

# Learning Together: Project-based Learning in the University Classroom

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## Introduction

The study was carried out over a period of four months, the first semester of the school year, with the cooperation of two small groups of university students. The students had signed up for one of two different courses. The first, with eleven students, one second year and ten first years, was a course entitled '*Senmon Kanren Eigo*' or 'English for Academic Purposes' an elective available to students from any of the school's three departments, the names of which, for the sake of brevity, shall be referred to here as Social Welfare, Psychology and Sociology. The second class was '*Jiyū Enshū*' or 'Free Seminar', a recently established course which aims to help students accustom themselves to university life and to develop both academic and interpersonal skills. This course too, was open to students from all departments.

One encouraging aspect of the make up of these classes was that they were both electives with no obligation on the part of the student to either attend regularly or to pass a stressful examination at the end of the course. Of course, failure to attend more than a certain percentage of classes or to produce project work would mean the student would not be able to get the two credits given for each of the courses, but this would not seriously affect the student's university career or prospects for graduation. In a nutshell, the students came because they wanted to be in the class and were interested in the possibilities offered to them.

This freedom from the shackles of performing under pressure for examinations or the fear of failing a course necessary for graduation or a professional qualification lent a relaxed atmosphere to the classroom and opened up a whole new world of possibilities for the teacher as well as the students. In addition to this, the Free Seminar course, which had been established that same year, was intended to be exactly what the name implies, 'free'. Only members of staff who wished to take part in these sessions taught the courses and were encouraged use the time to do anything they felt would be of benefit to

the students.

So this was the background to the course. The students were told that they could follow any line of research as long as it was connected, however distantly, with their major, Social Welfare, Psychology or Sociology. They were also told that they would be required to make a short 'progress report' in English at the beginning and the end of each class, a five to ten minute presentation in English at around half-term to introduce their work to the other students and to give in a final written 'project book' at the end of term. All of these activities were assessed and as much as possible of the course was conducted in English although not entirely.

Before going into any greater detail about the content of the courses this is probably a suitable point to explain what exactly PBL is, and how and why it originated. In this way it can be seen more clearly how the author adapted the method to suit the classes under discussion.

### **Project-based learning and its defining characteristics**

In its simplest form, PBL involves a group of learners taking on an issue that is important to them personally, developing a response, and presenting the results to a wider audience. PBL handbooks for teachers define PBL as a model that organizes learning around projects which are complex tasks based on challenging questions that involve students in design, problem solving, decision making, or investigative activities; gives students the opportunity to work relatively autonomously over extended periods of time, and culminates in realistic products or presentations (Jones, Rasmussen and Moffitt, 1997; Thomas, Mergendoller and Michaelson, 1999). Other features found in the relatively small body of research include authentic content, authentic assessment, teacher facilitation but not direction, explicit educational goals (Moursund, 1999), co-operative learning, reflection and incorporation of adult skills (Diehl, Grobe, Lopez, and Cabral, 1999).

In addition to these features, particular models of PBL add a number of other features. These definitions in a model termed "project based-instruction" include features concerned with the use of a "driving question", a community of inquiry and the use of cognitive (technology-based) tools (Krajic, Blumenfeld, Marx, and Soloway, 1994; Marx, Blumenfeld, Krajic, Blunk, Crawford, Kelly and Meyer, 1994). "Expeditionary Learning" adds features of comprehensive school improvement, community service and multi disciplinary themes (Expeditionary Learning Outward Bound, 1999a).

This diversity of defining features combined with the lack of a universally accepted model or theory of Project-based Learning has resulted in a great variety of PBL research and development activities. First, the number and variety of educational practices that have evolved under the title of PBL

makes it difficult to assess what is and what is not PBL and whether what the students are producing is a “real project”. Are there particular features that must be included or excluded for an instructional activity to be considered PBL? Questions such as how far the students’ efforts should be directed by the teacher, and if a course in which materials have been “pre-packaged” or in which student roles are scripted in advance should be considered an example of PBL abound and have not yet been unanimously answered. Second, differences between instances of PBL may be greater than their similarities making it difficult to construct generalizations across different PBL models about such questions as the effectiveness of PBL. Third, in contrast to the second point, there are strong similarities between models referred to as PBL and models which go under other names for example, “Intentional Learning” (Scardamalia and Bereiter, 1991), “Design Experiments” (Brown, 1992) and “Problem-based Learning” (Gallagher, Stepien and Rosenthal, 1992).

