

# **Instructional Strategies for Using Problem-based Learning with English Language Learners<sup>1</sup>**

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## **Abstract**

Problem-based learning (PBL) has been accepted for instruction in many fields of study since it was first introduced in the medical field during the 1960s. However, there is one area where it is underutilized: in English language learning. Problem-based learning provides a platform for authentic English as a second language instruction, and as a result, can foster English language use while promoting skills such as critical thinking, interactive communication, and self-reflection. English language learners (ELLs), in particular, may benefit from PBL instruction as it helps English Language Learners develop cultural constructs along with language arts skills such as reading, writing, listening, and speaking.

## **Introduction**

Problem-based learning (PBL) was first introduced in the 1960s by a Canadian medical educator, Howard Barrows (Delisle, 1997). Since that time, problem-based learning has moved into mainstream education in most content areas in K-12 and, more reluctantly, into higher education as well (Kaminskiene & Janulienė, 2006; Savin-Baden, 2000). Although problem-based learning has successfully moved from the medical field into other fields of study, one final frontier for instruction is using problem-based learning with English language learners (ELLs).

As an instructional strategy, problem-based learning can be defined by its processes. Problem-based instruction is primarily built around a problem scenario, or in problem-based language, a case. Students are presented with a case and are charged with the task of working together in collaborative groups to generate ideas or hypotheses to reach a resolution to the problem introduced in the case. A well written case, or the information students will learn in order to solve the case, is germane to the curriculum content being taught. Students must become self-directed as they work individually to gather ideas and information to share with the group. A further characteristic of the problem is that it is loosely

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structured to allow for several interpretations, and therefore, several feasible solutions. The teacher serves as a facilitator to this process, scaffolding instruction as needed, monitoring students' abilities to work in groups, providing supplemental information when necessary, and intervening in the process only when a gentle nudge is needed to help the learners refocus. The ultimate goal of problem-based learning is to foster development of critical thinking skills through problem solving.

In public school classrooms in the United States, students who speak languages other than English or who come from homes where another language is spoken are tested to determine their levels of English ability. English language learners are then placed in classes which support the acquisition of academic English. Problem-based learning provides an active strategy for language acquisition as well as cognitive engagement in the content area being taught. English as a second language (ESL) teachers are often challenged to bring stimulating opportunities for higher order thinking and authentic learning experiences into the English language classroom. Problem-based learning provides the opportunity to promote language learning in ELL classrooms while promoting areas of critical instruction: primarily increased communication skills, vocabulary, and culture constructs. Based on John Dewey's (1938) paradigm of thinking and reflection, problem-based methods promise an in-depth, close-to-life learning experience that will help ELL students integrate knowledge from various disciplines and make cultural connections.

In language acquisition classrooms, there are many ways that problem-based learning can be used effectively. Generally, there are five main components of the problem-based approach: case writing, case presentation, facilitation, structuring, and assessment/reflection (Delisle, 1997; Schreyer Institute for Teaching Excellence, 2007). Cases are fundamental to the problem-based learning process, and as a result, a well written, purposeful case is the essential first step on which to base successful problem-based strategies. Cases are concisely written scenarios that contain problems that do not have specific or well-defined solutions. Case-related content matter indicates the knowledge base students will be required to learn during the PBL process. The variety of cases is infinite; however, they all have the common element of being grounded in the real world. Each case is followed by open-ended questions used to provide direction for discussions and eventual resolutions of the problem (Duch, 2001). English language learners employ their problem-solving abilities as they interact with others to achieve a satisfactory response to the particular problem situation presented in the case; at the same time, the investigation of authentic information sources used to solve each case helps develop academic English.

## **Problem-based Learning vs Task-based Instruction and Role Playing**

Problem-based learning is not to be confused with task-based instruction (TBI) which began its popularity in second language acquisition pedagogy in the 1970s. Task-based instruction is commonly viewed as a communicative approach since task-based methodologies have the learning outcome of a communicative activity, mainly speech (Skehan, 2003). Consequently, although the definition of "task" changes with the purpose of each task-based instructional strategy, there is an assumption in language teaching contexts that the desired outcome of each task will be directed at oral speaking skills (Ellis, 2003). Tasks are often procedural in nature and often share a quality also represented in PBL by being grounded in real life events.

