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ABSTRACT

The aim of this study is to investigate the role played by the cognitive factors thought, language and creativity, and to determine the relative influence of these factors on the marks given to compositions.

The study is based on the views and theories of Piaget. As point of departure the concept "thought" is explained in order to determine what is meant by thought development. Piaget's classification of thought development in the four phases, namely sensorimotor, pre-operational, concrete operational and formal operational is discussed briefly. The last two phases, with which this study is mainly concerned, are discussed in detail and compared with each other in order to gain a clear concept of the typical thought patterns of the junior secondary pupil.

In short it amounts to the following:

1. Concrete operational thinkers cannot solve problems in verbal form, but they are, contrary to formal operational thinkers, restricted to perceptual matters in solving problems.
2. Concrete operational thinkers' way of verifying propositions and allegations is based exclusively on concrete information, while formal operational thinkers come to logical conclusions through reasoning.
3. Concrete operational thinkers lack the ability to go back to the starting point of an abstract problem. They cannot envisage a problem.
4. The pre-adolescent finds it difficult to follow

socially accepted behaviour patterns consistently, mainly because he does not take other people's viewpoints into consideration.

5. The concrete operational thinker is subjective in his attitude and seldom considers all the aspects of a matter.

6. Pupils in the concrete operational phase are able to understand the relationship between concrete matters such as length and weight, but they are unable to understand concepts such as space, speed and distance before they have reached the formal operational level.

7. Concrete operational thinkers find it difficult to compare ideas and to come to logical conclusions.

8. Concrete operational thinkers cannot classify ideas and concepts.

9. Pupils on the concrete operational level are limited to the conservation of quantity, weight and volume, that is concrete aspects, while formal operational thinkers are able to conserve aspects such as movement.

10. Only formal operational thinkers can see implications in words, sentences, ideas and thoughts.

11. The concrete operational thinkers are more than formal operational thinkers inclined to think about their own thoughts.

Subsequently the relationship between thought and language is discussed. The nature and the substance of language are reviewed: The theories of Piaget, Vygotsky, Bruner and Chomsky are discussed in detail and their views on the relationship between language and thought are summarised. Next a synopsis is given of the language development of the junior secondary pupil.

This indicates that there is a close relationship between language and thought and that thought is the determining factor. Although it is possible for a human being to think without language, these thoughts are restricted to the concrete. As soon as concepts become abstract, language is indispensable to thought because language is the vehicle for abstract concepts.

The problem of creativity and the relationship between thought and creativity and language and creativity are then discussed. The conclusion arrived at is that there is a close relationship between thought and creativity. Creativity is in reality a particular form of thought. Thinking problems will definitely be reflected in creativity. There is also a direct relationship between language and creativity and creativity demands a high degree of language competency. The concepts "creative language" and "creative writing" are elucidated. The possible factors that may influence creativity are considered. Lastly the incidence of creativity among junior secondary pupils is discussed.

The conclusion arrived at is that creativity is a complex phenomenon. It is a quality that occurs universally and is present in all individuals.

Subsequently the relationship between thought, language and creativity was considered as well as errors occurring in written composition. Clarity was gained as to what written composition exactly entails. Two main kinds of composition have been distinguished, namely concrete and abstract compositions. The general errors occurring in written composition were analysed and

elucidated and a relationship was sought between these errors and the cognitive abilities of the pupils. It was found that errors in word usage, syntax, context, presentation, selection of material and paragraphing probably stem from certain thought, language and creative problems. The conclusion is that the junior secondary pupil is subject to certain "deficiencies" that make it difficult for him to write certain types of essays.

Next an analysis was made of the Afrikaans First Language syllabus for standards 5, 6 and 7 to determine to what extent the requirements of the syllabus tax pupils too severely. The deduction was made that some of the requirements of the syllabus in respect of thought development can only be executed at formal operational level. The syllabus requires that pupils should be able to

- . think abstractly
- . reason deductively
- . generate ideas through visualisation
- . make classifications on an abstract level.

Unrealistic demands are also made in respect of language. The pupils are expected to use language at a formal operational level, regardless of their stage of language development.

As far as creativity is concerned the syllabus does not appear to make unreasonable demands. It is left to the teacher to decide how much he can expect of each individual pupil in the way of creativity.

On the whole it does, however, appear that demands made by the syllabus are in some respects unrealistic.

From the information gleaned, the following inferences

are made, in terms of a general hypothesis:

The quality of a written composition is determined by typical errors in word usage, syntax, context, presentation, selection of material, paragraphing and handling of the topics. These errors are directly or indirectly the result of thought and language deficiencies. According to their nature these errors can be divided into two groups, namely language errors and errors of thought. Creativity does not result in errors but largely determines the quality of the language used.

The following general hypothesis was therefore formulated: there is a relationship between the mark allocated to a composition and the creativity, language ability and the level of thought development of pupils.

To test the validity of this hypothesis experiments involving shortly the following were conducted:

Three hundred subjects were chosen from Afrikaans speaking pupils in standard six in the Western Transvaal by using randomized stratified sampling. They were proportionally chosen to represent the ordinary and the practical courses. They consisted of eight classes doing the ordinary course and two classes doing the practical course. Due to the fact that some of the subjects were absent during a part of the test, and that all the data were not available, the data of only 239 subjects were used.

The level of thought development of each subject was tested by means of a group test measuring the thought level attained. This test was developed by the author in co-operation with the promotor of this study and other students. This test was based on Piaget-type questions.

The subjects' creativity was tested by means of the Torrance Tests of Creative Thinking. The verbal and non-verbal IQ's were obtained from the Ed.Lab.Cards of the subjects. The test used for determining the IQ was the New South African Group Test (NSAGT). In addition, each subject had to complete a questionnaire on which he/she inter alia had to indicate his/her sex, age, number of schools attended (mobility) and the course he/she is taking. From this questionnaire the subject's socio-economic status was determined. Every subject had to write two compositions, one on a concrete and one on an abstract topic. The topics were the following:

1. "Give a good description of the sketch on this page (see annexure D). Imagine that you are looking at a real scene. Don't write a story. It doesn't matter how much you write, but try not to exceed one page."

