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1. Introduction

In this paper, we will describe the findings of using a specially compiled corpus of mechanical engineering English with the pedagogic aim of helping mechanical engineering students start learning the essential lexis to be able to understand, and rewrite summaries of, the technology-related presentations of other groups of students in the same class.

The students in question were mostly lacking even the quite basic, generic lexical items of the mechanical engineering field. Over the course of a single semester, creating a chance for students to experience a successful strategy for comprehension and production of lexically and clausally accurate language would ideally provide new confidence-building insights into language study and progress. Further, achieving this aim through the use of summary writing would also provide useful, practical training in an important skill area.

It was considered that this would be achievable even if only a very narrow band of the meaning of each lexical item was taught. In the event, the choice of presentation topics, which all included descriptions of basic technological machines and principles, meant that some of the lexical items were recycled and seemed increasingly salient to the students as the course progressed. This emphasized to students the importance, and frequency, of generic, lexical features of their own specialized area.

One of the most important factors in this process was giving students sufficient exposure to the specific meanings and sub-technical usage of key words of their peers ' presentations in advance to allow time for some internalization to occur before listening

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to those presentations and subsequently writing summaries. This is the key factor leading to gains in clausally, lexico-grammatically accurate language production.

Due to their undeveloped dictionary skills, and poor dictionaries themselves, we opted for a specially compiled corpus of mechanical engineering to elucidate mainly the specific usage and meanings of the key words. After listening to the presentations twice, student groups were required to write summaries of what they had heard. Their clauses and sentences were then checked for lexical and grammatical accuracy, especially those containing the previewed, studied words. The basis for this approach is that students who have ' a comprehension purpose may engage in processing that is effective for long-term retention. '（Lawson and Hogben, 1996）.

Further, many of these words appear in the Academic Word List （Coxhead, 2000）, of which most are not taught as part of the secondary school curriculum. In this way, through the use of students ' own choice of presentation and vocabulary to be shared, a lexical course was created in response to a specific need to learn relevant vocabulary that had probably never been met in class before.

1.1 Theoretical positions

Helping students become aware of viable, methodologically appropriate word-learning strategies is important and requires a methodology in which students are exposed as frequently as possible to natural instances of the target items, and which also gives them a chance to experiment to express real meanings with those words or phrases. This is a principle means by which students whose confidence may be low can be persuaded of their potential for rapid gains in productive use of language within a relevant linguistic genre.

Concerning exposure, a classroom average minimum of seven times may be necessary, according to Krachru（Oxford, 234）, for learners to begin acquiring words. Clearly maximizing the number of exposures, in a way that is not normally achieved in the classroom, is basic, and in this paper it be will explained how this was managed in the classroom. However, several questions remain.

- How many words is it possible to introduce at one time?
- What kind of trade-off is there between the number of new items and quality of learning?
- How can such quality be described? As complete mastery of lexical items is

unrealistic, how strong an ability to manipulate a word within the target language genre can be expected?

・Linguistically, how significant is the time lag between receptive and productive knowledge? What is the effect of providing students with chances for output? Will it accelerate acquisition of words?

In response to some of these issues, the following positions in the literature and an interpretation of them informed the pedagogic approach which was adopted in the study:

・Learning the numerous functions and complexity of any word is potentially a long process. As such, it is quite plausible that the gap between full receptive and productive（R&P）ability is wide. However, Melka（Schmitt, 1997）cautions that the disparity need not be considered as polar in nature, and that a more helpful conception is that this gap is one of degrees of familiarity, where rather than two extremes, R and P knowledge may complement and reinforce each other. In a class for specific purposes, if the range of meanings of the sub-technical vocabulary can be limited only to the meanings useful to students to complete the classroom task, the learners are not faced with a protracted assimilation process. Accordingly, the time from receptive to productive use can be shorter, based on the familiarity of the item. In turn, more new items can be reasonably introduced in each lesson without confusing students. It is pragmatic, from the busy student's point of view, for the head meaning of the word to start from its specific, generic meaning rather than a dictionary-ordained definition. In this way, the number of new words introduced can be increased, especially if the students feel the particular usage of the words is clear and useful. Concerning acquisition, one of the aims of this paper is to ascertain if a minimum of around seven exposures of various kinds, with the methodology to be described, leads to evidence of correct, and growing, use of lexical items. An integral part of this methodology involves writing summaries of language that contains the target items. Melka describes one of the stages between R and P as reproduction, where, if ' performed with assimilation of materials, then the reconstruction activates memory. '（Schmitt, p. 89.）

