EFFECTS OF PROBLEM-BASED LEARNING ON POLYTECHNIC STUDENTS’ ACADEMIC PERFORMANCE IN ENTREPRENEURSHIP EDUCATION IN Ogun State

DR. ELIZABETH E. KEHINDE
dotenny@yahoo.com
Department of Office Technology and Management
Moshood-Abiola Polytechnic, Abeokuta, Ogun State

Abstract
This study examined the effects of problem based learning method of teaching on office technology and management students’ academic performance in entrepreneurship. This study adopted a pre-test, post-test experimental research design using 2x2 factorial matrix. Subjects included a sample of 140 National Diploma (ND) students taking entrepreneurship courses in Moshood-Abiola Polytechnic, Abeokuta and Federal Polytechnic, Ilaro in Ogun State. The researcher and two other lecturers interacted with the subjects for six weeks to collect data which were analyzed using t-test statistics with results tested for significance at 0.05. Findings revealed that problem-based learning helped to boost students’ academic performance in entrepreneurship. The study recommended that entrepreneurship lecturers should be proactive and adopt modern dynamic methods of teaching to make entrepreneurship education more functional and result oriented.

KEYWORDS: Entrepreneurship education, problem-based learning, office technology and management and Polytechnic

Introduction
Entrepreneurship is one of the core courses offered in the office technology and management programme of polytechnics. It is offered at the National Diploma (ND) and Higher National Diploma (HND) levels. According to Alain (2009), entrepreneurship education aimed at fostering entrepreneurial mindsets, attitudes, skills and covering a range of aspects such as idea generation, start up, growth and innovation. Furthermore, entrepreneurship education is the process of providing individuals with the ability to recognize commercial opportunities, and the insight, self-esteem, knowledge and skills to act on them. It includes instruction in opportunity recognition, commercializing a concept, mobilizing resources on the face of risk, and initiating a business venture. It also includes instructions in traditional business disciplines such as management, marketing information systems and finance (Ojeaga and Owolabi, 2011). A successful entrepreneurship education in vocational business will:

a) make the average individual discover the entrepreneurial talents in his/her and therefore be guided to take the risk of starting a business.
b) impart the requisite skills and knowledge needed to successfully launch and grow a
c) provide information on where and how to get both financial and technical assistance when the need arises.

The OTM programme offered in polytechnics was introduced by the National Board for Technical Education (NBTE) in 2004 on the realization that the course contents of the former secretarial studies have been rendered obsolete due to changes occasioned by information and communication technology (ICT). The current programme thus changed the nomenclature and contents of the former secretarial studies and termed it office technology and management (Braimoh, 2012).

In the OTM curriculum of polytechnics, entrepreneurial courses are offered at ND and HND levels. However, a critical observation of the course contents reveals that there is a critical need to move beyond the traditional method of teaching which is lecture method to a more proactive and result oriented method in order to move from merely theorizing entrepreneurship to a more practical and functional approach to entrepreneurial studies (Akinyele, Olowookere and Akinlabi, 2015). Based on the foregoing it is expedient to adopt a cooperative learning method.

Cooperative learning is an approach used in organizing classroom activities into academic and social learning experiences requiring that students work in groups to complete the sets of tasks collectively at the end of which the groups as well as the individuals in each group succeed in learning the expected skills and knowledge (Morgan, 2003). It should be noted that cooperative learning covers a wide range of group based learning approaches including: reciprocal peer tutoring, scripted cooperation, peer mentoring, group testing, guided peer collaboration and problem based learning. Nevertheless the thrust of this study is problem-based learning.

Problem-based learning is a method of learning which is student-centered whereby students are exposed to situations that promote learning opportunities relevant to the students, the goals of which are partly determined by students themselves. This does not mean that the teacher abdicates his/her authority for making judgments regarding what might be important for students to learn. This approach places partial and explicit responsibilities on the students’ shoulders for their own learning.

Problem-based learning is highly context specific. It serves to teach content by presenting the students with a real word challenge similar to what they might encounter when they become practitioners of the discipline. Teaching content through skills is the basic distinguishing feature of problem based learning (PBL). The “problems” in PBL according to Charles, Baker, Chaves and Fisher (2006) are typically in the form of “cases” narratives of complex, real world challenge common to the discipline being studied. There are no right or wrong answers, rather there are reasonable solutions based
on the ability to think critically. Critical thinking is the main thing in operation because problem based learning advances critical thinking.

The teaching and learning of entrepreneurship courses require OTM graduates to diagnose and recommend action plans for organizational maladies. Malma (2009) observed that in conventional approaches to learning, faculty members provide students with theories and concepts to a situation. Awutu-Efebo (2003) and Ojo (2011) further explained that despite its’ limitations the traditional method of teaching has the following benefits:

a. It is suitable for large classes communication  
b. Students are exposed to unpublished or not readily available materials  
c. It complements certain individual learning preferences  
d. It helps to cover a large number of topics.

Problem-based Learning adds another step to the teaching/learning process because students are presented with authentic scenario from which they must identify a problem that merits solving, a problem solving approach to develop and analyse alternative solutions recommended and define an optimal solution. It is instructive to note that PBL is a curriculum model that emphasizes the effective use of task based problems to engage students in active and multidisciplinary learning. Through problem based learning, students learn how to solve problems that are ill-structured, open ended and ambiguous. Problem based learning engages students intriguing real and relevant intellectual inquiry and allows them to learn from life situations. The pedagogical value of PBL includes: exposing students to real world challenges, higher order thinking skills, interdisciplinary learning, independent learning, information mining skills, team work and communication (Mike et al 2012).

