

## **BEYOND REPRODUCTION: Incorporating effective teaching and learning strategies in mainstream secondary distance education materials**

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### **Background**

About seven years ago while teaching at a boarding school in Darwin Australia, I became acutely aware of the kinds of problems that junior secondary Aboriginal students from remote area communities experienced in their desire to access mainstream junior secondary education through distance education. I'd inherited several groups of students who had come into the classroom setting because they had found it just too difficult to achieve curriculum learning success through a largely print-based distance education mode of delivery with very limited support. Similarly, when I accepted a position to develop print-based curriculum support materials for junior secondary students studying distance mode through the College of Distance Education in Papua New Guinea, I found that students also were experiencing similar problems.

It was clear from talking to both service providers and students that the teaching methodologies used in junior secondary print-based materials did not effectively teach the skills, processes and knowledge required in the curriculum. Both groups of students faced additional dilemmas. They were learning English as foreign language and they were often not familiar with western culturally based ways of organising and interpreting knowledge through diagrams, graphics nor the language forms used in western education. Yet the kinds of teaching methodologies used in distance education seemed to assume that students could interpret and apply these culturally based knowledge and language forms by simply observing and reading the text.

### **The three significant problem areas**

Throughout the print-based material, I found that teaching methodologies did not model language or knowledge forms. Nor was any explanation offered about how the parts and features of language and knowledge forms were organised and sequenced. Rather, skills were usually presented in the material as a fait accompli with no additional teaching or learning support structures. Consequently, students were expected to intuitively deduce that there were conventions applying to the construction and use of these culturally based language and knowledge forms.

Secondly, students were not supported and encouraged throughout the print-based materials to become active participants in their learnings. The material did not repeat, reinforce or check the student's understandings of the introduced vocabulary, language forms and subject skills in different but relevant contexts. Nor were the students given positive reinforcement and encouragement except encapsulated in a brief repetitive phrase at the end of each lesson. NcNamara (1989) has suggested that this was inline with the rigid teaching methods taught in teacher training that had similarities with a conservative epistemological and traditional outlook

Thirdly, the design features incorporated into the material did not reflect the fact that the students came from a background that valued an oral rather than a print based tradition of learning. Further, a great deal of manipulation of the densely packed print based materials was needed by students which assumed literacy skills beyond their entry levels (Guy et al, 1996). The design features also had not considered how visual stimuli could enhance student understandings of western knowledge forms through the use of graphics and therefore reducing the dense text appearance of each page.

### **Restating the central issues**

It appeared that methodologies designed to promote effective teaching and student learning support strategies, used in classrooms and taught through teacher education courses, had been mainly overlooked in the development of print-based junior secondary courses of study (National Department of Education, 1994; Mandie-Filer, 1989). When I inquired about this, I was told that it was too difficult to include them and it seemed at this point that organisational and cultural structures within which teachers worked, actively preventing them from thinking and acting otherwise (Smyth, 1987). However, I had as part of a team of

curriculum support material writers in Darwin critically reflected on similar problems related to print-based medium of instruction. As a consequence I had as part of a team challenged how system requirements could be more appropriately presented so that junior secondary students could actively participate in their learning.

### **Junior secondary distance education in Papua New Guinea**

In June 1998, just over 12 000 secondary students were enrolled at the College of Distance Education (CODE), making it the largest secondary institution in the nation. Most of these students live in remote villages and undertake study at home. Each year, these students usually enroll in one or two grade level courses, made up of six units of study and assignments. Some students may take up to 8 years to complete their junior secondary education. These students rarely receive learning support, except in the form of brief written comments on their assessed assignments.

The developing and writing of all course materials and examinations is done at the CODE Headquarters in Waigani while the printing and national distribution of print-based materials takes place from Konedobu, both suburbs of Port Moresby. There are twenty Provincial Centres throughout the nation, located in the main town of each Province. These centres are responsible for enrolling and counseling students as well as the marking of distance education assignments. Some urban students enrolled in vocational centres also undertake junior secondary studies using CODE materials, while other urban students undertake CODE studies through tutorial centres registered with the Department of Education.