・The distinction between the generation of meaning of words from context（comprehension）and use of context for word acquisition has been highlighted.（Lawson and Hogben, 1996.）Pointing to a lack of evidence of association between

(successful) use of context and recall of word meaning, Lawson and Hogben assert that early elaboration of words to be learned, through analysis and rehearsal, is necessary for long-term recall. Investigating students' own elaboration techniques, they found that repetition or rehearsal of word or word-meaning complex was the most common strategy. However, this form of practice does not involve transformation of this new knowledge, making it less likely that links to existing knowledge become explicit. As we have often noted in lessons, students often check an unknown word's meaning in a dictionary but do not elaborate it with its grammatical co-text, and often simply forget it. In addition to elaboration, it is very important for learners to attempt their own sentences, as a means to acquisition. The role of such output has been shown as necessarily superior (Swain, 1985) to just relying on input as a way of proceduralizing language. However, as we will show, the methodology to encourage such output (through summary writing) is as important as the linguistic concept itself, and must be conducted with awareness of students' motivation level.

- The tradition of English education in Japan is very analytical. In many contexts, we have been perplexed at the tendency for Japanese people to immediately turn to a dictionary the moment they come across an unknown item in text. Sinclair mentions that 'the implicit stance of a conventional dictionary entry is that most of the words in daily use have several meanings, and any occurrence of the word could signal any of the meanings.' (Sinclair, p103.) Indeed, a common practice of students is to try and apply the dictionary head-word meaning to the clause, with unreliable results for comprehension, and lack of development of understanding how texts work on a clausal and lexical level. (See 2.2, below.) The frustrating and exhausting result, as demonstrated statistically (Parry, 1997), is that a small number of decontextualized words are memorized. We needed to devise a flexible exercise in which students are encouraged to take a more top-down approach to comprehension whilst also reinforcing their natural propensity towards analysis. These two concepts may seem superficially antithetical. However, taking account of our Japanese learners' learning style, pre-teaching specific usage of new words they need directly and providing relevant contextualized examples in preparation for a specific comprehension exercise is a pragmatic and appropriate methodology. The scope of what they learn may be fine-pointed but should permit an inductive insight into how such words function holistically in generic texts to create specific meaning. Further, students may usefully

develop a sense of practical caution toward the first entries in a dictionary.

- From the above perspectives, such relevant contextualized examples of sub-technical words can be selected from a corpus of mechanical engineering English. By giving students access to common sequences containing the specific meaning only of the key word and conducting analysis on it, two major possibilities appeared. First, students would gain enough from memorization and elaboration to be able to generate original, correct clauses in their summaries of presentations. Second, Ellis develops Sinclair's position（Schmitt and McCarthy, 1997）and stresses the importance of learning idiomatic phrases. While we appreciate the importance of this and do not discount the idiomatic nature of scientific language, in the time available we were also concerned with using concordance lines to elucidate correlation between meaning of words and structure in colligation. Letting students explicitly notice and learn information such as with what prepositions, or parts of speech and so on, words occur and how these attach to other elements of the clause is of particular importance for them. This is because the particular syntactic gap between Japanese and English is so wide that specific focus on form of the mechanics of the subject-verb-object order of English is a short cut to start generating their own examples. To give one example, the phrase ' *x based on y* ' switches order in Japanese giving ' *y based on x* ', resulting in the complete inversion of sentences. Further, through the provision of concordances of enough similar lexical phrases, where appropriate, the hope was to stimulate generalization to other examples where the fundamental syntactic structures underlie similar chunks of language, such as ' *x due to y* '.
- Having decided that we would select from the corpus only those meanings of the word which were relevant for the classroom task, it became easier to collect samples that were useful in this way. On the other hand, the corpus we constructed provided ambiguous samples that left us wondering if we were being arbitrary in rejecting concordances because they were inconvenient to the task of teaching only one specific usage of the word to be able to understand the presentations. However, in Sinclair's words, ' most actual samples are unrepresentative of the pattern of the word or phrase for which they are chosen '（Sinclair, p99）, advising that they may be discarded. This is especially relevant in this study given the fact that the sub-technical words are not uncommon and generally have many different usages.