There are several fundamental differences between task-based instruction and problem-based learning. One of the main differences is that task-based instruction does not focus on cognitive processes, but rather on productive language goals (Ellis, 2003). During problem-based instruction, students are given a problem to solve, not a task or goal to accomplish as in task-based instruction. The problem, unlike a task that has one correct procedural process, has multiple outcomes depending on the student's cognitive focus. And although speech may be a natural result of PBL, it is not the focus. Instead, the critical thinking that is required to solve the problem is the focus.

Role playing, another communicative approach which became popular in the 1980s, is also not to be confused with problem-based learning. Role playing also differs from PBL in many distinct ways. Role playing, for example, is frequently scripted with students playing the role of characters in a set scenario. One fundamental difference then is that role playing may be fantasy while PBL is grounded in real life. Although there is room for individual student dramatizations during role playing exercises, there is usually a preset conclusion to the scenario. As with task-based instruction, the focus is not on the cognitive aspects as with PBL, but rather on the language production. For students to dramatize their roles correctly, the teacher needs to act directly as a group facilitator (Cunningsworth & Horner, 1985; Livingstone, 1983). For ELLs, role playing is essentially a practice situation with students repeating social and situation specific language within the boundaries of the scenario.

## **Case Writing for English Language Learners**

Since cases are as varied as the real world situations they mirror, there is no one correct method for writing a case; however, the mechanics of case writing is still a daunting task for teachers new to problem-based learning. Beginning case writers are encouraged to have colleagues read and

respond to new cases before they are implemented in the classroom for the first time. Cases, and the problems they contain, may have alternate interpretations that the writer has not predicted due to cultural considerations (Duek, 2000). This may be especially true for ELLs. For example, a case concerning property ownership would be approached quite differently by a student from a country such as China, where individual ownership is not possible, and even the idea of it, improbable. If using this type of case, the teacher would want to understand each interpretation of the case and its possible solutions in order to provide appropriate supplementary reading and proper guidance.

Novice practitioners should first consider students' motivation and interest when deciding on the context of the problem. When writing cases for English language learning students, the context needs to include aspects that have a strain of familiarity, and therefore, allow students to work through the problem from as common a perspective as possible. The case should be complex, yet not so unfathomable as to lose students in their quest for a solution. And finally, content objectives and curriculum standards may have a broader application to the case content than in traditional coursework (Duch, 2001).

Experienced language teachers have a treasure trove of stories they could relate to situations that students have experienced. This makes good material for case studies, and can be embellished, changed, updated, or reconstructed to more directly address the curriculum and meet curriculum standards. Newspaper articles about situations that newcomers have experienced will make good idea nuggets for constructing problem-based texts for the English language class. Likewise, advice columns from current newspapers or magazines supply ideas for cases, as do past controversial situations. And although it is a departure from the traditional use of PBL case writing, ultimately, students may want to write their own cases and seek responses from their peers (Schreyer Institute for Teaching Excellence, 2007).

### **Case Presentation for English Language Learners**

The case text is a stimulus which unites the material (the case itself and supplemental reading), the method (connecting experiences, knowledge, and skills), and the mode (group interaction and systematic inquiry) of learning into one experience as illustrated below in Figure 1.

