Content Based Instruction

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Introduction

Language is a superb invention for the simple reason that it allows us to communicate with each other and thereby broaden our world. But language teaching and acquisition is by no mean simple. Being in a position which enables me to teach students about the preciousness of learning a new language, I have come to question how to go about this effectively in teaching English. Using a number of methods has allowed me to understand that content-based instruction is the most efficient, not only for language development but also content mastery. In this paper, I will 1) explain the theory of content-based instruction, 2) assess its merits and drawbacks, and 3) offer suggestions for content based materials development.

1. The Theory of Content Based Instruction

Briton, Snow and Wesche state that “content-based instruction aims at eliminating the artificial separation between language instruction and subject matter classes which exists in most educational settings” (2003). “Communication-based instruction can be an effective tool for providing English language learners access to content area learning” (Hernandez, 2003). Met suggests that “content in content-based programs represents material that is cognitively engaging and demanding for the learner, and is material that extends beyond the target language or target culture” (n.d.). Since it is important to produce students who comprehend English without translating into their native languages, choosing
meaningful content is essential. In ESL/EFL settings in Japan, however, translation of English into Japanese is still used, which provides students with comfort but never enables them to be real English users. Through communication-based instruction focused on content, students are able to pick up not only the communication skills that are necessary for effective language, but also learning new subject matter.

In addition, content-based material is believed to motivate students to acquire not only a target language but also content. Briton, Snow and Wesche mention that “the use of informational content which is perceived as relevant by the learner is assumed by many to increase motivation in the language course, and thus to promote more effective learning” (2003). According to Stoller, “there is a relationship between student motivation and student interest - common outcomes of content-based classes - and a student’s ability to process challenging materials, recall information, and elaborate” (1997). Content-based instruction has a strong correlation with student motivation, which is a vital element in English education. Motivation allows students to pursue learning English, not to be afraid of making errors, and to use it as a means of communication with a number of people. Motivation makes students understand the actual purpose of studying English. In other words, motivated students realize that English is not just a subject or a way to pass an entrance examination.

According to Sticht, “all human intellectual activities, such as thinking, communicating, problem solving, and learning, require both processes and content (knowledge). This implies that attempting to raise people’s cognitive abilities to high levels simply by improving processes such as “reading,” “writing,” “critical thinking” is futile. To perform these processes well requires high levels of content knowledge on which the processes can operate” (1997). Briton, Snow and Wesche assert that “language should be taught through a focus on contextualized use rather than on fragmented examples of correct sentence-level usage, the former a critical feature of a content-based approach” (2003). Met suggests that “content facilitates language growth” (n.d.). Content is strongly believed to have an
effective impact on the brain. While students learn about a certain topic, they are required not only to use their background knowledge, but also to think, doubt, and solve tasks. In other words, they need to reflect critically on the content, encouraging them to utilize a range of intellectual skills. This makes it possible for them to store new information in their knowledge bank. According to Kennedy, “enriched experiences neural growth and thus enhance learning, indicating that brains construct themselves through life experiences. The more stimulation received, the greater the learning. Emotion, experiences, and learning of meaningful information strengthens useful connections and results in cortical pyramidal cell branching” (2006).

2. Suggestons for content based materials development

Materials development is one of the key challenges instructors encounter during their career. Composing materials for content-based English class in particular is a tremendous trial for instructors unfamiliar with the content or without support from the subject instructors. Materials used in class, however, have tremendous impact on the learning experience and thus must be thoroughly prepared prior to class. In order for materials to be effective for both English and content learning, instructors should be familiar with the expected outcome of English ability as well as understanding of the content.

Met asserts that “careful planning for language development can be useful in ensuring that students gain language competence that will be useful in settings beyond the school itself” (n.d.). It is necessary that students can employ what they learn in real life. Snow suggests that “in order to develop communicative competence, learners must have extended opportunities to use the second/foreign language productively. Thus, in addition to receiving comprehensible input, they must produce comprehensible output; in other words, explicit attention must be paid to the productive language
skills of speaking and writing” (2001). According to Heo (2006), “the students must go through a real-world process instead of using independent, creative, or unrealistic thoughts”. Brinton, Snow, and Wesche assert that “first and most important, the materials chosen should be exploitable. In other words, there should be a range of language functions and structures available, and these should map neatly onto the language syllabus” (2003). Valuable and realistic lessons foster students’ language development. For students to effectively communicate with others, materials used in class need to train them to become successful communicators.

