EDDINGTON'S MONKEYS AND THE NOTION OF TASK*

Martin Phillips
The British Council

In this paper I hope to do two things. First, I shall briefly offer some theoretical speculations about the nature of language. Secondly, I shall then examine what implications these considerations might have for practical classroom activity. A convenient starting point is provided by the illustration below, which raises an interesting issue about the nature of language.

"BUT SURELY, LANGUAGE IS NOT DEFINED FOR US AS AN ARRANGE -MENT FULFILLING A DEFINITE PURPOSE..." STAMMERED JED.

I am afraid I must leave the reader to speculate on the significance of the motorcyclist because I should like to focus on Jed's concern that language might be "an arrangement fulfilling a definite purpose". Let us explore first the notion of arrangement.

In 1927, the celebrated British physicist, Sir Arthur Eddington, suggested that if 1000 monkeys were allowed to type randomly on 1000 typewriters, they might just, given a long enough period of time, produce the complete works of Shakespeare. That is, a purely random selection of letters in sequence might, eventually, hit upon the particular arrangement of letters which we recognise as Shakespeare's literary production. Whilst this occurrence is not impossible theoretically, Eddington, of course, gave the example as an instance of a highly improbable event, and more generally as an argument against the idea that the notion of probability is adequate to explain what we observe in the world about us.

Yet there is perhaps a sense, a very limited sense, in which Eddington's speculation is not so wide of the mark. Recent work in computational linguistics has shown how it is possible to use very limited information about probabilities of occurrence of letters as a basis for generating texts which display the characteristic style of any chosen author. To see what I mean, let us perform a little thought experiment. Suppose we have a bag full of letters, or rather a bag containing the twenty-six letters of the English alphabet, the apostrophe and the space character. It may seem rather strange to think of the space as a character but let us treat it as such for the purposes of the experiment. Now suppose we put a hand in the bag and pull out a letter (or, of course, the apostrophe or a space) at random. We note down the letter just pulled out and replace it in the bag. We then continue picking letters at random from the bag and noting them down for as long as we feel inclined to do so. When we grow tired of this, we shall find that the text we have noted down probably looks something like this:

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PWGMMLTHIDVGRHPEDFCXFEKFNOPYPQSXZRUXG'YS'AEEU PEDEGLQYFUWPO'IKI
QTONIXJKZEUKDXWKKJREHYHPKWUJHLEJNBPLQ AIEOQXUBJYYVIFFDPQGIGZNTI
RQXPDJ NQESPQMCRSNGMKQEZICZV'GSWALK ZZEYIBBOTDCRSMK'VI MRCZXUBI
SNEQ'VQQHFQUCBJXZRVVNIBHFJEFTCFJPWFOIYHOMPNFSFWKNCMVLOJJBX
QV KIZTLNRWGGTZFPZPQQCGVJCPAYRDQJRMYSWCGABRXLERCYYRHQCHTOQ'UT
FMRITFTIZUIWTSTXWQGOCAFXJOZYKSTV'BYOBEUFIRQWQ VOUVQJPRKJWBKPLQZCB
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This may be called a zero-order random text. It obviously bears very little resemblance to natural English.

One reason for this is because the frequencies of occurrence of different letters in English are not, in fact, equal. The letter 'e', for example, is the most common whilst the letter 'g' is relatively uncommon. Let us then repeat our thought experiment but this time building in knowledge of the frequencies with which letters occur in typical English text. In other words, our bag of letters now contains very many 'e's indeed, and so on for all the letters in the alphabet. The most frequently occurring character will in fact be the space, which of course reflects its importance as a word separator. If from this new bag of letters we now pick out letters at random, we obtain what may be called a first-order random text, which might look something like this:

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HUD T ALONIT NTA SN TVIOET ELERFOAD PE TRLTWTL N CABEG TYLUEMU TIGT
BH OFDRRIC O STU HOOOTO YATNDL UYA HWAE SS NLSDB OTRORT DEERARFT
D LBFF HHARE MW OSPE OFOIT SEOUN GTUMG H N GHKOY T EAOS A SD E TNNE
PEHAGIADIHNATO AATSAGI ED INNE ABRA TAAM GT E TWNO HEWIIGUTNCM GA SFHHY
HREBH RARE OOSY LFE OC EGGTA WIFRTYE EUS DA ETO WF EIT ERNETEBTSTTELO
NTAAN O YEETWNSONRNHN TYHVN NLUESETTHLGEAKPNNMTIA TSM REEANTVONC POE
RUTP EOIT L IEETGTWHSW H KHHER W OLIOEWOEPT D AEYBSTNHGDNPT C TNLINHH
KHHE E RTVIOB EI K EOAFPUTSTTAS NA LAN SRDF D NMTHESKO UGEEDICRAWDT OBD
TUIML WSORGNETE
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The letter frequencies now appear more natural, and in particular the length of individual "words" is more characteristic of English. Even so, this text does not represent much of an improvement over the first one.

The main problem is that letters in English are more likely to occur in the company of certain other letters than, as in this text, any other letter. Thus, after a 'q', a 'u' is almost certain to occur; after a 't', the letter most likely to follow is an 'h', and so forth. In other words, the probability of occurrence of a given letter depends on the occurrence of other letters in its environment. What happens if this knowledge is taken into account in our thought experiment? If, in other words, instead of our bag containing single letters, it contains pairs of letters, but again

in quantities corresponding to the likelihood of those pairs occurring in English. Thus the bag contains a great number of 'th's, for example, quite a few 'tr's but no 'tx's, which is an impossible combination in English. And so on. If the occurrence of a letter is allowed to influence the probability of occurrence of the immediately following letter in this way, then a second-order random text is obtained, of which the following is a typical example:

BEGASPOINT IGHIANS JO HYOUD WOUMINN BONUTHENIG SPPRING SBER W IDESE WHE D
OOFOMOUT O CHEDA AFOOIAUDO IS WNY UT DRSASER LD OT POINE ETHAT FOEVEL BE
ORRI IVER BY HE T AS I HET W BE T WAU GIM UTHENTOTETHAVE THIKEWOITOCOUTORE
TATHASTHEE AT D Y WAN TOND SE TEDING US AKIN WING W TE T BO TOTSTHINGATONO
EN T LLY WID OUCOUSIND HEF THIMES AG T BENG LORYE ALLATHOMOFTHER TOUDIMS YS
S ORYRY THERNG S HE M G M ANG S CITOOFO HEN G BEST ONDLOL ANE DO HE
ICISEKERIT ME NKITHADIMUPL WHES HT BATHE T LOR WITULOWAYE WATHEG M
LEROMAUN OUGS POUPO O HASING LIN ON ASHAN AWFAS HET ND MEDE

Whilst this is still not English, it is nonetheless beginning to take on some of the characteristics of natural English. A large proportion of the "words" are pronounceable and a number of the shorter words are in fact acceptable English, such as 'is', 'be', 'by', 'he', 'akin', 'best' and the longest example in this text, 'bathe'.

This procedure can be extended to higher order random texts. Given, for example, the occurrence of 'th', then in English the most likely next letter is 'e'. And so on for all possible combinations of letters. Thus a third order text could be constructed. And similarly for fourth and higher order texts in which increasingly long sequences of letters are used to determine the probabilities of occurrence. But for longer sequences of letters a question arises. Where is the needed information about the probabilities to be obtained? Fortunately, the answer is a simple one. The information can be extracted from a sample of writing in English. Any text exemplifies precisely those probabilities of occurrence of interest.

Now it is a curious fact that if the probabilities of occurrence of letters are taken from the writings of a particular author, only a relatively low order of probability is required in order to generate a random text in which that author's style is

recognisable. In fact, in most cases it is necessary to know only the probabilities of occurrence of sequences of between four and eight letters to produce a recognisable text. What the lowest order of random text is in which an author's style is recognisable depends, of course, on the particular author. A reasonable facsimile of Eliot's poetic style can be achieved with only a fourth order text, that is a text generated on the basis of knowledge only of the likelihood of sequences of four letters occurring in Eliot's poetry. Shakespeare is a little more demanding, and it is not until the seventh or eighth-order is reached that the random text begins to make any real sense. Nevertheless, the following fifth-order random text, using probabilities derived from 'Hamlet', has a certain ring which is redolent of Shakespeare's style.