## PBL Environment

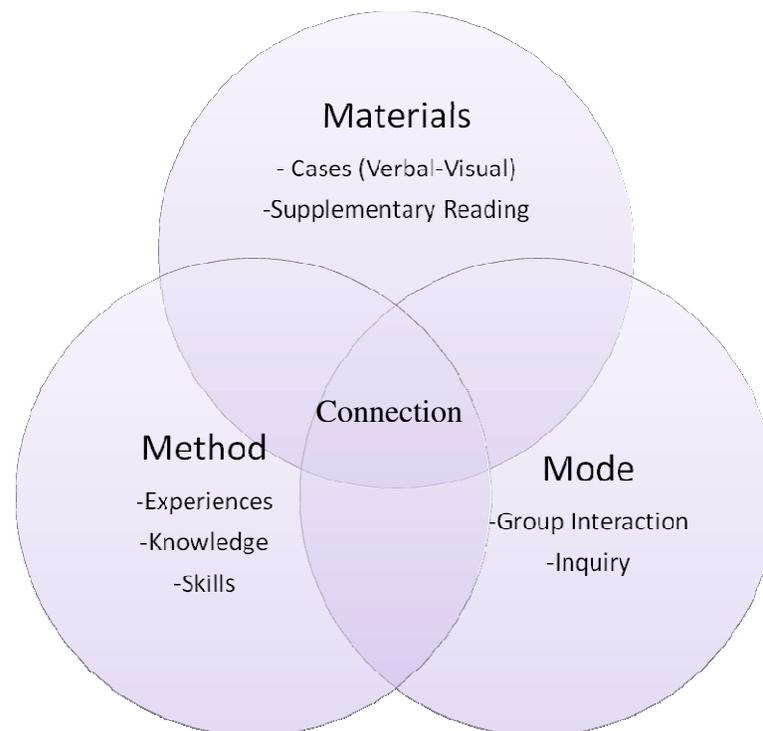


Figure 1. PBL Environment and Language Arts

As the case is discussed, the English language learner enlarges his or her constructs of related cultural experiences, integrates the ideas and experiences of other group members into his or her cultural schemata, and discusses various aspects and solutions to the case in the target language. The use of problem-based learning brings engagement and immediacy into the classroom and compels the use of language arts—speaking, listening, viewing, thinking, reading, and writing—as students grapple with and analyze the problem.

Cases are presented to students in a variety of ways: handed out on paper, presented on PowerPoint or overhead projector, read out loud by teacher or student, or through general class discussion facilitated by the teacher (Lambros, 2002). An effective technique of case presentation to English language learners is to present the case both verbally and on paper to increase initial comprehension of the problem (Curtin, 2005). The discussion that follows the case presentation will differ broadly in scope depending on the complexity of the problem. Some cases require only a brief clarifying discussion while others require a longer, in-depth analysis of the problem.

A chart such as the one presented below (see Figure 2) can be used to help structure the discussion (Delisle, 1997). Column one reflects a brainstorming session. All of the potential ideas for a solution mentioned during the class-wide discussion should be listed so that each idea can be investigated. The instructor should not evaluate the ideas, nor should he or she allow students to judge them in any way at this point in the PBL process. In column two, all of the known facts that come up in the discussion will be listed. Some of these facts may originate from the problem statement itself. This aspect of the discussion provides an opportunity for students to learn how to discern facts from opinions. The next column, *Needed Information*, will list information that is required and questions that should be answered during the inquiry phase of the problem-based project. Finally, column four will be a *To-Do List*, or processes which need to take place in order to find the information needed to solve the problem. Using such a chart guides and focuses the initial discussion and will provide a reference to anchor the inquiry process.

First Thoughts	Facts We Know	Needed Information	To-Do List

Figure 2. Discussion Chart

### Examples of Cases

The authors offer the following example cases written in the context of one theme, the development of a world monetary system, in order to illustrate how the scope, product, and language components of the case expand to match the appropriate levels of language ability. The cases have been developed through interaction and feedback from peers and colleagues (K-12 and college level) attempting to use PBL in their language learning classrooms. As a result, these sample cases are intended for those language learning classes which are leveled for language ability in their composition. However, leveling may also occur not only within the class as a whole, but should be considered carefully for the small problem-solving groups which consist of students with varied ability. For example, in a beginner class, the group might consist of pre-production beginners, low beginners, and high beginners in order to provide language models for the lower ability students. According to Vygotsky's sociolinguistic theory (1978, 1986), students with different strengths will learn from social interaction with each other as they interact together in groups.

### Case Series #1

#### Beginner ELLs:

The first case is written to promote descriptive language production typical of beginner English language learners. The incorporation of artistic expression into the output allows valued participation by all beginners, even those who are not as yet producing verbal output. The art component provides the scaffolding for the verbal and written description required for completion of the assignment. At the beginner level, a silent period is often experienced, and at the initial stages, language output typically consists of a few words or phrases. At this stage, the student may be supported with pattern sentences. For example, to describe the art production required in the solution for the following case, these pattern sentences could be used:

At the center of the coin is \_\_\_\_\_. On the other side of the coin is \_\_\_\_\_.

The words \_\_\_\_\_ are written below/above.

