

What's In a Picture? The Interpretation of Cartoons by Secondary School Students in Fiji

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The following report is based on a pilot project conducted in a boys' secondary school in Suva, Fiji. Although it reports what is an exploratory study and the number involved (N=40) is small, the curriculum development and teaching implications of the findings, if shown to be widespread, are important. Consequently the author would welcome hearing from readers interested in replicating the study in their own secondary schools.

Introduction

"A picture is worth a thousand words" is a well-known cliché. It is commonly assumed that pictorial materials help students acquire new information and generally facilitate the learning process in that it allows the teacher to represent important concepts and ideas. Furthermore, many teachers also assume that a combination of a picture plus humour in the form of a cartoon is an effective teaching aid. This seems a reasonable assumption since cartoons are both motivating and easily interpreted. Or are they?

This study was stimulated by comments made by a number of university students, who, when asked their opinion about the inclusion of humorous cartoons in Extension materials, indicated that they could not see why they were included. When pressed to explain this, a common response was that they did not understand the cartoons. Was this because the cartoons selected were somehow badly drawn, were they too subtle, or were they possibly culturally inappropriate in some way?

A related issue involves an assumption commonly made by curriculum planners: namely that secondary school students should be able to understand the subtleties of metaphor, irony and satire in English literature. These devices are all common and important forms of literacy expression, and without their recognition, an individual's appreciation of prose, poetry and drama is seriously affected. It is commonly assumed that secondary school students from around Form 3 onwards can and should not only be taught to recognise and appreciate these figures of speech, but also use them in their own writing.

* The author wishes to acknowledge the assistance of Anil K. Narayan who collected the data for this study.

This pilot study seeks to test the assumption that pictorial material in the form of humorous cartoons represents a meaningful and effective means of communication with secondary school students.

In order to explore this issue, the study sets out to discover whether common literary devices are recognised by students when presented in the form of cartoons, and whether there appears to be a relationship between any such recognition and a student's achievement in secondary school English.

Background

To understand some of the issues explored in this study it is useful first to briefly review a number of basic cognitive processes along with notions of their development. Some of the picture perception studies conducted in Africa indicated that the perception and interpretation of pictorial information differs across cultures (Hudson, 1960, 1967). Explanations for such differences tend to fall into two categories: socio-cultural and cognitively oriented information-processing explanations, and those based on cognitive development theory.

From a socio-cultural information-processing perspective, it is evident that attention, visual scanning, and the ability to encode, interpret, store and retrieve information is influenced by functional considerations embedded in an individual's culture. Some socio-cultural contexts emphasise and encourage certain skills while minimizing others (Dasen, 1975). The processes associated with information-processing also generally become more effective and efficient as a child grows older. The processing of written and pictorial information is central to formal schooling and a child's increasing competence during the school years is usually attributed to two things: the individual's ability to learn from experience, and the acquisition of important meta-cognitive skills like learning to attend to relevant cues while ignoring others, being able to monitor and change (if necessary) one's own processing of information, and being able to apply relevant processing strategies. It is generally accepted that these skills are facilitated by experiences associated with classroom learning.

From a cognitive development perspective, children are seen to progress from primarily enactive and ikonic (sensory motor/pre-operational) modes of representation (ways of "knowing") during early childhood, to a growing preference for symbolic representation during their school years (Bruner, Olver & Greenfield, 1966). Some writers have referred to children who function in the enactive (sensory-motor) and ikonic (pre-operational) modes of representation as both egocentric in their thinking and emotionally simplistic

(Egan, 1984; Elkind, 1981; Biggs & Moore, 1993). Such children believe that plants, animals and rocks think and feel, and that their thoughts and feelings are the same as their own. Egan (1984) refers to this as the "mythic" stage of cognitive functioning when the paradigms of science are not yet available to children, and narrative in the form of myths, legends and fables provide an adequate explanation of the world around them.