I, his soul, that are. To a nunnery. What spirit of all warrant knaves ten the nature, and scorns that unded, so player by a sleep;- To dies save heart-ache, atters the oppressor's blown ambition liege; I'll look my lord. O heart; and I'll give that he spokes thy origin and love. Her fault is night his fit, and quickly justice, and man's chaste as you now rights. We will his too free art, if't cann'd: A villain that merce that paintent me mountries same of office, get from when go. Oh, 'tis somethings and drift of him in. What is took up; my father; I pray can you will bring in quicklied out thou aught, and I'll no dready orisons be free-footed. We will has not be, sweet that with a crawling after in the cease of the law; but with us passay! Bow, stubborne me my mother aloof, what reply.

Certainly this is nonsense, but I suggest it is unmistakably Shakespearian nonsense! I should like to emphasize that the only information on which the generation of this text was based is the probabilities of occurrence of sequences of five characters (including apostrophes and spaces) in 'Hamlet'. For the moment I think I have done enough to lay the ghost, if not of Hamlet's father, then at least of Sir Arthur Eddington's monkeys.

One conclusion that could be drawn from the finding that only a comparatively low order of probability is needed in order randomly to generate a text which has recognisable characteristics is that style, and indeed, given that some of the higher order random texts are far from ungrammatical, even structure, is a far more superficial phenomenon than is commonly supposed. There is something deeply disturbing about the thought that so little knowledge of the characteristics of language is required in order to produce embryonic texts like the quasi-Shakespeare we have just seen. It is particularly disturbing for language teachers since structure and style are aspects of language which figure prominently in language teaching. Structure, of course, forms the core of many

programmes at elementary and intermediate levels, even within communicative methodologies, whilst subtleties of expression and sensitivity to literary effect or an appreciation of the significance of register frequently constitute topics of study at more advanced levels.

It is nonetheless a common human characteristic to miss the significance of the fundamental through becoming engrossed in the minutiae of superficial detail. But superficialities and detail are misleading if the overall picture cannot be perceived. In terms of language, this point is well made in the following illustration.


"QUITE GOOD, RUNNING ELK- YOUR WORK
ON THE APOSTROPHE IS COMING ALONG
—BUT THERE IS STILL MUCH TO LEARN..."
COMMENTED MR. THUNEGRENCH

Here an urgent communication from a student pointing out that his teacher's head is undergoing spontaneous combustion is ignored by the teacher himself because he is more interested in the relatively trivial formal aspects of the message. A perfectly meaningful utterance has been misconstrued through focussing at too low a level

of detail. How many of us can honestly say that, as teachers, we have never been guilty of the same mistake?

The prime determiner of the meaning of an utterance is its relationship to its context of use. By context of use I mean all the relevant situational factors surrounding the utterance, the participants, their roles and relationships, the setting, that is location, time of day, the physical objects present and so forth. The success with which an utterance relates to these factors contributes far more to its meaningfulness than its degree of formal accuracy. Only when inaccuracies of form lead to breakdowns in communication do the details of grammar and morphology assume significance. Let us be quite clear about this: I am not saying that grammar, for example, is unimportant. But there are implications in this view for when the lower levels of the language system, the levels of grammar, morphology, phonology and orthography should be focused on in language teaching.

The significance of context of use as determinative of the meaning of utterances is the insight which lies at the heart of today's communicative approaches to language teaching. It is the insight which accounts for the somewhat startling effect of the next illustration.
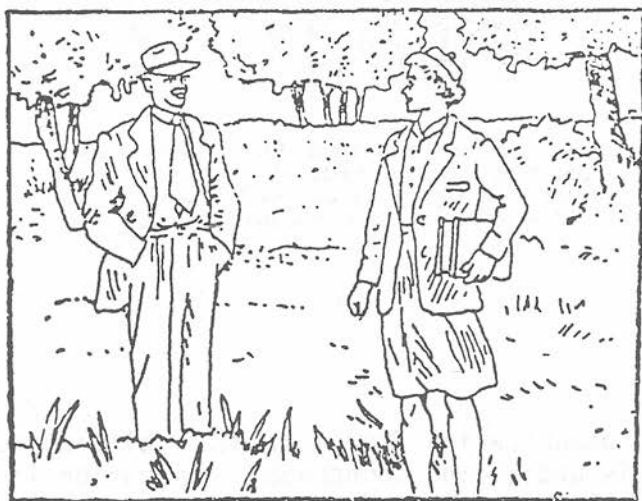
"THESE PANTS ARE WELDED STEEL"
ANNOUNCED THE STRANGER

