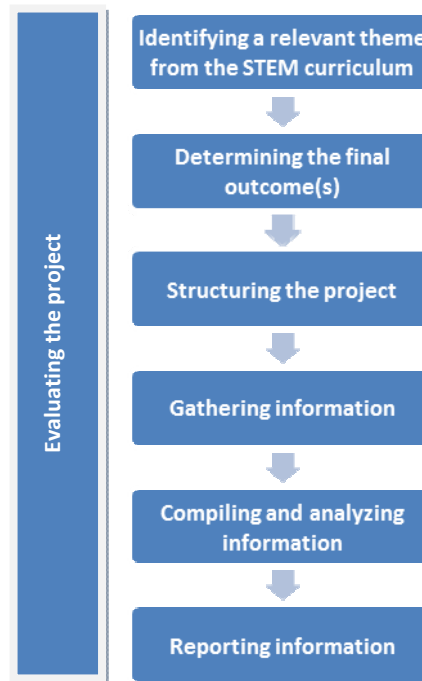


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**Evaluating a Project-Based Activity: Suggestions for CLIL Courses**

## Introduction

According to the Council on Foreign Relations (2012), much of the recent educational reform in K-12 settings throughout the U.S. has focused on advancing the quality of science, technology, engineering, and math (STEM) education, as well as foreign language instruction, since these areas are seen as being “weakest” in U.S. schools. To address these weaknesses, many educators have looked to project-based learning (PBL) as a means of simultaneously integrating STEM content and foreign language learning, as PBL engages students in real-world projects and challenges them to use the target language to complete the work (Stoller, 2010).

For this integration to be successful, it is helpful to consider PBL as a series of implementable steps. For example, Nekrasova and Becker (2012) outlined seven steps of a project for a high school Russian language classroom that centered around creating a report on renewable energy, targeting both students’ Russian language skills and STEM knowledge. As shown in Figure 1, the steps of that project included:



*Figure 1. Steps outlined in Nekrasova and Becker (2012) for conducting a project-based research report.*

In this article, we expand on the “evaluating the project” step, as this is seen as a fundamental element that occurs during, and at the conclusion of, a project-based activity.

## Evaluating the project

The evaluation of PBL can occur using a variety of assessments (Miller, Linn, & Grolund, 2009). The following types are the most pertinent for assessing students’ language learning and STEM knowledge in relation to PBL:

- *Formative assessment* – is used to collect information about learning progress. The intent of formative assessments is to improve students’ learning.
- *Summative assessment* – is used for the purpose of determining achievement at the end of instruction. In this sense, summative assessment promotes accountability and provides quantifiable evidence of student learning.
- *Direct assessment* – refers to the direct observation of students’ knowledge, skills, and abilities against learning objectives. Direct assessment relies on actual observations of student learning and is therefore considered a valuable part of the assessment process.
- *Indirect assessment* – refers to the process of self-reflection by students. Indirect assessment provides insights into students’ attitudes and values that cannot otherwise be obtained from direct assessments (Cromack & Savenye, 2008).

In what follows, we present specific examples of assessments for PBL that can be implemented by teachers in high school classrooms.

*During the project.* In terms of formative assessment, two types of instruments can be used in order to provide support to students and/or evaluate their progress while they are still engaged in the project.

- *Mid-project survey* (formative, indirect) – students record information about their experiences with the project activity, including reports on their attitudes, self-confidence levels, and abilities to perform tasks. The survey involves students in the assessment process by assigning them the role of assessor, not the one who is being assessed (see Appendix A).
- *Progress checklist* (formative, direct) – students assess their progress with the project activity by going through a list of requirements in order to identify areas which need further/additional work. The checklist can be used for each step of the project by both the instructor and the students (for self-check/peer-check). This enables students to monitor their own progress, which is typically a task performed by instructors (McMillan & Hearn, 2008). See Appendix B for a checklist developed for *Information Gathering Cycle*.

*End of the project.* There are a number of assessment options to gather evidence for how well students have mastered the content and language learning objectives targeted for a given STEM project. Below are three examples of possible assessments to implement.

- *Research report* (summative, direct) – students develop a research report that integrates the target language and students’ STEM knowledge. Their achievement is then measured using a scoring rubric which includes scoring criteria that reflect the most important aspects of the project that students have learned about. As indicated in Nekrasova and Becker (2012), these aspects would likely reflect those features that are common when writing a research report (see Appendix C).
- *Presentation* (summative, direct) – students create a presentation in the target language that relates to the STEM content of the research project. Their achievement is then measured using a scoring rubric. As shown in Appendix D, the rubric includes scoring criteria that reflect important aspects of an effective presentation (e.g., subject knowledge, organization, and language use).
- *Project completion survey* (summative, indirect) – students anonymously complete a survey at the completion of the project. The survey targets students’ opinions about the different tasks involved

in the project and asks students to identify areas of difficulty that were encountered (see Appendix E).

