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# Using Bloom's revised taxonomy to design in-class reading questions for intermediate students in the context of Vietnam

Nguyen Chi Duc*

*Department of English, College of Foreign Languages,*
*Vietnam National University, Hanoi, Pham Van Dong Street, Cau Giay, Hanoi, Vietnam*
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**Abstract.** The findings from the questionnaire survey conducted among 100 instructors of English in Vietnam about the reading-question design for the intermediate solicited three worth-noticing issues. First, the design aims mainly to develop in students reading skills, language elements or both. Second, the designed questions are largely of recalling and understanding the information (the lower level of cognitive domain, Bo-linn, 2006) and leave a large gap on the applying, analysing, evaluating and creating (the higher level of cognitive domain, Bo-linn, 2006). Finally, most of the instructors have yet established a basis to accompany this task. Therefore, the writer proposed the application of Revised Bloom's Taxonomy (Pohl, 2000). Literature bodies have well documented its efficiency on: (1) perceiving and processing the information, (2) generating the interest and motivation in learning, (3) bettering the spoken and written command of English, (4) and cultivating chances to apply the information to create something new. Yet to realize this application, the writer had to investigate the nature of each level of cognition, then found out a proper interpretation of each level rather than the novel idea of Bloom (1956) or the list of related verbs coined by Pohl (2000). Based on this interpretation, the writer built up a set of questions for each level. Apart from scanning, skimming, referring and inferring questions (divided as basic, intermediate, and advanced, scattering in all six levels), this set also includes those related to applying, analyzing, evaluating and creating. It is hoped that this set of questions would raise the instructors' awareness of high levels of cognition in their reading-question desin and that it can serve as a refernce list during their accomplishing this job.

## 1. Background

According to Bo-Linn [1], questioning should be used purposefully to achieve well-defined academic goals. An instructor should "ask questions which will require students to use the thinking skills that he is trying to develop" (P.1). Yet question design in reading class has long aimed purely to check students' comprehension text by text (Hoang [2]). And very a few of literature bodies have been documented to enhance students' thinking capacity and/or cultivate possible applications, regardless of academic or real-life purposes.

* Tel.: 84-4-2943774
E-mail: Frozensc@yahoo.com

The same pattern also stages in the context of Vietnam. My recent survey conducted with 100 instructors of English nationwide both on-and offline solicited many worth-noticing findings. When asked about the purposes that underlined their designing reading questions in class, up to 83 respondents claimed either to develop in their students reading skills, language elements or both. Only two raised some awareness of fostering students' critical thinking. Though open-ended items were intentionally embedded into the questionnaire booklet in a large property, no contribution on application of the given information into the reality was recorded.

It should also be noted that the target population have not yet established a well-proven basis to accomplish their design. 62% mainly based on the reading skills that their students had already learnt, 41% on a ready-use sample of a reading test booklet or an authentic material, 18% on the typical features of the given text. Even five instructors admitted to rely on their own preferences. Therefore, their common questions are largely of scanning (100), skimming (87), surveying (34), unfamiliar vocabulary (32), reference and inference (22), and wise prediction (12).

In conclusion, question design in reading class has primarily involved recalling and understanding the provided information (lower-level of cognitive domain, Bo-Linn [1]) and left a large gap on applying, analyzing, synthesizing, evaluating and creating (high-level of cognitive domain, Bo-Linn [1]). In other words, this norm of question design has directed students into a passive mode to their process of language acquisition and thinking enhancement. The information they have perceived from the given text remains inactive and consequently unproductive (Tarlinton [3]).

For all the reasons above, the author proposes the ideas of designing reading questions on the basis of Bloom's Taxonomy, which can be promising enough to encourage students to activate their high-level thinking skills.

## 2. Objectives of the Paper

The paper purports to revisit the literature bodies on Bloom's Taxonomy and its empirical applications into language teaching. Through this vast background, the author would build up a ready-use set of reading questions in accordance with the six cognitive categories of Bloom's Taxonomy. It is hoped that this paper would raise instructors' awareness of high-level thinking skills in their question design in reading class and that my established questions could serve as a reference list for instructors of English in Vietnam.