#### Case for Beginner ELLs:

You have been asked to design a new coin that will be used worldwide.

Assignment: Develop a picture of what the coin will look like.

#### Intermediate ELLs:

At the intermediate level, ELLs are typically adept at social language which facilitates PBL group interaction. Intermediate ELLs can effectively incorporate outside textual resources such as reference articles, electronic resources, and other databases. Scaffolding in the form of mini-lessons from the instructor can be helpful at this level. These mini-lessons can have a variety of purposes; examples include vocabulary introduction, modeling of group collaboration techniques, and effective use of reference materials. Intermediate ELLs can be expected to produce limited written pieces with some errors. The case below, for example, has been expanded in scope and has incorporated a written product for the intermediate ELL.

#### Case for Intermediate ELLs:

You are a part of a world delegation charged with the task of creating a new set of world coins.

Assignment: Describe in an essay what processes you went through to develop the money.

#### Advanced ELLs:

At the advanced level, verbal and written discourse of an evaluative or persuasive bent can be produced by students. Some assistance with academic vocabulary, use of complex databases, and technical aspects of written expression may be necessary. The following case for advanced

ELLs expands the scope and audience of the monetary theme and, because it is intended for use in a multilevel class, has the potential of requiring a formal presentation with a technological component for the most advanced students.

#### Case for Advanced ELLs:

The universe is running out of resources used to make coins, print paper money, and manufacture credit cards. As a result, the leaders have decided to use an intergalactically-adopted monetary system and abolish coins, paper, and plastic money. Your help is needed for these decisions.

Assignment: You will be presenting your idea to the Intergalactic Council (a panel of teachers).

One consideration for ELLs engaging in the problem-based learning process is that a variety of materials at several reading levels may be necessary for classroom use even within a leveled class of beginners, intermediates, or advanced students. To facilitate scaffolding, a group of appropriate resources suitable for each ELL's language level should be gathered in preparation for the PBL inquiry. These materials will be available to the entire class and will provide a common basis for the inquiry process. The materials may range from picture posters, atlases, almanacs, and picture books, to electronic media. Groups can and should decide to seek additional outside resources if their inquiry questions cannot be answered fully by using teacher-supplied materials. A sample list of resource subjects appropriate for supplemental reading on the topic of the sample cases follows:

- Research on world coins
- History of the Euro
- Ancient and current types of monetary systems
- Natural resources
- Cultural symbolism
- Technology

#### Case Series #2

A second series of example cases based on ecological issues faced by schools attempting to go "green" provides a realistic, multi-solution series of scenarios.

#### Case for Beginner ELLs:

You and your classmates have noticed that cans (or bottles) from canned drinks (or bottled drinks) do not get recycled in your school. What suggestions can your group make to the school officials?

Assignment: Make a series of posters for display in the hallway illustrating your best suggestions.

### Case for Intermediate ELLs:

After attending a school workshop about reducing waste in your school, you have been asked to share other ideas for making your school less wasteful. What are some of your ideas?

Assignment: Write a letter for the school newsletter describing your program to reduce the waste in your school.

### Case for Advanced ELLs:

Your school is trying to be more conservation oriented or more "green." You are on a committee with school personnel, community leaders, and other class members to discover and develop ways to conserve resources inside your school. What ideas will you bring to the table?

Assignment: You will be presenting your idea to the Parent Teacher Committee.

For this case supplemental reading subjects include:

- Research on environmental issues
- Articles about the new term "green"
- Newspaper articles about local environmental concerns

## **Facilitation of PBL with English Language Learners**

After the case is presented to the class, the teacher must begin work as a facilitator or tutor in the process. Becoming a successful facilitator for problem-based learning represents a learning curve as teachers adjust and readjust to allow students to be self-directed, yet maintain the expectation for English language learners to complete an assigned outcome. In problem-based learning, the teacher becomes more the facilitator/tutor and director of the process and less the source of information (Savin-Baden & Major, 2004) as the following figure of the coaching approach illustrates.

