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New England Journal of
Entrepreneurship

Volume 11 | Number 1

Article 6


2008

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Recommended Citation

Bell, Joseph R. (2008) "Utilization of Problem-Based Learning in an Entrepreneurship Business Planning Course," *New England Journal of Entrepreneurship*: Vol. 11 : No. 1 , Article 6.

Available at: <https://digitalcommons.sacredheart.edu/neje/vol11/iss1/6>

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Utilization of Problem-Based Learning in an Entrepreneurship Business Planning Course

Cover Page Footnote

Associate Editor for the Entrepreneurship Education section of this issue is Sean M. Hackett.

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Joseph R. Bell

This article demonstrates the implementation and efficacy of Problem-Based Learning (PBL) in an undergraduate entrepreneurship business planning course. Throughout the course, ill-structured problems arise that require independent thinking and ongoing problem solving with students taking responsibility for their own learning. The course incorporates the latest classroom technology and how that technology is utilized to deliver self-directed learning. The PBL methodology is then evaluated in light of anonymous student survey results. The objective is to create a framework for future assessment in evaluating PBL in the business planning course.

According to Solomon and Fernald (1991) and Hisrich and Peters (2002), traditional entrepreneurship education focuses on formulating a business plan, understanding the entrepreneurial decision-making process, knowing how to acquire funds from venture capitalists, angel financing and externalized financing possibilities, managing, and growing the enterprise. Entrepreneurship education also focuses on educating “about” entrepreneurship and enterprise where students would be equipped with the technical knowledge on how to grow and manage small businesses. But knowing the principles and practices does not mean that the students would become successful businesspersons (Solomon and Fernald 1991). They need to be equipped with a set of attributes, skills, and behaviors to enhance their entrepreneurial capabilities. This means introducing courses specifically designed to develop the awareness and characteristics of the entrepreneur namely: planning, problem solving, communication, creativity, critical thinking and assessment, leadership, negotiation, social networking, teamwork, and time management (Brockhaus 2001; Rae 1997).

Traditional business curriculum is designed based on the functional control-oriented areas such as marketing, finance, accounting, and so on (Meyer 2001). But as Chia (1996) has suggested, “. . . a radical change in intellectual and educational priorities is needed.” Or as Rae (1997) suggested, “. . . the skills traditionally taught in business schools are essential but not sufficient to make a successful entrepreneur.” And why Gibb (1987) has argued that to develop entrepreneurs or more enterprising individuals, the focus of the education system needs to be shifted away from the traditional to what he terms “the Entrepreneurial.” Thus, the challenge is to develop a system of learning (and assessment) that complements the

traditional and develops in its students the skills, attributes and behaviors characteristic of the enterprising or entrepreneurial individual (Gibb 1987).

Wee’s (2004) study found the following:

Assuming that student entrepreneurs are active, experiential and reflective learners who seek independence, reduced bureaucracy and mentoring support, [the author] proposes that the traditional lecture-tutorial entrepreneurship education be transformed to offer authentic entrepreneurial learning that prepares them for their entrepreneurship careers in the terms of competencies and confidence (p. 690).

Problem-based learning is considered a viable alternative because it promotes learning from the process of working toward the understanding or resolution of an emphatic problem in its context (Barrows 2000).

A 1997 National Survey of Entrepreneurial Education, by Winslow, Solomon, and Tarabishy indicated that 26 percent (the number one response) of both two- and four-year colleges and universities preferred the test format as the evaluation pedagogy for entrepreneurship and small business education. The second most relied upon measure was the business plan (20%). They also concluded that experiential teaching and evaluation pedagogies are increasingly being employed. There is a need to abandon more traditional forms of teaching and evaluation methods for more unique, unconventional ones where self-directed learning methods may help answer the growing needs of students. There is also a need for technology to be utilized in entrepreneurship and small business courses.