## 3. Bloom's Taxonomy

In 1950s, Bloom and his assistants developed the Taxonomy, a hierarchical system of ordering thinking skills from lower to higher, with the higher levels including all the cognitive skills from the lower levels. This taxonomy categorizes human cognitive domain into six thinking levels, aligned as follows:

**Knowledge**: Remembering previously learnt materials, e.g., definitions, concepts, principles and formulas.

**Comprehension**: Understanding the meanings of remembered materials, usually demonstrated by explaining in one's own words or citing examples.

**Application**: Using information in a new context to solve a problem, to answer a question, or to perform another task. The information used may be rules, principles, formulas, theories, concepts, or procedures.

**Analysis**: Breaking a piece of materials into its parts and explaining the relationship between parts.

**Synthesis**: Putting parts together to form a new whole, pattern or structure.

**Evaluation**: Using a set a criteria, established by the students or specified by the instructor, to arrive at a reasoned judgment.

*(Bloom* [4]*)*

In 2000, Pohl in his book "Learning to think, Thinking to learn" has changed the terms that Bloom coined from the noun to verb form to depict these thinking skills as an active process for more accuracy. Also he has shifted the position of ***synthesis*** (creating) and ***evaluation*** (evaluating) as in his view creating should be the highest level of cognitive activity. His revised version of Bloom's Taxonomy would be presented as hereafter:

**Remembering**: Recalling information

**Understanding**: Explaining ideas or concepts

**Applying**: Using information in another familiar situation

**Analyzing**: Breaking information into parts to explore understanding and relationships

**Evaluating**: Justifying a decision or course of action

**Creating**: Generating new ideas, products or ways of viewing things

*(Pohl* [5]*)*

In 2001, Anderson and Krathwohl put evaluation (evaluating) and synthesis (creating) at the same level. This idea was also supported by Hoang [2], reasoning that though evaluating "requires full possession of the expert knowledge, [it] involves less creative "brain" work than creating", then evaluating could not be beyond creating as in the origin version by Bloom. She also added that the boundary between these two skills proved to be vague, so they had better be categorized at the same level. Accordingly, their new version would flow like:

Remembering → Understanding → Applying → Analyzing → Evaluating + Creating

The author, on the other hand, agrees with the revised version proposed by Pohl [5] with creating as the climax of human cognitive domain. It is obvious that evaluating merely presents the quality of judging the information, but yet producing something ***new***. Therefore, he would employ this classification for his question design in reading class.

## 4. Benefits of Designing Questions on the basis of Bloom's Revised Taxonomy

Literary works have documented abundance of benefits to question design based on Bloom's Revised Taxonomy.

a) This norm of question design ensures appropriate coverage of a variety of types of cognitive demands made on students. Normally it would develop in students thinking skills from simple to complex (D. Vidakovic, J. Bevis, M. Alexander [6]; T.T.. Surjosuseno, V. Watts V [7]).

b) It generates cognitive conflicts in students' mind, which would then fertilize their creativeness to cast to solve a particular problem or complete a given task (D. Vidakovic, J. Bevis, M. Alexander [6]; Tarlinton [3]).

c) It encourages students to analyze and generate the information rationally (Pohl [5]; Bloom [4]).

d) It aims students to apply the information loaded from the given text to a real-life situation and help it work for some purpose (Hoang [2]; Pohl [5]; Knutson [8]).

e) It helps students draw connections to their own experiences, which then fosters their background and support an easier later recall (Hoang [2]; Schraw and Dennison [9]; Rinninger, Hidi, and Krapp [10]).

f) It enhances students' comprehension on the given text (Hoang [2]; Knutson [8]; Schraw and Dennison [9]; Rinninger, Hidi, and Krapp [10]).

g) It offers students a free room to think about and discuss what they are reading (Graff [11]).

h) It fosters a sense of student-student and student-teacher interaction in the target language, in which the attention is due paid to meanings rather than forms [2], D. Vidakovic, J. Bevis, M. Alexander [6]; Graff [11]).

i) It conveys to students the value of fluent and efficient reading since they can derive a sense of accomplishment from their progressively greater comprehension and more extended use of the text (Knutson [8]).

j) It forms in students situational interest and encouragement to problem-solving (Knutson [8]; Hidi and Anderson [12]; Schiefele [13]).

k) It cultivates students' motivation, interest and manner of reading (Knutson [8]; J.E.Brophy [14]).

