



El litio en Bolivia
A Case Study for Second-Semester Spanish
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Resumen del caso

Los automóviles y la gasolina presentan un problema para los humanos y la naturaleza. Muchas personas creen que el carro eléctrico es una solución posible. Una parte importante de tal carro es la batería. Si las fábricas empiezan a producir carros eléctricos en grandes cantidades, vamos a tener mucha demanda para las baterías. Es posible que el elemento *litio* sea esencial en la producción de las baterías en gran escala.

El litio es un metal y es el metal menos pesado de todos. Es el número 3 en La tabla periódica de elementos, con el peso atómico de 6.941. Es un metal corrosivo. Una fuente del litio es la sal. Es posible sacar el litio de la sal por medio de una solución de cloruro y de la electrólisis.

En varios áreas del mundo hay depósitos de sal que contienen litio. Bolivia tiene dos desiertos de sal que se llaman salares. El más grande se llama el Salar de Uyuni y es enorme. En total, Bolivia tiene casi un 50% del litio mundial.

El gobierno de Bolivia ha construido una planta para sacar el litio de las sales del Salar de Uyuni. Varias compañías grandes de automóviles están muy interesadas en el Salar de Uyuni como una fuente de litio para las baterías que necesitan. Los trabajadores del Salar y la gente en las comunidades alrededor del Salar quieren una voz en las decisiones grandes que posiblemente van a afectar sus vidas. El ecoturismo quiere conservar el medio ambiente y sus fantásticos fenómenos y colores que se encuentran cerca del Salar. La gran diversidad de animales de la región viven en una zona ecológica que es alta, fría, seca y frágil. La industrialización de la zona puede representar un peligro para ellos.

Los estudiantes deben tomar UNA de los siguientes posiciones:

- 1) el gobierno: sus planes, las ideas, las aspiraciones para el desarrollo económico. O,
- 2) una compañía de autos: sus planes para sobrevivir, sus necesidades para competir en el mercado internacional y doméstico. O,
- 3) Los trabajadores y las comunidades: sus esperanzas y planes, sus miedos y problemas si viene la industrialización. O,
- 4) las compañías locales de ecoturismo: sus necesidades y planes, sus intereses
- 5) los animales, las plantas, el aire y el agua : las cosas que no tienen voz ni voto. ¿Quién los representa ?

Cada grupo: Señalar por lo menos 3 opciones posibles para resolver el problema.
 Explicar sus razones para las opciones. (En otras palabras, students must state their positions or conclusions and explain why.)

Case Summary

Automobiles and gasoline present a problem for humans and Nature. Many people think that the electric car is a possible solution. An important part of such a car is the battery. If factories begin to produce electric cars in large quantities we will have great demand for batteries. It's possible the element Lithium may be essential in the mass production of batteries.

Lithium is a metal and is the lightest of all metals. It's number three on the Periodic Table of Elements and has an atomic weight of 6.941. It is a corrosive metal. One source of Lithium is from salts. It's possible to extract Lithium from salt by means of a chloride solution and electrolysis.

In various parts of the world there are salt deposits that contain Lithium. Bolivia has two salt deserts that are called salt flats or *salares*. The largest is called the Salar de Uyuni and it's enormous. Bolivia has almost 50% of the world's total Lithium.

The government of Bolivia has constructed a plant to extract Lithium from the salt at the Uyuni Saltflats. Several large automobile companies are interested in the Uyuni Saltflats as a source of Lithium for the batteries they need. The workers at and the communities around the Uyuni Saltflats want a voice in the big decisions that are possibly going to affect their lives.

Ecotourism wants to conserve the environment and its fantastic phenomena and colors that are found near the saltflats. The great diversity of animals of the region live in an ecological zone that is high, cold, dry and fragile. The industrialization of the area can represent a danger for them.

Students must take ONE of the following positions:

- 1) the government of Bolivia: its plans, ideas and aspirations for economic development. Or,
- 2) an automobile company: its plans for survival, its needs to compete in the domestic and international markets. Or,
- 3) The workers and the communities: their hopes and plans, their fears and problems, if industrialization comes. Or,
- 4) Local ecotourism companies: their needs and plans, their interests. Or,
- 5) The animals, plants, air and water: those things with neither voice nor vote. Who represents them?

Each group: Present at least three possible options to resolve the problem.
Explain your reasons for your options.

Preguntas para guiar los pensamientos:

El gobierno:

¿Cómo es el tamaño del Salar de Uyuni?

¿Qué quiere el gobierno?