2.1 Teaching background to the current study

Language courses tailored to the specific needs of study departments have only been implemented at Nagaoka University of Technology in recent years. This study focused on teaching a class of third-year mechanical engineering students.

It quickly became apparent that students barely possessed even sub-technical language, much less the generic language of their own field. Specifically, in the first lesson we decided to illustrate the benefit of a Cobuild dictionary's authentic samples to elucidate the distinction between the words '*machine*,' '*device*,' and '*mechanism*'. However, a majority of students only knew the word '*machine*'. Assumptions about the extent of students' knowledge, and the planned direction of the course, were challenged. We were faced with redesigning the course to deal with the needs of students to focus on more general vocabulary.

Immediately, the problem of what to specify for classroom treatment appeared. At first, we were tempted to make use of the New Academic Word List (Coxhead, 2000) (a carefully constructed list, above the most common 2,000 words of English, useful especially for the reading of scientific texts), since it includes a large number of lexical items that are not prescribed in secondary school education in Japan. However, there was no context for the arbitrary selection of this list's items, and learner engagement with context is paramount for meaningful learning to occur.

When students have been given translation exercises to complete from Japanese to English, the results have been almost consistently poor, even when the lexical items are elaborated through the examples from generic dictionaries. (Appendix 1.) This lack of quality extends to the syntactic level of the sentences, frequently bordering on the incomprehensible. We would like to later draw attention to the difference between the language here and in the dictogloss summaries.

2.2 Specifying the nature of language problems

While explaining a list of concordances for the word 'amount' one day, one frustrated student decided to check the word in his bilingual dictionary, and randomly gave a gloss for the word 'amount to', a completely separate lexical item. This sort of mistake, where the student may believe that the first evidence found in a dictionary is the correct answer, is a common practice we have often witnessed. It is probably due to lack of awareness of the potential lexical range, and inability, or lack of motivation, to read

complex dictionary information in a foreign script. Regarding this last point, the definition of the sub-technical meaning of words is often buried half-way down a column and requires considerable skill in deciphering. In sum, the problem, discussed in 1.1, of the frequent lack of elaboration of new words to co-text when students use dictionaries to check meaning is deep-rooted.

One solution to this problem, in turn, encourages the pedagogic use of concordances. With encouragement to further analyze the concordance list, this particular student eventually formulated the correct meaning. Inspired, we believe, by his moment of inspiration and apparent joy of his success, he went from a dismal 1/24 on the mid-term test to full points on the next.

However, students 'lexical knowledge was scant. Of 30 students in the class, the following number of students said they knew the meanings of following key words of the first presentation made by students.

Defect = 0	Significant = 2	Reinforce = 1	Amount = 8	Disperse = 0
Sufficiently = 1				
Cylindrical = 0	Spherical = 0	Conduct (an experiment) = 5		
Satisfy (standards) = 5				

As an immediate response, students were asked to check the meaning of these words in their English-Japanese dictionaries, and then to attempt to write their own sample sentences based on the information they gathered. Each group was asked to come up with one sample. Examples such as the following were collected:

'The battery in my CD player can store sufficiently energy.' / 'This machine's defect is high price.' / 'The form of the eraser is cylindrical.'