These benefits are of convincing evidence that Bloom's Revised Taxonomy be a well-proven basis for question design in reading class.

## 5. A suggested Set of Reading Questions Designed on the basis of Bloom's Revised Taxonomy

Level 1. Remembering

| Nature | Further Explanation | Question Types |
|---|---|---|
| Recalling learnt information | - Recall explicit details, main ideas (information elements) | - Scanning, Basic Skimming |
| | - Recall sequence of facts and ideas (information order) | - Basic Surveying |
| | - Recall reference and simple inference (information linkage) | - Reference, Basic Inference |

Level 2. Understanding

| Nature | Further Explanation | Question Types |
|---|---|---|
| Understanding the meaning of remembered information, usually demonstrated by explaining in one's own words or citing examples | - Explain in one's own words or language | - Paraphrasing/Translating |
| | - Relate the remembered information with other already-known information via examples, compare and contrast, and classification | - Exemplifying, comparing and contrasting, and classifying |
| | - Identify the main ideas and organization of the information | - Intermediate Skimming, Surveying |
| | - Infer and/or predict | - Intermediate Inference |

Level 3. Applying

| Nature | Further Explanation | Question Types |
|---|---|---|
| Using remembered information in a new context to solve a problem, to answer a question, or to perform another task | - Personalize (one's decision at the same situation) | - What/How would you do if you were in the same situation? |
| | - Apply the information into a similar situation | - What/How would you do in a similar situation like…..? |
| | - Apply the information to handle a problem, a question, or a task. | - Based on the information in the text, what/how could you do to handle the problem, the question, or the task…..? |

Level 4. Analyzing

| Nature | Further Explanation | Question Types |
|---|---|---|
| Breaking a piece of information into its parts for a better understanding and explaining the relationships between the parts | - Deconstruct a whole (a piece of information) | - How many elements in this concept or principle? List. (Advanced Skimming, Surveying) |
| | - Investigate and Compare its components | - How can you explain this element? Is it similar to? Why? (Advanced Inference) |
| | - Learn the relationships between the components | - How do the elements link & work together? (Advanced Surveying) |
| | - Reconstruct the components into the whole | - How do the elements shape the concept or principle? (Advanced Surveying) |
| | - Compare this whole with other wholes | - Is this concept or principle similar to? Why? (Advanced Inference) |
| | - Learn the relationships between this whole and others | - How does this concept or principle relate to? (Advanced Inference) |

Level 5. Evaluating

| Nature | Further Explanation | Question Types |
|---|---|---|
| Using a set a criteria, established by the students or specified by the instructor, to arrive at a reasoned judgment | - Hypothesize | - What have you assumed about this concept or principle? |
| | - Test the hypothesis | - What would you do to test it? |
| | - Judge and Critique the findings | - What findings do you have? How are they? |
| | - Manipulate the findings to make a decision or course of actions | - Through these findings what conclusion and decision could you make? |

Level 6. Creating

| Nature | Further Explanation | Question Types |
|---|---|---|
| Putting parts together to form a new whole, pattern or structure | - Invent a new idea | - Could you build up...? |
| | - Plan a project/scheme | - Write a proposal for this? |
| | - Implement the project/scheme | - Conduct it within...? |
| | - Finalize the product | - Wrap up, Report the performance? |

## 6. A Sample of Reading-question Design on the basis of Bloom's Revised Taxonomy

This reading passage is extracted from "English for Economics" (Nguyen Xuan Thom [15]) and purports to be designed on the basis of Bloom's Revised Taxonomy as a demo booklet.

***The Equilibrium Price***

1, Law of Demand

Demand is defined in economics as the amount of goods and services that buyers are willing and able to purchase at a range of different prices. Demand in market, as it depends on the behavior of buyers, is normally not fixed. Given a fixed sum of money, buyers always expect to buy a greatest quantity of goods - or given a fixed amount of goods, buyers always expect to pay the least sum of money. Demand is therefore greater at a lower price than that at a higher price. The table below presents the students' demand for Chocolate Chip Cookie at different prices:

| At a price of | Students will buy |
|---|---|
| $ 60 each | 100 cookie |
| $ 50 each | 400 cookie |
| $ 40 each | 700 cookie |
| $ 30 each | 1100 cookie |
| $ 20 each | 1600 cookie |
| $ 10 each | 2300 cookie |

This idea is so important that economists have defined it into the Law of Demand. This law states that the quantity of goods and services demand increases and decreases in the opposite direction from the changes in the price.

