

Creative Thinkers: A Valuable Asset in a Developing Country: Part Two*

Jeannette P. Maas

In developing countries, changes in social systems and the breakdown in social structures, coupled with population growth and changing technology, create a large element of unpredictability. This requires the development of creative potential in people who can adapt to the new, rather than attempting to superimpose any predetermined system.

One of the capabilities of the divergent thinker is the ability to deal with new, emergent situations in creative ways. A continuous supply of such thinkers who can develop systems that are inclusive of change is required.

A study was performed in 23 secondary schools in Fiji. The Alternative Uses Test and a Background Information Inventory, were administered to 2564 fifth formers (juniors in High School) of the two major ethnic groups (Indian and indigenous Fijians), males and females.

Students were separated into divergent, convergent and neither as categories. A larger percentage (31%) of divergent thinkers was identified than convergent (22%) and a still larger number fell into the 'neither' category (47%). Indigenous males produced the greatest number of divergent responses, the difference being significant at the 0.01 level.

In response to the Background Information Inventory, subjects were compared by groups. A one-way non-orthogonal analysis of variance was carried out. Differences significant at the 0.01 level were found between divergent and some other groups in both parents' occupation and education. Various reasons for the differences between these findings and those of other studies were hypothesized.

A full report of this research was made in *Directions* 16 (Maas 1986).

* This research was supported by a grant from the University of the South Pacific and was carried out, with permission from the Fiji Ministry of Education, in April 1982.

It has been pointed out that tests of achievement are used as a measure of success in school, and that these tests are devised so as to require one 'right' answer. This means that the students' thinking has to 'converge' on this already determined solution. Since the students' success is 'proven' by this method, teachers favour convention, and conformity to text/fact. A circularity is established in that the 'right' answers are required, and thus must be taught. This system discourages students who come up with different, but also possibly 'right', answers (divergent thinking).

On the other hand, those persons who have become creative scientists, artists (including writers of literature), and leaders have become so precisely because their thinking processes have diverged from the 'tried and true' into the creative and original. The literature on this topic has been thoroughly discussed (e.g., Vernon, Adamson and Vernon 1977) and does not need to be reviewed here. What has come to light in recent years is that this same phenomenon of limitation has an effect on the success or failure of development efforts in developing countries. When the uniformity of tradition is broken down through changes in social systems, convergent 'experts' all too often assume that there is only one way to be instituted, and frequently impose a system not really suited for a particular area or group (*Social Development Newsletter 1981*).

Because the usual emphasis in education is upon factual learning, information gathering, processing, recollection, and studying for high examination performance, teachers and administrators frequently fail to recognize the existence of students who have a high degree of creative thinking ability, and who may be organizing their thinking along the lines of internal control factors rather than through externally motivated means. It is believed that a certain proportion of such individuals are in regular classrooms, and are not identified. Yet those who are outstanding in these areas of thinking require special provisions to meet their needs, since they are a valuable natural resource. Until we can know certainly that they do exist, and that they can be identified, we cannot plan to give them the opportunities that we might be able to.

Since the teachers have the closest contact with the students, and come in contact with their responses to both oral and written questions and instructions, it is assumed that they would be in the position either to identify or to be unable to identify students who think either divergently, convergently, or in the main, do neither. For this reason, at the same time

that the Alternate Uses Test was given in the classroom, the teachers of that class were asked to classify the students into the three categories. Following are the instructions given to the teachers:

Instructions to Teachers

It is believed that in every classroom there are some students who have a capacity for original, or creative, or divergent thinking. These students are able to absorb abstract concepts and organize them effectively. They give original, novel or unique responses, make many associations, seek variety, and are able to be innovative. On the other hand, there are some students who are considered very good students, but who limit their responses to a single best one, tend to try to stay with the strictly logical, and limit themselves to the "tried and true". These students are convergent thinkers. In addition, in every classroom there are a number of students who are not notable for coming up with divergent responses, and at the same time are not good convergent thinkers either. These students would probably fall into the "average or below" category.

As teacher of this class, please group all students into the following three categories:

Those I would rate as the most divergent thinkers.

Those I would rate as the most convergent thinkers.

Those I would rate as neither Divergent nor Convergent.

These instructions were given to 47 teachers of form five students. There were 85 form fives whose students were given the Alternate Uses Test in 23 schools.

The question to be answered was, of course, "Do the teachers' ratings correlate with student performances on the objective measure of divergent and convergent thinking?"