Although the command of syntax is not bad, the de-coupling of syntax and lexis that plagues Japanese students, resulting in odd sentences, is not adequately treated by the information their dictionaries provide. Other times, it appears students may imagine that register is standard across all genres of English. For example, although the sentence *'The form of the eraser is cylindrical'* is acceptable, it is quite probable the student was unaware he actually produced a technical register when a more realistic *'the eraser is round'* would have sufficed. Conversely, the problematic situation seems common

where language which is too general or lacks control of generic lexico-grammar is used for specific purposes. In our course, a key test was whether the use of summary writing, supported by investigation of key word in context concordance lists （KWIC）, would in fact result in an appropriate tenor for technical reports. See section 3.3 for the results.

2.3 The use of presentations: eliciting course language for authentic sharing

In this section, the revised pedagogic goals for the course will be described. The emphasis switches to a much stronger focus on student-centered learning and sharing. The issue of how to induce rather than arbitrarily select pre-technical language was addressed in the following way.

A children's encyclopaedia CD-ROM, containing highly attractive, moving graphics and sub-technical yet authentic language, was used to teach students the mechanical principles of a bottle opener. This was displayed on desk-top monitors in the language laboratory so that images and sound were immediately before the eyes and ears of every student. The fortuitous presence of such classroom equipment encouraged the ease of sharing of such material that may be remote and uninteresting otherwise. The major benefit of this was to inspire students to think up their own choice of presentation to describe and demonstrate a basic mechanical process. The prospect of such a project, making use of the extensive available technology to assist ease of comprehension, was the first step to solving the problem of lexical specification of the course, namely the language of technological principles of mechanisms such as a lighter, oil-jack and sprinkler system, amongst others. The ease with which all students quickly identified such a mechanism reassured us of their motivation to prepare the language of the presentation, and of their motivation to listen to other presentations.

Students were to form groups of 3-4 students to make their presentations, which would be conducted in the second half of the course. The first half of the course would involve a process of editing of presentations. By submitting the latest version to the teacher by email, problematic areas of the language were simply highlighted（not corrected）, which the same, or another group-member, then tried to correct before sending it again to the teacher for the next round of checking. By directing learners' attention onto the form of the language, it was surprising how easily they made collective progress towards an acceptable version. The primary aim was to make students

completely at ease and familiar with their own language so that during the presentation they would be able to speak fluently and clearly from memory.

In turn, it was explained that a course requirement for each group was to write summaries of each presentation, in a procedure known as a ' dictogloss '. This is an elaborate form of dictation in which students hear a text (in this case a presentation) twice, before rewriting it as accurately as possible. During the first hearing, each member of a group listens quietly. The second time, students make notes of what they can understand. Each member then shares those notes with the group, piecing together as much of the content as possible, before one member takes responsibility for writing their own version of the text. In this way, the focus is on the clause structure, with associated key lexis integral to that. Nation (1991) describes the benefit of dictation (and therefore dictogloss, but to a greater degree) hence: ' the unfamiliar collocations and constructions are the learning goal of dictation. '

3.1 Creation of a corpus

The corpus created for use with the class totaled 109,500 words of running text and was constructed entirely from the Internet. Four major sources across a variety of genres were accessed. The first was the Encyclopaedia Britannica Online. This provided quite lengthy entries treating many kinds of simple machines. Articles on the principles of levers, gears, pulleys, and pumps were very easy to find. Second, articles on each of the students 'presentations, where possible, were downloaded. The online search engine, Ask Jeeves for Kids, provides links to many such sub-technical articles for children, which are lexically very rich. Third, a search was made through the Internet of ' engineering journals ', which gave access to a long list of downloadable abstracts from numerous different areas of engineering. Around 300 examples were included in the corpus. Fourth, the online version of the magazine Popular Mechanics was accessed. One column available to non-subscribers offers explanations of the latest devices and gadgets. Around 200 of these were included. The concordance software used was CONC for MAC (version 1.76).