## FACILITATION

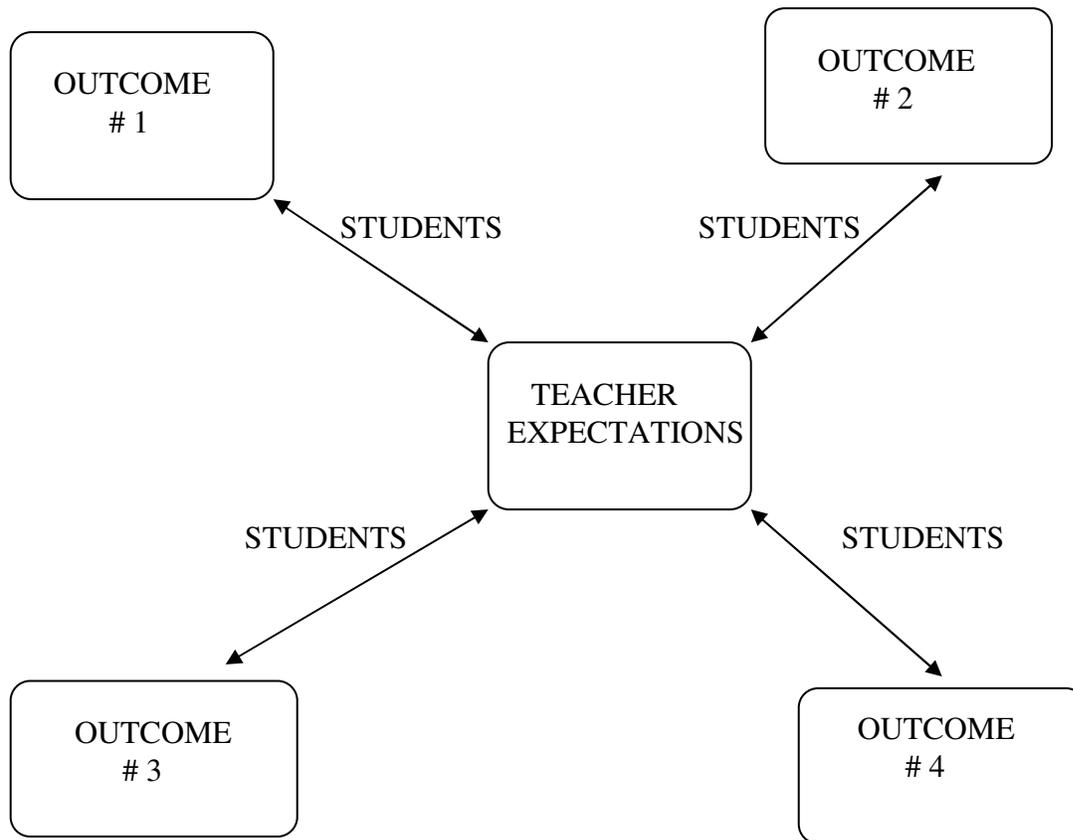


Figure 3. A Coaching Approach

This is especially true during the inquiry phase when most group work is accomplished. In the language learning classroom, the teacher/facilitator faces many language-based challenges. Group interaction, for example, may become problematic as gender and cultural perspectives assert themselves more dramatically (Curtin, 2005; Duek, 2000). Additionally, ESL teachers do not usually allow students to struggle with learning, yet struggling during the learning process is a necessary and productive component in problem-based applications (Kaminskiene & Januliene, 2006). There are advantages to presenting the problem case without previous discussion thus creating a greater cognitive dissonance and a greater urgency for resolution. An unembellished presentation of the case forces language learning students to determine word meanings, intuit cultural context, make inferences, and grapple with the logic and structure of text with no support. However, it is entirely possible that, due to the variety of levels of language proficiency which are represented in many classes, the gap between text and reader may be too great to be bridged if the case is presented in raw form with no support whatsoever. For this

reason, most English language learners will require specific types of scaffolding, at least initially, for problem-based learning to be successful.

In order to provide support in the initial stages, facilitators of the process need to take several steps to build background. The idea that students are expected to engage in a problem, create questions, access information sources of their own choice, and use inquiry techniques to solve a problem having multiple solutions may be entirely unfamiliar to them at this point. Consequently, the first area to be addressed is the nature of the problem-based process itself. Prior to engaging in a specific case, a general outline of the problem-based learning process should be discussed with the class. Problem-solving steps or stages should be listed on a poster or chart so that students can visually access the process at all times. A sample "PBL Directions" poster includes the following: Steps for Problem-based Learning 1) Read the case. 2) Check for understanding. 3) Ask questions. 4) Look for new information. 5) Discuss. 6) Offer solutions. 7) Evaluate. 8) Reflect and revise solutions. Careful attention to the problem-based process helps alleviate students' discomfort, not only with the PBL process itself, but also with the high level of student self-direction which is expected because of the possibility of multiple correct solutions.