### **The challenge**

The challenge I faced as a Social Science writer at the College of Distance Education in Port Moresby was how to adapt the unique features incorporated into the material in Darwin to the technical specifications at CODE, so that students could be effectively taught and provided with ongoing learning support. Further, I came to realise that in order to effectively teach and provide ongoing student learning support in print-based material, I would also have to adapt the teaching strategy of modeling using scaffolding to encompass more than just the teaching of literacy. I had used this strategy to model the contextual and generic features of literary genres to explain how the features of specific genres were assembled to effectively communicate. This strategy is based on the genre approach to teaching literacy extensively used in both the Queensland and the Northern Territory Schools (Hardy and Klarwein, 1990; Northern Territory Department of Education, 1992). This teaching strategy had to be adapted to suit the teaching of specific subject skills and processes in Social Science such as reading grids to locate places, constructing and interpreting graphs, tables, diagrams and so on.

I found that the technical specifications applying to print-based material production at CODE, including the letter font size, width of margins, footers and headers were non-negotiable. However, external material approval committees had not formally sanctioned the teaching sequence used to present each lesson. Rather, the teaching sequence had become an accepted and common practice over the years and as such, minor alterations could take place without the need to undergo extensive prior approval processes.

As well, Grade Nine increasingly marks the beginning of secondary education in Papua New Guinea and the Board of Studies requires active student participation in demonstrating their learnings. Consequently, students were expected to write descriptions, argue points of view and after conducting interviews, to write reports. This suggested that it was possible to adapt what I had learned about incorporating effective teaching and student learning support strategies through the design features, into the material at CODE.

In consultation with other Social Science writers, it was decided to incorporate a 'Skills Section' into the current lesson sequence. Initially, I was not entirely happy about this, as this seemed to imply that skills and processes should be taught separately from the context of the lesson. I felt that this would reduce opportunities to integrate language teaching with subject-related skills and process. Therefore, the challenge was to ensure that the 'Skills Section' became a logical extension of the main body of the lesson, as well as a natural lead into the remainder of the lesson. Therefore, the 'Skills Section' needed to be premised on how it could best revise, extend and enhance what had been taught, as well as ensure that the students were supported as they undertook meaningful and relevant tasks in their 'Practice Exercises'.

### **Incorporating effective teaching strategies**

Imagine the following dilemma faced by Social Science curriculum support material writers early on in the Grade Nine Syllabus. The students were required to write a report that coincided with an examination of late nineteenth century colonial influences in Papua or New Guinea. As well, the production section of the College of Distance Education at Konedobu had placed a two hundred pages limit on each Unit Book. That meant that at the most, each lesson including revision, effective teaching, checking and reinforcing the students' learnings and

skill development would have to be contained within seven pages. I decided that teaching the report genre as well as providing opportunities for students to write a report about the aspects of colonialism, would have to take place over two sequential but related lessons.

The main body of the first lesson included a simplified imaginary news report about the German annexation of New Guinea. I chose to use this because I needed to expand the students' subject related vocabulary (Parade, 1995), to expose them to a variety of textual forms or genres, as well as to provide a modeled report. In the 'Skills Section' of the lesson, students were presented with the same news report but this time scaffolding was added to explain and thus teach the generic features of the simplified report.

Immediately following the scaffolded model, the students' understandings of the generic structure of this report and the sequential arrangement of its language features were checked in a variety of ways. Firstly, the students were required to name the three parts of a report by referring to the scaffolding. Then the students were provided with brief notes about the information that had been included in the introduction to the report. These notes were written out in the same order in which they appeared in the report. Students were then required to briefly note the information that had been included in the main body sections of the report. To assist them, the number of bullet points in the space provided for their answers indicated the number of points they would find in the main body of the scaffolded text. Following CODE conventions, students could check their answers in the answer section at the end of the lesson. The lesson then summarised the German administration in New Guinea until 1914 in narrative form. To conclude this lesson and following the accepted Social Science lesson sequence, a summary and a Practice Exercise made up of short answer questions, which required the students to explain and identify. The introduction and main body of the second lesson revised and expanded the students' developing knowledge of this genre and historical era by examining another scaffolded report model. This report added to their knowledge of late nineteenth century colonial activities in Papua and New Guinea but focussed on the work of an administrator in British Papua. It also expanded and reinforced the vocabulary and language necessary to write about colonialism. Then the same report with scaffolding was reproduced in the 'Skills Section' of the lesson to revise the language features of a report. Their knowledge of report writing was extended as this scaffolded model explained how a report's main body could include opinions as statements and supporting reasons. When students were asked to make notes about this administrator's achievements, possible answers were provided directly below for students to check their understandings by using phrases like; You would have discovered that...or You would have noticed that...