3.2 First use of a corpus to help students develop lexical and textual authenticity

Through the editing process, students had largely managed to solve major problems

where the language did not read very authentically. However, lexico-grammatical information of words not treated well by their dictionaries proved irresolvable to many students. At this stage, we aimed to provide them with carefully selected concordances from the corpus. As students were rather surprised at first by this new resource, it was considered necessary to give them a class-wide example of its application and helpfulness. This was possible in the following way. Most of the presentations suffered from poor textual and thematic organisation. The teaching of predictive categories of lexis (Tadros, 1994), provided us with the way to correct this, and demonstrate how corpora are useful, distinct from dictionaries. Predictive categories are words such as *factor, advantage, problem* which sign-post new information, as in '*one factor which helps is...*' When checked, none of the presentations included any such predictive items.

To demonstrate the potential advantage of using concordances over dictionaries, seven examples of '*advantage*' were written on the board, one from each of the entries for that word from the Cobuild dictionary. Only one of these seven examples was a predictive category, and not defined as such. It was explained that many dictionaries fail to emphasise the function of words useful for their mechanical engineering field. A concordance list was then shown of all the examples of '*advantage*' from the corpus and students were asked to identify the predictive examples. Surprisingly, and convincingly, around half were predictive .

As homework, students were asked to check similar lists of concordances (appendix 2) for five other predictive category items and analyze them and incorporate them into their presentations. Most groups managed to include such examples. These markedly helped improve the clarity of the presentations. The group who were to present first were able to include at two such predictive clauses in their draft text (appendix 3) which served to make the text more coherent. These two examples are marked in the appendix.

3.3 Use of concordances to prepare the audience's comprehension

Before the first presentation, carefully selected concordance lines of the key words in context were prepared. (See appendix 4 for some samples.) These were distributed to each student one week before the presentation day. In class, we went over the lines and elicited possible meanings for them. As we had already asked students to check the meanings of these words of the first presentation in dictionaries due to their surprising lack of even head-word meaning they at least possessed a rough idea of the meaning, if

not the usage, of the words. Now with their second exposure to the words, they were in a position to adopt a more usefully analytical strategy in observing the co-text and colligation of the samples. This first time we did not make extensive supporting exercises for the concordance list, mainly presenting the linguistic evidence to them, with a few orienting questions. However, they were motivated to glean as much as possible from this information since they had been told that the evaluations from the summaries would be a major source of class credit. They were receptive to the suggestion that they keep the list handy in the week to come before the presentation, to familiarize themselves with the nature of the items.

The following week, the oil-jack presentation was given twice. With the extensive editing that had occurred, the presenting students were very at ease with their speech, enunciating unusually well, with each member on cue with his own section, or supporting another speaking member by putting up transparencies, etc. As mentioned, the visual support of their work was outstanding.

After the presentation was over, the summary writing began. Fifteen minutes was allowed for the completion of the task. There was an unusually close and attentive huddle of students around the team writer and it appeared that all students were highly engaged in the task. The all-important checking of these summary texts then began. Remembering that the students i) had only limited prior knowledge of generic lexical items of the mechanical engineering field (2.2); ii) tended to write lexically and clausally inaccurate sentences when they relied on only dictionary information (appendix 1); and iii) had not had extensive elaboration of the key words in context beyond our exercise (appendix 4), the results were remarkably good.

Looking at the best summary example (appendix 5), the original (not just copied verbatim) clauses and sentences which contain the items introduced in advance read very authentically. We certainly would not have expected students to be able to write such texts from scratch, nor with the help of dictionaries. We are certain a significant qualitative step-up in productive ability was made, through their collective output, by this methodology. Although there were weaker summaries than this, all showed evidence of this qualitative productive step-up.