2. "Have a nice chat about friendship. Don't write a story about friendship. It doesn't matter how much you write but try not to exceed one page."

In both cases marks were allocated to Content/Style, Spelling/Punctuation, Language/Idiom and Total. The marking was based on the system generated by E.L.G. Schnell. The mark for Content/Style was obtained from a 6 X 8 point scale matrices. Spelling/Punctuation and Language/Idiom are two components of Language Correctness. Marks were allocated by determining mistakes in each of the two components. One mark was deducted for each mistake in Spelling/Punctuation to a maximum of 10 marks and three marks were deducted for each mistake in Language/Idiom to a maximum of 30 marks. Total represents the sum of the

three components.

The validity and reliability of each of the measuring devices were discussed and it was found that they were valid and reliable in all cases.

Multiple regression analysis was used to analyse the data.

Statistics which have been obtained from this programme are

- . correlation matrices
- . regression equations
- . multiple correlation coefficients squared (R^2).

The primary aim with this investigation was to determine the influence of thought, language and creativity on a composition. It has been decided to include the following independent variables in the first few analyses: socio-economic status, age, course taken by the pupil, sex, mobility and non-verbal IQ. These factors are included because they supply a framework for reference against which the influence of thought, language and creativity can be gauged.

They were used as "control variables."

An analysis of the data gives the following results:

1. The independent variables mutually influence the writing of compositions, but some have greater influence than others.

2. Pupils' level of thought has influence on the writing of compositions, which means that concrete operational thinkers might find it difficult to write

about abstract topics.

3. Language ability also determines the composition mark, owing to the close relationship between thought and language.

4. Creativity has influence on the writing of compositions although not to a very great extent.

5. Certain dependent variables are better explained by the independent variables than others. The following percentages indicate the variance in the dependent variables which are explained by the independent variables:

Content/Style	:	concrete composition	:	44 per cent
		abstract composition	:	41 per cent
Spelling/Punctuation	:	concrete composition	:	9 per cent
		abstract composition	:	12 per cent
Language/Idiom	:	concrete composition	:	18 per cent
		abstract composition	:	21 per cent
Total	:	concrete composition	:	38 per cent
		abstract composition	:	35 per cent

The data show that the variance in Content/Style and Total is best explained by the independent variables, Language/Idiom to a smaller extent and Spelling/Punctuation is least explained by the independent variables.

6. The influence of the independent variables is slightly more on the concrete than on the abstract composition.

7. The contribution of the level of thought, language ability and creativity to the variance in the dependent variables, differs mutually. There is a small difference between the influence of the level of thought and language

ability, but the difference in the influence of level of thought and creativity and language ability and creativity is greater.

In short it can be said that the level of thought, the language ability and creativity have influence on the writing of a composition. Admittedly there are other factors too which have influence, but we are satisfied that these three factors have a determining influence.

As a result of these findings the following proposals are made:

1. The syllabus must be revised to make provision for exercises to develop the pupils' thinking ability, to give guidance concerning the kind of topics that should be given and to give guidance on the marking of the compositions.

2. Guidance should be given on the teaching methods and ways to develop pupils' creativity.

3. Further investigation should be done concerning tests measuring the development of thought and also to determine the exact relationship between the errors found in compositions and the thought and language deficiencies of pupils.

DENKVLAKTOETS: INSTRUKSIES AAN PROEFLEIER

Sê aan die proefpersone:

Hierdie toets is nie 'n intelligensietoets nie. Ons wil net sien hoe jy oor sekere sake dink. Beantwoord dus elke vraag so goed en so deeglik as wat jy kan. Kort en saaklik. As jy iets nie verstaan nie, steek jou hand op. As jy 'n fout gemaak het, moet jy nie jou antwoord uitvee nie. Trek slegs 'n streep daardeur sodat ons kan sien hoe jy eers gedink het.

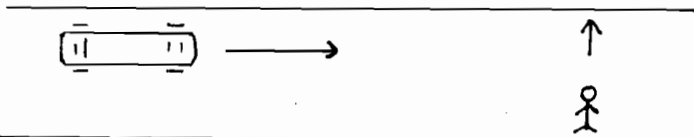
Doen jou bes.

Vul nou eers die gegewens wat ons vra in en wag tot ek vraag 1 verduidelik het.

Moenie vrae oorslaan nie. Doen al die vrae.

1. Apparaat:

Scalectrix-baan van ongeveer 60cm, met 'n karretjie opgestel aan die een punt van die baan en 'n mannetjie wat wil oorstap aan die ander punt van die baan en ander kant van die baan:



Die proefleier wys die opset aan die proefpersone sodat almal dit duidelik kan sien. Hy sê: Die man wil oor die baan hardloop voor die resieskar by hom is. Dink julle hy sal die oorkant van die baan haal voor die kar by hom is?

Skryf nou by vraag 1(a) neer of die man betyds sal wees of nie, of dink julle 'n mens sal nie kan sê of hy betyds sal wees of nie? Maak slegs 'n kruisie in die toepaslike blokkie.

Na sowat 30 sekondes sê die proefleier:

Skryf nou by 1(b) neer hoekom jy die antwoord hierbo gegee het.

2. Apparaat:

Twee ewe groot balle wat verskil in massa. Twee glase water met die watervlakke ewe hoog. Beklemtoon dat die balle ewe groot is, maar dat massa verskil; watervlak ewe hoog is; albei sink. (Laat die ligte bal insak, hou die ander bokant).

Die proefleier vra: Watter een van die twee balle sal die water die hoogste laat styg as ek hulle in die glase water laat insak? Of weet 'n mens nie? Of sal die water ewe hoog in elke glas styg? Antwoord by 2(a) deur 'n kruisie in die toepaslike blokkie te trek.

Skryf nou by 2(b) hoekom jy so besluit het.

3. Apparaat:

Die proefleier sê: Die twee balle klei is ewe groot, presies ewe groot. Dit het dieselfde volume. Ons kan ook sê hulle is identies.