Activating prior knowledge and making connections with vocabulary is another integral part of preparing language students for a new case. Limited discussion is one means of achieving this goal. However, as the background discussion unfolds, caution is in order to prevent unintentionally predisposing students towards any particular solution. The realistic nature of cases suggests that many ELLs may have already experienced similar situations or had friends or family who have experienced similar problems. As students offer personal insight, relate examples, and share related experiences, the teacher supports vocabulary development by the creation of a word web for class reference. This graphic representation of the vocabulary, synonyms, antonyms, related words, and examples clarifies the relationships within and among concepts, both those pertinent to background knowledge and those which relate directly to the scenario. Leaving the word web on display throughout the learning process may provide support for struggling learners as an easily available reference for concept associations and spelling.

Concepts introduced in the case scenario should be used to promote systematic inquiry. Students are directed through the teacher's facilitation to find a concrete solution to the open-ended problem presented in the case. The use of systematic inquiry to reach a solution requires students to seek supporting information, another commonality in PBL implementation. As students ask questions and seek clarification of facts and events, supporting documents such as articles, interviews, and

movies will need to be chosen with care by the teacher/facilitator in order for language learning students to achieve maximum understandability. Selecting informative texts with appropriate and varied reading levels, for example, is one aspect of the selection process that is critically important to ELLs. Checking resources for cultural appropriateness is another. These tasks are part of the role of teacher as facilitator to the problem-based learning process (Delisle, 1997; Lambros, 2002).

The introduction of each case will be followed by open-ended questions to guide discussion. These ambiguous questions are designed to deeply engage students in the content objectives. However, for ELLs, response cue questions may also require the application of a particular language curricular objective. For instance, if students need to demonstrate the correct use of quotations and present tense conversation skills, the response cue may be written to shape the form, although not the content, of the student response. An example of such a question follows: "What conversation might ensue as John and his parents discuss his options?" This question requires a response in dialogue form. Open-ended questions for ELLs often differ from those for the general student population in that they are designed with language objectives foremost, rather than the content curriculum objectives foremost.

### **Structuring PBL for English Language Learners**

Problem-solving groups for ELLs should be formed using the principle of heterogeneity. According to Slavin (1990), homogeneous groups have zero affect on academic achievement; therefore, a single group should contain students ranging from the beginner to the advanced levels of language production if possible. Beginner ELL students need to listen and speak to intermediate and advanced learners. Advanced students often have more experience in the target culture and can provide more input, both cultural and informational, to inform the PBL process. Most ELLs, regardless of their level of language proficiency, will have ideas from actual or vicarious experiences and thus bring valuable contributions to the heterogeneously-structured group. Each ELL integrates the ideas and experiences of other group members into his/her cultural schemata as students discuss various aspects and solutions to the case in the target language.

For English language development, one of the most beneficial aspects of the PBL process is purposeful group discussion and question formation that will guide ELLs to seek further information in order to develop thoughtful solutions. The use of inquiry skills to provide additional data to inform solutions will be among the various tasks to be accomplished by the PBL group. Further clarification through facilitation will almost certainly be needed as students analyze the scenario and its cultural

context. At this step of the process, teachers should be prepared to facilitate ELLs in the use of the various types of reference works, websites, and databases that are required. Specific mini-lessons in the use of a particular information source may be designed by the teacher and presented as each group demonstrates a need for a particular data source.

Although PBL methods are accepting of ambiguous problems and solutions, individual or group work must be accomplished through a structured process if it is to be a successful, systematic experience. Structure within the freedom of PBL methods provides the platform or scaffolding for students to ask questions, experiment, make decisions concerning their own learning processes, and take risks with their solutions. Structuring the process also provides the necessary instructional base for upholding both content and language standards and helping students meet the goals and outcomes of the case (Delisle, 1997). Without structure for the learning process of PBL, assessment would be extremely difficult for the ELL student.