Another consideration that must be taken into account when trying to define the term Project-based Learning is that the name itself has only been in use in research for a relatively short period of time, about ten years, so that when looking for examples of learning models to assist us in defining PBL should our research include prior research on project focused, experiential education or active learning? The idea of giving children projects to do which incorporate going out on field trips, doing experiments in the laboratory, interviewing working professionals and so on is not a new one. In fact in many countries there is a long standing tradition of “doing projects” and the very idea of distinguishing PBL from other more didactic educational practices has its roots in the distinctions made between orthodox, traditional classroom instruction and “discovery learning” more than twenty years ago.

So, to sum up this question of how to define PBL, a review of the relevant research would suggest that the following five criteria: centrality, a driving question, constructive investigations, autonomy and realism, may provide an answer to the question, “What must a project have in order to be considered an instance of PBL?”.

Centrality refers to the idea that PBL projects are not simply attractive additions to the curriculum but that they *are* the curriculum. The project is *the* teaching strategy. Students come up against and learn the central concepts of the target subject via the project. This is in contrast to a project which is used adjacent to traditional teaching methods to illustrate or provide additional practice for material initially or subsequently taught by other means. It also means that projects which assist in the learning of materials which are outside the curriculum are not examples of PBL even though they may be enjoyable and effective in what they do.

PBL projects must have a “driving question” sometimes called a “project proposal” which focuses,

“drives” and directs the students towards the project’s goals and objectives. A good driving question makes the project intriguing, complex and problematic (Markham, Larmer and Ravitz, 2003). A good driving question cannot be easily answered without multiple activities and the combination of a variety of different types of information.

PBL projects involve students in a constructive investigation. The main activities of the project must involve students in the transformation and construction of knowledge that is to say, new information and new skills. If the central activities of the project are easy for the student to carry out, that is, they involve no challenging new information and can be carried out without the application of new skills or newly-acquired information it is not a PBL project. In this respect PBL reflects a Vygotskian perspective. Vygotsky, a Russian cognitive psychologist, theorized that learning occurs through social interaction that encourages individuals to deal with cognitive challenges that are slightly above their current levels of ability (Wertsch, 1985).

The projects are autonomous and student-driven to a significant extent. A project, the title and topic of which has been set by the teacher, is not a PBL project. Generally speaking they are not scripted or packaged and they do not have predetermined outcomes or predetermined paths. PBL projects incorporate a great deal more student autonomy, choice, unsupervised work time and responsibility than traditional teaching methods and traditional projects.

Projects are realistic and meaningful to the students, not ‘school-like’ exercises just for the sake of problem-solving itself. In the author’s opinion this authenticity is central to the concept of learning through PBL. Authenticity should be evident in the topic, the tasks, the roles that the students play, the context in which the work of the project is carried out, the people who work with the students on the project, the products that are produced, the audience for the products and the criteria by which the products or performances are judged. Gordon, (1998) makes the distinction between academic challenges, scenario challenges and real-life challenges.

### **A brief history of the concept**

For over one hundred years, educators such as John Dewey have reported on the benefits of experiential, hands on, student-directed learning. Most teachers, knowing the value of engaging, challenging projects for students have planned field trips, laboratory investigations and interdisciplinary activities that enrich and extend the curriculum. As mentioned above, “doing projects” is a long-standing tradition in American and European education.

