Learning Objectives Project

Driving in Germany
Project Objectives

For this project I picked a practical domain—driving in Germany vs. America—, which I believe many potential students/drivers or future visitors of Germany may appreciate and find useful. This was the first time, however, that I put on the hat of an instructor responsible for an effective design of a lesson with specific learning objectives as opposed to the receiver—a student. These were my learning objectives and questions for doing this assignment:

1. **Gain a solid experience translating general learning objectives in English to the Bloomian versions**
   - Convert original learning objectives to the *noun-verb* [knowledge – cognitive process dimension] learning objective structure
   - Become familiar with the four categories of the Knowledge Dimension of the Revised Taxonomy
   - Evaluate and apply the correct Knowledge Dimension category to a specific *noun phrase* based on my best judgment
   - Become familiar with the six categories of the Cognitive Process Dimension of the Revised Taxonomy
   - Evaluate and apply the correct Cognitive Process Dimension category to a specific *verb phrase* based on my best judgment

2. **Correctly place results of my evaluation into the Taxonomy Table**

3. **Practice evaluating the significance of my original learning objectives based on the Taxonomy Table**
   - Are the objectives too focused on recall and memorization? Could they be re-structured to put more emphasis on the 2.0 thru 6.0 categories of the Cognitive Process Dimension?
   - What are the blank areas in the Taxonomy Table and what do they signify? Should there be more objectives to cover the missing Knowledge or Cognitive Process categories?

4. **Think of potential lesson activities that would support the outlined objectives**

5. **Think of ways to assess how well the students understand the presented material and are able to apply it in real life situations**

**Method**

During the first stage of the assignment planning I came up with two candidates for a lesson topic. After additional brainstorming and analyzing the potential sub-topics to each topic, I picked one that I believed provided a good mixture of physical and significant cognitive components; however, not one that was solely based on facts and numbers. I further outlined the potential sub-topics in a greater detail to get a better idea of the time required to teach this lesson. I concluded that this lesson could be taught in a 1 to 3 hour period.

**Topic Description**

For the lesson, I picked a topic covering the major differences between German and American road driving laws and regulations. The lesson is meant to familiarize new visitors (drivers) coming to Germany with the local laws and expectations that differ from those in America. A special focus is given to the autobahn and general city driving rules, speeds and order monitoring, and significant differences in traffic signs and navigation.

**Prior Knowledge**

I expect the students to hold a valid US driver’s license. Specifically, the students are assumed to have prior
knowledge of how to safely operate a vehicle on the road including understanding of the driving laws and rules and traffic signs.

Lesson Agenda

The main purpose of this lesson is to familiarize incoming visitors from America on the major differences between driving in Germany and the US.

I envision this class to be divided into two main modules: 1. Driving Rules and Regulations and 2. Traffic Signs and Navigation. Each module is then further divided into sub-modules as displayed in Figure 1. Modules bellow:

![Figure 1. Modules](image)

The lesson would be taught using various types of lecturing materials primarily emphasizing interactive videos, real life imagery, standard lecture and games. Material in each sub-module would be first explained in plain English while emphasizing the difference between a specific German regulation and an American regulation. Following would be a real life video demonstration of the same concept (where applicable), again emphasizing the difference between the two. Where applicable, the concept would also be reinforced via an image clearly indicating the difference. The lecture itself would take about one hour or less per module.

At the end of each sub-module and/or module the students would participate in a series of short interactive games testing their knowledge of the presented material. For instance, a student would be presented with a
driving scenario and asked how he would proceed if he were driving on a German road. As a follow up, he would also be asked to explain how this rule was different from that in the US. Or, the student would be presented with a common speed, for instance, 120 km/h and asked to pick the correct one in miles out of a group of two options. I would allocate about an hour or less for the “review” games after each sub-module and for a final review game at the end of the lecture.

Results

The Conversion Table

Below is the conversion table (Table 1. English and Bloomian Conversion Table) providing an overview of the original learning objectives and the conversion process to the Bloomian version.

