

A fresh look at cartoons as a media of instruction in teaching Mathematics and Science in Malaysian schools: A hands-on experience.

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1. Introduction

The introduction of English for the Teaching of Mathematics and Science (EteMS) beginning 2003 is a very significant and timely curriculum and pedagogical change in the Malaysian Education System. These changes require a review of existing instructional strategies, and a fresh look at new approaches to ensure that such changes can be effectively implemented. Cartoons are more often viewed as an entertainment media and the serious use of cartoons as a pedagogical tool to be frivolous. However it is the intention of this paper to correct this myth, and to demonstrate with a hands-on approach of the use of cartoons as an amazing media of instruction.

2. Features of cartoons

A cartoon is a graphical media that can either be in the form of a single picture or a series of pictures as in the form of a comic strip, captioned or non-captioned, that are printed in magazines, newspapers and more currently in books. It is suggested that these illustrative drawings have a potentially valuable contribution to make, especially as a vehicle for humor or political satire on a subject of current public interest.

Comic strips are readily available daily in all the major newspapers published in the country. There are also specially printed cartoon books, which are sold in major bookstores. In addition, cartoons are now also more frequently found (inserted) in many academic books to highlight a point and also to break the dullness of text only. Cartoons are also available on-line through dedicated cartoonist web-sites (Zoraini, 2002; Marisa, 2003) or newspaper syndicates such as the United Press Syndicate.

Cartoons in newspapers usually appear in a few formats. They can appear in a one-frame format, or in a two to four frames formats especially in daily papers. The five to 12 frames formats are more common in the Sunday editions of newspapers.

3. History of cartoons

According to Watterson (1995), the comic strips were invented in the late 1800s, when large cities in the United States of America had as many as a half-dozen newspapers. By using cartoons, each newspaper was trying to outdo the other to attract the readership of huge new immigrant population. The comics were visual, easy to understand, funny, and boisterous by design and hence became immediately popular. However, cartoonist had few pretensions about the artistic or cultural significance of their work. From the beginning, the comics were regarded as a commercial product that existed for the purpose of increasing newspaper readership. Cartoonists also considered themselves as newspapermen, not as artists. Their job was pure and simple, and that was to help sell newspapers.

4. Some famous local and foreign cartoonist and cartoons.

Today, there are numerous cartoon strips published in local English and vernacular newspapers except the SUN newspaper and we have a few local favourite cartoonists and their cartoons. They include Datuk Mohmed Noor Khalid (Lat¹), C.W. Kee (Kee's World), Din Teksi (Nan), Mohd Desa Omar (M. Desa). Lists of foreign cartoonists and their cartoons that are our favourites by local English newspapers in Peninsular Malaysia are as follows:

- **Star** - Chris Browne (Hagar the Horrible); Bill Watterson (Calvin and Hobbes); Johnny Hart (B.C.); Mort Walker & Dik Browne (Hi and Lois); Jeff MacNelly (Shoe); and Pat Brady (Rose is Rose).

¹ A nickname used as a nom de plume from the start of his career (Sri Delima – Lots of Lat (1977-Berita Publishing)

- **Sunday Star** – Russell Myers (Broom-Hilda); Bill Rechin & Don Wluder (Crock); Jim Unger (Herman); and Brian Basset (Adam @ home).
- **New Straits Times** - Charles Schultz (Peanuts); Bill Holbrook (On the Fast Track); Rick Kirkman & Jerry Scott (Baby Blues); Bill Kavanaugh & Hal Camp (Bringing Up Father); and Dean Young & Mike Gersher (Blondie).
- **New Sunday Times** – Lincoln Peirce (Big Nate); Cathy Guisewite (Cathy); and Leigh Rubin (Rubes®).
- **Malay Mail** – Art Sansom & Chip Sansom (The Born Loser) (Popeye); and Beetle Bailey (Crock).
- **Sunday Mail** – Henry Scarpelli & Craig Boldman (Archie); Art Sansom & Chip Sansom (The Born Loser); Guy Gilchrist & Brad Gilchrist (Nancy); and Bill Yates & Mel Casson (Redeye).
- **Sun** – Mark Tonra (Marvin & Tiger); and Mark O'Hare (Beyond The Black Stump).