As pointed out some years ago by Piaget & Inhelder (1958), at the pre-operational stage of development, perception and thinking tend to be governed by simplistic pre-conceptions and transductive reasoning. These in turn powerfully influence what a child actually "sees". For example, the misperception by young children of the water level in a tilted bottle is a case in point. Biggs & Moore (1993) draw attention to the fact that children who function in the ikonic mode show a preference for fairy stories because such stories usually portray one or two outstanding characteristics, generally in simple two-dimensional terms. For example, things or people are either big or bad, or poor but honest, good triumphs over evil and miracles happen. It is also relevant to bear in mind that many adults also prefer the ikonic mode. This is something that TV advertising knows and exploits well, with plenty of pictures, bare, brief and simple language, repetitive slogans, little or no analysis and plenty of emotional appeal. Thus, the ikonic mode is not simply a pre-symbolic mode of information processing limited to children, but is something that grows in power and complexity well into adulthood (Biggs & Moore, 1993).

Piaget's well-known sequence of cognitive development stages is generally assumed to apply universally, as the result of neural and brain maturation mediated by experiences associated with formal schooling. What does vary is the rate of development, which appears to be strongly influenced by socio-cultural and ecological factors (Berry, 1975; Dasen, 1975).

If we consider Piaget's developmental model, the stage of concrete operational thinking is typified by a number of characteristics. For example, there is an increasing use of symbols and an ability to think conceptually, language is used increasingly to speed up the acquisition of concepts, and individuals show an ability to attend to more than one prominent feature at a time. The individual can reverse his/her thinking and can reason inductively, as well as being able to classify things into classes or categories that are increasingly abstract. However, students operating at this level still need to have things explained exactly. For example, they require explicit instructions when proceeding from one task to another; they find it difficult to see relationships between ideas and they tend to make only literal interpretations of content and material (Garbarino, 1985).

On the other hand, students capable of Piaget's formal operational thought (hypothetico-deductive thinkers) can transcend reality. They are able to perceive

relationships between two ideas, they can perform complex tasks with minimal direction and tackle problems in a systematic yet more flexible manner. What is particularly relevant to this study, is that formal thinkers are also less literal and more analytic in their interpretation of both written and pictorial material. They are able to appreciate metaphors and similes and understand the subtleties of satire and irony in prose, poetry and plays. It is also assumed that when these subtleties are depicted pictorially, they are readily identified and understood.

As Elkind (1968) pointed out some years ago, the appreciation of political cartoons is essentially a formal operational task. To understand a good cartoon one needs to understand and decode the metaphor hidden within it.

Finally, it is also relevant to note that cognitive performance may be affected by emotional context, especially the presence of stress (Cohen, 1980). For example, under conditions of stress some individuals typically revert to a "lower level" of cognitive functioning than would otherwise be the case. There is some limited evidence to suggest that this may apply particularly to formal operational thinkers who revert to a more concrete or ikonic mode when faced by a stress-inducing situation.

In view of the above, two questions were posed in the context of this study. Firstly, is there evidence of a developmental qualitative change in cartoon interpretation when senior secondary students are compared with younger secondary students? Secondly, does cartoon interpretation appear to be linked to academic performance in English?

These questions led to two tentative hypotheses. Stated in their null form they are: Firstly, that when compared, the number of Form 3 and Form 6 students interpreting cartoons in a non-literal manner will not be significantly different. Secondly, that there will be no significant relationship between students' marks in secondary school English and their interpretation of cartoons.

Method

This pilot study was conducted in a boys' secondary school in Suva, Fiji. Two groups were selected: twenty Form 3 boys and twenty Form 6 boys (N=40). Each student was presented with two humorous cartoons during a normal English lesson. The two cartoons depicted two readily identifiable local situations. Cartoon A involved two mothers receiving inappropriate gifts on Mother's Day, while cartoon B showed children mimicking a local beauty quest similar to the annual Miss Hibiscus Festival.

The Form 3 and Form 6 boys tested were taught by the same teacher, and the cartoons were presented during a regular English lesson in the same manner for both classes. Students were informed that there were no right or wrong answers to the exercise, and that the teacher was simply interested in what they thought the cartoonist was trying to say.

Cartoon A was distributed to the students who were asked to respond to the following two questions written on the chalkboard:

- (1) Please explain and interpret what you see in this cartoon. and,
- (2) Thank you for your explanation. Do you think there may be any other "message" in it? If so, please explain what you think it is.