The project method as we know it is usually assumed to be a product of the American progressive

education movement. It was described in detail and definitively delimited for the first time by William Heard Kilpatrick in his essay, "The Project Method" (1918). Kilpatrick believed that using literacy in meaningful contexts provided a means for building background knowledge and for achieving personal growth. Project methods were used by advocates of the progressive movement in education that stressed the need for child-centered education. John Dewey (1899), who thought that schools should reflect society, was a leader of this movement, which flourished in the late nineteenth to the mid twentieth century.

Progressivists believed that children learn best through experiences in which they have an interest and through activities that allow for individual differences. Teachers were advised to observe learners and their interests so they could tie what students wanted to know to what the classroom provided. Practical inquiry, everyday problem solving and meaning seeking as part of social interaction played a role in child-centered, progressive education as well.

Recently, however, historical research has been able to tell us when and where the term "project" was used in the past to denote an educational learning device. According to recent studies, the "project" as a method of institutionalized instruction is not a child of the above-mentioned progressive education movement in the United States at the end of the nineteenth century. Rather it grew out of the architectural and engineering education movement that began in Italy during the late sixteenth century (Knoll 1997). Knoll divides the long and somewhat convoluted history of the project method into five phases:

1590-1765 : The beginnings of project work at architectural schools in Europe.

1765-1880 : The project as a regular teaching method and its transplantation to America.

1880-1915 : Work on projects in manual training and in general public schools.

1915-1965 : Redefinition of the project method and its transplantation from America back to Europe.

1965-today : Rediscovery of the project idea and the third wave of its international dissemination.  
(Knoll, 1997)

### **Project-based learning today**

As we have seen, the roots of PBL lie in the above traditions but the emergence of a method of teaching and learning called Project-based Learning is the result of important developments over the past twenty-five years. Research in neuroscience and psychology has extended cognitive and behavioral

models of learning, that is, those which support traditional direct instruction, to show that knowledge, thinking, doing and the contexts for learning are inextricably entwined together. We now know that learning is partly a social activity and that it takes place within the context of culture, community and past experiences. Although, it is not possible to discuss these developments in any great detail in this paper, the author believes their importance justifies a brief mention here.

There are a number of areas of cognitive research which are often cited in support of the activities of PBL. These areas can be divided into research on motivation, expertise, contextual factors and technology. Research on motivation includes studies on students' goal orientation and on the effect of different classroom reward systems. In short, Ames (1992) proposes that students who possess a motivational orientation that focuses on learning and mastery of the subject matter are more likely to exhibit sustained engagement with schoolwork than students whose orientation is to merely perform satisfactorily or complete assigned work. Classroom reward systems that discourage public comparisons and favor task involvement over competitive goal structures tend to reduce ego threat on the part of students and encourage a focus on learning and mastery (Ames, 1984). Accordingly, PBL because of its emphasis on autonomy, collaborative learning, and assessments based on authentic performances is seen to maximize students' orientation toward learning and mastery.

Another area of research that has influenced PBL has been that on experts and novices. This research has shown the importance of metacognitive and self-regulatory capabilities on the part of experts and also the absence of planning and self-monitoring skills of inexperienced and young "novice" problem solvers (Bereiter and Scardamalia, 1993). Simulating the way experts approach and solve problems insures that the young novice problem solvers become proficient in the skill. This is what has led to the shifting of the major portion of instruction in schools from teacher-led "chalk and talk" with its teacher-directed, teacher-assigned work emphasizing comprehension to student-initiated, goal-driven independent learning models with an emphasis on knowledge building.

The influence of contextual factors has also had an important influence on the authenticity and autonomy elements of PBL. According to research on "situated cognition" learning is maximized if the context for learning resembles the real-life situation in which the material to be learned will be used. Conversely, learning is minimized if the context in which learning occurs is dissimilar to the context in which the learning will be used (Brown, Collins and Duguid, 1989). Research on contextual factors also recommends that since it is important for students to be able to apply the knowledge they have learned to solve problems and make decisions, instruction should be carried out in a problem-solving context. In this way, learning is more likely to be retained and applied (Boaler, 1998b; Bransford, Sherwood, Hasselbring, and Kinzer, 1990).