Furthermore, materials need to motivate students to pursue the target language. “Every attempt should be made to select materials which reflect the needs and interests of the students and to choose content areas in which the language teacher has some interest or expertise” (Brinton, Snow, and Wesche, 2003). According to Met, materials should be “enhancing language learning by providing motivating topics to communicate about, and enhancing language learning by providing meaningful, purposeful language practice opportunities drawn from a variety of topics” (n.d.). Varying the choice of topics and themes is essential in order to engage students in learning the content through English; appealing topics and themes encourage them to actively participate in class. Active participation in class, moreover, enhances students’ relationships with one another, creating a positive influence on classroom atmosphere.

There are several key points required in material-making. “In order to make English language input as comprehensible as possible, the teacher should present information through diverse media: realia, graphs, demonstrations, pre-reading, and pre-writing strategies. The focus of the instruction should be motivated by the content to be learned which will help identify the language skills required to learn that content, and the reasoning abilities needed to manipulate it” (Short, 1991). Hernandez mentions that “it is essential to familiarize English language learners with clear content vocabulary related to the unit of study” (2003). He also suggests that “lessons may need to be sequenced with careful planning
so that students can be exposed to information needed as a prerequisite for another subject matter, particularly in the areas of math and science. Students should be guided to see that these thinking processes are common in everyday life situation; lessons can then be adapted to demonstrate how the critical thinking used in their personal lives can be transferred to academic thought” (2003). Instructors need to carefully choose the way they present the planned content in their materials. It is particularly important to structure activities in an appropriate order. In addition, visual aids are instrumental in supplementing students’ understanding. Vocabulary-building is strongly believed to be one of the key elements in English education. Thus, materials must include relevant vocabulary exercises at the right time. Most importantly, materials need to be built with the goal of fostering critical thinking, forcing students utilize a combination of prior knowledge and skills.

3. **Assessment of Content Based Instruction: students project work in class**

Most problematic for instructors of content-based classes is evaluation, necessitating the right of language assessment and content assessment. According to Heo, “students in CBI classes cannot be evaluated in the traditional way because they were exposed to more input and content information through the class” (2006). Brinton, Snow, and Wesche mention that “instructors need to be continually aware of the interface between language and content in evaluation, or, as Mohan puts it, of “the content factor in language tests and of the language factors in content tests.” In particular, they need to consider possible causes of misevaluation when designing tests or other assessment tasks” (2003). Instructors need to be deeply familiar with the assessment method.

Designing methods of assessment requires much time and consideration. The format and content of evaluation necessitates well-organization and consideration. “Assessment of CBI should not be simple and isolated; students must be required to integrate information, to form, and to articulate
their own opinions about the subject matter, not to analyze the linguistic structure of the target language. Designing authentic and interactive content-based assessment was required because learners in CBI had to complete discourse level tasks and the skills evaluated in the assessment were in an academic setting” (Heo, 2006). “The language learning objectives of content-based courses are performance-based: Students aim not only to improve their knowledge of the language but to learn how to use this knowledge to perform tasks in an academic setting. Evaluating their ability to do so will necessarily involve tasks requiring comprehension or expression of relatively complex content” (Brinton, Snow, and Wesche, 2003). Authentic and performance-based task evaluation is essential in assessing acquired knowledge and linguistic skills in content-based classes.