After students had completed their responses, Cartoon B was similarly distributed and the same two questions asked.

Three possible interpretations based on ikonic/concrete operational and symbolic/formal operational thinking were notionally defined. An essentially descriptive and literal interpretation was taken to indicate an ikonic and concrete level of thinking (literal level), while an explanation embodying an appreciation of satire and irony was taken to indicate a more analytical and abstract approach comparable to Bruner's symbolic mode and Piaget's hypothetico-deductive reasoning (symbolic level). Where students appeared to employ a little of both or fluctuated between the two modes, they were classified as "transitional".

Actual responses to the two cartoons were then examined and the above three notional levels of interpretation were operationally defined as follows:

Level	Typical Description for Each Level
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Cartoon A

Literal Level:	A descriptive account. eg., "It shows two mothers. One is unwrapping a present, while the fathers are drinking grog. The two girls are bringing tea for their mothers."
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Transitional Level:	Still primarily descriptive, but showing some evidence of symbolic understanding. eg., "One mother is watching the other unwrapping a gift on Mother's Day. The two men (husbands) are smiling because the gift is not a good one for a mother."
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Symbolic Level: A more analytic and speculative explanation. eg., "The picture shows a mother unwrapping an inappropriate gift for Mother's Day. She is being comforted by the other mother who had the same experience. The gifts were obviously not bought by the children, but by the fathers who were thinking of themselves."

"The cartoon shows how some people give gifts suited to the needs of the one who receives it." "It shows the self-centredness and selfishness of some husbands, especially on Mother's Day."

Cartoon B

Literal Level: A descriptive account. eg., "The picture shows a festival of some kind." "The cartoon is about a quiz and a girl is being asked a question." "It looks like a school play."

Transitional Level: Still primarily descriptive, but showing some evidence of symbolic interpretation. eg., "The cartoon shows a competition and a girl is giving an answer that makes one boy laugh. She must have made a mistake." "I think the picture is poking fun at something."

Symbolic Level: A more analytic and speculative explanation. eg., "The cartoon shows a school competition like a beauty contest. Perhaps they are raising money for the school. The girl being interviewed has given a stupid answer showing she is pretty dumb. She has not understood she was being asked about plants."

"The cartoon is poking fun at people who go into beauty contests. It shows that they are often not very intelligent. It is poking fun at competitions."

Academic performance in English was based on how well a boy had performed on his first term assessment. Four categories of students were identified: those receiving 80% or more were classed as "very good"; those gaining 60-79% as "good"; 40-59% as "average"; and those gaining 39% or less as "below average".

Results and Discussion

Written responses to the two cartoons were first analysed by two judges independently. Where initial disagreement occurred, a consensus decision was reached. The following results were obtained:

Table 1: Responses to Cartoon A - The inappropriate Mother's Day gift

Type of Response	Form 3 (N=20)		Form 6 (N=20)	
	N	%	N	%
Literal Interpretations	14	70%	3	15%
Transitional Interpretations	4	20	5	25
Symbolic Interpretations	2	10	12	60

The calculation of chi square within each group produced the following:
 F.3: $X^2 = 13.110$, $df=2$, $p<.01$. and for F6 $X^2 = 7.11$, $df=2$, $p<.05$.

Table 2: Responses to Cartoon B - Mimicking a beauty contest

Type of Response	Form 3 (N=20)		Form 6 (N=20)	
	N	%	N	%
Literal Interpretations	5	25%	2	10%
Transitional Interpretations	6	30	4	20
Symbolic Interpretations	9	45	14	70

The calculation of chi square within each group yielded the following:
 F.3: $X^2 = 2.010$, $df=2$, N.S.; F6 $X^2 = 13.185$, $df=2$, $p<.01$.

The non-parametric statistic chi square was used to test whether the actual distribution of responses across the three categories (literal, transitional and symbolic) within each year was significant. As indicated beneath Tables 1 and 2, three of the four calculations were significant - only the response distribution for Form 3 students on cartoon B was not. Thus, it appeared reasonable to tentatively reject the null hypothesis that the qualitatively different types of responses made by students were not random but meaningful.