The last of the areas of cognitive research that needs to be considered is the application of technology to learning and instruction and its use as a “cognitive tool” and in particular to the incorporation of computer hard and software into PBL programs as extensions of and models for student capabilities.

“Using technology in project-based science make the environment more authentic to students, because the computer provides access to data and information, expands interaction and collaboration with others via networks, promotes laboratory investigation, and emulates tools experts use to produce artifacts.”

(Krajic et al., 1994, pp.488-489)

Now that we are securely oriented in the field of PBL in its modern connotations it will be useful to look at what this implies for its adaptability to teaching English or indeed other foreign languages and in particular at the university level.

### **PBL and the second or foreign language classroom**

Every aspect of PBL feeds into what Krashen (1985) has called the language acquisition device, the ability of the brain to acquire a second language (L2) through meaningful input and expression. Amongst a whole range of skills and subject matter, skill gains in L2 acquisition are perhaps the easiest to see. Proficiency can be expected to increase as the target language is used to investigate and discuss, to gain content knowledge by reading and talking with others and to share ideas through writing. Engagement and involvement of this sort with another language is likely to result in greater “pragmatic competence,” (Krashen) the ability to understand that language varies across contexts and to use language and literacy in socially appropriate ways.

PBL has been recommended as an effective method for the teaching of L2s or FLs for the past twenty years or so. (Freidbooth, 1982, 1986, 2002; Haines, 1989; Ho, 2003; Papandreou, 1994; Stoller, 1997. Most of the support for PBL during these two decades comes from the anecdotal reports of teachers working in the field with young, adolescent or adult learners as well as those classrooms for vocational, academic and specific language aims (Allen, 2004; Coleman, 1992; Gardner, 1995).

So, despite a small amount of evidence of dissatisfaction on the part of some students, and the relatively sparse number of empirical studies on the merits and efficacy of PBL, (Beckett, 2002; Beckett and Slater, 2005) the reports of L2 and FL students who have participated in PBL and completed projects with increased language skills, content learning, real-life skills and sustained motivation attest

to the successes attributed to PBL.

A number of the above studies had been carried out with university age and adult students, many of whom had a very real and immediate reason to learn as much English as possible in as short a time as possible. This is especially evident in work with Southeast Asian refugees in California and Green's (1998) with Spanish-speaking immigrant mothers in Texas. It self evident that the above mentioned need for motivation would not be in short supply in such groups. Would it be possible to motivate a group of students such as the author normally had to deal with? Let us now look at this issue.

### **The students and the setting.**

As was mentioned in the introduction to this paper, the students involved in this experiment were two small groups of first and second year university students who were not English majors, in fact it was assumed that their level of English would be very low, perhaps even below that of Grade III of the Japanese EIKEN Test of Practical English Proficiency, certainly not higher than Grade Pre-II. Even after examining all of the above information on PLB there were still a number of worrying questions. The question which loomed largest over this project was whether the students would have enough English to sustain them when faced with a three-month long project and that project alone.

Two years before, the author had carried out some initial work on PBL with similar groups of students and it had been very successful. However, the project work was not, as explained above, "central to the curriculum" but quite secondary to it. Details of that initial work can be found in Williams, (2008). Most of the work was carried out after class with the occasional lesson used for discussion, group work and presentations. The rest of the class time probably, more than three-quarters, was devoted to the traditional format of the teacher teaching and the students listening. Getting through regular class work including tests and homework in addition to the project work kept everybody extremely busy for the whole year.

Another concern was the quality and quantity of English. These classes were taking place in a completely non-English speaking environment. This lack of contact with the L2 created a dilemma in that in a traditional class, students would be forced to use a certain amount of L2 even if they were simply reading and translating or listening to tapes and working through a textbook. In our classes, however, they would be free to leave the classroom or even the campus if necessary so that there would be no control over their use of L2. However, in the previous year's class, it had become increasingly obvious that the students were more engaged and motivated when they were doing their project work than at any other time and that the work they produced was far better both in content and linguistic elements.