Brinton, Snow, and Wesche (2003) suggest that evaluation should include these abilities: feasibility, validity, appropriateness, reliability, variety, and frequency. They also stress that the evaluation process should involve not only assessment by the instructor, but also self-assessment, and peer-assessment. In addition, there are five categories of evaluation: knowledge of elements of the linguistic code, knowledge of discourse, interactive communication skills, academic language use skills, and other relevant study skills. Content based language instructors efficiently need to take all five factors into consideration in order to efficiently assess their students language both in terms of language output and content understanding. Furthermore, ability and content mastery need to be evaluated at appropriate intervals. Hernandez asserts that “it is important for the teacher to frequently check learners’ comprehension by collecting and evaluating student work samples in the subject area. Monitoring a student’s degree of complexity in the use of English language is another way of measuring progress in English language acquisition through communication-based instruction” (2003).
4. **Teaching English Using Content-based Instruction**

An actual lesson is introduced in this section. The class consists of seventeen freshmen from various countries including the Philippines, Cambodia, France, Taiwan, China, and a few Japanese returnees from English-speaking countries. This is an advanced university English class which aims to produce fluent and eloquent output from students to equip them for regular classes conducted in English during their study aboard in the third year. The class meets four times a week from Tuesday to Friday for 90 minutes. On Tuesday and Wednesday, the class focuses on input skills with the content before they make output in English. The material for those two days consists of timed reading, listening, pre-reading, mid-reading while reading, and post-reading. Key vocabulary words are highlighted after timed-reading and during reading so that they can pick up the new vocabulary necessary to understand the content. Thursday and Friday are dedicated to output skills: speaking and writing. Key words are practiced through speaking activities.

The English course continues for two years with four semesters. Each semester focuses on certain areas including speaking skills, debate skills, essay writing skills, and presentation skills. On Thursday and Friday, skills are carefully instructed to prepare the students for academic success.

Project work is the main method of evaluation. For instance, during first semester of the first year, the focus is on speaking skills requiring the students to make three speeches based on the content tackled in class.
5. Positive Aspects of Content Based Instruction

New content in English allowed the students to be familiar with academic and specialized terms that they would never have encountered in ESL/EFL class. Their knowledge of the particular content also expanded increasing their overall confidence. Their attitudes towards learning content in English gradually changed: at the beginning, they were hesitant to read complicated passages and articles. However, by the end of the semester, they were able to read any material using background knowledge, experiences, critical thinking, and their expanded vocabulary set. Moreover, speeches and presentation enabled the students to master the essential skills that are significant in mainstream classes overseas. Such projects made the students learn about the content and English from each other.

Conclusion

Content-based instruction allows English learners to acquire not only English but also certain themes or topics. It is surely valuable since there is no isolation of language and content. Students also need to employ all required skills to comprehend the content, and store the newly acquired knowledge. Content-based instruction, in addition, has a strong connection with student motivation. Although materials development is one of the challenges that many instructors encounter during their career, content-based English instructors also need to set a target for both of English ability and understanding of the content. Materials should have motivating, comprehensible, and real-world relevance. The problematic part in content-based instruction is evaluation. Instructors should familiarize themselves with methods of assessment in order to evaluate students as accurately as possible.
References


Met, M. (n.d.). Content-based instruction: defining terms, making decisions. NFLC Reports.

Short, D. J. (1991). Integrating language and content instruction: Strategies and techniques. NCBE program information guide series, number 7, fall


Preliminary I (a): SA Class 1: Nuclear Energy

5 minutes Timed Reading

Nuclear Energy

Nuclear energy comes from the splitting of atomic nuclei in a processed referred to as fission. When the energy from splitting atoms gets released, the results can be massively destructive, as shown with the nuclear bombs that leveled Hiroshima and Nagasaki during World War II, or that energy can be channeled to create power to supply homes in large urban areas. The process of generating this energy and harnessing it for mass consumption by communities takes place in a nuclear reactor.

Nuclear reactors used to generate power, also known as nuclear power plants, exist throughout the industrialized world. Most countries use nuclear power plants to produce a certain percentage of their overall power supply with countries in Europe using such plants to generate as much as 75% of their power supply while North America utilizes reactors to create less than 25% of its power supply. A majority of these plants function by using the energy produced during fission to turn water into steam, which in turn works to run large power-producing turbines. The power production of these plants is controlled by intensifying or minimizing the nuclear reaction within the reactor. While the process of fission does produce a substantial amount of energy without taking up a large amount of natural resources, as plants running off of coal or oil do, the nuclear reaction does create harmful waste products that require special care to prevent radiation contamination of the environment, a potentially lethal concern.