Hulle mag dalk 'n baie, baie klein bietjie verskil, maar kom ons neem aan hulle het presies dieselfde volume, hulle is presies ewe groot.

Veronderstel ons sou die een bal in die vorm van 'n wors rol, sal die twee stukke klei nog dieselfde volume hê of sal die bal of die wors die grootste volume hê?

Merk jou antwoord by 3(a).

Skryf nou by 3(b) die rede vir jou antwoord.

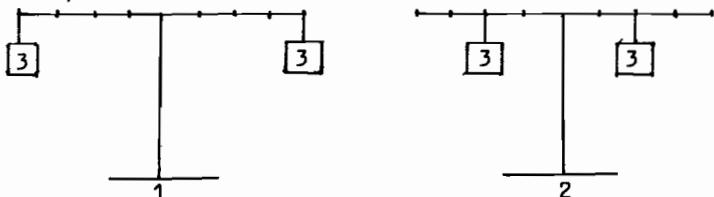
Die proefleier rol nou een bal in die vorm van 'n lang wors en sê:

Watter een dink julle het nou die grootste volume? Watter een het die meeste klei? Merk jou antwoord by 3(c).

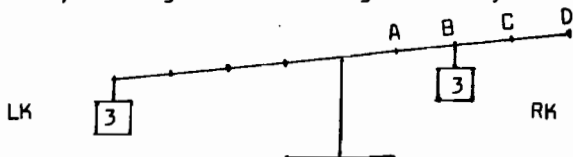
4. Apparaat:

Balans met verskillende gewigte.

1. Die proefleier plaas die balans voor in die lokaal op 'n tafel sodat al die proefpersone die voorkant van die balans duidelik kan sien.
2. Dui aan dat die indelings of merke op die arms presies ewe ver uitmekaar gespaseer is.
3. Dui aan dat die balans in ewewig is as daar aan beide kante geen massa is nie.
4. Dui aan met behulp van twee 3 eenhede gewiggies dat die balans in ewewig is as die gewiggies ewe ver van die steunpunt af is. Dui die twee moontlikhede aan.



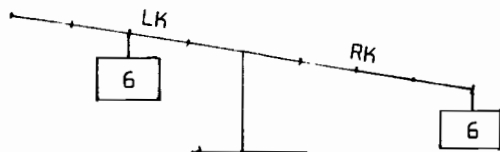
5. Dui aan dat as die linkerkant (LK) se gewiggie in dieselfde posisie bly en die regterkant (RK) se gewiggie inskuif, die regterkant "te lig" is. Byvoorbeeld:



Vervang nou die RK eers met 'n 4, dan met 'n 5 en dan met 'n 6. Met die 6 moet die ewewig herstel word. Sê: Sien julle die 6 herstel die ewewig.



6. Dui aan dat as die balans so is en die LK se 6 bly vas en die RK s'n skuif uit, dat die RK dan te swaar is.



Vervang nou RK se 6 met 'n 5, 'n 4 en 'n 3. Sê: Sien julle dat die 3 die ewewig herstel. (Laat staan die skaal in ewewig).

Die proefleier sê: Julle gaan nou 4 soortgelyke probleme kry. Die probleme is op julle antwoordboekie. Lees elk probleem telkens aandagtig deur, bestudeer die balans en beantwoord dan die vrae wat gevra word in die ruimtes wat daarvoor gelaat is. Kruisies moet oor die bepaalde letter in die blokkies gemaak word.

Nadat die proefpersone vraag 4 beantwoord het, sê die proefleier:

Werk nou verder op julle eie so vinnig as wal julle kan, maar sonder om te haastig te raak. As julle klaar is met vraag 18 sit jy jou pen neer en kyk op.

Ek gaan 'n verduideliking gee voor julle met vraag 19 verder gaan.

Gee voor vraag 19 die volgende verduideliking van vraag 18. Vra die proefpersone om nie aan hulle antwoorde op vraag 18 te verander nie.

Ons kon op die volgende maniere die vloeistowwe gekombineer het: Ons kon B eers met G, dan B met R, dan B met Y ge-

kombineer het. BG BR BY

Ons kon ook G met R en G met Y gekombineer het. GR GY

Ons kon ook R met Y gekombineer het. (Nou is

ons klaar met 2's)

RY

Ons kon ook B met G en R gemeng het. (Nou is

ons klaar met 3's)

BGR BRY GR

(Nou is

ons klaar met 4's)

BGRY

Handel op hierdie wyse alle moontlikhede af.

Sê dan: Jy kan die oplossings op baie maniere kombineer.
Jy kan 2 of 3 of 4 van die oplossings kombineer.

Gaan nou weer verder met nommers 19 en 20.

As julle klaar is, maak julle boeke toe, sit julle penne neer en kyk op.

Vee die verduideliking van vraag 18 uit terwyl die proefpersone met vraag 19 verder gaan.

DENKVLAKTOETS: VRAE EN ANTWOORDEBOEK

NAAM: SKOOL:

VRAAG 1

- 1a. Ja, hy sal die oorkant haal
 Nee, hy sal nie die oorkant haal nie
 'n Mens kan nie sê nie

- 1b. Rede vir my antwoord
-

VRAAG 2

- 2a. Die grys bal sal die water die hoogste laat styg
 Die wit bal sal die water die hoogste laat styg
 Die water sal ewe hoog styg
 'n Mens weet nie vooraf nie

- 2b. Die rede vir my antwoord is
-

VRAAG 3

- 3a. Die volume van die bal is die grootste
 Die volume van die wors is die grootste
 Hulle volume is dieselfde
 'n Mens kan nie sê nie

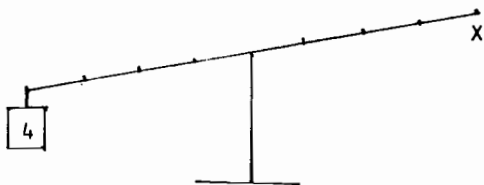
- 3b. Die rede vir my antwoord is
-

- 3c. Die volume van die bal is die grootste
 Die volume van die wors is die grootste
 Mens weet nie
 Albei is ewe groot

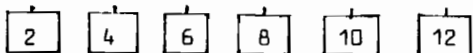
VRAAG 4

Moenie met vraag 4 begin voor dit nie aan julle
 verduidelik is nie.