Educational cartoons are also widely available on the Internet. There are several web sites that offer good cartoons that can be used in classroom teaching and learning at school level and beyond (Zoraini, 2002). We also find the various web sites for online comic strips that are meant to cheer you up by Marisa Mohd Isa (2003) to be truly entertaining.

5. When cartoons should be used

Cartoons can be used at any time during the teaching or training as long as they are relevant to the point or have been designed with a specific purpose. The 'specific purpose' can be to start a lesson, to keep the learners occupied, alert, liven up the class and to wake them up after a lunch break. Cartoons can be used as a useful means of improving the learning atmosphere. Cartoons should not be used simply to fill in time when the facilitator doesn't have anything else to present.

It is not difficult to find cartoons as a teaching strategy in books. Most training books (Corder, 1990, Kroehnert, 1991; 1999; Silberman, 1995) have exercises, games and

activities in the form of cartoons for a training session. We would like to apply cartoons to achieve some of these training and learning needs. These include:

a. *An introduction to a lesson or a course*

Almost any cartoon can be used as an icebreaker or an introduction to a lesson or a course. The two main purposes of using icebreakers are firstly, to allow the learners to introduce themselves to each other, and secondly, to lead into the topic matter. Learners often find that the topic matter is made clearer by the use of appropriate icebreakers.

The exercises (or cartoons) introduced are often non-threatening introductory contacts designed to allow learners to get to know one another a little and to lower any barriers that may exist. Very often the success or failure of a program depends on these two points. The more comfortable and at ease the learners feel about each other, the better the learning environment. Then, they are more likely to participate and to generate new ideas.

b. *A re-enforcement of points or concepts raised during the teaching or training*

Cartoon exercises are generally fun for everyone to use and tend to be more experiential in their application. It is to give a lesson more impact. They are designed to help learners perceive familiar situations or objects in a different way. The end result with most cartoon exercises is that learners are made aware of their need to use lateral thinking (Kroehnert, 1999), to look at things in different ways, and to try to break down any preconceived stereotypes that they may have.

c. *Mid-course energizers*

When at any time we observed that the learners are losing interest or falling asleep, we can use cartoons as one of the mid-course energizers. Mid-course energizers are very similar to icebreakers but they make the assumption that the learners know each other already (Kroehnert, 1999). Their purpose is to keep participants awake, to get their blood moving, to keep them from falling asleep after a lunch break, to simply get people back on line or to think about a new approach to a problem. They can also be used at certain points of time to reduce tensions that may have built up with individuals or the group.

d. *Variety and creativity exercises*

Visual information in the form of cartoons is usually processed by the right brain which is the holistic, creative, artistic side. On the other hand, the spoken word engages the left side of the listeners' brain. The left brain is analytical, recognizes and interprets words, performs calculations and so on. No matter how interesting and persuasive a lecture is, after awhile, the learners will feel the monotony of the same manner of instruction. By using cartoons, we appeal to the visual, as well as the auditory, sense giving the additional effectiveness through variety and creativity.

e. *Debriefing*

At the end of any learning experience, experienced facilitators or teachers would usually debrief the learners on the lesson for the day or the session. By showing the appropriate cartoon (s), the facilitator would be able to encapsulate important teaching points without having to say or repeat too many words.

6. Uses of cartoons

Experience demonstrated that cartoons have a number of uses. Cartoons can be used individually, in pairs, small groups and even in large lecture classes. Cartoons are a wonderfully versatile medium in enhancing teaching and training.

Visual Tool for Learning

Visually the impact of cartoons is immediate and people from all walks of life, irrespective of age or background, are able to respond in some way to the 'educational' point being made. With the potent combination of words and picture/pictures, it can attract attention and interest. Other alleged benefits include the promotion of understanding, motivation towards learning, improved attitudes, productivity and creativity.

