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The Integrated Memory and the Integrated Syllabus

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Introduction

Currently, in Malaysian secondary schools we have what has been termed an integrated syllabus. This paper examines the integrated syllabus in terms of what we know about the structure of memory, comparing what seems to be a generally held notion of what constitutes an integrated syllabus with the understanding of memory found most prominently in the works of Earl Stevick (1980, 1982, 1986).

Language learning, in a very obvious way, is a matter of getting words, patterns, and meanings from short-term into long memory and from long-term into permanent memory. This, of course, is not to say anything which is not obvious. From this, it follows that successful language teaching techniques are those that augment or are at least compatible with the way these memory processes work, while less successful techniques are those which fail to augment the memory processes, or which even hinder the processes.

Short-term, long-term, and permanent memory

Memory can be viewed in terms of short-term memory, long-term memory, and permanent memory. The learning task, of course, is not just to get material into permanent memory, but also to get it there in such a way that it can be accessed or recalled automatically.

Short-term memory is short- 20-30 seconds. It only requires noticing something, paying attention to it. After some twenty years of classroom teaching, I will not say that this is no problem. I have certainly had students and, on occasions, even classes who were not inclined to pay attention. All of us, however, who have survived any length of time in a classroom have picked up some techniques for getting students to pay attention; as will become clear from the discussion below, in terms of their effect on long-term and permanent memory, some of the techniques are better and some are worse.

Long-term and permanent memory are of more interest. Here, the major concern is with how things in short-term memory get into long-term and permanent memory. The movement from short-term to long-term appears to correlate with two characteristics in the stimuli: the "frequency" and the "intensity". Sufficient frequency or sufficient intensity or some combination of both leaves an impression in long-term memory.

Quantity and Quality *1. Quantity*

Quantity: the frequency of the association.

The frequency and quality of the experiences determine whether an image will remain in long-term and permanent memory. Certainly, the more frequently an item is encountered, the greater its chances of occurring in long-term memory, although there is a qualification which must be made here. The literature on frequency and memory distinguishes between 'distributed' practice and 'massed' practice, and concludes that the frequency of an item appearing is more effective if the appearances are distributed over time than if the items occur, massed one after another. Certainly, a weakness of many drills is that, although in a drill certain items are presented with considerable frequency, the occurrences are not widely evenly distributed over time to have full effectiveness.

The movement from long-term to permanent memory (and, the movement may only be movement between different points on a continuum), involves the same factors - quality and frequency - but with quality now being of more importance.

Stevick suggests heuristically that a single exposure, if "intensive" enough, might be sufficient to implant something in permanent memory. "Intensity" has been used here to refer to a whole cluster of features about an experience - in this case, a language experience, which makes it important, salient, or relevant to the individual. This notion of 'intensity' has to do with how important the experience is to the individual, how well the experience fits in with other association networks of the individual, and how much emotional attachment the experience has for the individual.

2. Quality

Quality: the "intensity" or meaningfulness of the association.

In short and simplifying somewhat, quality or "intensity" depends on two factors: first, how well the experience fits in with previous associations and memory networks i.e., how many other bits of memory it can be tied to (and, conversely, it can be supported by them) and, second, its importance both intellectually and emotionally. In more technical terms, intensity depends upon emotional 'depth' and the cognitive 'breadth' of other associations. [The things that determine the quality or intensity of the association are discussed further toward the end of this article].

Increasing the Intensity and "Depth" of Materials

There are countless ways in which the quality, intensity, depth, etc. of materials can be increased. Relating the materials to individuals in the class helps do it in part, making the contexts of materials more familiar helps do it, a classroom atmosphere which is warm and enjoyable helps do it. Anything that increases the degree of intellectual and emotional involvement of the students helps to do it.

Here, however, the discussion has been restricted to just three of the many possibilities.

Communicative Materials.

Communicative materials are materials that share three features: an information gap, a choice, and some feedback.

By an information gap is meant that one person in the exchange knows something that the other person does not know thus, the teacher-to-student question 'What colour is your coat?' usually does not involve an information gap as both the teacher and the student know the same information, while the friend-to-friend question 'What are you doing tomorrow?' does involve an information gap because the person asking presumably does not know the answer, while the person asked probably does. The presence of an information gap in the language experience adds one more association which is often missing from classroom materials, an association with information-seeking and giving.