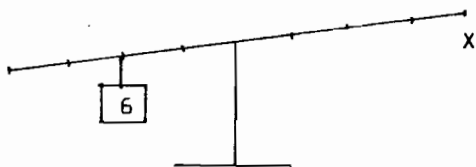
4a.



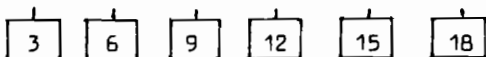
Watter gewig moet by X geplaas word om die skaal te balanseer? Maak 'n kruisie oor die gewig wat jy sal gebruik.



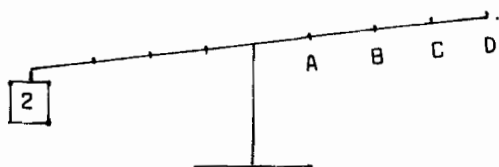
4b.



Watter gewig moet by X geplaas word om die skaal te balanseer? Maak 'n kruis oor die gewig wat jy sal gebruik.



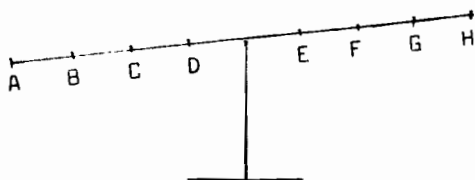
4c.



Waar moet 'n 4 kg gewig geplaas word om die skaal te balanseer? Maak 'n kruisie in die korrekte blokkie.



4d.



Jy het twee gewigte, een van 5 kg en een van 10 kg. Waar aan die linkerkant sal jy die 5 kg gewig plaas en waar aan die regterkant sal jy die 10 kg gewig plaas om die skaal te balanseer?

Antwoord: Ek sal die 5 kg gewig plaas by A B C D
en ek sal die 10 kg gewig plaas by E F G H

Die rede vir my antwoord is

JY KAN NOU OP JOU EIE WERK TOT BY VRAAG 19

VRAAG 5

Wat bedoel ek as ek sê:

- (a) Anderkant die draad is die gras groener.....
.....
- (b) Daar is geen self aan hom te smeer nie.....
.....

VRAAG 6

Wat bedoel ek as ek sê:

- (a) Die hoogste bome vang die meeste wind.....
.....
- (b) Die onderwyser het die leerling op die vingers getik
.....

VRAAG 7

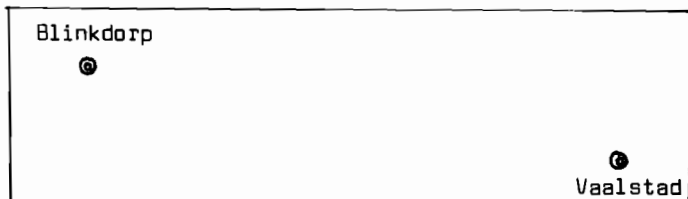
Ons kan sê 'n moeder is een wat haar kinders liefhet, een wat haar kinders en man versorg, iemand wat seker vir elkeen die kosbaarste op aarde is. Ons kan nog baie sulke goeie dinge van 'n moeder sê. Gee jy nou 'n definisie van 'n moeder. Wanneer is iemand 'n moeder? Moenie die goeie hoedanighede van 'n moeder beskryf nie. Sê wanneer is iemand 'n moeder.

.....

.....

VRAAG 8

Hier onder is 'n soort kaart wat die name van twee dorpe aandui. Daar is geen rante of berge of riviere of ander hindernisse tussen die twee nie. Die dorpe se name is Blinkdorp en Vaalstad. Hoeveel verskillende paaie sal daar tussen Blinkdorp en Vaalstad gemaak kan word al is al die paaie nie nodig nie.



Hoeveel paaie?

Wat is jou redes vir jou antwoord?

.....

VRAAG 9

Ek sal nie op 'n Vrydag (veral as dit die dertiende van die maand is!) in 'n motorongeluk wil sterf nie, want Vrydag is 'n baie ongelukkige dag.

Daar is 'n fout met die stelling. Wat is die fout?

.....

Skryf nou hoekom jy dit as 'n fout beskou

VRAAG 10

Ek hou nie van die smaak van wurms nie. Dit smaak vieslik.
Ek het nog nooit wurms geëet nie en sal ook nooit nie.

Daar is ook 'n fout met hierdie stelling. Wat is die fout
.....
.....

Skryf nou hoekom jy dink dis 'n fout

VRAAG 11

Lees die volgende paragraaf deur en beantwoord die vrae
wat volg:

Gert en Susan moes gaan tamaties koop by die groentewinkel.
Toe die winkelleienaar sy rug draai, steel Gert van die lekkers
in die winkel.

Toe hulle by die huis kom, vra Gert se ma hom om hout te
kap. Terwyl Gert hout kap, gly die byl en hy kap sy voet
raak.

(a) Hoekom het Gert homself raakgekap?

(b) Sou hy sy voet raakgekap het as hy nie van die lekker
gesteel het nie?

(c) Het die byl geweet dat Gert gesteel het?

VRAAG 12

Daar is drie dogters Marie, Bettie en Sannie. Marie is
donkerder as Sannie, Marie is ligter as Bettie. Wie is
die ligste een van die drie?

Kies die regte antwoord deur 'n kruisie in die toepaslike blokkie te maak.

Marie
Bettie
Sannie
Kan nie sê nie

VRAAG 13

'n Pa is 3 keer die ouderdom van sy dogter Ria en 5 keer die ouderdom van sy seun Piet.

Wie van Piet of Ria is die oudste?

Piet is die oudste
Ria is die oudste
Mens weet nie

VRAAG 14

'n Man is dood gevind op die agterste sitplek van 'n motor wat teen 'n telefoonpaal gebots het. Skryf wat kon alles gebeur het.