We find graphics and symbols everywhere in our daily life and our children are attracted to cartoons from an early age. Children are exposed to so many colours on television, movement and interactivity on the computer screen. According to Hartmann (1996), our society and the world in general are becoming more visual but many of our institutions, particularly our schools, have not kept up with its progress. We often hear children complaining about boring school lessons and activities. Using

cartoons would certainly break the monotony (Rae, 2000) of reading text after text in the schoolbooks. Very often a picture speaks louder than words and has more impact than just reading the text. The same scene that the cartoon depicts would undoubtedly take longer to describe using the written word and the scope for comprehension would be restricted. It is also believed that the usage of cartoons can reduce boredom and decrease academic stress, anxiety and disruptive behavior. We might have to incorporate some of these interests within our school and training environments.

Humour

Nowadays, learning is often seen as a serious and stressful activity. A good laugh, either in pictorial or verbal form promotes a positive learning and healthy environment. Laughter is believed to be the best medicine. According to researchers at the University of California Irvine, having a good laugh will also boost the immune system and reduce stress. The researchers found that laughing at a joke or something funny could make healthful changes in the levels of hormones involved in stress and lower blood pressure. Researchers at the University of Maryland however reported that people who use humour more often were less likely to have heart attacks (NST, November 12, 2002, Health, p. 7). Tamblyn (2003) also acknowledged that humour helps people learn better by suggesting 95 ways to use humour for more effective teaching and learning.

Thus, we often insert cartoons for just this purpose especially in lengthy training sessions. Other benefits include the enhanced relationship between teacher and students as cartoons can create a light, playful mood. However, those who associate learning only with more formal classroom activities, may see cartoons as a frivolous waste of time and do not take their valuable contributions seriously.

Cognitive Development

Every learner can respond instantly to cartoons according to their personal interpretation of what is portrayed. Cartoons can be used as an alternative tool for developing cognitive development. In interacting with the cartoon stimuli, they are refining their own learning and understanding while at the same time be encouraged to develop critical higher order cognitive skills.

It is also a good alternative to learning concepts especially in science subjects. If the introduction of a concept is followed by a humorous illustrated example, then the

explanation of the concept is more comprehensive and reinforcement can also follow suit. We often observe the “hit on the nail” for a concept or point followed by a surprised look of “why didn’t I think of that solution”. Some students may even request for more of such illustrations. When a teacher uses humour to stimulate students to laugh or smile, he or she engages the students in interactivity and active involvement of the students’ minds to think and learn. This would affect the conduct of teaching. The teacher would also be getting useful feedback from their students with regards to the extent and quality of learning.

Idea Elicitation

Concept cartoons as suggested by Keogh & Naylor (1996) believed that this approach has a direct and immediate impact in the classroom. They seemed to promote a purposeful approach to practical work – a “hands-on and minds-on” approach. It has been found that concept cartoons lead to a number of learning developments such as a shift from negatively-worded to positively-worded statements, a shift from statements to questions and a shift from single alternatives to multiple alternatives.

Concept cartoons are intended as a starting point to stimulate discussion and for eliciting ideas from the learners. To illustrate this point, students can be provided with an illustration and questions that require them to consider their thoughts, feeling and form opinions about the situation portrayed. The questions asked consist of: *What do you see?* (facts); *What do you think?* (opinions); and *What do you feel?* (feelings). This makes it an extremely valuable exercise to use with groups because it encourages open discussion. The participants form small groups (4-6) with work copies of the cartoon. After studying the cartoon quietly for a few minutes, the group members take turns to say, “When I look at this cartoon, I see” (facts) and must state one fact that can be seen in the cartoon. They then move on to ‘rounds’ of “When I look at this cartoon, I think” and finally to ‘rounds’ of “When I look at this cartoon, I feel”. Using cartoons as we have illustrated here whole range of opinions and feelings can be shared.

Promotes Investigation

Individuals can have their own understanding of what is portrayed restricted by social or cultural background or the extent of their knowledge of language (Lochrie, 1992). Students test out their ideas without further prompting. Although sometimes an individual or group may be reluctant to engage in discussion and investigation of

ideas, a ready progression from discussion to investigation would be the usual response. Learners are also allowed to change their minds during the discussion when they have initially thought of one thing and now they believed it to be something else. The cartoons appeared to provide a stimulus, which frequently led to the learners' ideas being modified and developed. These processes are especially crucial for promoting cognitive development.