What Is Problem-Based Learning

While the content and structure of PBL courses may differ, the general goals and learning objectives tend to be similar. PBL begins with the assumption that learning is an active, integrated, and constructive process influenced by social and contextual factors (Barrows 1996; Gijsselaers 1996). In their review of the literature, Wilkerson and Gijsselaers (1996) claimed that PBL is characterized by a student-centered approach, teachers as “facilitators rather than disseminators,” and open-ended problems (also referred to as “ill-structured”) “serve as the initial stimulus and framework for learning” (p. 26–29). Instructors also hope to develop students’ intrinsic interest in the subject matter, emphasize learning as opposed

to recall, promote groupwork, and help students become self-directed learners. Learning is student-centered because the students are given the freedom to study those topics that interest them the most and to determine how they want to study them. Students should identify their learning needs, help plan classes, lead class discussions, and assess their own work and their classmates' work (Gallagher 1997; Reynolds 1997). "Students develop a deeper awareness and ownership of important concepts in the course by working on activities, a basic tenet of the constructive approach to learning" (Seltzer et al. 1996, p. 86).

In addition to emphasizing learning by doing, PBL requires students to be metacognitively aware (Gijsselaers 1996). That is, students must learn to be conscious of what information they already know about the problem, what information they need to know to solve the problem, and the strategies to use to solve the problem. Being able to articulate such thoughts helps students become more effective problem-solvers and self-directed learners. Initially, however, many students are not capable of this sort of thinking on their own. For this reason, the instructor must become a tutor who models inquiry strategies, guides exploration, and helps students clarify and pursue their research questions (Arámbula-Greenfield 1996). The instructor plays a critical role in helping students become self-directed learners and must create a classroom environment in which students "receive systematic instruction in conceptual, strategic, and reflective reasoning in the context of a discipline that will ultimately make them more successful in later investigations" (Gallagher 1997, p. 337).

Groupwork is also an essential aspect of PBL for several reasons. First, groupwork helps develop learning communities in which students feel comfortable developing new ideas and raising questions about the material (Allen, Duch, and Groh 1996). In addition, groupwork enhances communication skills and students' ability to manage group dynamics. Finally, groupwork is interesting and motivating for students because they become actively involved in the work and are held accountable for their actions by group members (Cohen 1994). For these reasons, groupwork can enhance student achievement.

Rowley and Sherman, in their book *Academic Planning* (2004), illustrated that PBL included the following characteristics:

- Learning through group meetings.
- Being "learner-oriented" by implying that learners determine what is to be learned and what is to be done to accomplish this learning.
- Students determine how to accomplish/complete the various tasks assigned.
- Students determine what books to read and what literature and resources to consult for task completion.

- Learning occurs as the task is being completed.

Rowley and Sherman (2004) went on to state, "The advantages for learners include improved ability to work in groups, developing applied research skills, taking responsibility for the learning process and developing ownership of the knowledge and skills they generate" (p.163). And finally, they concluded, "PBL is an educational philosophy and methodology in which the course instructor, often a person called a tutor, creates a learning environment where a real world scenario drives learning" (p. 162).

Connecting PBL and Entrepreneurship

Chaharbaghi and Cox (1995) pointed out that several of their students recognized that, "PBL has great potential for those courses where the intention is to integrate a number of disciplines and this holds true particularly for management and engineering programmes" (p. 255).

Sexton and Upton (1987) state, "Entrepreneurship students can be depicted as independent individuals who dislike restraint, restriction and the routine. They are capable of original thought, especially under conditions of ambiguity and uncertainty" (p.38). These conclusions led Sexton and Upton to propose that [entrepreneurship] courses should be relatively unstructured and "pose problems which require novel solutions under conditions of ambiguity and risk" (p. 38).

Wee and Kek (2002) concluded that, "The PBL curriculum is a compendium of critical entrepreneurial incidences that the students need to manage." The acquisition of the critical entrepreneurial knowledge and relevant skills through the PBL entrepreneurship education should prepare the students to become effective entrepreneurs (Wee 2004).