Table 1. English and Bloomian Conversion Table

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<th>ENGLISH</th>
<th>BLOOMIAN</th>
<th>JUSTIFICATION</th>
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| 1       | The students should understand the basic rules and laws for driving safely on the German autobahn. | Explain (2.7) the autobahn laws (Bb. Knowledge of principles and generalizations) and apply (3.0) them while driving. | First, I omitted “The students should understand...” part of the learning objective based on the example in the Bloom Taxonomy paper. Originally, I put down a general understand. Looking over the 2.0 sub-categories, however, I realized that the act of understanding in this case was a “passive” activity. I want the students to be able to verbalize the law, or put it in their own words through explanation, which makes this task more “active”. Therefore, I changed understand to explain.

Consequently, I also added apply to this objective because I perceived it as the second part of the explain process. I want the students not only to explain the law but most importantly, to correctly apply it while driving. In my opinion, in this case, both explain & apply together make up the general term understand. I felt as though 3.0 apply was more appropriate in this instance than 3.1 execute or 3.2 implement.

Finally, I took out “the basic rules” as the concept served no additional value. The laws encompass everything one needs to and is required to know to safely drive on the road. I did, however, struggle with correctly placing laws in an appropriate Knowledge category. I felt as though laws could fall under Bb. Knowledge of principles and generalizations. At the same time I wondered why they could not be placed under Cc. Knowledge of criteria for determining when to use appropriate procedures? In this case I was thinking that driving laws state criteria and rules regarding when to use specific procedure and when not to while driving on the road. An example, the criteria could be that you are driving in the left lane and there is a slow vehicle in front of you. If you are in America, you are allowed to use an appropriate procedure of passing on the right. If you are in Germany, however, you are not allowed to follow this procedure because the law prohibits it. |
| 2       | The students should understand the general rules and laws for driving safely in German cities and towns and explain how they differ from those in America. | 2A. Explain (2.7) the city and town laws (Bb. Knowledge of principles and generalizations) and apply (3.0) them while driving. | I have split the original learning objective #2 into two distinct objectives, 2A and 2B, respectively. 2A specifically deals with being able to explain and apply German city and town laws and 2B focuses on being able to verbally differentiate between American and German city and town driving laws.

The same justification applies for 2A as listed for the learning objective #1 above with the only difference of city and town laws vs. autobahn laws. |
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<td><strong>28. Differentiate</strong> <em>(4.1)</em> between the specific American and German city and town driving laws <em>(Bb. Knowledge of principles and generalizations)</em>.</td>
<td>Originally, I had used “explain how the laws differ from those in America”. After breaking the objective into two distinct parts, however, I realized that this objective should use a different verb. I do not only want the students to be able to explain a specific law in their own words, but in this case, I also want them to be able to articulate what the differences are between the German and American versions of the law as applied to an identical scenario. Therefore, I replaced explain with differentiate.</td>
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| **3** The students should be able to automatically map most commonly used speeds in km/h to miles/h. | **Recall** *(1.2)* most commonly displayed German speeds *(Aa. Knowledge of terminology)* in miles/h.  
**Assumption:** All speeds in Germany are displayed in km/h. However, many vehicles (American owned) driven on the German roads display the speedometer in miles/h.  
Originally, I used the term map to imply recognition or recall. Although retrieving facts from the long-term memory is generally not a favorable cognitive process, I feel as though in this case there is no other way around it. I want the students to be able to look at a displayed speed in km/h and automatically associate it with or convert it to miles/h. This conversion must happen quickly for the student driver to adjust his driving and thus comply with the speed limit.  
I feel as though the noun-phrase (German speeds) should be classified as Aa. Knowledge of terminology. |
| **4** The students should be able to understand common traffic signs and explain how they visually differ from those in America. | **Correctly interpret** *(2.1.)* common traffic German signs *(Aa. Knowledge of terminology)* and explain *(2.7)* how they visually differ from those in America.  
The first part of the original learning objective seems too vague. To make it more specific and imply that the student must have solid prior knowledge of traffic signs before the lesson, I changed understand to interpret. By doing so, I wanted to clarify that the student is not asked to understand a new concept learned in the lesson. Instead, he is required to use prior knowledge to correctly determine the meaning of a traffic sign.  
I feel as though the German signs are represented by distinct images with corresponding terminology, and therefore, could be classified as Aa. Knowledge of terminology. |
| **5** The students should be able to recall the specific rules for driving in snowy conditions and how they differ from those in America. | **Compare** *(2.6)* specific German and American laws *(Bb. Knowledge of principles and generalizations)* for winter driving.  
Originally, the learning objective required students to recall and to explain. After further review, I decided to bundle both sub-tasks under one by asking students to compare weather related driving laws in Germany and the US. The difference between the two objectives is very subtle. By having to compare, the students must have a solid understanding of both perspectives and apply analytical skills to determine similarities and differences in both. In other words, they are asked to show that they understand the information presented in the lesson. Asking the students to recall information is rarely an optimal step even though in this case, they would be required to use acquired knowledge to determine the differences.  
I also took out “the specific rules” and replaced them with laws. The laws encompass everything one needs to know to safely drive on the road in winter conditions. |