## **Conclusion**

Project evaluation may seem like a final activity for an instructor to undertake once a project is being completed. In this article, however, the authors demonstrate how the implementation of different types of assessments (i.e., formative/summative and direct/indirect) throughout the project can help an instructor to better determine students' needs and progress in the activity, and allow students to become more autonomous learners by giving them tools to self-monitor their work.

## Appendix A

### Mid-Project Survey

Thank you for agreeing to provide feedback about the project. This survey involves giving your opinion about the STEM project that you are carrying out for this course. The survey should be filled out anonymously, so DO NOT include your name.

**Directions:** Read the statements in the left-hand column. Circle your degree of agreement for each statement in the right-hand column. Circle only one answer for each statement. Also, please provide comments that explain your answer for each statement.

Statement	Strongly Strongly Agree Disagree	Agree	No Opinion	Disagree	SD	Comments
1. I feel satisfied working on the project.	SA	A	NO	D	SD	
2. I feel that working on this project motivates me to learn both the subject and the language.	SA	A	NO	D	SD	
3. I feel confident about the project parts I have completed to date.	SA	A	NO	D	SD	
4. I have the subject knowledge and the language skills to carry out the project.	SA	A	NO	D	SD	
5. I am able to complete this project on time.	SA	A	NO	D	SD	
6. I understand the requirements for the overall project activity and all individual steps I have completed to date.	SA	A	NO	D	SD	

Statement	Strongly	No			Comments
	Strongly Agree Disagree	Agree	Opinion	Disagree	
7. I receive sufficient support (i.e., instructions, feedback) from my instructor to be able to finish this project.	SA	A	NO	D	SD
8. I DO NOT anticipate any difficulties in my future work on the project.	SA	A	NO	D	SD
9. I believe the project activity helps students to be creative while learning the language.	SA	A	NO	D	SD
10. I believe the project activity helps me to become more independent as a learner.	SA	A	NO	D	SD

11. With which aspects of the project activity do/will you need assistance from your instructor? Please use the space below to list the aspects and provide additional details.

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12. What changes in the project activity would you like to be incorporated in order to help you complete it? Please use the space below to describe the change(s) and provide additional details.

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**Thank you for completing the survey. Please return the form to your teacher.**

Appendix  
x B

Progress Checklist: Information Gathering Cycle

**Directions:** In the left-hand column read the requirements for completing Step 4 of the project - Information Gathering Cycle. Circle **YES** if the requirement has been met; circle **NO** if it has not been met. In the right-hand column, please include your comments that explain your response.

Requirements	Completed (Yes/No)		Comments
1. There are at least five authentic (i.e., originally created in a foreign language) sources used in the project.	Y	N	
2. All sources are reliable and credible.	Y	N	
3. All sources are current (i.e., published within the last 10 years).	Y	N	
4. The sources present an accurate and adequate account of an issue/problem researched in the project.	Y	N	
5. All sources are appropriate for the use in the project activity.	Y	N	
6. Sources include a variety of different text types/media (e.g., journal articles, web-site entries, video clips).	Y	N	
7. All sources are properly documented and referenced following the APA citation style.	Y	N	

Appendix C  
 Synthesis Paper Scoring  
 Rubric

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

Category	Points (out of 100)	Teacher Notes
A. Introduction <ul style="list-style-type: none"> <li>• States the thesis of the paper.</li> <li>• Provides an overview of the points to be discussed in the body of paper.</li> </ul>	___/20	
B. Body of Paper <ul style="list-style-type: none"> <li>• Parallels the order of ideas discussed in the introduction.</li> <li>• Includes 3-5 main points related to the topic.</li> <li>• Compares and contrasts ideas from different sources.</li> <li>• Supports ideas with references.</li> </ul>	___/30	
C. Conclusion <ul style="list-style-type: none"> <li>• Reviews major points of paper.</li> <li>• Offers conclusion about thesis.</li> </ul>	___/20	
D. Language Use <ul style="list-style-type: none"> <li>• Uses correct vocabulary.</li> <li>• Uses transitional phrases.</li> <li>• Uses correct grammar and spelling.</li> </ul>	___/20	
E. Format <ul style="list-style-type: none"> <li>• Shows evidence that student has edited paper.</li> <li>• Paper is 3-5 pages long.</li> <li>• Correctly cites sources.</li> </ul>	___/10	