The stranger's statement is a perfectly well-formed utterance from the grammatical point of view. Thus it can be understood in the abstract. It has meaning. But I would claim that it does not make sense. The problem is that there is virtually no context of use that could be imagined, and certainly none indicated in the illustration, which would render the utterance a fully meaningful and natural one, although the reader might find it amusing to speculate on the hypothetical context which would do so. Thus, the fact that the utterance is perfectly grammatical is irrelevant. Indeed, the context of use which is suggested by the reference to a "stranger" conflicts with the apparent meaning of the utterance. One simply does not make announcements to passing strangers about the materials one's clothes are made of. The bizzareness of the utterance does not rest solely on the improbability of the material from which the stranger claims his trousers are made.

At this stage I should like to recall the words of our linguistically inclined cowboy, Jed, and to move to the second stage of this discussion. This concerns the practical implications of what I have considered so far. It will be recalled that Jed was concerned whether language is "an arrangement fulfilling a definite purpose". I have briefly examined the notion of arrangement. It is now possible to appreciate what is meant by the notion of "definite purpose". It has been seen that the purpose of an utterance is determined by its relation to its context of use. In other words, only purposeful language makes sense. And therein his relevance of these speculations to language teaching. For it is our duty as language teachers to help our students make sense of language. I suggest that this cannot be done successfully unless the language to which they are exposed makes sense.

In other words, I believe it is necessary to make the assumption that language learning takes place most effectively when the language to be learnt is meaningful. There is, of course, experimental evidence which shows that meaningful sequences of letters or words are memorised more easily and retained better than nonsense sequences, but the point appears so obvious as to be virtually self-evident and so I shall not dwell upon its justification. But if it is indeed the case that utterances derive their meanings from contexts of use and that language is learnt most effectively when it is meaningful, then clearly the responsibility of the language teacher is to create contexts of use in which the language to be learnt is as meaningful as possible. To see what this means in the

context of language teaching, it will be necessary to look more closely at a particular way in which utterances can relate to their context of use.

The key to the relationship lies in the notion of task. A task, in language learning terms, is an activity which provides a meaningful context for language acquisition by students. More formally, if less digestibly, it can be defined as

AN ACTIVITY WITH A DEFINITE OUTCOME
INVOLVING OPERATIONS ON DATA
WHICH CAN BE ACCOMPLISHED ONLY BY LINGUISTIC MEANS

Let us break this definition down a bit. An activity that has an outcome simply means that as a result of the activity some observable change takes place and the occurrence of that change marks the end point of that activity. In other words, a task must have an effect and a definite set of conditions which must be met for the task to be considered accomplished.

Next, a task involves operations on data. That is to say, it involves the transformation of information into some other form. Trivially, this requirement excludes tasks concerned with purely physical skills, such as swimming 100 metres for example. But the point of this requirement is that there are two elements to any language learning task - the information provided in the task description and certain actions a student must perform in order to achieve the appropriate outcome.

These actions are linguistic ones, in that they crucially depend upon the appropriate use of language. This is what is meant by an activity which can be accomplished only by linguistic means. This is the condition which ensures that the task is a language learning task.

It may be helpful if at this point I give an example of a task. This task, which I have adapted from a typical coursebook, is intended to give the students practice in discussion skills and is to be used with groups of four students.

Four of you are going to spend a fortnight's holiday in Britain in the Bournemouth area. One of you likes sunbathing and shopping, one is very interested

in historical buildings and churches, one likes to
see countryside and coastal areas, the fourth likes
wildlife and is a car enthusiast. You must decide
amongst yourselves how to divide up the 14 days and
if it is worth renting a car.

This is the specification of the task which defines both the out-
come and the operations to be performed by the students. The out-
come is a plan for the holiday agreed by all four students. The
operations to be performed involve the taking of decisions through
appropriate discussion. This leaves the information which is needed
as a basis for these operations. This is provided separately in
the coursebook in the form of an extract from a tourist guide and
another from the brochure of a car hire company. Better still, of
course, would be to offer the students authentic examples of these
documents. The tourist guide gives details of "where to go and
what to see" in the Bournemouth area whilst the car hire brochure
specifies a variety of rates for a range of popular cars. Using
the information thus provided, the students must achieve an appro-
priate outcome.