**Updated Objectives Based on Bloom Taxonomy**

Below is a list of measurable learning objectives that each student should be able to do at the end of the lesson.
1. Explain the German autobahn laws and apply them while driving *(in a real life scenario situation)*
2. Explain the German city and town laws and apply them while driving *(in a real life scenario situation)*
3. Differentiate between the specific American and German city and town driving laws
4. Recall most commonly displayed German speeds in miles/h
5. Correctly interpret common traffic German signs and explain how they visually differ from those in America
6. Compare specific German and American laws for winter driving

The Taxonomy Table

Below is the taxonomy table (Table 2. The Taxonomy Table) providing a summary of the learning objectives and how they fall under the knowledge and cognitive dimension categories.

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<tbody>
<tr>
<td>KNOWLEDGE DIMENSION A. Factual</td>
<td>Objective 3</td>
<td>Objective 4</td>
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<td>B. Conceptual</td>
<td>Objective 1</td>
<td>Objective 2A</td>
<td>Objective 1</td>
<td>Objective 2A</td>
<td>Objective 2B</td>
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<td>C. Procedural</td>
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<td>D. Metacognition</td>
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Discussion

The results of this exercise display a clear focus on conceptual and factual knowledge in the first four cognitive dimension categories. The laid out learning objectives for this task do not involve procedural and metacognition knowledge. Looking back, presumably I could have focused some energy on outlining objectives using strictly procedural knowledge but at the same time the focus of the lesson was not on how to physically drive a vehicle. Rather, I aimed for the lesson to be more cognition based and particularly emphasizing the differences between prior acquired knowledge the students would have coming into the lesson (American driving laws) and newly presented material (German driving laws).

I did, however, come across a gray area, which would make the results in the Taxonomy Table (Table 2. The Taxonomy Table) spread out more evenly into the procedural knowledge realm. I have not been able to make a clear decision whether or not to place laws under Bb. Knowledge of principles and generalizations or Cc. Knowledge of criteria for determining when to use appropriate procedures. For the time being, I placed the laws under the conceptual knowledge dimension. The argument for placing laws under the procedural knowledge dimension, in my opinion, has to do with the guidance (or criteria) they provide on how to drive a vehicle on the road and what specific steps one is required to take in various driving situations, such as passing, stopping or speeding.

**Reflection Question 1:** How difficult was the translation process? Did your English description map easily to the terms used in the Taxonomy? Did you find it required significant inferences (as in the case of “editing”)?
I found the first step of describing the indented learning objectives in English fairly straightforward. After my preliminary research and brainstorming, I had a fairly good idea of what I wanted the lesson to focus on. Initially, I was leaning towards presenting material that would solely teach any newcomers (not necessarily drivers) about the German driving laws. However, later I realized that it would make more sense and provide a greater benefit to the students to build upon their prior driving knowledge and rather focus on contrasting the two distinct driving experiences.