.....
.....

VRAAG 15

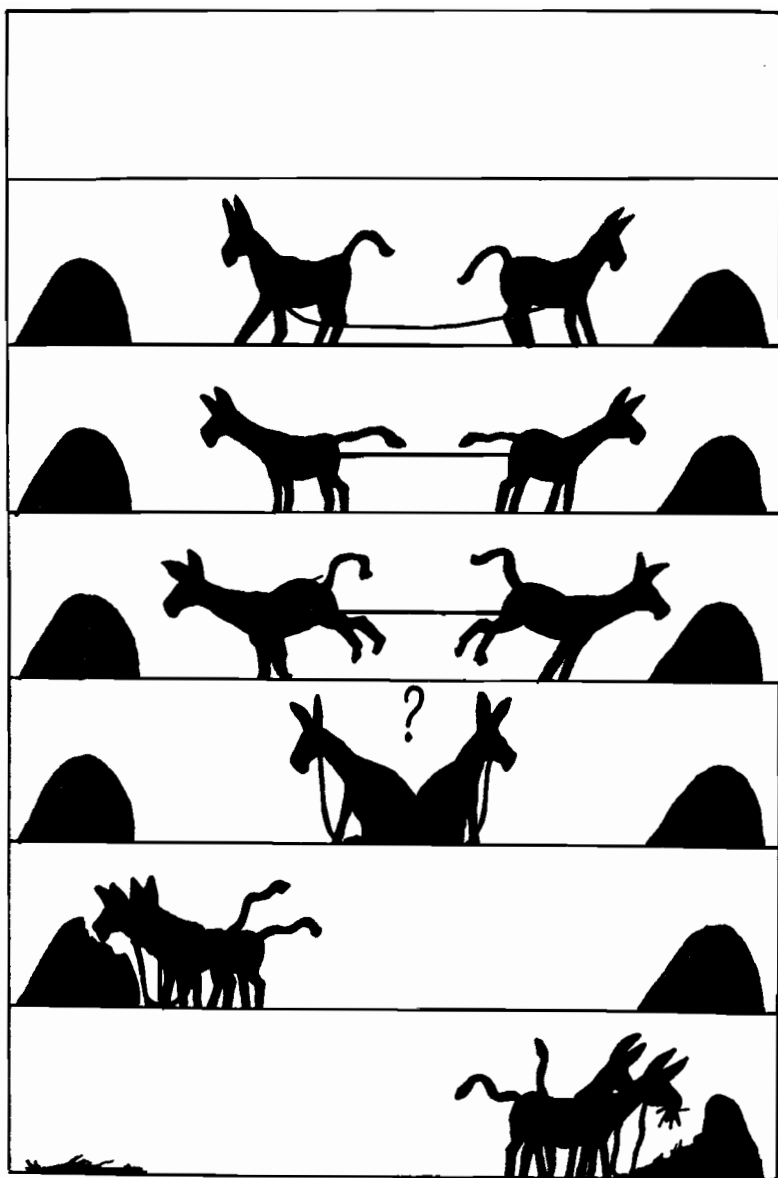
Verlede week het hulle 'n geraamte gevind van 'n dier met vyf pote en drie koppe. (Let wel, hy het vyf pote en drie koppe gehad). Die dier was veertig jaar oud toe hy dood is. Daar is vasgestel dat die geraamte agtien jaar oud is.

Wat is verkeerd met dié stelling?

.....
.....

VRAAG 16

Die Israëliete het deur die Rooisee op droë grond getrek. Die water was soos 'n muur aan hulle linkerkant en aan hulle regterkant. Sê kortliks hoe dit kon gebeur het.



VRAAG 17

Op die prentjie langesaan is twee vasgemaakte donkies wat by hulle voer wil kom. Die tou was te kort en hulle kon nie by hulle voer kom nie. Hulle maak toe 'n plan. Hoe het hulle die probleem opgelos?

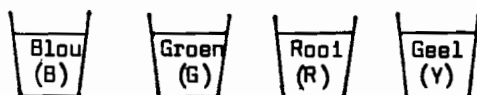
.....
.....

Verduidelik hier watter lee 'n mens uit die prentjies kan leer.

.....
.....

VRAAG 18

Probleem: Jy het vier glase. Die vier glase is elkeen met 'n bepaalde kleur vloeistof gevul.



Hoeveel verskillende kleurkombinasies kan jy met die vloeistowwe maak? Met ander woorde op watter maniere kan jy die kleure meng? Mens kan blou met geel meng om 'n voorbeeld te noem (B x Y) Daar is nog baie meer.

Gebruik slegs die simbole tussen hakies en skryf al die moontlike kombinasies onder mekaar neer. Onthou, jy kan twee of drie of vier kleure met mekaar meng.

.....
.....

WAG MET VRAAG 19 TOTDAT VRAAG 18 EERS VERDUIDELIK IS.

VRAAG 19

Lees die volgende probleem aandagtig deur en bestudeer dan die moontlike oplossings vir die probleem voordat julle die vrae beantwoord.

Probleem: Die leerlinge in 'n bepaalde skool kan nie al hulle huiswerk afhandel nie omdat hulle verplig

word om aan te veel buitemuurse aktiwiteite (sport, toneel, debat, koor, ensovoorts) deel te neem.

Moontlike oplossings:

Om die probleem op te los, kan die volgende gedoen word:

- (a) Minder huiswerk kan gegee word.
- (b) Deelname aan buitemuurse aktiwiteite kan vrywillig gemaak word.
- (c) Die leerlinge moet maar later gaan slaap sodat hulle genoeg tyd kan hê om hulle huiswerk te doen.
- (d) Die skool moet die leerlinge help om hulle studie=metodes te verbeter sodat hulle vinniger kan werk of studeer om in dieselfde tyd meer werk af te handel.

19.1 Hoe sal (a) die probleem oplos?

.....

19.2 Hoe sal (d) die probleem oplos?

.....

19.3 Watter oplossing sal die bevredigendste resultate lewer? Gee 'n rede vir jou antwoord.

.....