By choice is meant that the student has some choice in what to say and how to say it; thus, reading a dialogue does not involve choice in this sense. The presence of choice also adds one more association which is often missing from classroom materials, an association with choosing - usually in connection with trying to figure something out or with trying to get something done.

By feedback is meant the speaker gets some meaningful response-other than the teacher saying, "Good! Good!" -which indicates that the communication was understood; thus, if a boy tells a girl that she has pretty eyes, and she blushes and bats her eyelashes, this constitutes feedback, there is at least reason to believe his message was understood. The presence of feedback also adds still another association which is often missing from classroom materials, an association with making progress while problem-solving - as the feedback is usually given in response to some sort of information-seeking, problem-solving task.

"Who Am I?" - A Communicative "Game

In the game, the teacher is a well-known person either living or dead, and the students are to figure out who it is by asking yes-no questions, questions that can be answered by yes or no. The students ask yes-no questions until they succeed in guessing who the teacher is supposed to be.

The widely-known game "Who Am I?" illustrates these three principles quite clearly. There is an information gap. The teacher knows the answer; the students do not-but they want to. There is choice. The students have a wide variety of choices about what to ask. And, there is feedback. Every question is answered with a yes or a no.

One of the things that makes the above game effective is that the students are actually trying to find out some information while they are going through the process of forming and asking questions. That is, the questions are real questions; thus, these questions are associated in memory with information seeking. These extra characteristics of the material mean extra processing, which means deeper and stronger memory patterns, and extra associations, which also means deeper and stronger memory patterns.

This is in sharp contrast with exercises in which students turn statements into questions; such exercises establish little or no association of question formation with information seeking.

Providing Motivation and Short-Term Goals.

Long-term goals such as learning the language, doing well in school, and preparing for a future career are important, but for the short-term, day-to-day motivation is needed to help students focus on the immediate task. Giving the students well-devised short-term goals provides them with a useful focus on the subject and a motivation for doing well the work required that class period.

As an example, the teacher who makes it clear at the beginning of the lesson that the students will write a letter at the end of the class does two things for the students. By providing the students with a clear and understandable immediate goal, the students have been given a short-term but real motivation for paying attention - the information included in the preparatory exercises will be needed at the end of the class to write the letter. With such a clearly defined goal in advance, we provide them with short-term motivation and we help them focus on precisely that part of the lesson needed to successfully complete the task we set for them.

This increased focus, this artificially-induced concentration nevertheless typically increases the amount of processing the students do with the material and as a consequence increases the amount taken in and the amount retained. A little low-level "pressure" helps.

Putting 'Depth" into Comprehension Questions.

If we examine the short reading passage below and the questions which follow it, we notice that different questions make different processing demands on the reader:

> The older hunter moved forward quietly, his mind alert, his body controlled, the spear ready in his hand. His companion also circled around the prey, moving noiselessly, stealthily, quietly.

> 1a. Which hunter moved forward?
> 1b. Which hunter circled around the prey?
> 1c. How many hunters were there?
> 2a. What were they hunting?
> 2b. What did the older hunter look like?
> 2c. When did this take place?
> 2d. Where did this take place?

The first set of questions are typical of the comprehension questions found at the end of most reading passages. This type of comprehension question comes directly out of the reading passage. These can usually be answered using words, phrases, and often even structures taken directly from the text. The answer itself is factual and serves to indicate the students' understanding of the passage and proficiency in the language. Such questions are easy to make up and easy to answer, and for students who are having considerable problems just handling the language are quite useful.

Psychologically, however, such questions require minimal involvement and minimal processing on the part of the student. Certainly the answers are not communicative - there is no exchange of information; that is, as the students are well aware, their answers do not tell the teacher anything that the teacher does not already know. The student is not required to think and is not involved except on the most superficial level.

As a result, the interaction itself is relatively superficial.