2, Law of Supply

Price will also affect the supply of an item. In economics, supply is the quantity of goods or services offered for sale at a range of prices. Below is the table revealing the quantity the producer of Chocolate Chip Cookie would offer at different prices:

| At a price of | Producer will offer |
|---|---|
| $ 60 each | 1800 cookie |
| $ 50 each | 1600 cookie |
| $ 40 each | 1400 cookie |
| $ 30 each | 1100 cookie |
| $ 20 each | 700 cookie |
| $ 10 each | 100 cookie |

As you can see from the table, the producer is willing to provide many more cookie at the higher prices that at the lower prices. Economists explain this as the Law of Supply. This law states that supply increases as prices increase and decrease as prices decrease.

3, Equilibrium Price

It should also be noted that at the price of $30, demand is equal to supply. At that price, both the producer and buyers (students) are happy to sell and buy 1100 cookie. Economists call $30 the equilibrium price.

Base on the information in the reading text above, answer briefly the questions below.

| | |
|---|---|
| 1. Remembering | Q1: What is the Demand in Economics? (Basic Skimming)<br>Q2: How many cookie will students buy at $10? (Scanning)<br>Q3: How many main concepts does the writer mention in the text? List them in their correct order? (Basic Surveying)<br>Q4: Who are the buyers in the context of this reading? (Reference)<br>Q5: Obviously prices affect both the supply and demand. True or False? (Basic Inference) |
| 2. Understanding | Q1: In your own words, briefly explain the influence of prices on the demand (Paraphrasing)<br>Q2: Use a three column table to compare the influence of prices on the demand and on the supply (Comparing and Contrasting)<br>Q3: Summarize the text above within 70 words (Intermediate Skimming and Surveying)<br>Q4: On the same chart, use two lines to present the supply and the demand in the two tables above. Is there any intersection between the two? And what does this intersection represent for? (Intermediate Inference) |
| 3. Applying | Q1: If you were a student in the text, how many cookie would you buy at $20? Why? Do you think it is a reasonable price? Why?<br>(Personalizing)<br>Q2: By the end of winter when the demand for warm clothes decreases, as a producer what would you do with the price?<br>(Applying into a similar situation)<br>Q3: Use the information above, answer the question below<br>What are the possible functions of prices in the market?<br>(Apply to answer a question) |
| 4. Analyzing | Q1: According to the passage, how many factors are influenced by the prices? (Advanced Skimming, Surveying)<br>Q2: What are the similarities and differences between these factors? (Advanced Inference)<br>Q3: How are these factors correlated?<br>(Advanced Skimming, Surveying, and Inference) |
| 5. Evaluating | Q1: We have a hypothesis as "equilibrium price does not exist in the reality", Do you agree or disagree with this? Use your knowledge from this reading passage to support your idea.<br>Q2: From your conclusion above, what should producers do to maximize their business efficiency? |
| 6. Creating | Q1: Design a questionnaire to survey the demand for Nokia N95 at different prices among Vietnamese youngsters this year. Report the findings in form of a two-column table.<br>Q2: Design a questionnaire to survey the supply of Nokia N95 at different prices by Viet Nokia Company this year. Report the findings in form of a two-column table.<br>Q3: What is the equilibrium price for Nokia N95 this year? |

*(All these questions above are for illustration only)*

## 7. Steps in Using Bloom's Taxonomy Questioning in Reading Class

a) Introduce to students six levels of Bloom's Taxonomy, focusing primarily on the thinking skills, kinds of questions deployed for each skill. Post a chart of Bloom's Taxonomy in class for quick reference.

b) Provide a reading text, which is followed by questions categorized under the names of thinking levels in Bloom's Taxonomy. Ask students to complete the reading with a regular referring to the Chart in class.

c) Give students another reading text with questions not being categorized. Ask them to

label them into correct thinking levels and then complete the reading questions.

d) Pass another reading passage with no questions at all. Ask them in six groups to design three questions in accordance with the six thinking levels. Gather the questions and ask the whole class to complete them.

e) Repeat the steps if necessary. Be sure to encourage students to discuss on a regular basis.