It should be noted that in this example the outcome of
the task is not a purely linguistic one. It is, rather, something
specific in the real world: a holiday plan. It could, of course,
be objected that there is a crucial difference between the task
I have just described and the making of a holiday plan in real
life. This is that in the latter case the holiday plan is made
because one is going on holiday whereas in the former case the plan
is made because the coursebook tells the student to make one. In
other words, the purposes are in fact different. This obvious fact
I have to concede and will continue to have to concede for so long
as students with no immediate need of the language are taught Eng-
lish in classrooms. I admit that there will always be the necessity
for some suspension of disbelief in the language classroom. But
I would maintain that, unlike much activity that takes place in
language classrooms, this task is a possible real world activity
with a potential real world purpose and this, in most cases, is
as close to the meaningful use of language as we can get. Nonethe-
less, there are exceptions and the ESP situation, for example, is
quite different. Here it is entirely possible to create language
learning tasks directly linked to significant outcomes in the real
world.

I have suggested that, despite the constraints of the classroom, there is still an important difference between the kinds of task I am discussing here and much of accepted language teaching activity. To see wherein lies this difference a distinction must be made between two types of language learning task. It is helpful to distinguish between <u>authentic tasks</u> and <u>enabling tasks</u>. Authentic tasks are tasks which, like the example I have just given, have non-linguistic outcomes. The only exception to this general rule is when the purpose of learning is the study of the linguistics or the literature of the language, as may be the case for example on an MA programme. But I shall not consider this special case further. Thus an authentic task is an activity in which language is used to achieve something in the real world, in which language has not merely an arrangement but also a definite purpose. I think it can now be seen how the notion of authentic task provides the link between this view of language and activity in the classroom.

It is, of course, entirely possible for tasks to have solely linguistic outcomes. Thus, whereas an authentic task might be, for example, to purchase a plane ticket, where the means are linguistic but the outcome is not, the transformation of sentences from active to passive, for instance, or the filling of blanks in sentences with appropriate words are not authentic tasks. The outcomes are purely linguistic ones. There are no other real world consequences and so tasks of this nature <u>per se</u> are not compatible with the views of language and language learning that I have been developing here. It is true, nonetheless, that such tasks are frequently to be found as the basis for activities in the language classroom and, indeed, are perhaps the commonest form of language learning activity.

Does this mean, then, that this theoretical perspective obliges us to dismiss as irrelevant much of what traditionally constitutes the language teacher's stock-in-trade? This would be an unwarranted and foolhardy conclusion. But I would like to suggest that tasks with purely linguistic outcomes cannot be used indiscriminately, that they require justification and are not self-evidently appropriate, that certain conditions have to be met for their valid use. A language learning task with a purely linguistic outcome is justified,

firstly, if achievement of the linguistic outcome is essential to the accomplishment of some other authentic task

and secondly when there has been a linguistic breakdown
which has prevented the student from accomplishing the
authentic task.

In other words, such tasks are justified as <u>enabling tasks</u>, that is
as tasks which enable the accomplishment of an authentic task. It
is crucial to realise that both conditions must hold. The need for
an enabling task is generated when the student displays imperfect
control of the linguistic system with the result that some authentic
task cannot be undertaken. Thus whilst it is important to distingui:
enabling tasks from authentic tasks, the two are also intimately
connected because it is the failure to accomplish an authentic task
which generates the need for an appropriate enabling task. Enabling
tasks have no independent justification. This follows from the con-
sideration that an enabling task has no purpose rooted in a context
of use. The latter can only be provided by an authentic task.

What I hope I have done thus far is to move from a partic-
ular view of the nature of language, through its implications for
the nature of language learning, to quite specific consequences for
language teaching methodology. But how practical are these conse-
quences? Is it realistic to think in terms of a task-based method-
ology, a task-based approach to language learning and teaching?
There are, of course, often political issues and constraints which
cannot be commented upon in general. But I have no doubt that the
notion of task is not merely a theoretical concept but a practicalit
which can be introduced as appropriate into one's teaching. I have
already given an example of an authentic task adapted from a course-
book, and therefore one clearly intended as a practical activity
in real classroom situations. I should like to conclude by offering
some further suggestions for practical authentic tasks which the
reader might like to consider trying out when a suitable opportunity
presents itself. I shall try to relate the examples to learning
situations that are commonly found in the classroom so that it can
be seen how the tasks might fit in.