VRAAG 20

Lees weer vraag 19 se probleem.

Op watter verskillende maniere kan ons die probleem oplos, dit wil sê hoe kan ons die vier oplossings kombineer om verskillende maniere te kry om die probleem op te los? J moet nie die oplossings uit skryf nie. Gebruik slegs die letters (a), (b), (c) en (d).

.....

.....

DENKVLAKTOETS : TIPIESE ANTWOORDE¹ EN PUNTETOEKENNING

VRAAG 1

Konkreet:

- (i) Ja, want die motor is nog 'n hele ent van hom af.
 (ii) Nee, die reissieskar is te vinnig.

Formeel:

- (i) Ken nie sê nie. Ons weet nie met watter spoed die motor ry nie en of die man hardloop of loop nie.
 (ii) Ken nie sê nie, omdat ons nie sekerheid het oor die motor se spoed en die afstand wat die man loop nie.

VRAAG 2

Konkreet:

Die grys bal laat die water die hoogste styg.

Formeel:

Ewe hoog, omdat die balle dieselfde volume het/ewe groot is.

VRAAG 3

Konkreet:

Verkeerd, want die volume is in die klein balletjie. Die wors s'n is uitgesprei.

Formeel:

Korrek, want jy rol hom net in die vorm van 'n wors.

VRAAG 4

Konkreet:

10 kg is swaarder as 5 kg. As jy 5 kg het en jy verdubbel dit, sal 10 kg swaarder wees.

Formeel:

Die rede is, omdat $5 \text{ kg} \times 4 = 10 \text{ kg} \times 2$.

1) Die voorbeelde is aanhalings van werklike response van proefpersone

(Die verhoudingsgedagte kom duidelik na vore)

VRAAG 5

Konkreet:

- (1) Anderkant die draad is beter weiplek.
- (ii) Daar is geen plek op hom om self aan te smeer nie.

Abstrak:

- (1) Hy makeer niks nie, hy is gesond.
- (ii) In 'n ander land leef 'n mens lekkerder.

(Hierdie reponse is nie korrek nie, maar is tog abstrak).

VRAAG 6

Konkreet:

- (1) Hoe hoër dit is hoe kouer is dit.
- (ii) Die leerling het slaë gekry.

Formeel:

- (1) Die mense wat dink hulle is die beste, verdra altyd die meeste moeilikhede.
(Foutief, maar tog abstrak)
- (ii) Die onderwyser het met die leerling geraas.

VRAAG 7

Konkreet:

- (1) Wanneer sy haar kinders versorg.
- (ii) Wanneer sy baie moed en liefde het.
- (iii) Iemand is 'n moeder as sy dissipline kan handhaaf.

Abstrak:

'n Moeder is 'n vrou met kinders.

VRAAG 8

Konkreet:

- (1) Vier paaie. Daar gaan een pad na altwee dorpe toe en dan is daar nog uitdraaipaaie ook.
- (ii) Een pad. Die pad kan krom loop of reguit, want daar is nie 'n rivier nie.
- (iii) Twintig, want die dorpe is taamlik ver uitmekaar.

Formeel:

- (1) So veel as jy wil.

- (ii) Ontelbaar.
- (iii) Oneindige getal.

VRAAG 9

Konkreet:

- (i) Want Vrydag is nie 'n baie gelukkige dag nie.
- (ii) Mens sal nie graag in 'n motorongeluk wil sterf nie.

Formeel:

As 'n mens sterf, kan daar niks meer as die dood wees nie.

VRAAG 10

Konkreet:

- (i) Want wurms smaak glad nie lekker nie.
- (ii) Mopaniwurms is van die lekkerste kos.

Formeel:

Hoe weet hy dan dat 'n wurm vieslik smaak as hy dit nog nooit geëet het nie?

VRAAG 11

Konkreet:

- (i) Omdat hy oneerlik was by die winkel.
- (ii) Dit sou nie gebeur nie.
- (iii) Ja, die byl het geweet.

Formeel:

- (i) Omdat die byl uit sy hande gegly het.
- (ii) Ja, want dit is nie omdat hy gësteel het nie.
- (iii) Nee.

VRAAG 12 en 13

Konkreet:

As die antwoord verkeerd is.

Formeel:

As die antwoord reg is.

VRAAG 14

Konkreet:

- (i) Die man het vir 'n ander kar uitgeswaai en in die telefoonpaal vasgery.
- (ii) Hy is met die botsing agtertoe geslinger.

Formeel:

Diewe kon die man oorrompel het en toe teen die telefoonpaal vasgejaag het en toe die man vasgemaak het of hom doodgeskiet het.

VRAAG 15

Konkreet:

- (i) Agtien jaar terug het daar nie so 'n dier geleef nie.
- (ii) Daar is nie diere met vyf pote en drie koppe nie.

Formeel:

Die dier kon nie veertig jaar oud wees toe hy dood is en die geraamte net agtien jaar oud nie.

VRAAG 17

Konkreet:

- (i) 'n Mens moet nooit vraatsig wees nie.
- (ii) 'n Mens moet nooit vasgemaak word nie.

Formeel:

Samewerking is belangrik.

VRAAG 19.1

Konkreet:

Jy sal nog aan al die aktiwiteite deelneem en jou huiswerk klaarkry.

VRAAG 19.2

Konkreet:

Hulle kan elke middag by die koshuis studeer.

Formeel:

Ons sal vinniger kan leer in dieselfde tyd.

VRAAG 19.3

Konkreet:

Gaan slaap later.

Formeel:

d, want dan kan jy al jou huiswerk doen en aan sport deelneem.

VRAAG 20

Konkreet:

Minder as 6 korrekte kombinasies.

Formeel:

9 en 10 korrekte kombinasies.

DENKVLAKTOETS : PUNTETOEKENNING

VRAAG 1

Ja of Nee - 0 punte

Kan nie sê nie en een veranderlike - 1 punt

Kan nie sê nie en twee veranderlikes - 2 punte

dit wil sê as die proefpersoon iets sê:

- (i) oor die tyd, afstand OF spoed van die motor en
- (ii) iets oor die veranderlikheid ("ons weet nie") van die mannetjie se stap, dit wil sê iets oor die tyd, afstand OF spoed van die mannetjie.