Having completed the above 'rounds' of "I see..., I think ... and I feel...", the sharing of ideas needs to be properly acknowledged and can be further developed. Further suggested exercises are as follows:

- Considering and planning positive ways of responding to the situation;
- Writing newspaper headlines –one funny and one serious;
- Writing speech bubbles (one positive and one negative statements, and possible conditions surrounding the situation);
- Designing a poster (or draw their own cartoons about the focus of discussion);
- Writing a short story/play;
- Role-play.

Such exercises, not only can afford teachers an insight into what ideas, understanding (s) or conceptual development their students have concerning the subject being considered but it can also enable the individual room for expression and thereby understand their own personal feelings.

Neutral Resource

Cartoons are commonly used in language teaching. However, the use of cartoons has also been found to offer an effective means to develop particular skills such as social skills. Sociologically, cartoons are a powerful means of providing social and political comment (Ziegler, 1998) because so often they are unmasking – they reveal the contrast between perception and reality (Witkin, 1999). By nature, cartoons usually exaggerate a particular facet or situation that can help focus on a suitable teaching/learning point. As they are seen as a neutral resource, students are able to respond, joke about possible interpretations, and react to the exaggerations without being offended. Cartoons can be used with students to objectively analyze everyday social behavior and a stimulus to reflection on attitudes. Scenes, which can be developed easily, include relationships (e.g. boyfriend/girlfriend relationships),

attitudes and behaviors (e.g. bullying). They also prove very valuable when working with cross-cultural and cross-sector groups for examples, teachers/ parents/other professional agencies, to promote a sharing of ideas.

In the spirit of exercise, humorous examples can expand one's perspectives, for example, different beliefs and understanding, the openness of different interpretations and acceptance of alternative views (Doring, 2002). It is important that individuals are given the opportunity to explore and review a range of attitudes and behaviors beyond one's own limited and narrow interests, to understand the effect that these can have on others and to consider means towards improvement. Other possibilities arise where uncaptioned cartoons allow for creative analysis and/or after contributions, checking with the original caption. Again, only illustrations need to be provided and students are asked to add a caption to highlight a particular aspect of a lecture or topic.

Motivation and Involvement

Without a doubt, the use of cartoons would certainly promote a high level of involvement among learners who are normally reluctant to get involved in discussion. Now that we have begun using English to teach science, cartoons would enable students who do not normally converse much in English what more about science to articulate their ideas more readily. Woolnough (1994) notes that if students are motivated and if they are given the freedom and the opportunity, they will find ways of learning. If they are not, they will not bother.

Transferability

Cartoons can be replicated with a variety of groups in many teaching situations. These include primary and secondary schools, students with special educational needs, students learning English as a second language, undergraduate and postgraduate students, primary and secondary school teachers and parents. Although the clarity of some of the cartoons needs to be modified or adapted to the various groups, we generally find them remarkably easy to use and effective in their outcome. "You just photocopy and go!"

7. Collection of cartoons – thematic

A good collection of suitable cartoons is necessary and this can be built up over time. As there are so many cartoons that are readily available, it is imperative for users to

decide on a thematic collection that are appropriate and effective for their teaching or training areas. The authors' collections are primarily in the areas of:

- i. Teacher and teaching,
- ii. Students and learning,
- iii. Leadership and management, and
- iv. Parenting skills

Once students are aware that we favour the usage of the cartoon approach as our teaching strategy, they often assist by locating pertinent examples or in several cases; skilled students have drawn their own examples to illustrate a point.

8. Preparation of cartoons for teaching and training

Selection of the method of training or teaching often comes after the setting of the learning objectives. The method selected should respond to the learners' needs, not the teacher or the facilitators. The same procedure applies to the selection of cartoons. It is through the careful selection and use of appropriate and relevant cartoons that an element of humour can be introduced, where appropriate, without detracting from the intention of the teaching situation.

When we have decided on the particular cartoon to be used, it is important to practise using it at least once with a group of people. This will help us see if the cartoon selected is going to work and in the expected way with the expected results. The cartoons selected must be evaluated for their worth and effectiveness. If they don't produce the desired effect, then it might need to be scrapped or modified.

a. Selection & storage

A systematic effort in the selection and collection of cartoons is important as cartoons are seldom repeated in most newspapers although they may appear later in a book-form. Many local cartoons tend to portray and highlight local issues of current interests and failure to collect them in a timely manner may cause them to be "lost" forever. The challenge is to constantly be on a lookout for them.