The PBL Course Structure: Student-Centered

"A Business Plan is a document that spells out a company's expected course of action for a specified period, usually including a detailed listing and analysis of risks and uncertainties. [It] should examine the proposed products, the market, the industry, the management policies, the marketing policies, production needs and financial needs. Frequently, it is used as a prospectus for potential investors and lenders" (AcceleratorOnline).

A business planning course will usually require the student, or more frequently a small team of three to four students, to research, collect, collate, and prioritize data and deliver a succinct and compelling document supporting their business endeavor. The course culminates in a 15- to 20-minute oral presentation covering the business and the business plan. San Tan and Ng (2006) observed that end-of-course examinations do not figure prominently in the entrepreneurship programs they reviewed. In its place, all the programs place considerable emphasis on the development of business plans. The preparation of the business plan by student-teams

based on a selected venture leading up to the presentation of the completed plan to a panel comprising faculty staff, venture capitalists, and/or entrepreneurs, is doubly positioned as an assessment method as well as another form of “learning by doing” (San Tan and Ng 2006).

Fifty-seven percent of Inc. 500 CEOs got their original business idea from within the industry they worked (Stuart 2002). Whereas, in a traditional-age classroom, experience tends to focus on restaurants, retail, and a safe way home from overenjoyment on a Friday evening. The idea-generation focus is on “novel” ideas with growth potential and possible venture sale-ability (“harvest”) at some point in the future. They are not receiving knowledge but are required to generate independent ideas on which to develop a business plan. Independent thought, ill-structured problems, and limited experiences to draw from make this a very challenging experience for the students.

Traditionally, most students were told by their instructor what they need to know in more conventional lecture format classes. Gibbons et al. (1994) described a paradigm shift that occurs when a teacher decides to move from the role of “sage on the stage” to that of “guide on the side.” In a PBL business planning course, the students determine what they want to work on throughout the semester. More pressure is introduced when they are told, “You will be marrying this idea for the entire semester so you better be passionate about it.”

The day-to-day structure of a PBL course is quite different from the structure of traditional lecture courses. Rangachari (1996) suggests that the first few class meetings in a PBL course include brainstorming sessions in which issues central to the course are identified. During the first two weeks of class there is significant interaction between the instructor and the student-teams. Again, students are required to develop a novel idea upon which to create a business plan. Magazines, catalogs, videos and a “pain” exercise¹ are used to stimulate thought; enticing students to explore novel ideas that are of interest to them.

Groupwork and Ill-Structured Problems

PBL enhances student learning by relying on students working in groups, learning from one another and sharing information and different perspectives (Gijsselaers 1996).

Near the end of the second week, student-teams are created. They can be formed by common interest, randomly, by complementary backgrounds, or by outside of class schedule availability.

Once each group has selected their idea, the class format takes an interesting turn. For example, the students are provided an example of a “WOW” statement. Basically, it is a very short and compelling depiction of a company, usually limited to two to three sentences. The students are really not told much beyond the example. And from classroom observa-

tions, what inevitably happens is that the students fail to assess the example, they go on to create their own “excitement statement” and in the process fail to recognize specific information that makes for a quality WOW statement. Is this an example of letting them fall on their face? No. It is setting the tone for the remainder of the semester. They will be required to think on their own, depend on their group members, solve problems, and ask good questions of their tutor. This represents an early and rather large step, in their learning paradigm shift.