Because of this the author felt justified in devoting one hundred per cent of the class time to PBL although not entirely sure if this would be enough to keep them occupied the whole time.

Another issue that had to be faced was how much autonomy the students could be reasonably given, especially given the very low level of English that we had to work with. In a very practical sense, the author would have tried to dissuade a student from doing anything that would have involved the writing out of a great deal of abstract discussion in English. Fortunately this problem did not arise.

### **The lessons : centrality and the driving question**

In both classes the first lessons were devoted to explanations and organizing the students into groups. With both groups it was pointed out that although they would not be forced to work together, or to do the same topic, working in cooperation with other people in the class was felt to be beneficial in a number of ways and was to be encouraged if possible. They were also assured that their teacher would be available to mediate if any problems did occur.

The eleven students in the English for Academic Purposes (EAP) class immediately set to and divided themselves up into four groups. It turned out that these were groups of friends who had chosen to take the class together so that they were only too pleased to work together. In the other class, the Free Seminar (FS) class, the students were first year students that had never met before. Initially they were somewhat confused but by the end of the lesson they had decided that as the class was so small, they would work as one group. Both classes were given Project Proposal Forms (Williams 2008) and were instructed to get together and fill them in by the following lesson. In this first lesson we also discussed the “rules of engagement” with English.

As mentioned above, giving the students enough opportunities to use English and seeing that they did not immediately resort to Japanese was an important concern. It was explained that at the start of each lesson they would have to give a short oral report in English on what they had achieved during the preceding week and what they intended to work on during the lesson that day. Then they would be permitted to do as they pleased as long as they were working on their projects. Twenty minutes before the end of the class they would be required to come back if they had left the room and give another report on what they had been doing and what they were planning to do the following week.

The content of the projects was also discussed. The need for a “driving question” was explained and also the use of the library, multimedia, and human resources such as other teachers and people in the community. Anticipating that they might be “stuck” for ideas, (not, as it turned out) they were encouraged to look at the project books produced by the previous years’ students.

The following week the EAP class arrived with their PPFs filled in and all decisions made. The FS class had had problems, it seemed, deciding what their topic should be, but in a spurt of originality they decided to tackle poverty issues. It seems they had all wanted to do something different only to find that their individual interests, “Homelessness”, “The Working Poor”, “Victims of Domestic Violence”, and “The Graying of Japan” could be linked by a theme of “poverty” and so they each decided to be responsible for a “chapter” which they planned to link together at the end.

Both classes chose topics which were relevant to the courses they were following. They were not coerced into doing so and seemed to be genuinely interested in the questions they choose to investigate.

### **Constructive investigations : new information, new skills.**

It has been mentioned above that in previous years the author had been a little nervous about devoting the entire class time to PBL but that the interest shown by the students led her to believe that it would not be a reckless waste of their time or in any way a “dumbing down” of the course. It would, however, be untrue to say that there were no qualms about basing the curriculum entirely on PBL and the greatest worry, whatever course is planned, is whether the students will benefit from it. One of the points considered earlier in defining PBL was importance of its being central to the curriculum and whether the student was involved with constructive investigations that is, learning new skills and using new information. Observations of class activities, assessment of the products and reading the responses obtained to questionnaires at the end of the course showed that a reasonable level of success had been achieved on all points.

It must be pointed out again that the students’ level of English was very low. None of them had attempted to take the TOEIC test but if they had, their scores would very likely be under 350. In the beginning they found it very difficult even to explain what they had done the previous week, and what they were planning to do that day. They soon learnt the basic patterns they needed to do this and had no further problems. It would have been preferable for them to have used much more English in their investigations, but in such a completely L1 environment the heavy use of Japanese was, to a certain extent, unavoidable. They did a great deal of translating. Even so, there was a great deal more English used in the classroom than in regular textbook – based classes.

