are some clear directions for future research arising out of this study. One is to explore a Likert type format. The outcome of this would provide a 'profile' on student development in the affective domain on the characteristics within each factor.

Given the significance of the student response when they were asked to say what they liked about the Measure of Affective Development in Primary Students (MAPS), it is important to explore further:

(i) the effect of teacher-student discussions on their mutual ratings;
(ii) the impact on student performance in the classroom, both academically and behaviourally;
(iii) the change in students' liking for school and feelings of satisfaction; and
(iv) the parents' perception of change in their children.

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Table 1:
List of Affective Characteristics

Characteristic	Definition
1. Caring for others	• an accepting and positive attitude
2. Self esteem	• has favourable opinion of him/herself
3. Enjoyment of learning	• takes pleasure in most subjects
4. Participation	• actively joins in
5. Values excellence	• strives for high quality work
6. Independence	• the state of thinking for oneself
7. Obedience	• willingness to follow directions
8. Self motivation	• self initiated action
9. Honesty	• in the context of intellectual honesty
10. Courtesy	• respectful in manner and action
11. Responsibleness	• trustworthiness and accountability for one's actions towards others and the environment
12. Perseverance	• sticking to the task
13. Appreciation of cultures	• in the context that one's way is not the only way
14. Initiative	• acts without direction from others
15. Willingness to seek help	• in most subjects
16. Positive attitude	• in response to most subjects
17. Appreciation of language	• values the richness of the English language
18. Appreciation of the use of Maths	• values the application of maths in real life situations
19. Co-operative effort	• willingness and ability to work co-operatively with others and to value the contributions of others
20. Self Evaluation	• knows one's strengths and weaknesses, and not just in the academic sense
21. Curiosity	• an eager desire to know
22. Open-mindedness	• willingness to consider new ideas

Table 2
Correlation Matrix for Affective Characteristics (No. of cases =1740)

Chara-cteristic	car foth	self -est	enjl earn	part icip	val exc	inde pend	obed ienc	self mot	hon esty	cour tesy	resp ness	pers ance	app cult	init atve	wils khlp	posa ttde	app lang	app math	coop eff	self eval	curi osty	opmi nnes
carfoth	1.00	.38	.60	.58	.59	.51	.73	.58	.63	.69	.67	.58	.60	.54	.52	.58	.52	.45	.67	.55	.49	.56
selfest		1.00	.61	.60	.54	.60	.39	.58	.39	.35	.48	.54	.47	.58	.47	.61	.53	.54	.49	.54	.58	.54
enjlearn			1.00	.79	.77	.74	.67	.81	.58	.58	.70	.77	.64	.77	.66	.77	.73	.72	.69	.69	.75	.68
particip				1.00	.72	.71	.62	.75	.60	.56	.66	.72	.58	.73	.66	.73	.65	.66	.69	.66	.70	.66
valexc					1.00	.73	.68	.78	.60	.58	.71	.77	.65	.72	.62	.71	.73	.67	.67	.69	.68	.64
independ						1.00	.61	.80	.58	.52	.70	.76	.59	.79	.59	.69	.69	.69	.62	.68	.70	.65
obedienc							1.00	.69	.73	.77	.75	.70	.63	.62	.56	.67	.61	.55	.70	.60	.56	.63
selfmot								1.00	.65	.61	.75	.82	.65	.82	.66	.76	.75	.72	.69	.72	.73	.69
honesty									1.00	.70	.68	.61	.59	.59	.53	.60	.56	.52	.62	.55	.55	.59
courtesy										1.00	.75	.62	.62	.55	.54	.63	.56	.46	.66	.55	.51	.58
respness											1.00	.76	.69	.70	.60	.71	.68	.61	.73	.68	.62	.65
persance												1.00	.66	.78	.66	.76	.73	.69	.70	.71	.70	.67
appcult													1.00	.63	.55	.65	.66	.57	.67	.65	.60	.69
initatve														1.00	.66	.73	.73	.70	.65	.71	.75	.68
wilskhlp															1.00	.70	.60	.58	.64	.62	.63	.61
posattde																1.00	.72	.67	.71	.69	.71	.70
applang																	1.00	.75	.65	.68	.72	.67
appmath																		1.00	.62	.67	.72	.64
coopeff																			1.00	.71	.63	.69
selfeval																				1.00	.70	.70
curiosty																					1.00	.74
opminnes																						1.00