Allen, Duch, and Groh (1996), suggested that problems be introduced with mini-lectures that provide some context for the problem and identify areas of potential difficulty. This approach is adopted in the business planning course where, the first 10 to 15 minutes of a class are devoted to a particular section of the business plan. A rectangular shape (1 or more) is drawn on the board to represent the number of sheets of paper to be handed in for each assignment. In an exchange between the instructor and students, the section of the business plan is discussed along with the topical areas (“content topics”) that might be applicable in each section. For example, in the Marketing section television ads, brochures and tradeshow, to mention a few, might be discussed. Content topics are identified on the board next to the corresponding rectangles, but it is up to the students to determine how applicable a particular topic might be for inclusion in their plan, the depth to which it might be covered, and any additional information that should be included. Strict page limits are enforced, both for too little information and running over the established page limit. Page limits are critical for two purposes. First, the student learns to take large amounts of data, evaluate its significance, and then clearly and succinctly communicate their message. Second, it follows a consistent pattern of delivery, 15 to 20 pages is acceptable in the investment community (www.growthink.com/businessplan/The_Ideal_Length_of_Your_Business_Plan.html). Throughout each class the instructor must ensure that all students are involved in the problem-solving process and must familiarize students with the resources needed (e.g., library references, databases) to solve the problems, as well as identify common difficulties or misconceptions (Arámbula-Greenfield 1996; Seltzer et al. 1996).

Students then begin to analyze, investigate, and make determinations as to what is appropriate for inclusion in their business plan. The student-team must be able to reduce a vast array of data to a succinct document that is particularly compelling in regard to both the establishment of that business and the attractiveness to the investor.

The above scenario presents what might be referred to as “ill-structured problems” (Stanford University 2001; adapted

from Allen, Duch, and Groh 1996; Gallagher 1997). In general, ill-structured problems:

- require more information for understanding the problem than is initially available,
- contain multiple solution paths,
- change as new information is obtained,
- prevent students from knowing that they have made the “right” decision,
- generate interest and controversy and cause the learner to ask questions,
- are open-ended and complex enough to require collaboration and thinking beyond recall, and
- contain content that is authentic to the discipline.

Students have the ability to take multiple paths (not necessarily just one solution) to resolve the issues and there may also well be multiple outcome options. For example, one may want the greatest profit while one is willing to settle for less profit but greater social outcomes.

Specifically, in addressing these ill-structured problems, or here, completing the components of the business plan, require that throughout the course the students research and collect vast amounts of data to be reviewed and evaluated for their pertinence. The students’ subjective selection and application of that data may take the business plan in any number of varied directions. This process is further complicated because the data set affecting the business is constantly in the state of flux as more information becomes available from the students’ ongoing research, and the fact that the world economy is a moving target. Determining the “right” decision may not only be driven by market conditions, but may also be affected by personal preference, or other factors. The ongoing standard is: “If you were actually starting this venture, what information would you want and to what depth of understanding the team must accomplish?” The students become very inquisitive in this environment where they ask questions of not only the instructor but also turn to one another, other teams, or additional outside resources.

The Instructor as a Member of the Team: “Advisor”

Deviating from the instruction-led approach where the focus is on the transmission of knowledge from the teacher to the students, PBL encourages students to engage their prior knowledge and any learning situation as a base to connect and construct a new knowledge structure. Learning starts with the facilitator presenting an authentic problem to a small group of students at the outset (Barrows 2000; Wee and Kek 2002). Problem-based learning means learning is student-centered with teachers acting primarily in the role of facilitators (Wee 2004; Barrows 1996).

Much as a business would seek out an advisor, the instructor becomes an ad hoc member of each student-team. The

instructor as advisor frequently responds to questions framed as, “What do you think about this?” When the instructor has the ability to address specific questions individually that arise from a particular student-team, numerous minor errors and omissions can be avoided, while at the same time keeping the team focused on the most important issues facing that particular venture.

What if you as the instructor could step back, act more as a facilitator and allow each individual group to specifically further their project throughout the class period (Stinson and Milner 1996)? This shift in instruction requires the faculty member to move from a structured lecture format to a more free-flowing, at times disorderly classroom environment. Most traditional curricula are designed around systems of compliance and control, which tend to stifle the creative and entrepreneurial instincts of students (Clouse and Goodin 2002).