Another modeled and scaffolded opinion with supporting evidence about this administrator followed. Then the students were asked to refer to what they had written before attempting to write their own main body, made up of statements and supporting opinions. Scaffolding was included alongside the space for the student response as a guide. Similarly, a scaffolded model of an introductory paragraph and a conclusion about the same topic was provided and then the students were required to write their own report about this administrator.

In the 'Practice Exercise', space was provided for the students to write an edited copy of their drafted report. Several modeled reports with scaffolding similar to what the students were expected to write were provided in the answers section. Students could check their completed report and realise that while reports follow a sequence, the same information could be stated in a variety of ways, yet following the requirements of a well written report.

### **Summarising effective teaching strategies**

The above overview summarised how effective-teaching strategies can be incorporated into the development of print based student materials. In this example the following effective teaching strategies:

- Teach the vocabulary and language necessary for the task
- Model accurately and give examples
- Set an achievable task
- Repeat instructions
- Check students' understandings
- Give constant reinforcement and encouragement
- Maintain student's enthusiasm by presenting challenges.

### **Effective student learning support through print based materials**

If junior secondary students are to become and continue to develop as confident learners through their distance education studies, they must be provided with as many opportunities as possible to apply, expand and revise what they have learned, in a supporting environment. Supporting strategies as a natural and ongoing feature of

learning can be incorporated into print-based materials to encourage students to question, read, check, practice and through active participation, enjoy the challenge learning provides.

It is of course not possible for students to receive instant feedback about any concerns or questions they may wish to raise with an up front classroom teacher. Therefore, it is the responsibility of the writer to pre-empt where students might raise concerns and structure the text/lesson so that information is repeated, questions are posed and answers provided as a natural part of the ongoing writing process and lesson development. For instance, the lesson introduction will outline the purpose of the lesson, briefly indicate what prior student knowledge the lesson will draw as well as indicate what the student will be required to complete by the end of the lesson. The student will probably want to ask questions which relate to checking his or her progress throughout the lesson. Small exercises should ideally be included on nearly every page with answers provided directly underneath in the body of the text, allowing the students to check their understandings. Students at junior secondary level must be encouraged to actively participate in their learning. They need a variety of different challenges to facilitate their active role in their learning.

To encourage students to become aware of how small parts of the learning process make up the whole, a variety of textual forms can be used, yet these forms represent western ways in which knowledge is organised and presented. Maps with scaffolding explaining the features shown. Additional graphics such as tables and diagrams should be used with scaffolding to teach students to interpret the included features and to guide them as they identify and consider information that adds to their general understanding of the lesson objectives. Scaffolding layout must logically sequence the structural and generic features and explain how these features can add and be linked to student understandings.

Instructions are an important part of learning. In the classroom students have learned to respond to oral cues used by the teacher. Similarly in print based material, visual cues must be presented as specific design features so that the students recognise them and subsequently focus on what is required of them. Instructions should also provide adequate information for the students to engage in the task. Icons can be used to provide instructions as well as revise and repeat information the student has already been exposed to. Icons used for revision and as key points should be consistent throughout the material. For instance, before an instruction to write, key points relating to that instruction can be summarised in a box as follows,

**Remember**      *Connecting words which show the cause and effect can include:*

*As a result,                      this caused,                      as*  
*because,                              therefore,                              as*

In addition other icons such as a teacher icon,



Reports are often used in Social Science. Reports summarise information about events. The report on the previous page provided information about the proclamation of the Protectorate of German New Guinea in 1884.