3.4 Improvement in the elaboration of KWIC items exercises and frequency of exposure

In the first presentation, students had a total of just 7-10 different exposures to each word over the course of one week. However, this seemed, with motivation also a factor, to assist them in writing better quality English clauses. However, as the presentations progressed, the concordance list stage was developed to provide greater guidance in the analysis of the usage of the key words, and we devised further ways to increase the number and quality of exposures.

For the second presentation the students were given a worksheet that, question by question, led them to consciously take note of the collocational features of the usage of the words in lexical phrases, and the subtleties of meaning in clauses. This was a successful, popular homework, and the results of that week's summaries were again encouraging.

One way of increasing, and reinforcing, the number and quality of exposures was to give students a post-task exercise, as defined by Willis (1996), in which learners are shown how native speakers do the same or similar task. Therefore, the teacher's own summaries of the students' speeches were shown to the class a week after, to encourage further restructuring of their vocabulary, including of those words and phrases not explicitly taught.

4. Conclusion

In this paper, it was described how the language which students used to communicate with other members of their class, through the medium of presentations, supplied and became the focus of a lexical course. This language was not only useful for the specific purposes of the students, but also elucidated many of the complicated issues and processes of vocabulary learning that many students never fully get used to without special pedagogic attention. Such issues included : the addressing of the range of meaning of lexical items and how such information can be difficult for students to locate in regular dictionaries; the use of a corpus for identifying specific meanings of lexical items, their uses and associated exercises. The use of summary writing revealed that students had started to assimilate the target language in productive and accurate ways after only a minimum of around seven to ten exposures.

Based on this first experience, we would like to experiment further with this kind of

student-centered approach for use in other classes for teaching specific purpose vocabulary.

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Appendix 1

An example of poor clausal construction and lexical knowledge of a student's language to describe a piston engine prior to the current study.

'*The air and gasoline into the cylinder, and there push air pressure by piston. There are warmed up, when it boms.（sic）It moved the piston. Fly wheel scrols.（sic）*

Appendix 2 Concordance lists of predictive items.

Advantage

springs *offer* several	**advantages**	*over* metal springs, one
spray guns *have* two	**advantages**	*over* brush painting. First, ...
numbers *have* the	**advantage**	*that they* are always the...
recharging. *The*	**advantage**	*of* this system *is that* no

Problem

account. *The main*	**problem**	*of* determining the optimum
nitrogen. *The primary*	**problem**	*with* the system *is to* make
conditions. *One*	**problem**	*with* concrete *is a* tendency
you left off. The *one*	**problem**	we ran into *was* with the

Factor

design. An *additional*	**factor**	relating to the load capacity
An *important*	**factor**	*in* spring selection is the
The most important	**factor**	*in* these sintering methods *is*
The most limiting	**factor**	*in* the transfer of these *is*

Effect

direction. *The*	**effect**	*of the* relative substructure
driving frequency. *The*	**effect**	*of the* deviation of the driving
and much more. *The*	**effect**	*of* Newton's Principia was to
force of gravity. *Its*	**effect**	*is that*, at the equator, where

Feature

the most flexible	**feature**	*is* the driving directions
the drain. *As a* safety	**feature,**	washers *have a* switch
ball-end milling. *Main*	**features**	*of* the model *include:* (1)a

Appendix 3 A completed presentation draft text

Hydraulic Jack *Mechanisms* and *Principles*

We will explain about hydraulic jack *mechanisms.*

A jack is very useful and *assists* you in your daily life.

When you have a flat tire, you use a jack.

A jack is a *mechanism,* which is used to lift a heavy weight, such as a car, off the ground.

A jack is a *device* for lifting heavy weights or otherwise exerting great force by utilizing

the *principle* of the lever, screw, rack, or hydraulic press.

① Main features of the oil jack include: The oil tank contains oil. There is a ram, cylinder, plunger, bed, lever, and valve.