Two approaches exist for the handling of the waste produced in a nuclear reactor. In one process, the waste gets reprocessed to remove all elements that can be used again at the reactor. Under this process, the waste gets filtered and all reusable components removed with the unusable waste contained in special canisters that are then placed in heavily secure storage sites. In the other process, which mainly takes place in North America, the waste get placed directly into reinforced containers and placed in a storage facility, no processing of the waste takes place. In both processes, special care must be taken to ensure the waste does not escape into the environment and contaminate the surrounding area. The waste produced
by a nuclear reactor contains extremely high levels of radiation which can poison and potentially kill living beings. To add to this concern, the radiation generated from the waste maintains a level of hazardousness for thousands of years.

1. What is the main focus of the article?
   a) The destructive ability of nuclear energy.
   b) The negative effects of nuclear energy on the environment.
   c) The making and processing of nuclear energy.
   d) Radiation poison on living beings.

2. What is the process of splitting an atom known as?
   a) reactor.
   b) mass consumption.
   c) fission.
   d) turbines.

3. What percentage of the overall power supply is produced by nuclear power plants in North America?
   a) More than 75%.
   b) As much as 75%.
   c) More than 25%.
   d) Less than 25%.

4. According to the passage, how is the amount of power produced by a nuclear reactor controlled?
   a) By making more nuclear reactors.
   b) By increasing or decreasing the nuclear reaction.
   c) By filtering the waste product of the nuclear reaction.
   d) By shutting down the nuclear reactor.

5. How many processes are there for handling of nuclear waste?
   a) 1
   b) 2
   c) 3
   d) 4
---------Key--------

1. (c)
2. (c)
3. (d)
4. (b)
5. (b)

**Vocabulary**

<table>
<thead>
<tr>
<th>fission(n)</th>
<th>harness(v)</th>
<th>intensify(v)</th>
<th>radiation(n)</th>
<th>contamination(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>分裂</td>
<td>利用する</td>
<td>強める</td>
<td>放射</td>
<td>污染物</td>
</tr>
<tr>
<td>canister(n)</td>
<td>hazardousness(n)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>かん</td>
<td>危険</td>
<td></td>
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</tbody>
</table>

Write your original sentences with the vocabulary words above.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
Listening

1. Listen to a conversation and fill the blanks with proper words.

□ □ □ □ □ □

A: What do you think about this unit we’re covering on energy? I never realized the 1(  ) of it.

B: I know what you mean. I never really thought about it. I guess I kinda took it for 2(  ).

A: Yeah, me too. This 3(  ) chapter on nuclear power is scary. I never realized how many nuclear power plants have had problems. And, the 4(  ) those problems are having on the community are really messed up.

B: I couldn’t believe those pictures they showed us of the Hanford Nuclear Site with the mutated plants and animals.

A: I know, and how about that footage of the Chernobyl meltdown and all those people getting sick with 5(  ).

B: It really scares me to think of how 6(  ) these plants can be.

A: Exactly, and, we haven’t even begun to discuss the 7(  ) of these nuclear plants.

B: How do you suppose North Korea got its nuclear arms? They didn’t just buy them. They made them from the material they recovered from their nuclear power plant.

A: That’s why the US is trying to stop Iran from making a nuclear power. They don’t want them to have the 8(  ) to make a nuclear bomb.

B: If this form of energy creation has so many problems attached to it, why do they keep using it?
A: That’s a good question. I suppose it 9(energy) energy rather cheaply. So, the 10( ) must outweigh the risks.

B: You would hope so.

2. According to the conversation, why do they think people keep using nuclear energy although there are risks and problems? Answer with your own words.