Some examples of a free-flowing classroom might include seeing students reading a newspaper or even talking on a cell phone. Students are encouraged to embrace this contemporary learning experience using up-to-date and relevant resources in real time, for example using their cell phone to contact a commercial realtor to get real-time pricing on leases. Educationally sound, ill-structured problems help students learn a set of important concepts, ideas, and techniques because they provoke group discussion and give students experience solving problems encountered by experts in the field (Gallagher 1997). Students recognize these problems as professionally relevant. Therefore, students are more likely to be motivated to work on them (as opposed to discrete problem sets or textbook exercises), not only because they realize that the knowledge they gain by thinking about these problems will be useful in the future, but also because students are typically given significant opportunities for creativity and flexibility in solving PBL problems (Stanford University 2001). PBL has also been found to have some rather dramatic effects on faculty, including how the faculty member designs problems, manages groups, and engages the classroom. (Major 2006)

As advisor, the instructor becomes challenged by the specificity and depth of the student inquiries. At times the instructor can respond to student team inquiries and at other times can refer the student team to resolve the issue themselves. Students take a much larger role in their learning experience. The instructor as advisor would seem to be supported by Wilkerson’s (1996) list of key instructor behaviors when using the PBL approach, including: (1) balancing student direction with assistance; (2) contributing knowledge and expertise; (3) creating a pleasant learning environment; and (4) stimulating critical evaluation of ideas.

Performance Assessment

Incremental feedback is provided to each team as each business plan section (see Figure 1), for example the Marketing

Plan, is submitted, graded, and returned for updating and ultimate inclusion in the final presentation. The students are told the first day of class that grading occurs on two levels: first, how well does each student-team address the necessary components for their individual business plan; and second, how does their effort compare to the other team submissions in the class.

The final grade for the course is derived entirely from the student-team project and the culminating presentation. The actual grade on the written portion of the assignment results from the submission of 13 pages of work plus the ending financials. The grade for members within the team can be differentiated by the other members of the team (Gallagher 1997). For example, if a participant of a particular team demonstrates an exceptional effort as recognized by the other members of that team, that individual could be awarded a higher grade than the rest of that team. The grading process can also work against an underperforming member of the team. Each member of the team has 100 points to allocate to the other members of team. The numeric grade should be accompanied by a qualitative assessment justifying the point allocation. Peer review and evaluation gives the student-team a feeling of control over the behavior of team members, and in turn, can be motivational for underperforming team members (Allen, Duch and Groh 1996).

At the end of the semester, the student teams present their plan to a community-based panel of experts in the field of

ASSIGNMENT	Week DUE	Max. Pages	Points
Concept/Patent Search	3	1	25
WOW Statement	3	3 sentences	25
Company/Product Description	4	1	25
Industry Analysis	5	2	50
Market Research/ Target Market/ Competitor Analysis	6	3	50
Marketing Plan and Pricing Strategy	7	2	25
Technology Application	8	1	20
Operations Plan	9	2	25
Strategy/Risk	10	1	25
Financials	12	4+	100
Executive Summary	13	1	25
Presentation	14, 15		100
		Total 17+	620

Figure 1. Business Plan Content Topics

business startup, funding, and other areas (San Tan and Ng 2006). At the conclusion of the presentation, a question and answer opportunity takes place with participation from both the panel and other students. The experience for the presenting team is real because input from a nonpartisan panel of experts assists the instructor in determining the final presentation grade. The panel generally consists of four, always including one or more Angel Investors and/or Venture Capitalists, and the remainder of the panel comprised of business professionals ranging from businessowners to consultants to SBDC staffers. The presentation mirrors what any entrepreneur might encounter in the pursuit of external funding.

High-tech Classroom

The tipping point for PBL adaptation in this entrepreneurship business planning course was the adoption of a computerized “group room.” Sungur, Tekkaya, and Geban (2006) recommend that classrooms need to be designed to support effective group interaction and access to resources such as the Internet. The group room fosters isolation and clustering of each group at team workstations. Collectively, nine groups, comprised each of four group members, independently and simultaneously create nine unique student-team-based business plans in the same classroom. Each workstation has a single computer, keyboard, and two screens, viewable by all team members. The projection equipment allows the instructor to highlight a student-team’s work-product and share it for instruction purposes with the entire class. A master computer was also available to the instructor, enabling the instructor to see what the students are doing in real time.