A read icon,



Read the following newspaper article. Similar reports about the newly proclaimed protectorate appeared in most Australian newspapers.

and a write icon



In the space below write out the conclusion to your report could be used to instruct the student to recall, review and write key points. Icons should come immediately in front of where the task is to be undertaken. Icons encourage students to be involved in every step of their learning because they direct the students to what they will need to consider and revise in order to successfully complete the task. They also indicate exactly where the task will be completed in the material.

Students learn best when they are supported as learners and provided with many opportunities to practice and learn from their mistakes. This should not be restricted to the end of the lesson in a Practice Exercise. Rather, opportunities to revise, practice and question should be an ongoing feature of every lesson and take place on

almost every page. The writer must develop material so that the students can demonstrate and gain positive feedback from resources other than their marker.

Students in Grade Nine were taught over a 16 lessons unit on Colonialism, to develop effective questions to ask in interviews and to make brief notes from interviews. They were then supported to go beyond the material and draw on their local community and environment. They were taught how to identify the best person in their community to provide more information, set up and conduct an interview, as well as write a report summarising the effect of colonialism on the lives of their extended family. An example of how this was developed in the material has been provided on the next page.

By using effective student learning support strategies in the material, students gained confidence, reflected on what they learned, received positive feedback from their community and were encouraged to become active learners.

### **Design features which support teaching and learning**

Incorporated design features need to complement and strengthen effective teaching and student learning support strategies. The use of visual stimuli such as a constant teacher figure that communicates directly with the students and icons that direct and focus student's attention became particularly important when abstract concepts are introduced. They also function to reduce verbose written textual explanations, which are not supportive of students learning English as a second or foreign language.

By paying attention to the kinds and variety of design features incorporated as well as the logical sequencing of these features throughout material development, effective teaching and student learning support can be enhanced. The example chosen to elaborate this has been taken from a Grade eight lesson about connections between environmental elements. Throughout this lesson, a series of graphics, diagrams, pictures and written text were used and repeated to reinforce the concept of environmental connections as well as model the vocabulary required.

The lesson introduction outlined the purpose of the lesson, followed by a double page graphic showing environmental elements with added text describing various connections that could be made between environmental elements. Then a brief description about some of the depicted connections between environmental elements was provided as a text. The concept of connections between elements was repeated as a graphic, however this time with scaffolding and simple language describing a variety of connections that could be made. An icon of the 'teacher' was used to restate the purpose of the graphic and then she 'instructed' the students to list and sort the elements into four main groups. To assist the students as they complete this task, examples of elements were included under each heading in the answer space for the students to follow. An icon of a hand and pen with brief written instructions clearly indicated where the students were expected to write their answers and what they were expected to do.

The teacher icon then 'told' the students that diagrams are often used to simplify concepts and a simple diagram summarising environmental connections was provided. The features of a good diagram were summarised underneath and then a write icon with accompanying instructions instructed the students to complete a simple exercise to check their understandings of the concept of environmental connections. The answer to these questions was provided in a brief paragraph following the space for the students' answers. Below is a graphic showing how the main text, diagram and picture were reduced and repeated with a statement that summarised what the students should by now understand about connections between environmental elements.

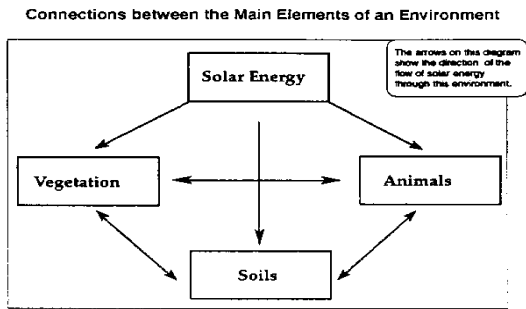
- a written text

Environments are made up of many elements, such as sunlight, soil, vegetation and animals. People make use of these elements to survive. Some people clear the trees and grow crops in the soil. Animals eat grass, seeds and leaves. People hunt the animals for food.