The translation process from English to Bloomian was not very challenging but it involved a great amount of time and thinking. Very quickly I realized that my original learning objectives were in some cases too vague, used multiple unnecessary synonyms (i.e. “rules and laws”) within one sentence, repeatedly used the verb understand or combined multiple objectives into one. I found that having to map my original verbs and nouns to the cognitive process and knowledge categories and sub-categories forced me to re-think my learning goals and dig deeper into each selected term while analyzing its true meaning. At the end of the translation process the level of objective specificity that resulted from the mapping to the Bloom Taxonomy pleasantly surprised me.

Reflection Question 2 Did your objectives span multiple cognitive process types? Should / could they have? (If you wanted to include other processes, could you do so?)

At the end of the translation phase I was happy to see that my objectives covered four out of the six possible cognitive process dimensions. My initial goal was to design the objectives so that there would be minimal focus on memorizing and having to recall information at a later date and I met this goal. At the early stages of the project I could not think of any specific objective that would fall under the 5.0 evaluate or 6.0 create cognitive process dimensions. I am still unsure what specific objective I could include in these two dimensions that would benefit this particular lesson. I have also noticed that two out of the six objectives span two cognitive process types, namely, objective #1 and #2A. Although I did pause and wondered if I should separate these objectives even further, I decided against it. I felt as though the “explain and apply” cognitive processes went hand in hand in this case and were ok left together.

Reflection Question 3 One of the goals of Bloom’s taxonomy is to make it clear how you would assess if the objectives were met. Is it clear how you would assess yours? If so, how? If not, why not?

Although I am a complete novice at this process, I believe that it would not be difficult to develop a strategic assessment plan based on the given learning objectives. There are four cognitive process categories that are covered by the learning objectives:

1. Remember (recall), Objective 3: To assess whether the students have memorized a list of speed pairs [in km/h and miles/h], I would use a gaming approach—flashcards. For instance, I would show the students a card with a speed in km/h and then show another card, which would have two answers on it with only one being correct. The student would add up all the wrong answers, which would then determine a passing score for this particular module.

2. Understand (explain, interpret, compare), Objective 1, 2A, 4 and 5: In these cases, the students would be assessed based on how well they can use prior (objective #4) and existing knowledge to articulate the meanings of German and American driving laws in own words, including their similarities (objective #5). For specific assessment in this area I would probably choose video scenarios and/or images. The students would be presented with a short video of a driving situation or a picture of a traffic sign and then asked to explain the applied driving law or the meaning of the traffic sign. Alternatively, I would use a multiple-choice approach to gather similar feedback. The students would be assessed based on the number of wrong answers, which would again determine a passing score for this module.

3. Apply (apply), Objective 1, and 2A: Assessment in this module would be a follow up to the “2.
Understand” module discussed above and it would be very straightforward. The students would be presented with various driving scenarios (videos) involving both autobahn and German city and town driving. I would then ask them to tell me how they would proceed on the road if they were in Germany. Again, the students would be assessed based on the number of wrong answers, which would determine a passing score for this module.

4. Analyze (differentiate), Objective 2B: Lastly, assessment in this module would focus primarily on correctly stating the differences between American and German city and town laws applied to the same driving situation. I think that the easiest way to assess students would be to present them with various driving scenarios and ask them how they would proceed if they were in Germany and how they would proceed if they were in America. Assessment in this module could also be followed up with a series of multiple-choice questions.

Conclusion and "Future Work"

The art of lesson design that students can benefit from is challenging. Never having had a similar opportunity before, I did not realize how much thought and effort goes (or should go) into what one may consider an easy task of “outlining learning objectives” for a teaching lesson. Going through the several stages of brainstorming, translation and evaluation has been thought provoking, at times a bit confusing but yet very informative. Completing this project opened my horizons and developed much greater appreciation for any type of a solid learning opportunity. The approach that I chose based on the lecture notes and the readings worked well for me. At this point, being this my first and only experience, I cannot say with any level of certainty what I would change about my approach. I will certainly incorporate any feedback on this project into similar future tasks.