3. According to the conversation, how did North Korea get its nuclear arms?

4. What are the two terrible incidents related to nuclear power?

5. Which country is the U.S. trying to stop from making a nuclear power?

Reading

Pre-Reading Activity 1: Reading

End the nuclear age

Nastya, from Belarus was only three years old when she was diagnosed with cancer of the uterus and lungs. According to local doctors the region has seen a huge increase in childhood cancer cases since the Chernobyl disaster.

Pre-Reading Activity 2: Sharing

Do you know about Chernobyl disaster? Share your knowledge with your peer.

Pre-Reading Activity 3: Exchange Your Opinion

How do you feel about the passage above? Why do you feel so? Exchange your opinion with detailed examples with your peer.

(Retrieved from http://www.greenpeace.org/international/campaigns/nuclear)

For Your Knowledge

- The Chernobyl accident in 1986 was the result of a flawed reactor design that was operated with inadequately trained personnel and without proper regard for safety.
- The resulting steam explosion and fire released at least five percent of the radioactive reactor core into the atmosphere and downwind.
- 28 people died within four months from radiation or thermal burns, 19 have subsequently died, and there have been around nine deaths from thyroid cancer apparently due to the accident: total 56 fatalities as of 2004.
- An authoritative UN report in 2000 concluded that there is no scientific evidence of any significant radiation-related health effects to most people exposed. This was confirmed in a very thorough 2005-06 study.

Reading

Is Nuclear Power Safe?
by: Denise Palmer

The Kashiwazaki Kariwa nuclear power plant in Japan discharged approximately 350 gallons of radioactive water into the sea today after an earthquake shook the Japanese town, which is 160 miles northwest of Tokyo.

Fortunately, the radioactive contamination levels fell well below legal limits. The power plant is the one largest nuclear facility’s in the world and just one of fifty-five nuclear reactors in Japan. The incident, in light of the recent swarm of headlines regarding alternative energy use and the possible re-emergence of nuclear power as a primary alternative energy source, leaves many to wonder, is nuclear power safe?

Nuclear energy has both good and bad points. It creates a huge amount of energy without using valuable fossil fuels, but it also produces radioactive materials that can be extremely harmful to the environment. Consequently, nuclear safety includes actions taken to prevent nuclear and radiation accidents or to limit their consequences.
Workers at nuclear plants, and the larger environment, run a risk due to this radioactive material. Nuclear power plants must be run very carefully to ensure that there are no mistakes, which is why nuclear power plant operators promote a safety culture. The term "safety culture" is a term introduced by the International Nuclear Safety Advisory Group in a report published on the Chernobyl disaster in 1986. The International Atomic Energy Agency (IAEA) defines safety culture as "an assembly of characteristics and attitudes in organizations and individuals, which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance." Safety culture is about improving safety attitudes in people, but it is also about good safety management established by organizations with a holistic, whole community, whole of life approach. A good safety culture implies a constant assessment of the safety significance of events, such as earthquakes or other natural disasters.

Mid-Reading Q 1: What is "safety culture"?

Additionally, nuclear power plants possess both active and passive safety systems. Active safety systems are systems activated by a human operator, an automatic computer driven system, or even a mechanical system to respond to dangerous events in an appropriate manner. Passive safety systems rely on the laws of nature to ensure a reactor responds in an appropriate manner during potentially dangerous events. The laws of nature include for instance, incorporating the law of physics in engineered components of nuclear power plants whereby a nuclear reaction would slow versus accelerate during potentially dangerous situations or events.

Nuclear power plants also possess structural safety systems. Surrounding a nuclear reactor are certain containment structures, such as the fuel ceramic, metal fuel cladding tubes and the reactor vessel and coolant system. Finally, nuclear
reactors are housed in containment buildings. Containment buildings, which are made of steel or concrete, enclose nuclear reactors to contain the escape of radiation.

Ultimately, human exposure to radiation, the primary contamination of concern at nuclear power plants, is more likely to come from exposure natural background radiation and from some medical procedures. In fact, studies exist finding no evidence of increased risk of exposure to radiation or occurrences of cancer in individuals living near nuclear facilities. For instance, in 1990 a study by the National Cancer Institute (NCI) of the National Institutes of Health, which surveyed over 900,000 cancer deaths in counties near nuclear facilities, found no increased incidence of cancer mortality in people living near 62 different nuclear facilities in the United States.