With each student-team isolated at a devoted workstation, a very focused work environment is promoted. The tables are configured so that team members are angled to actually face each other, rather than sit next to each other in fixed rows and facing forward as in most classrooms. In their study of 61 10th-grade students, Sungur, Tekkaya, and Geban (2006) found that working cooperatively significantly contributed to their learning. Sungur and Tekkaya (2006) also found that 80 percent in the experimental group and only 38.7 percent within the control group set aside time to discuss course materials with other members of their group. They concluded that PBL appears to improve experimental group students’ use of various learning strategies including intrinsic goal orientation and task value.

Here, teams carry on conversations, evolve a leadership structure for the business, and actually use the unique classroom setting to establish a “team bond.” Sungur and Tekkaya (2006) found that PBL students tend to collaborate with their peers and appreciate the importance of cooperation. They went on to refer to discussions and interaction within the

group as activities among “friends” (p. 315). The instructor has an expectation that the work ethic, behavior patterns, and team interaction established within the classroom will carry on to the frequent external, or out-of-class, group meetings. The observed dynamics are more professional, focused, and team-oriented. This is crucial for the necessary collaborative PBL experience.

In this setting, all teams have equal access to the instructor. Again, as questions arise, the instructor might address the individual student-team, engage the entire class, or suggest that the students need to solve the issue without instructor input. The instructor must draw a line between assisting in the development of the business plan versus the resolution of issues that need to be decided by the management of the business (i.e., the student-team). Much greater team-specific guidance is provided by the instructor. Because the instructor can provide team-specific advice, rather than generalities used in lecture format, the teams have a greater “focused-depth” to their project.

At times, students not only benefit from the learning experience of their fellow team members, but also realize the value of the shared classroom experience other teams are going through in the development of their business plans. Student-teams also begin to understand how the nature of the business might require certain sections of the business plan be addressed differently. What evolves are disinterested teams that will submit direct input for the betterment of other teams’ business plans, in spite of the competitive nature of the grading (as discussed earlier).

Outcomes

Key measures for the success of any quality delivered course include the student learning perspective and external, or third-party, validation. In using PBL in the classroom, the anticipated student experience should be more real than provided in a traditional class lecture setting. Some University of Northern Colorado (“UNC”) student comments between 2002 and 2005 included, “. . . application to real life was the greatest thing from this class, more so than any other business class.” This comment demonstrates (1) the student acceptance of the PBL format, and (2) that the material has greater relevance to the user. Another student, referring to the best aspects of the course wrote, “. . . the structure. . . . Allowing students to learn from their own mistakes and not a lesson planned out for them.” Again, such a comment validates the self-directed learning model. In support of the qualitative UNC student comments, Bonds and Paoletta (2006) in their study quoted students reflecting on how challenging the course was and how much the learning experience differed from other lecture-based courses.

The students also observed, “. . . made me think critically about the subject” and “It was hands-on and made me think

every day.” As discussed earlier, PBL requires significant participation to the point of ongoing weekly involvement in the course rather than just as exams approach. When students were asked, “What are the greatest strengths of this course?” comments like “critical thinking and required application of knowledge” directly relate to characteristics and outcomes associated with a PBL-formatted course. By their own observations the desired outcomes for the course are being validated. Another student commented on randomly assigned group members by saying, “The assigned group work made people think outside their comfort zone.”

In a self-validation comment, one student noted, “I ended up with great respect for this professor,” while another said, “Probably the most challenging class I have ever taken.” These comments should serve as encouragement for traditional lecture-based instructors to explore alternative teaching methods, including PBL.