The second set of questions differs in one major way from the first: the answers are more than just information taken from the passage; the answers also require the student to go beyond the contents of the reading passage. Such questions have several advantages: they involve the students' imaginations, they often receive more interesting answers, and they deepen the students' intellectual and often emotional involvement, all of which helps their learning.

As student proficiency increases a slow transition can be made from the less-demanding comprehension questions to the more-demanding inference questions. When the students' language proficiency is too low, inference questions because they require more language ability are often simply too frustrating for learners; in this case, the simpler comprehension question is to be preferred. When the students' language proficiency is greater, the more-demanding inference questions increase student interest and involvement. Once the students can answer clearly and easily, the inference question is to be preferred.

The Holistic Characteristic of Memory

We do not just take in just sounds alone or just words alone or just sentences alone. When we are exposed to an experience including language experiences, the image that is taken in includes all elements of sound, sight, emotion, smell, etc. which were present.

This has two important consequences for language teaching. The first and most important is the realization that our stored images include an emotional component. As Stevick notes (1982:26), this emotional component of a language learning experience may be "pleasant, but many of them contain heavy elements of feeling ignorant, powerless and constantly evaluated… When that is the case, a learned image may in some deep sense be unwelcome even at a time when our most obvious but more superficial motivations (the need to get a good grade or to sound educated, for example) make us try desperately to get it back." In other words, if the learning conditions were unpleasant enough, there may be a tendency to suppress everything about the experience - including the valuable part of the learning itself.

The second value of the observation is that it suggests that the richer the learning environment, the potentially more valuable the experience for putting items into memory, and also, with the added associations of a richer environment, the more the greater the access to that memory. Part of this enrichment is done through visual aids. Although visual aids typically do not include motivational and emotional elements, they nonetheless improve the quality of the input.

Gaps, Frequency, and the Formation of Images in Memory

Fully-developed rich images in memory do not typically come into being from a single contact with an experience. Our memory patterns, our internalized networks of associations, our internalized maps of knowledge do spring forth fully developed. With any of our perceptions, the mind takes in some but not all of the scene - inevitably, there are gaps, holes, and missing pieces. If our perceptions have gaps, holes, and missing pieces, our memories are even more incomplete.

The presence of gaps in our memory networks is reflected in the fact that the ability to recognize is consistently better than the ability to recall. It takes a more complete memory to recall something than it does to recognize it; the fact that something is recognized, however, indicates that part of the work of putting it in memory has been done. In the classroom, this dominance of recognition over production is reflected in the typical ordering of listening before speaking and reading before writing. Certainly, in an integrated lesson, the recognition part of a lesson precedes a production segment of the same lesson, as often the recognition segment helps raise the level of understanding to the point where the more demanding production work can be done.

These gaps are filled by our minds in two obvious ways. First, at the moment, the gaps are filled by using items which in the past have been associated with the items that have been retained - that is, some of the gaps are filled by things already stored in memory. This is another way of saying that what we think we see is the result of an interaction between what is going on at the moment and what we have in storage (i.e., memory). As Stevick notes (1986:11-12), "It is this interaction that accounts for the many distortions and partial errors which are important parts of language learning, as well as of everyday life."

Certainly this is nothing new. As many readers will recognize, it is the essential view behind much of the schemata theory found in reading and certainly a prevalent view among cognitive psychologists.

However, these gaps are also filled over time. The gradual acquisition of more complete images also comes about through repeated exposures. Repeated exposures result not only in more complete images but also a widened network of associations, which means smoother and quicker access to these memories. Over time, with repeated access to new but related language experiences, we refine and expand our memory networks and our access to them. The process is continual; the better the quality of the image, the more we can take in and add and so on.

The metaphor which comes to my mind is pouring paint through a sieve. If a little is poured through each day, by and by the gaps are filled in and eventually will disappear.

Thematically-Integrated Across-Skill Materials

Materials can be "integrated" by using materials with identical or basically similar content for a number of related activities. As an example, within one lesson the same reading passage will be used not just for reading but will be adapted as part of a listening comprehension exercise, and perhaps adapted again as part of a culminating writing assignment.