Total Score: \_\_\_\_\_/100 points



Appendix D

Project Presentation Scoring Rubric

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

Criteria	Levels of Achievement			
	Excellent (4)	Good (3.5)	Fair (3)	Poor (1.5)
<b>Subject Knowledge (x3)</b>	Student demonstrates full knowledge of topic and answers all questions with appropriate explanations and/or elaboration  12	Student demonstrates good knowledge of topic and answers most questions with appropriate explanations and/or elaboration  10.5	Student demonstrates some knowledge of topic and answers only rudimentary questions with minimal explanations and/or elaboration  9	Student does not have grasp of information; student cannot answer questions related to the topic  4.5
<b>Organization (x2)</b>	All content is organized in a clear and logical sequence  8	The sequence of main points is good but could be improved  7	Some main points seem to be out of logical sequence  6	There is no clear plan for the organization of information  3
<b>Effectiveness of Presentation (x1.5)</b>	The presentation effectively enhanced your understanding of the topic being described  6	The presentation somewhat enhanced your understanding of the topic being described  5.25	The presentation did not sufficiently enhance your understanding of the topic being described  4.5	The presentation did not enhance your understanding of the topic being described  2.25
<b>Delivery of Presentation (x1.5)</b>	A well-planned delivery is apparent; presenter is well-prepared to discuss project with eloquence and authority  6	Delivery is good but could have been better planned; presenter is sufficiently prepared to discuss project  5.25	Presentation seems to be hastily planned; presenter is insufficiently prepared and unable to hold audience attention  4.5	Presentation seems to be completely unplanned; presenter is unprepared to discuss project coherently or knowledgeably  2.25
<b>Language Use (x1)</b>	Very few errors in pronunciation common to second language learners; appropriately uses a great variety of vocabulary and idiomatic expressions very few spelling errors  4	Some errors in pronunciation common to second language learners; appropriately uses some variety of vocabulary and common idiomatic expressions; several spelling errors  3.5	Many errors in pronunciation common to second language learners; appropriately uses a limited number of formulaic words and phrases; many spelling errors  3	Largely incomprehensible pronunciation; displays inability to use vocabulary to convey ideas; significant number of spelling errors  1.5
<b>Total possible</b>	<b>36</b>	<b>31.5</b>	<b>27</b>	<b>13.5</b>

Total Score: \_\_\_\_\_/36 points

## Appendix E

### Student Project Completion Survey

Thank you for agreeing to provide feedback about the project. This survey involves giving your opinion about the STEM project that you completed for this course. The survey should be filled out anonymously, so DO NOT write your name.

**Directions:** Read the statements in the left-hand column. Circle your degree of agreement for each statement in the right-hand column. Circle only one answer for each statement. Also, please provide comments that explain your answer for each statement.

Statement	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	Comments
1. I like learning by creating a project on topics I have researched.	SA	A	NO	D	SD	
2. I was able to easily find information on a given topic.	SA	A	NO	D	SD	
3. I am comfortable sharing my ideas and thoughts about a topic with my peers.	SA	A	NO	D	SD	
4. This project has increased my interest in science (or technology or math or engineering).	SA	A	NO	D	SD	
5. I believe one term was enough time to adequately complete the project.	SA	A	NO	D	SD	
6. I was able to find the information I needed to successfully complete the project.	SA	A	NO	D	SD	

Statement	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	Comments
7. I felt confident when analyzing the data I collected for the project.	SA	A	NO	D	SD	
8. I think the feedback from the teacher helped me to improve the project.	SA	A	NO	D	SD	
9. I believe my level of language ability allowed me to successfully complete the project.	SA	A	NO	D	SD	
10. I felt comfortable writing the report in the target language.	SA	A	NO	D	SD	

11. Which areas of the project did you find most difficult? (Check all that apply.)

Finding a topic	_____	Analyzing data	_____
Researching the topic	_____	Writing the report	_____
Collecting data	_____	Presenting the research	_____
Using the language	_____		

12. Which areas of the project did you find least difficult? (Check all that apply.)

Finding a topic	_____	Analyzing data	_____
Researching the topic	_____	Writing the report	_____
Collecting data	_____	Presenting the research	_____
Using the language	_____		

**Thank you for completing the survey. Please return the form to your teacher.**

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