### **The questionnaires: the students’ opinions**

The questionnaires were extremely simple. The students were asked one basic question, “What did

you learn from this seminar?”, and were given space to write comments under the headings, “English”, “Practical Skills”, “Academic Knowledge”, and “Personal, Interpersonal Skills”. Responses showed that they felt they had learnt a great deal of vocabulary, both basic and specialized. Several people commented that it was the first time they had attempted to write sentences in English. In addition the students all felt they had learnt a great deal about their special topics and had had to read several books (in Japanese) that they might not have read otherwise.

When it came to practical skills, there was a unanimous and surprising response showing that almost all of the students had had no idea how to use the library effectively and were not able to conduct a search using the computers. Every student commented on this and that they were pleased to have learned how to do so. The librarians were astonished and set to and gave them special instruction. Other skills that they found to be necessary and subsequently learnt, were basic computer word processing skills such as Microsoft WORD and in certain cases the use of special programs such as EXCEL. About half of the students said that they learnt how to look up things on the internet (in English) but some had not known previously how to do so even in Japanese. Judging from their responses a surprising number of the students, more than ninety per cent, had almost no computer skills and were not able to use the library except for taking books directly off the shelves. Even that proved difficult as they did not know how to find the books they needed and were too shy to ask. This brings us to final criteria for the effective use of PBL, working with others towards a mutual goal.

It is the author’s opinion that, on the whole, Japanese students are good at working in groups and generally do not object to doing so. Over the past four or five years since the start of this research there have only been two students who could not or would not work in cooperation with their peers. This is out of a total of perhaps 150 students in all. There were no problems at all with the classes referred to here. Nobody was so lazy that they quarreled and everyone attended regularly and performed the tasks agreed upon in their groups. A large number said they enjoyed working together especially when they could do so across different school years and had a chance to meet people with whom they would not normally come into contact. Others said the classes provided a stimulus to make contacts with people outside the group such as the librarians or lecturers they went to for information. Several went to the city offices to get information and also contacted other organizations such as women’s centres and those connected with the visually impaired and seeing-eye dogs.

## Conclusions

Perhaps the greatest problem encountered when attempting to conduct a class of this type is the

almost total lack of the need to speak English in the immediate environment. If the class were to be conducted in an English speaking environment and the students were studying English abroad they would be forced to use the L2 in order to achieve their goals. However, in a completely L1 situation using L2 to complete a task is at best somewhat frustrating. It is also very tempting for the teacher to resort to using L1 to explain difficult or abstract concepts. It is quicker and more efficient especially with lower-level students but there is a tendency for the use of L1 to proliferate in relation to the lack of ability of the students. In this situation we decided that if the concept was not crucial to the lesson the use of Japanese would be limited to just a few words.

There is also the problem of the lack of natural contact with L2 speakers. Some students attempted to use U. S. and U. K. "Yahoo!" sites with some success and occasionally went to other native speakers on the teaching staff for help.

Considering these issues, the importance of designing a course which minimizes the use of L1 and encourages the use of L2 in as many aspects as possible became evident in a number of ways. It may be possible to create an environment which maximizes the use of English, perhaps with the help of IT technology. It has become clear that this may be the way to overcome the biggest hurdle in the use of PBL in English teaching in the Japanese university environment.

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## Learning Together: Project-based Learning in the University Classroom

Susan Williams

This study attempts to ascertain whether employing a project-based learning approach to language instruction in two university English courses fosters the acquisition of both foreign language and other peripheral academic skills such as carrying out library searches, using multimedia technology or conducting interviews. It also includes a history and explanation of the nature of Project-based Learning to orient the reader to the field. The study was conducted over one semester and was based on the work of students who had registered for two different elective English courses. The students involved were not English majors and had had no previous experience of this type of language instruction. It was expected that, in addition to learning a great deal of English connected to their special interests, the students would also acquire incidental skills necessary to conduct research, give presentations and produce written work. The author's course diaries and students' responses to a questionnaire bore out these expectations.