### **Assessment and Reflection with English Language Learners**

As with other types of instruction, authentic assessments are accepted as one way to assess problem-based learning. Assessing for multiple activities or outcomes based on engagement may also be part of problem-based specific assessment for ELLs. Since outcomes from cases can be so different, rubrics designed to assess both content and process, as in authentic assessment methods, may be the answer (Lambros, 2004; Savin-Baden, 2003). The formative/summative design of assessment may be applicable as well. Individual performance during group work, for example, may be assessed as formative, and the outcome of the PBL process—the proposed solution—as summative (Savin-Baden, 2004).

As expected in other areas of well-applied pedagogical assessment, problem-based learning may be assessed more authentically through the use of rubrics. This is not an absolute necessity, as individual teachers may want to use other assessment procedures to evaluate the various outputs related to individual cases. The authors have found rubrics beneficial for giving students feedback about how they contributed to the process as well as for assigning a grade for the outcome. One advantage of the use of rubrics is that they can be teacher-written from a general template and then customized to more critically assess the specific case and its final product or the process itself. A rubric such as the example below (see Figure 4) permits authentic assessment of both the problem-based process and its product and allows evaluation of performance both at the individual and group levels.

	Criterion	1 Unsatisfactory	2 Minimal	3 Above Average	4 Excellent
1	<b>Group work</b>	There is no evidence that the group worked together to produce the result.	Some, but not all the group, cooperated to produce the resulting product.	The group worked together and solved its own problems to produce the result.	The group worked together well and produced a product that they are all satisfied with.
2	<b>Final Product</b>	The product does not address the assignment.	The product partly addresses the assignment.	The product clearly meets the requirements of the assignment.	The product meets and exceeds the requirements of the assignment.
3	<b>PBL Process</b>	The group did not follow the PBL process as posted.	The group followed some, but not all, of the PBL steps as posted.	The group followed the PBL process as posted.	The group followed the PBL process and repeated the revision steps as needed to improve its product.
4	<b>Independent Work</b>	The group asked for frequent assistance.	The group asked for occasional assistance.	The group worked on its own with little assistance from the teacher.	The group did not require teacher assistance except for necessary permissions to seek outside information.
5	<b>Higher Order Thinking</b>	No evidence that higher-level thinking skills were used in creating the product.	Little evidence that higher-level thinking skills were used in creating the product.	Some evidence that higher-level thinking skills were used in creating the product.	Clear evidence that higher-level thinking skills were used in creating the product.
6	<b>Inquiry</b>	No evidence of supplementary resources.	Some evidence of supplementary resources.	Adequate selection and use of supplementary resources.	Original, creative selection and use of supplementary resources.

Figure 4. Assessment Rubric

Another type of assessment that is particularly applicable to use with ELLs needs to take place at the conclusion of the PBL case—student self-assessment or reflection (Faidley, Evensen, Salisbury-Glennon, Glenn, & Hmelo, 2000). As students reflect on their performance within the group, the research decisions they make, and other group or individual performances which led to the end solution, the ESL teacher/facilitator will give feedback that may ultimately lead to a student's greater success in the next academic experience. Self-assessment can follow several different models. A more informal type of self-assessment could take place during group discussion at the conclusion of the case as students self-disclose and get group feedback concerning their performances. Written self-assessments can be prompted by specific questions for ELLs to guide their written language production. And finally, students can be instructed to write their own self-assessment rubrics at the beginning of the PBL experience, either individually or as a group, that will later be used to reflect on their performances and the end products required by the case.

## Conclusion

To date, PBL has not been used routinely in language learning classrooms; however, the possibilities are limitless as problem-based learning methods represent an authentic learning approach which connects to the English language learner's experience, whether the learner is an immigrant, a

refugee, or a foreign language learner. Cases used in problem-based learning are life-based and finding case solutions requires the student to employ processes which compel the use of all the language arts, especially speaking, thinking, reading, and writing. As ELLs navigate the problem-based process, they grapple with critical reading, higher-order thinking, analysis, and information skills necessary to resolve the case scenarios. A teacher facilitator who is cognizant of both the PBL process and the points of support needed by ELLs can facilitate successful engagement in problem-based learning and effectively implement problem-based learning strategies in ESL settings.

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