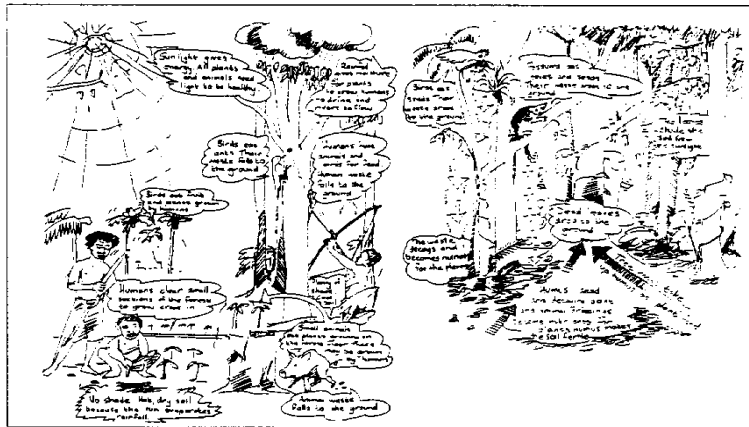
The elements which make up the environment are connected. The rain provides moisture for the soil. Plants use this moisture to grow. Leaves drop from trees and fall to the soil. These leaves rot and become humus. Plants use humus to grow.

These connections are very important. They help keep the environment healthy. In a healthy environment all the parts work well together.

- a diagram



- a graphic



While this description is verbose, it outlines how a variety of design features can be used in a sequence to support students and effectively teach a range of concepts.

I would further add that I have found it essential to include simple line graphics rather than photos, which become less clear with each print run. The graphic artist ideally should be able to work in close consultation with the writer so that the required image is produced.

## CONCLUSION

There are thousands of junior secondary students who are undertaking distance education courses using print based materials with little or no additional learning support in Papua New Guinea. These students are learning English as a second or foreign language as well as western forms of knowledge organisation. If these students are to achieve curriculum learning success, it is imperative that curriculum support material writers critically confront how their teaching methodologies can effectively teach and provide student learning support through innovative material design.

Experienced classroom teachers in Papua New Guinea who are developing print-based materials suitable for junior secondary students inevitably find themselves in difficult teaching contexts. They have successfully taught in mainstream classrooms but now they find themselves cut off from the visual cues their former students provided to gauge the effectiveness of their teaching methodologies. However I believe it is time to critically consider the methodologies that worked well in their former classroom practice and how these effective teaching and learning support strategies can be incorporated into the development of print based curriculum in all subject areas. It is about making sure the writer focuses on how the material can effectively teach and support students as they engage in learning

## References

- Guy, R. Haihuie, S. Pena, P. (1996) 'Research, Knowledge and Management of Learning in Distance Education in Papua New Guinea', in T. Evans et al (ed.) *Research in Distance Education 4: Revised papers from the fourth research in Distance education seminar*, Deakin University.
- Hardy, J. and Klarwein, D. (1990) *Written Genres in Secondary School*, Department of Education,

- Queensland.
- Mandie-Filer, A. (1989) *Teacher Training to Accommodate for Distance Education in Papua New Guinea*, Paper presented at the UPNG Education Faculty Extraordinary Meeting on Teachers for the 90's
- National Department of Education (1994) *Papua New Guinea National Plan of Action: Education for All, 1994-2010* Port Moresby, NDOE.
- McNamara, V. (1989) *The Future Direction of Community School Teacher Education*, Department of Education, Waigani, Papua New Guinea.
- Northern Territory Department of Education, (1993) *Getting Going With Genres*, Darwin, Australia.
- Paraide, P. (1995) 'Discourse Analysis of Selected and Elaborated Course Material Texts', in F. Nouwens (ed.) *Distance Education: Crossing Frontiers*, (papers of the 12<sup>th</sup> ODLAA Forum) Distance Education Unit, Central Queensland University.
- Smyth, W. John. (1987) *A rationale for teachers' critical pedagogy: a handbook*. Deakin University Press, Victoria, Australia.