Method

The students' responses to the Alternate Uses Test were divided into Divergent, Convergent, and Neither. The students' responses were compared with the teachers' ratings as elicited by the Instructions to Teachers sheet. The students who were so categorized by the objective test were used as the criterion group and the teachers' ratings were compared with the students' responses using a zed score for the variability of each teacher from the actual performance of his/her students. This score was then evaluated for significant difference at the 0.05 level.

Results

Of the twenty-three schools tested, only five cases yielded no significant difference between the students' placement as divergent thinkers according to the Alternate Uses Test and the teachers' selections of students who think divergently. In other words, the majority of teachers' seemed unable to choose such students.

In only six of the twenty-three schools tested was there no significant difference between students' performance on the Alternate Uses Test, and the teachers' placement of students in response to the Instruction to Teachers questionnaire, with respect to convergence. Again, we would assume that most teachers are not able to place in the proper category students who think convergently.

The results of the entire study are summarized in Table 1.

Table 1
Summary of divergent, convergent, and neither thinkers by school with rank and comparison of teachers' selection with objective test results

Schools	N Divergent	% of Total	N Convergent	% of Total	N Neither	% of Total	Total N	Rank by % of divergent thinkers	t scores for comparison of Teachers' and student ratings on Divergent Thinking. (*=significance)	t scores for comparison of Teachers' and student ratings on Convergent Thinking. (*=significant difference)
1	21	28	24	32	31	40	76	11	4.63*	5.20*
2	25	20	36	29	63	51	124	14	1.43	6.01*
3	50	38	28	21	53	41	133	8	4.00*	1.60
4	7	5	20	16	102	79	129	18	0.53	2.53*
5	6	5	39	35	65	60	110	18	1.15	6.12*
6	35	30	35	30	48	40	118	10	5.51*	1.67
7	76	57	30	23	27	20	133	3	5.74*	3.10*
8	72	58	10	8	43	35	125	2	5.33*	20.00*
9	13	15	31	36	43	49	87	16	3.26*	3.34*
10	1	4	14	48	14	48	29	19	1.41	2.55*
11	27	24	20	17	68	59	115	12	3.00*	0.63
12	34	24	31	22	75	54	140	12	1.04	3.40*
13	43	30	40	28	58	42	141	10	7.98*	7.16*
14	61	47	41	32	27	21	129	7	5.03*	3.31*
15	32	20	40	26	85	54	157	15	2.50*	0.89
16	23	33	11	16	35	51	69	9	6.19*	2.98*
17	32	48	14	21	21	31	67	6	2.50*	4.50*
18	28	19	18	12	101	69	147	18	3.20*	4.00*
19	19	22	14	16	55	61	88	13	5.50*	3.01*
20	60	49	36	30	26	21	122	5	2.19*	0.95
21	22	14	8	6	123	80	153	17	3.01*	3.00*
22	41	54	11	14	24	32	76	4	5.52*	2.98*
23	65	68	6	6	25	26	96	1	5.79*	1.16
Totals	793	31	557	22	1214	47	2564			

Summary

The Alternate Uses Test establishes that both divergent and convergent thinkers are present in fifth form classes in the twenty-three schools tested. The presence of slightly more divergent than convergent thinkers is slightly different from findings by Hudson (1966), and this could be attributed to the large number of bilingual students. It has been found that cultural and linguistic diversity is a rich resource for divergent thinking (Holmes 1982). An artifact that may have been present due to the inclusion of schools number 22 and 23 was explained in Part I of this report (Maas 1986, 106).

It is apparent that even though these students exist in rather large percentages, the majority of teachers are not able to identify them according to the definitions given.

Of the five schools in which there was not a significant difference between students' and teachers' placements of divergent thinkers, all were predominantly of Indo-Fijian descent. Of the six schools in which there was no difference in students' and teachers' placements in convergent thinking, one had a predominantly indigenous Fijian population, two had approximately equal representation, and three were predominantly Indo-Fijian.

The Fiji system of education was developed by the British, since Fiji was a British Colony before obtaining independence in 1970. This system has, in the main, continued. The classes are large, (generally 40 and sometimes more students), and because of the examination system, teaching is test and examination oriented. Convergent thinking is emphasized. The general method of teaching is teacher and curricula centred. When questions are asked of the students, they raise their hands and the teacher selects a respondent. Students who respond by hand-raising are usually of the convergent type. However, in spite of this, teachers do not seem to be able to classify convergent thinkers. Teachers report that they do not get to know their students very well, because they may be moving from classroom to classroom, and may meet with as many as 200 students in one day. This combination of events may be responsible for the findings of this part of the study.

References

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