Históricamente, ¿adónde han ido los beneficios del desarrollo económico?

¿Cuáles son las ventajas y desventajas de desarrollar el Salar?

Si el gobierno desarrolla el Salar, ¿con quién necesita hablar? ¿Alguien? ¿Nadie?

La compañía de autos:

Si la compañía decide construir un carro eléctrico con las baterías de litio, ¿qué puede ofrecer al gobierno?

¿Qué ofrece a los trabajadores y a la gente de las comunidades?

¿Qué responsabilidad tienen con el medio ambiente?

¿Cuáles son las ventajas y desventajas de usar una batería de litio?

La gente, las comunidades:

Históricamente, ¿qué ha pasado muchas veces con la gente cuando vienen los extranjeros a Bolivia para hacer la minería?

¿Qué quieren los individuos ahora y para su futuro?

- ¿Qué piensan del medio ambiente de la zona?
¿De qué tienen miedo para el futuro?
¿Cuáles son las ventajas y desventajas de desarrollar el Salar para la gente y las comunidades?
Y, ¿para los trabajadores?

Los empresarios de ecoturismo:

Algunas de las compañías locales de ecoturismo son negocios pequeños de empresarios individuales.

- ¿Qué ofrecen al público?
¿Cuáles son las atracciones para los turistas?
¿Cuáles son los intereses de los empresarios y sus empleados?
¿Qué quieren si empieza el desarrollo?
¿Cuáles son las ventajas y desventajas de desarrollar el Salar para ellos?

Ellos que no tienen voz ni voto:

- ¿Cuáles son las responsabilidades de todos hacia el medio ambiente y sus habitantes?
(animal, vegetal, mineral)

Vocabulario activo

la fuente = source; fountain
el tamaño = size
el litio = Lithium
la minería = mining
la demanda = demand, the opposite of supply
en gran escala = grand scale; mass production
la sal = en casa, normalmente nosotros comemos NaCl.
el cloruro = chloride
la voz = voice
el peligro = danger
sobrevivir = to survive
la esperanza = hope
el miedo =
la ventaja = advantage
la desventaja =
sostenible = sustainable
la minería = mining
el empresario = entrepreneur
hacia = toward

Recursos

www.uyuni.com.bo Natour--good pix. Very basic info on surrounding area.
www.rutaverdebolivia.com-uyuni More info, pix, flamingo species / breeding.
www.gonomad.com-destinations-0409-salar_de_uyuni_bolivia.html Article by Molly Beer interesting. Informative.
www.world66.com-southamerica-bolivia-salar_of_uyuni Nice summation, good pix.

Use of above websdites does not imply endorsement of products / services. Simply used for informational content and pretty photos.

www.webelements.com-lithium Chemical information (bottom equation best for us).

www.sciencebuzz.org-taxonomy-term-28

Scroll down to article on Lithium, click on “The trouble with Lithium” article by William Tahil. Great science summary.

- Read:
1. Executive Summary
 2. The rise of Lithium.
 3. LiCl Production – Future Issues
 4. pp. 19-20, Zinc batteries
 5. Skim the charts & graphs for fun.

www.startribune.com-nation-39166167.html

General view, all players.

www.gasandoil.com-goc-company-cn190916.html

Good worker / local viewpoints.

Feel free to pursue websites and links you may discover on your own. If you use information therefrom, please cite the website in your presentation.

¿Qué tal?, textbook. Chapters 14-16.

Instrucciones para los estudiantes

El día número 1

1. Escuchen el caso en inglés.
2. Escuchen y lean el caso en español.
3. Pónganse en grupos de 4 personas.
4. En los grupos, lean, comprendan y hablen sobre las preguntas. Pregúntenle al instructor si tienen preguntas o problemas.
5. Después, en casa, busquen, miren y lean la información en el Web para estimular sus ideas.
6. Escriban en español sus respuestas a las preguntas asignadas por la instructora.

El día número 2

7. Pónganse en sus grupos. Comparen sus respuestas. Hagan correcciones. El instructor pasa entre los grupos para dar consejos, ideas, etc.
8. Escriban sus ideas en un párrafo para la presentación. Hagan una copia. Den una copia del párrafo a la instructora. Decidan cual persona del grupo va a presentar.

El día número 3

9. El instructor pasa copias de todos los párrafos a todos los estudiantes. Unos estudiantes presentan y los otros lean y escuchan a las presentaciones.

Goal of Case

The goals of the Modern Language Case Project are to help students develop skills in the target language, strengthen cultural competency, learn significant business principles and practices, and to function effectively in a team setting.