VRAAG 2

Die grys/wit bal die hoogste) Afgesien van die rede -
'n Mens weet nie) 0 punte

Ewe hoog - 1 punt

Ewe hoog EN die rede is dat hulle ewe groot is/dieselfde volume het - 2 punte

(Indien ander veranderlikes - byvoorbeeld oppervlakte, gewig - as rede genoem word, gee slegs 1 punt)

VRAAG 3

Ken punte negatief toe, dit wil sê, gee 2 punte en trek 1 punt af vir elk van die volgende:

- (i) As die antwoord verkeerd is, dit wil sê as die proefpersoon by 3(a) of 3(c) 'n verkeerde antwoord gegee het.
- (ii) As die rede 'n ander, nie-tersaaklike veranderlike insluit (veral gewig, net so swaar).

VRAAG 4 (TOTAAL: 5 punte)

4a : 4 - 1 punt

4b : 3 - 1 "

4c : B - 1 "

4d : A en F of C en E:1 "

'n Rede waarin die verhoudingsgedagte na vore kom - 1 punt.

VRAAG 5 en 6

Een punt by elk van 5a, 5b, 6a en 6b vir elke abstrakte, veralgemeende stelling, al is dit nie 'n korrekte inter=pretasie nie - 4 punte.

VRAAG 7

Vir die woord kinders (1 punt) en vir die woord vrou (1 punt) as dit in die definisie voorkom.

As dit wat in die uiteensetting gesê is, herhaal word - 0 punte.

VRAAG 8

Vir 'n eindige getal - 0 punte (behalwe as uit die rede blyk dat baie paaie moontlik is - 1 punt).

As die antwoord en rede impliseer dat daar baie paaie gebou kan word - 1 punt.

As die antwoord en rede impliseer dat daar 'n oneindige (ontelbare) getal paaie gebou kan word - 2 punte.

VRAAG 9

As die proefpersoon slegs een aspek noem - 1 punt.

As die proefpersoon die teenstrydigheid ineen - 2 punte.

VRAAG 10

Dieselfde as vraag 9.

VRAAG 11

Kyk na dele 1, 2 en 3 gesamentlik.

As aldie vrae korrek beantwoord is, dit wil sê as 'n ander rede as diefstal by 1 gegee word, dat hy hom buitendien sou raak gekap het en dat die byl nie geweet het nie - 2 punte.

As 3 reg is en 1 OF 2 ook reg - 1 punt.

As 3 verkeerd is - 0 punte.

As 3 reg en 1 EN 2 verkeerd - 0 punte.

VRAAG 12

Bettie - 2 punte

VRAAG 13

Ria - 2 punte

VRAAG 14

As die proefpersoon 'n ander oorsaak as die botsing vir die man se dood gee - 2 punte.

Vir baie toestande (beseer, gewond, dood, bewusteloos) - 2 punte, maar vir baie moontlikhede wat die ongeluk kon veroorsaak, byvoorbeeld hy kon besope gewees het, dit was donker, ensovoorts - 0 punte.

Indien twyfel bestaan - 1 punt.

As die proefpersoon by die botsing bly of die oorsaak van die botsing beskryf - 0 punte

VRAAG 15

Korrek - 2 punte

Iets oor vyf koppe en drie pote - 0 punte.

Ander nie-terseaklike dinge - 0 punte.

VRAAG 16

Laat weg.

VRAAG 17

Vir 'n konkrete antwoord (honger, donkies werk saam) - 0 punte.

Vir 'n abstrakte maar foutiewe antwoord - 1 punt.

Vir 'n abstrakte, korrekte antwoord, dit wil sê 'n antwoord waarin die abstrakte samewerkingsgedagte ne vore kom -

2 punte.

VRAAG 18

Minder as 6 kombinasies - 0 punte.

6, 7 of 8 kombinasies (enige) - 1 punt.

9 of 10 kombinasies - 2 punte.

VRAAG 19 (TOTAAL: 3 punte)

19.1: "Meer tyd kom so vry" - met dié gedagte in die rede - 1 punt.

19.2 Meer tyd/of ander werk en dieselfde tyd - 1 punt.

19.3 d is korrek

Vir d en rede: meer tyd tot die beskikking en huiswerk word gedoen - 1 punt.