After the cartoons are selected, a conscious effort must be done to store them. Cartoons that are printed on newsprints tend to fade with time and would turn yellowish when exposed to heat and light. One of the suggested remedies is to make photocopies of the selected cartoons as soon as

possible. Prior to photocopying the cartoons, one can also edit them for instance by removing the captions or adding and removing particular elements. Later the one-frame cartoons required for teaching purposes can be enlarged to 164-172% to get into a A4 size.

As mentioned earlier, there are several web-sites that contain cartoons for education purposes. Once you find a suitable cartoon on some of these Web sites, you can use it in your electronic slide presentation or have it printed onto an overhead transparency film. However, one must remember to seek written permission or pay a minimal fee for the right to use the cartoons as some of these cartoons are copyrighted.

b. Rearrangement

Generally, the cartoons in the newspapers have a number of frames and displayed in small sizes. For teaching purposes, it is imperative to enlarge them to a visually comfortable and appealing format so that the text or dialog can be read by learners. We personally don't favour cartoons with too many words in the dialogue bubbles. It might also be good to think of the rearrangement of cartoons as it might inhibit the appreciation and understanding of the cartoon if they are presented exactly the way it was displayed in the newspaper. Rearrangement depends on the creativity and preference of the teacher. However, a portrait format is more appropriate as compared to a landscape format. Once prepared, cartoons can be displayed either by overhead projector or computer presentation programs.

c. Presentation

Besides careful selection of cartoons, the appropriate use of relevant cartoons is also of utmost importance to introduce the element of humour so that the actual intention of the teaching situation is not disrupted (Doring, 2002).

Various presentation strategies will have to be used to keep the flow going in terms of appreciation and understanding, but at the same time a buildup to a "climax/high point" is crucial. However, the teacher has to guard against the overuse of cartoons or the possible unintended consequences, particularly of caption humour, which are not sensitive to certain groups of people in our culturally rich society. Doring (2002) suggested that delivery of messages

through cartoons is a real skill. Some students may not be attentive and understand the humour or message due to language proficiency. This can be observed by the puzzling gestures or a request for extra explanation of the crux of the messages or points that are portrayed in the cartoons. There is also the risk of offending through misunderstanding with any joke being perceived as a source of ridicule, sarcasm or as being racist or sexist in nature.

Even the size of fonts used and the discontinued flow in presenting a cartoon may also cause some students confusion and unable to appreciate the full resonance of the effects of the cartoons. The introduction of cartoons also needs to be timely and appropriate for the teaching situation. If the particular teaching situation calls for a certain amount of seriousness, the usage of a cartoon with a joke may be seen as disrupting the solemnity of the lesson taught. This would certainly be inappropriate. It is for these risk elements that cartoons need to be used wisely. Facilitators have to realize that what works for some people might not work for others.

After all, the success at the end would be a loud laughter and resounding requests for more are some indications that the specific training strategies (where cartoons have been used) is a sounding success. Although we would like to see people laugh and enjoy the lesson, we need to be mindful that our primary responsibility is not to entertain the group but that we have a greater responsibility for ensuring clarity and precision of information. We, as teachers are responsible for aligning the learners and keeping them moving towards achieving their learning objectives.

9. Conclusion

As educators, we are constantly looking for new ways of teaching to enable learners to be actively involved in their own learning. In this respect, graphics such as cartoons can make a valuable contribution. This is because cartoons provide visual impact, which is immediate. Irrespective of age or background, every learner can respond instantly to what is being shown. We have first-hand evidence through our practice as trainers that many teachers share our views about the uses of cartoons. Generally, feedback from students on the use of cartoons as a teaching strategy has been consistently favorable. Like any teaching strategy, one has to be careful not to



overuse cartoons or their effect will be diminished if not lost. There needs to be a careful balance with humour and the content that we would like our students to learn.

For copyright reasons, examples of cartoons could not be included with this text.

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