I shall start with the perennial problem of the conversa-
tion class. How can one get students to talk? I would suggest that
it is unlikely to happen by expecting them to discuss the great issu
of the day - unless perhaps they are fairly sophisticated advanced
students. It is normally unreasonable to demand that students have
a facility in handling complex ideas, be well-informed about a varie
of topics and be capable of controlling their linguistic production

in a foreign language, and all this at the same time! Let me suggest, then, a simple little activity, one that in one form or another we all have to go through in everyday life at some point. It is called a "mingle". One of the simplest forms of mingle is to require students, within some time limit, to discover two things they have in common with every other member of the group and two points in which they differ. I leave the reader to consider the language forms in which this activity might afford practice but would point out that it should provide good opportunities for exercising a range of question forms. Frequently it is the teacher who gets all the practice in asking questions so perhaps this activity is worth experimenting with. And it does not take much imagination to think of variations. It can be made more difficult by increasing the number of points of similarity or difference required or it could be made easier by making the activity more specific, such as by requiring the students to find out only which music they agree about liking and disliking. The information the students are operating upon is their knowledge of their own tastes and preferences whilst the real world outcome is the knowledge gained about the other persons. Is not this what we all do in some form at parties and other social gatherings?

Let us turn now to another important aspect of language teaching work, comprehension, whether of the written or the spoken word. I shall quote an example of an activity developed at the University of Kuwait, within an ESP context, but which I think is in principle of much wider relevance. In this activity students were asked to collaborate in the building of a kite and, it is to be hoped, in its flying as well. To do this, the students needed instructions and information about the principles of flight. In other words, a natural demand was created for the exercise of comprehension skills, since the instructions and the information were supplied in the form of reading texts. I believe they could equally well have been provided as listening comprehension, or indeed as a mixture of both reading and listening. The point is that there was a genuine purpose to the comprehension activity and a real sense of achievement when the kite was ultimately flown. A good example of a real world outcome in which linguistic skills play a crucial role. Perhaps kite-building is an ambitious project, but it is surely not impossible to devise similar activities on a smaller scale and of a more general nature. The construction of a simple puppet theatre, for example, would not only involve students in a task requiring appropriate use of language for its accomplishment, but would also act as a stimulus for the writing and performance of

simple plays in English.

Lastly, let us consider briefly how to encourage students
to produce meaningful writing, that is writing which has a purpose
other than simply being a requirement of the language course. An
obvious instance of writing with a purpose is when we report ex-
periences. This may be done with different degrees of formality and
indeed, accuracy, from the scientific laboratory report, through
the newspaper report, to the personal letter. In the ESP situation
for example, it would be perfectly natural to have the students en-
gage in some practical activity of which they provide a written re-
port. One could imagine the kite-building exercise leading to a
further structured report writing activity, for example.

In a more general situation, there is always the class
magazine or wall newspaper, which can be a motivating way of en-
couraging students to produce written work for a genuine communi-
cative purpose. One of the most delightful instances of this kind
of task that has been brought to my attention recently involves
high technology. At one of the private language schools in Britain
where computer assisted language learning has been introduced, stu-
dents are responsible for running an in-house Teletext service.
Teletext, as its name suggests, is a system whereby computers are
used to display on television screens pages of text and simple pic-
tures prepared by the user. Apparently, on St. Valentine's Day
this Teletext facility is in great demand and the texts produced
make for fascinating reading. What better communicative purpose
could one wish for? I would simply point out that this kind of
writing activity could also be sustained using the less advanced
technology of paper and pencil, should the reader feel like experi-
menting with the idea.

Ultimately, of course, the practicality of such ideas is
for the individual teacher to judge in relation to his or her teach-
ing situation. What I hope I have done in this discussion is to
have stimulated some thought about the suggestion that our aim shou
be to get students to use language and that in helping them to do s
the notion of task is a helpful one.

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