The University of Northern Colorado classroom survey results seemed to be strongly supported by the survey results published by Wee (2004), where 85.5 percent of respondents “strongly agree/agree” that “PBL focuses on real-time, real client/industry problems.” And, 79 percent of student respondents “strongly agree/agree” that “PBL allows me to learn at my own time, style, and pace,” while 77.8 percent of student respondents “strongly agree/agree” that “PBL’s small group structure allows both tutor and students to work together in the learning process.” The survey covered 65 final-year students at Temasek Polytechnic, Singapore 2000–2001. San Tan and Ng (2006) utilizing a PBL classroom format observed that the students “. . . generally demonstrated a better understanding of what it takes to be an entrepreneur . . . were able to assess opportunities more critically, understood the various factors that might impact entrepreneurial success, and showed more caution when proposing solutions” (p. 425).

An additional validation for PBL came during a 2006 business plan competition. The Donald W. Reynolds Governor’s Cup graduate and undergraduate business plan competition has one of the largest cash prize pools in America. Since the inception of the award, 832 students representing 19 Arkansas colleges and universities have participated in the competition. During the first six years of the competition, \$581,000 has been awarded to student-teams and their faculty advisors (Arkansas Capital Corporation).

In 2006, two student groups from a PBL business planning course at the University of Arkansas at Little Rock (one graduate plan and one undergraduate plan) submitted plans to a competition (see Table 1). Sixty-one plans were submitted by 14 different institutions. Both plans submitted from the UALR PBL course were selected (100%), and both were also accepted in a separate portion of the competition highlighting innovation.

Table 1. 2006 Donald W. Reynolds Governor's Cup

Schools participating	14	
Faculty participating	24	
	Graduate Plans	Undergraduate Plans
Total plans submitted	10	51
Plans accepted	6	12
Overall percentage accepted	60%	~23%
Schools represented	3	4
UALR PBL accepted	1	1
UALR PBL percentage	~16%	~8%
Innovation category	4	3
UALR PBL accepted	1	1
UALR PBL percentage	25%	33%

Conclusion

In conclusion, PBL is an extremely effective method to deliver an entrepreneurship business planning course. Wee (2004) supports this contention in her research:

PBL suits the teaching and learning of entrepreneurship education well because it is about equipping students to be able to “do” instead of “know.” The PBL approach mirrors the demands of the entrepreneurial world in the classroom

Acknowledgements

The author would like to express his gratitude to graduate assistants Larisa Durmisevic and Ildeniz Yayla for their research assistance. A version of this article was presented at the Institute of Behavioral and Applied Management conference in Memphis, Tennessee, in October 2006.

Endnote

1. Brainstorming “where is the pain in your life,” and later can we create a solution, or business, to address that pain.

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and allows students to become producers of entrepreneurial solutions instead of mere consumers of education at every lesson. . . . The authenticity in learning offers a closer simulation to their real work demands of entrepreneurship. The acquisition of the critical entrepreneurial knowledge and relevant skills through the PBL entrepreneurship education should prepare the students to become effective entrepreneurs (p. 697–698).

The UNC students confirm that the experience is more realistic and relevant than traditional lecture formats. By their comments, they go so far as to understand what they are actually learning and why the course is formatted in PBL. Allen and Rooney (1998) stated,

In contrast to those we see in our traditionally taught classes, the most thorough and well-developed reports seem to be the products of the problem-based courses. Purpose statements are more focused, criteria used to solve problems more evident, and the criteria form the organizational bases for reports. The data are more comprehensive and justifications for decisions are more persuasive. We attribute the success of the students, in both the mixed and ESL [English as a Second Language] sections, to the students’ motivation to work on problems that are realistic case studies linked to their business interests.

From an instructor perspective, the quality of business plans developed in the PBL classroom is far superior to those developed in a traditional lecture setting. And though a small sample, PBL is further validated by the acceptance rate of 100 percent in the recent business plan competition, also noting that a number of schools (8 of the 14) had no representation of the 18 plans ultimately accepted. The plans created in the PBL class provided realistic outcomes and insights as interpreted by an independent judging plan.

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