## 8. Conclusion

The paper has, through its questionnaire survey, underscored a large gap (high-level thinking skills) in question design in reading class in the context of Vietnam. To counteract this problem, the author has proposed Bloom's Revised Taxonomy (Pohl [16]) an a basis to design reading questions and established a ready-use set of questions in accordance with the six levels of cognitive domain in this taxonomy. These questions are supposed to be a reference list for instructors of English in Vietnam. However, their effectiveness is still subject to be justified by empirical studies. Also It is hoped that this paper would raise instructors' awareness of applying, analyzing, evaluating and creating skills in their question design for reading class.

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# Sử dụng thang bậc tư duy của Bloom hiệu chỉnh để thiết kế câu hỏi đọc hiểu tiếng Anh cho trình độ trung cấp tại Việt Nam

Nguyễn Chi Đức

*Khoa Anh, Trường Đại học Ngoại ngữ, Đại học Quốc gia Hà Nội, Đường Phạm Văn Đồng, Cầu Giấy, Hà Nội, Việt Nam*

Kết quả khảo sát việc thiết kế câu hỏi đọc hiểu tiếng Anh cho trình độ trung cấp của 100 giáo viên Việt Nam đã đưa ra 3 điểm chú ý. Một là, việc thiết kế chủ yếu nhằm phát triển kĩ năng đọc hiểu, và các yếu tố ngôn ngữ; chỉ có 2 giáo viên đề cập đến việc phát triển tư duy phê phán. Thứ hai, các câu hỏi được đặt ra chủ yếu yêu cầu học viên tái hiện và nắm bắt thông tin (mức độ thấp của tư duy theo sự phân chia của Bo-linn, 2006), mà để một khoảng trống khá lớn đối với việc áp dụng, phân tích, tổng hợp, đánh giá và từ đó sáng tạo ra yếu tố mới (mức độ cao của tư duy, Bo-linn, 2006). Cuối cùng, hầu hết các giáo viên này đều đang thiếu một cơ sở hữu hiệu cho việc thiết kế câu hỏi đọc hiểu tiếng Anh ở trình độ này. Do đó, tác giả của bài viết này xin đề xuất một công cụ hiệu quả trong việc thiết kế câu hỏi nói chung và câu hỏi đọc hiểu nói riêng. Đó là thang bậc Tư duy của Bloom được hiệu chỉnh bởi Pohl (2000). Các tài liệu khoa học đã chứng minh tính hữu dụng của thang bậc này trên bốn bình diện lớn: tiếp nhận và xử lý thông tin, kích thích hứng thú và động lực học tập, rèn rũa khả năng sử dụng ngôn ngữ và tạo điều kiện ứng dụng thông tin vào cuộc sống. Tuy nhiên để đưa thang bậc này vào thiết kế câu hỏi đọc hiểu tiếng Anh, tác giả đã đi sâu tìm hiểu bản chất của từng thang bậc, để rồi từ đó tìm ra cách lí giải cụ thể hơn của Bloom (1956) và khái quát hơn của Pohl (2000). Trên cơ sở lí giải này, tác giả đã xây dựng một bộ câu hỏi theo từng cấp độ tư duy. Bên cạnh những câu hỏi về tìm ý chính, ý phụ, liên kết ý và suy luận (được chia làm ba cấp độ cơ bản, trung cấp và cao cấp) nằm dải rác ở 6 thang bậc tư duy, bộ câu hỏi này còn chứa những câu hỏi liên quan đến tính ứng dụng (bậc 3), phân tích (bậc 4), đánh giá thông tin (bậc 5) và sáng tạo (bậc 6). Hi vọng bản câu hỏi này sẽ giúp các giáo viên ý thức hơn đến các hoạt động tư duy bậc cao trong khi thiết kế câu hỏi đọc hiểu tiếng Anh và đây cũng là một tài liệu giúp họ đối chiếu câu hỏi của bản thân với các thang bậc của Bloom hiệu chỉnh.