② The effect of this principle is that a hydraulic jack is able to lift up objects of the maximum weight 300t.

We will illustrate how to use a hydraulic jack.

First, as you move the lever up and down, the hydraustatic pressure is applied to a plunger. And the plunger reciprocates.

Oil flows into the plunger pump from the oil tank when plunger pump's *volume expands.*

When it contracts, the oil flows into the cylinder to raise the ram.

As the valve is set in motion, the pressure is released and the ram is down.

The ram is *equipped* with supplementary screws so that it can *adjust* its height.

Pascal's law is found in a hydraulic jack. So we'll explain about this law.

If any *external* pressure is applied to a confined fluid, the pressure will be increased at every point in the fluid by the amount of the *external* pressure. This law was formulated by Blaise Pascal. It finds application in a hydraulic press. A small force F1 is exerted on the small area A1 of a piston, Fig.2. This increases the pressure in the liquid under the piston by an amount P＝F1/A1. The force that this increase of pressure will cause on the large piston will be F2＝PA2, since the pressure increase under both pistons is the same. Simply by changing the *ratio* of A2 to A1, the force F2 may be made as large as is safe for the big piston to carry. Larger pistons require more *transfer* of liquid and are correspondingly slower in action.

Appendix 4 Examples of concordance lines for the first presentation（oil-jack）with brief associated exercises.

1）**Equipped with**

linkages. Some cars	**equipped**	with rear leaf springs
models are usually	**equipped**	with a humidistat, a fan
all water heaters are	**equipped**	with a T&P valve
constant volume vessel	**equipped**	with a dynamic pressure transducer

Question: Some words are very uniform and easy to learn. Can you notice any simple features of these words? _____

2）**Exert**

the forces that bodies	**exert**	on one another. This leads to
or more particles that	**exert**	forces on one another and
causing the surface to	**exert**	a force analogous to that
the springs	**exert**	a force F proportional to x
However, the Sun does	**exert**	a small torque on the Earth

Question: What does exert mean? _____ Which words helped you to understand? _____

3）**Transmit**

probe system to	**transmit**	the amplified signal form
pressure in a liquid is	**transmitted**	equally in all directions
of the major energy-	**transmission**	technologies utilized
The automatic	**transmission**	was developed to ...
to limiting light	**transmission**	developed by Research...
or vibration-	**transmission**	characteristics. By...

Question: Can you find any differences between the various meanings of ' transmit / transmission '? Please write any Japanese alternative words:_____

Appendix 5

An example of one group 's dictogloss summary of the oil-jack presentation, noticeable for its clausal and lexical accuracy, especially compared to the representative quality of student writing as shown, for example, in appendix 1.

Oil jack is very useful and assists your daily life. The best way to lift up the car is by using a jack or oil jack. Jack can lift hevy（sic）weight. The advantage is able to lift up hevyweight without using great force. It uses hydraulic pressure. The oil jack is

composed mainly of eight parts. The parts is oil thank（sic）, ram, cylinder, plunger, bed, lever and valve. Oil thank contains oil. Ram is raised by pressure.

Cylinder adds the pressure to oil.

Way to use the oil jack and its mechanisms. As move the lever up and down, the pressure will be applied to the plunger. The effect of it makes the plunger up and down. As the plunger volume expand, oil flows into it. We can adjust its height by screw. As the valve is set in motion.

Pascal's Law.

Most feature is used Pascals Law. The low（sic）was discovered by Pascal. SI unit if pressure is named pascal. The effect of this principle is to lift up easily heavy object.

The pressure exerted against the smaller area, will be transmitted larger area A2. F2 is applied on the A2. F2 is larger than F1 Because expression（1）Pascal's Low applies to all fluid. For example, it is the automobile lift in gas station.

Properties.

1. Oil jack is able to lift up the maximum weight 300t.
2. Principle is Pascal's law.