Mid-Reading Q2: In short, what was found according to this paragraph?

Regardless of the safety systems in place, which promote a culture of safety in nuclear power plant operations, no industrial activity is risk-free. Occurrences take place, which are completely outside our control, as evidenced by the earthquake, which impacted the Kashiwazaki Kariwa nuclear power. Any malfunction, accident or natural disaster at or near a nuclear power plant presents potentially devastating, long-term impacts to the surrounding community and environment.

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To read more about this topic, see ‘Global Nuclear Power Outlook and Opportunities 2007’
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Post-Reading: Answer the Questions

1) What happened to kashiwazaki kariwa nuclear plant? Summarize.

2) How many reactors are there in Japan?

3) What are the positive aspects of nuclear energy usage?

4) What are the negative aspects of nuclear energy usage?

5) What active systems do nuclear power plants possess?

6) What passive system do nuclear power plants possess?

7) What are safety structural systems?

8) Do you agree with this: “no industrial activity is risk-free.”? Why or why not? State detailed examples and reasons.

9) What is the author’s conclusion?

10) Is nuclear power safe? Answer with reasons and examples.
Speaking

Summarizing with Your Own Words

Question 1: What did you learn in reading section? Summarize what you have learned in three to five sentences.

Question 2: Read the passage below. Then summarize the passage below with your own words.

An interdisciplinary MIT faculty group decided to study the future of nuclear power because of a belief that this technology is an important option for the United States and the world to meet future energy needs without emitting carbon dioxide and other atmospheric pollutants. Other options include increased efficiency, renewable, and carbon sequestration, and all may be needed for a successful greenhouse gas management strategy. This study, addressed to government, industry, and academic leaders, discusses the interrelated technical, economic, environmental, and political challenges facing a significant increase in global nuclear power utilization over the next half century and what might be done to overcome those challenges.

Retrieved from http://web.mit.edu/nuclearpower/

Key Words

interdisciplinary (a) 学際的な emit (v) 放つ atmospheric (a) 大気の pollutant (n) 汚染物質 sequestration (n) 隔離 strategy (n) 策略 utilization (n) 利用すること overcome (v) 克服する
Expressing Your Opinions

Question 1: Is nuclear power safe? Answer the question with reasons and examples.

Question 2: If the government has a plan to build a nuclear power plant in your neighbor, would you support or oppose the plan? Answer the question with detailed reasons and examples. Be prepared to answer in front of entire class.

Speech Skills: Physical Message

When you make a speech, you need to pay attention to the way you stand, where you look, how you move your hands, and the tone of your voice.

Activity 1: Standing Position

Topic: Introduce yourself.

Stand up and talk about yourself in front of your group members.

Activity 2: Eye Contact

Topic: What do you like to do on weekends? When did you start doing that? Who taught you that? Where do you do that? Who do you do that with?

Talk about the topic with your group members. When you talk, spend three seconds on keeping eye contact with each member.
Activity 3: Gesture

Topic: What are you going to do today?

Do not speak. Use only gestures to answer the question.

Activity 4: Voice Inflection

Read the sentences below, stressing, stretching, and pausing.

Stressing

We build bigger cars than before.
Do you have a big dog?
And remember there’s no down payment.
This is $100 car.

Stretching

We see an 85 percent chance of rain.
We will give you a very good deal on a new car.
We have the most beautiful mountains.
I’m sorry, batteries are not included.
**Pausing**

First, I don’t want to go. Second, I’m busy.

You can quickly multiply your money.

Nobody gives better service than us.

You should never lend money to a stranger.

**Activity 5: Make a Speech**

**Topic: Do you support or oppose nuclear energy?**

Make a speech on the topic above. When you speak, you need to convey physical message to your group members.

**Writing: Typing Rate Check**

Write a journal on nuclear energy. What did you learn from the lesson?

Write as much as you can.