This case study is designed to

1. integrate some of the vocabulary and grammatical structures of chapters 14-16 of the ¿Qué tal? textbook, for the Spanish 1020 classroom, into everyday business applications.
2. have the students listen, read, write and speak in Spanish about the case;
3. consume no more than 60 minutes total of class-time, although students will need to access websites and prepare their responses outside of class.

4. to explore international markets and to perceive the economic world as a global system;
5. to consider the future role of the automobile and its energy sources.

Student Learning Outcomes for this Case

1. Students will read and comprehend the case summary in Spanish.
2. Each student will explore information sources regarding some of political, economic, social and environmental issues current in Bolivia.
3. Students will search various websites in order to obtain information and answer questions.
4. Students will accurately apply vocabulary and grammatical structures to express ideas related to the differing components of the environment, economic development, and mining operations.
5. Students will use a variety of tenses to express themselves when answering the guiding questions though most communication will focus on present, future and present perfect.
6. Students will present in accurately spoken Spanish the findings of their groups.

Direct Assessment

Instructor will assess the logic and language of:

1. the written replies in Spanish to the guiding questions,
 2. the paragraph,
 3. the presentations.
4. Instructor will assess how well students have found and synthesized informational resources via the above three student products.

Indirect Assessment:

For the Student:

1. Do you believe you better understand the vocabulary involved now than before the exercise?
2. Do you find it is easier to use Spanish in this context now than before the exercise?
3. Has this exercise helped you with your Spanish? If so, can you please give an example?
4. What have you learned about Lithium in Bolivia?
5. Do you believe the idea of a business application of Spanish has merit in the classroom?

Teaching Notes

Day 1 Time = 20 minutes.

1. To the class as a whole, the Instructor orally presents only the Case Summary itself to the students in English. (Establish a base of understanding.) No paper, students just listen.
2. Distribute copies of just the *Resumen del caso* in Spanish and the *Vocabulario activo* to the students. One sheet: Resumen on one side, vocab on the other; any other paper = distraction.
3. Read over the *Vocabulario activo* quickly.
4. Read the *Resumen del caso* in Spanish aloud to the students. (Paste new information to base.)
5. Distribute copies of the *Preguntas para guiar los pensamientos* and *Los recursos* to students.
6. Students put themselves in groups of 4 or 5 people.
7. Each group represents a party of interest in the situation. There are 4 or 5 groupings: the government, the car company, the local people including workers, small business entrepreneurs, and the plants, animals, air & water resources. Instructor may use creativity with the fifth role or omit it. There will be duplicate groups. Don't worry, they may well present different ideas.
8. In the groups the students will read the *Resumen* in Spanish. Circulate among groups to check on progress, ask/answer questions, guide the process.
9. Assign each group and individual their respective questions as homework. Assign website and relevant textbook sections to all students.
10. Ensure group members know their responsibilities. Students tend to divide up work among members. Does the group have contingencies? What if one of the members is absent?

Day 2 Time = 20 minutes

11. Students to their groups. See that they compare answers, make corrections, synthesize their individual answers and findings into a paragraph. Circulate among students, guide.
12. Have the students copy the final version of their paragraph—best by hand. One stays with the group. The copy goes to you, the Instructor.
13. Grade the paragraph. Indicate areas of correction for the students.

14. Collate the paragraphs onto one or two sheets of paper, make copies for the class (one sheet / 2 students...they can share...reduce print size...save paper ?).

Day 3 Time = 20min

15. Pass the paragraphs back to the groups. Students note and integrate the corrections.
16. Student spokespersons prepare to present.
17. Present findings. Students listen and read along via the copies of all the paragraphs. Encourage questions on the part of students.
18. Assess presentations.
19. Administer the Indirect Assessment to the students and collect it when they are done.

How to present this Case

The nature of case studies is such that:

- Cases must address business-related problems.
- They begin with a description of a commercial situation with a problem therein.
- They often include cultural differences within a business context.
- Students pose possible solutions and offer rationales for them.
- The Instructor should end with follow-up activities: closure and a survey.
- The surveys improve and streamline this and other cases.

Assessment by Instructors

Foreign language learning and acquisition assessment is an on-going process and may ask a long-term perspective. Each student must demonstrate their learning and acquisition of Spanish in each class. Students learn for themselves as individuals at different rates. The information gained today, in this case study, may not be acquired and manifested until the tomorrow after the case has finished as some individuals process language skills at a deeper, slower level. Consequently, the learning outcomes may serve the student for purposes later in the course.