Thus, in relation to cartoon A, Form 3 students showed a significant ($p<.01$) preference for literal interpretations, while Form 6 students showed a significant ($p<.05$) preference for symbolic explanations. With respect to cartoon B, Form

3's showed no significant preference for any single interpretations, while Form 6's clearly opted for a symbolic explanation ($p < .01$).

What this indicates is that when a within-group comparison is considered, the interpretation of cartoon A shows a statistically significant and psychologically meaningful preference for a very literal interpretation by Form 3's. This also suggests that its meaning was too subtle for the great majority of the Form 3's tested. Cartoon B appears to have been a little easier to interpret with proportionately more Form 3's adopting either a symbolic or transitional explanation. On the other hand, Form 6's had little difficulty understanding the symbolism involved in this cartoon.

To test whether there appears to be a significant development trend, a between-group comparison of responses was made (ie., comparing Form 6 responses). Using cartoon A data, this comparison produced a $X^2 = 32.735$, ($df=2$), $p < .001$ - a highly significant result. For cartoon B, $X^2 = 2.772$, ($df=2$), N.S. These results suggest two things. First, that because of its difficulty, the interpretation of cartoon A follows a statistically significant developmental progression: only 10% of Form 3's understood its subtlety compared with 60% of Form 6's. On the other hand, a symbolic interpretation of cartoon B was appreciated by 45% of Form 3's compared with 70% of Form 6's. While this latter result is not statistically significant, it nevertheless suggests a trend consistent with a developmental explanation.

The next step involved comparing students' English results for Term 1 with their responses to the cartoons. The twenty Form 3 and twenty Form 6 participating students were classified into one of four possible English result categories: very good (80%+); good (60-79%); average (40-59%) and below average (< 39%). In view of the preliminary nature of this study, it was decided to allocate each student a crude rank in English based on the above four categories. Thus, a student classified as "very good" received a ranking of 1, a "good" student a ranking of 2 and so on. In a similar manner student interpretations of the two cartoons were allocated a score. A symbolic interpretation of one cartoon received a score of 3, a transitional interpretation a score of 2, and a literal interpretation 1. Thus, it was possible for students to receive a total score of between 2 and 6 for the two cartoons. Students were then ranked on the basis of their English performance and their cartoon interpretation scores. These ranks were compared using Spearman's rho for ordinal data.

The results of the comparison of English grade and cartoon interpretation for Form 3 students yielded a rho = 0.906, with $p < .01$, while the Form 6 data yielded a rho = 0.735, with $p < .01$. On the face of it this indicates a significant relationship between English grade and cartoon interpretation at the .01 level of

confidence for both Form 3 and Form 6 boys, and thus the null hypothesis of no significant relationship between the two is not supported by these results. However, given the crudity of this analysis, the above needs to be interpreted cautiously. Nevertheless, there is some *prima facie* evidence to indicate that level of cartoon interpretation appears to be significantly linked to performance in English. While it is tempting to speculate about a causal link between formal operational cognition and performance on both of the variables tested (cartoon interpretation and performance in English), clearly, more evidence is needed before this assertion can be made with any degree of confidence.

If one may nevertheless indulge in a little speculation, it becomes plausible to think in terms of using cartoon interpretation as a means of ascertaining an individual's level of cognitive functioning. It may be further speculated that in the short term at least attempts to teach the subtleties of metaphor, irony and satire are likely to be futile if a cartoon interpretation exercise indicates a literal and purely descriptive perception. The teacher faced with students who appear unable to perceive the subtleties of metaphor, satire and irony presented pictorially, may well be engaging in a Herculean teaching task if she or he expects to communicate these mysteries to students forced to operate in a second language.

Some tantalizing questions emerge. Are pictorial cartoons a satirical device too alien to be useful in South Pacific classrooms? Are they communicatively too puzzling and problematic to be used as an illustrative form? One wonders what readers make of *Peanuts* and *Hagar the Horrible*. Perhaps cartoons are associated with newspapers and "factual" information and as a consequence there is an implicit assumption that such illustrations represent literal "photographic" (concrete) representations. This may generate a mind set that tends to preclude other possibilities like satire and irony. Perhaps in our Pacific context, instead of a cartoon picture being worth a thousand words, it may require that many to explain it.

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