Memory benefits from the particular combination of the new and the old found with the approach: the activity changes while a significant part of the linguistic material remains relatively constant. Thus, the student gets needed stimulation from the novelty of the change to a new activity-that is, new associations are made for items already partially in memory - and needed reinforcement through reexamination of familiar material but from a different perspective - that is, some more of the gaps in the retained images are filled in and some more of the distortions are adjusted.

The layering implicit in an integrated skills approach is consistent with the concept of developing a richer, more integrated, more complete set of images over the course of a full lesson. Recognition tasks normally require less complete mental pictures than do production tasks; thus, listening skills are usually more

advanced than speaking, and reading skills are usually more advanced than writing. In an integrated approach, the listening activities - requiring less complete control of language - will usually precede the more-demanding speaking activities. During the listening activity, the students' command of the material increases-the relevant "images" are expanded, further filled-in, and further improved. With this slightly better command of the material, the students go on to the next related activity; again further developing their command of the material and helping prepare them for the level of understanding required for the next activity. Listening activities, typically, help set up speaking activities, reading activities help set up writing activities, and so on.

The benefits to the teacher are equally obvious: it is much easier to take a piece of material and then adapt it for one kind of activity and then another than it is to come up with one completely new piece of material and new activity after another. In fact, materials preparation takes so much time that an integrated syllabus can benefit us almost as much as the students.

Grammatically Integrated Materials

Grammatically integrated materials are more difficult to prepare, take more skill, and, if not done well, are less effective, but nonetheless an integrated, effective lesson can be built around a grammar point. On occasions, almost all good teachers do it.

What makes an integrated grammatically-based lesson effective is that from the student perspective it is not organized around grammar. As professional language teachers, it may be clear to us that the lesson is grammatically based, but the learners see the lesson as a series of one, two, or, three non-grammatical topics.

Passives with Modals.

This is illustrated beautifully in the lesson on passives with modals immediately below, in which the three successive segments of the lesson deal with passives with modals - this grammar point provides the integration. However, the students must see the lesson as a nicely-paced class, divided into three distinct segments.

The lesson begins with Faridah drawing a broken down house on the blackboard; the fence is crooked, the grass is uncut, the windows are broken, and the door needs repair. As the drawing nears completion, the teacher asks, "What should be done to this house?" The answers are cued by such prompts as:

> The fence… should be repaired/fixed/straightened.
> The grass...
> The windows...

The prompts, as you may have noticed, begin in such a way that a normal answer requires using the passive. The two most typical answers are with should be and must be.

A second round of passive modals begins with the comment that Nik - a student in the class - is having a birthday party today at 3:00 o'clock. The teacher then asks, "What has to be done before 3:00?" Again, the answers are cued by prompts such as:

Colorful balloons... must be hung from the ceiling.
Food...
Drinks...
The table...
The chairs...

To this list, some other things were added by the students. A third round of passive modals involves group work. The students get into groups and are told that they want to take a camping trip to Morib Beach in a month, "What has to be done?" The groups come up with a list of things necessary to do to prepare for a camping trip and things necessary to bring. When the groups are done, the list of necessities constitutes a list of prompts for further practice.

The three consecutive but distinct exposures to passive modals helps set this particular grammatical point in the students' minds - the parallelism between the uses in the three successive segments should do that well. The scenes in each of the three segments are also fairly rich and complete. The first scene involving the teacher drawing the broken down house, unfolds before the students as they work on the material - their interest in the unfolding picture was evident as the teacher put it up on the board. The second segment involving the birthday party starting later that day, deals with a topic of obvious interest to the class; the segment is strengthened to the degree that the scene can be connected to actual class members. The last segment, working Out what sort of preparations have to be made for a camping trip to Morib Beach, has a certain plausibility and reality, as Morib Bay was only ten or so kilometres away, and a camping trip would not be impossible.

More important, however, is that each of the three segments was taken, developed and worked with for about ten minutes before moving on to another segment.

Conclusion

An integrated syllabus is consistent with what we know about the memory and memory processes. The integration can be thematic and across-skill or grammatical; both are possible. In either case an integrated approach provides the necessary quantity of exposures and part of the necessary quality or intensity. Further, an integrated approach is also not only fully consistent with certain other approaches such as the use of communicative materials but is enhanced by them.

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