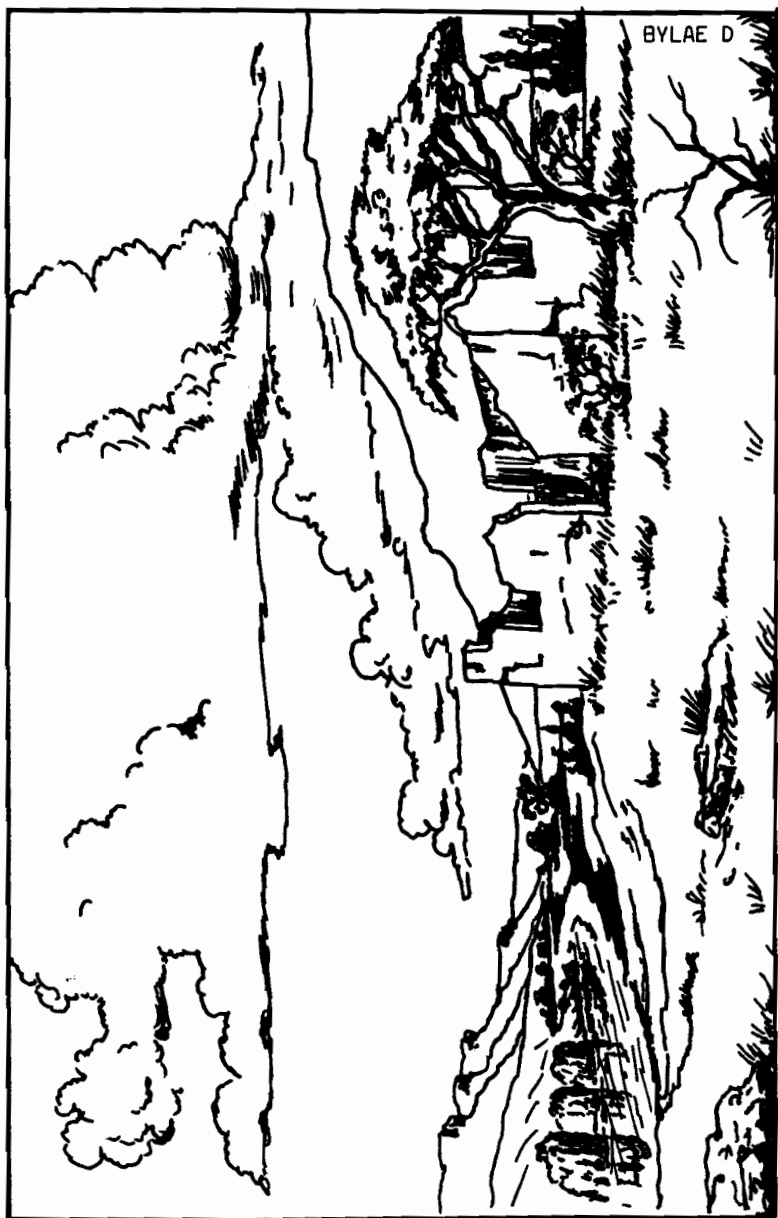
VRAAG 20

Minder as 6 korrekte kombinasies - 0 punte

6, 7 of 8 kombinasies (enige) - 1 punt

9 of 10 kombinasies - 2 punte

TOTAAL 42 punte



BYLAE D

NAAM SKOOL KLAS
 SEUN/DOGTER Aantal skole bygewoon (laer en
 hoër)
 GEBORTE DATUM OUDERDOM
 WOONADRES

1. Opvoeding van ouers
- 1.1 Watter standerd het jou vader op skool voltooi?
- | | | MAAK HIER
KRUISIES | Punte |
|--------|--------------------------|-----------------------|-------|
| St. 6 | <input type="checkbox"/> | 0 | |
| St. 7 | <input type="checkbox"/> | 2 | |
| St. 8 | <input type="checkbox"/> | 4 | |
| St. 9 | <input type="checkbox"/> | 6 | |
| St. 10 | <input type="checkbox"/> | 8 | |
- 1.2 Het jou vader na skool verder studeer aan 'n universiteit of kollege?
- | | | |
|--------------|--------------------------|------|
| Universiteit | <input type="checkbox"/> |) 10 |
| Kollege | <input type="checkbox"/> | |
| Nee | <input type="checkbox"/> | |
- 1.3 Watter standerd het jou moeder op skool voltooi?
- | | | |
|--------|--------------------------|---|
| St. 6 | <input type="checkbox"/> | 0 |
| St. 7 | <input type="checkbox"/> | 2 |
| St. 8 | <input type="checkbox"/> | 4 |
| St. 9 | <input type="checkbox"/> | 6 |
| St. 10 | <input type="checkbox"/> | 8 |
- 1.4 Het jou moeder na skool verder studeer aan 'n universiteit of kollege?
- | | | |
|--------------|--------------------------|------|
| Universiteit | <input type="checkbox"/> |) 10 |
| Kollege | <input type="checkbox"/> | |
| Nee | <input type="checkbox"/> | |
2. Beroep
- 2.1 Watter soort werk doen jou vader? 40
 of
- 2.2 Watter soort werk doen jou moeder? 40
3. Aspirasie
- 3.1 Watter standards wil jou ouers hê dat jy op skool moet voltooi?

St. 6	<input type="checkbox"/>	0
St. 7	<input type="checkbox"/>	1
St. 8	<input type="checkbox"/>	2
St. 9	<input type="checkbox"/>	3
St. 10	<input type="checkbox"/>	4

3.2 Verwag jou ouers van jou om na jou skoolopleiding verder te studeer aan 'n universiteit of 'n kollege?

Universiteit	<input type="checkbox"/>) 5
Kollege	<input type="checkbox"/>	
Nee	<input type="checkbox"/>	

3.3 Watter soort werk wil jou ouers hê dat jy eendag moet doen?
 10

4. Huislike omstandighede

4.1 Hoeveel mense woon in julle huis? 5

4.2 Hoeveel kinders is julle? 5

5. Ekonomiese omstandighede

Beskryf julle huis deur net 'n kruisie te maak in die toepaslike blokkie:

(a) Getal slaapkamers:	Meer as 4	<input type="checkbox"/>	5
	4	<input type="checkbox"/>	4
	3	<input type="checkbox"/>	3
	2	<input type="checkbox"/>	2
	1	<input type="checkbox"/>	1
(b) Sitkamers:	2	<input type="checkbox"/>	2
	1	<input type="checkbox"/>	1
	Geen	<input type="checkbox"/>	0
(c) Eetkamer:	1	<input type="checkbox"/>	1
	Geen	<input type="checkbox"/>	0
(d) Kombuis:	1	<input type="checkbox"/>	1
	Geen	<input type="checkbox"/>	0
(e) Badkamers:	3	<input type="checkbox"/>	3
	2	<input type="checkbox"/>	2
	1	<input type="checkbox"/>	1
	Geen	<input type="checkbox"/>	0

SOSIO-EKONOMIESE STATUS : INDEKS VAN INDIKATORE

	<u>Punte</u>	<u>Totaal</u>
1. Opvoeding van ouers:		20
vader	10	
moeder	10	
2. Beroep van ouers:		40
of vader	40	
of moeder	40	
3. Aspirasie vir kinders met betrekking tot opvoeding (onderwyspeil)	5	15
beroep	10	15
4. Huislike omstandighede		10
Aantal mense in die huis	5	
Aantal kinders in die huis	5	
5. Ekonomiese ometandighede		9
Huis	15)	
Motors	3) 18 + 2	
	TOTAAL	94