In a study on effects of problem-based learning and gender on colleges of education students’ academic achievement in entrepreneurship”, Akinyele, Olowookere and Akinlabi (2015) adopted a pre-test, post-test experimental research design using a 2x2 factorial mix and a sample of 120 students studying entrepreneurship education in business education department in two colleges of education in Ogun state. The researchers interacted with the subjects for six sessions of two hours each to collect data which were analyzed using t-test statistics and analysis of covariance (ANCOVA). Two research questions and two null hypotheses guided the study. Findings revealed that students taught using problem-based learning performed better than those taught with traditional method. It was equally revealed that there was no significant effect of gender on colleges of education students’ achievement in entrepreneurship education. It is on the premise that this study sought to examine the effects of problem-based learning on polytechnic students’ academic performance in entrepreneurship education in Ogun State, Nigeria.
Statement of the Problem
Entrepreneurship education is skill oriented and requires the acquisition of skills that would make OTM graduates to be self-employed and employers of labour. The fact that entrepreneurship courses are not domiciled in OTM departments makes the classes very large and therefore the possibility of lecturers taking care of individual differences among students is very slim. The pertinent questions that prompted this study are: How prepared are OTM graduates to cope with the ever competitive and dynamic business world? Why are OTM students unable to put into practice what they learned in entrepreneurship after graduating from the polytechnic? These questions are the reasons for which this study was carried out.

Purpose of the Study
The major purpose of this study was to examine the effects of problem based learning method of teaching on the academic performance of OTM students in entrepreneurship education. Specifically the study sought to:
- Identify the benefits of teaching entrepreneurship using lecture method
- Ascertain the benefits of teaching entrepreneurship using problem based learning and
- Find out whether there is any significant difference in the mean scores of OTM students taught with the traditional method and those taught using problem based learning.

Research Questions
The following questions were raised to guide the study:
1. What are the benefits of teaching entrepreneurship using traditional method?
2. What are the benefits of teaching entrepreneurship using problem based learning method?

Research Hypothesis
The following null hypothesis was tested in the study at 0.05 level of significance:
HO$_1$ : “There is no significant difference in the mean scores of OTM students taught using traditional method and those taught using problem based learning”.

Method
This study adopted the quasi experimental research design with the following design.
Table A: Layout of factorial mix and number of participants.

<table>
<thead>
<tr>
<th>Treatment (Method of Teaching)</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Problem-Based Learning</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Traditional (Lecture) Method</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>TOTAL</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

The population for the study consisted of 210 ND 1 and 2 OTM students registered for the 2015/2016 academic session at the Federal Polytechnic, Ilaro and Moshood Abiola Polytechnic, Abeokuta while the sample comprised 140 students randomly selected on the basis of 70 per institution. The participants from Moshood Abiola Polytechnic were exposed to problem based learning while the participants from Federal Polytechnic, Ilaro were exposed to the traditional method. Three major instruments were used to gather data for the study namely: (a) the pre-test objective test containing 40 questions (b) the post-test achievement test of 40 fill in the gap questions and (c) a well-structured questionnaire containing 20 items on a four-point scale. The instruments were validated by three experts in business education while the validated instruments were subjected to reliability through pilot test involving 20 OTM students of Grace Polytechnic Omu Ijebu (A Private institution). The Cronbach Alpha was used to test the reliability of the instrument with an index of 0.75 while the mean, standard deviation and t-test statistics were used to analyze the data at 0.05 confidence level.

Results

Research Question (RQ) 1: What are the benefits of teaching entrepreneurship with traditional method?

Table 1: Mean ratings of benefits derived from adopting traditional method of teaching

<table>
<thead>
<tr>
<th>S/N</th>
<th>Benefits</th>
<th>Mean</th>
<th>SD</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Promotion of large-class communication</td>
<td>2.52</td>
<td>1.02</td>
<td>Accept</td>
</tr>
<tr>
<td>2</td>
<td>Stimulation of interest in the subject matter</td>
<td>2.60</td>
<td>1.13</td>
<td>Accept</td>
</tr>
<tr>
<td>3</td>
<td>Quick coverage of the syllabus</td>
<td>2.77</td>
<td>1.04</td>
<td>Accept</td>
</tr>
<tr>
<td>4</td>
<td>Exposure of learners to materials not readily available</td>
<td>3.66</td>
<td>1.14</td>
<td>Accept</td>
</tr>
<tr>
<td>5</td>
<td>It is very informative</td>
<td>2.81</td>
<td>1.22</td>
<td>Accept</td>
</tr>
</tbody>
</table>

Table 1 reveals that all the items were accepted as benefits of using traditional method to teach entrepreneurship courses.
Research Question (RQ) 2: What are the benefits of teaching entrepreneurship using problem based learning?

Table 2: Mean ratings of benefits derived from adopting problem based learning

<table>
<thead>
<tr>
<th>S/N</th>
<th>Benefits</th>
<th>Mean</th>
<th>SD</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exposure of learners to real world challenges</td>
<td>3.50</td>
<td>1.27</td>
<td>Accept</td>
</tr>
<tr>
<td>2</td>
<td>Promotion of team work</td>
<td>2.90</td>
<td>1.09</td>
<td>Accept</td>
</tr>
<tr>
<td>3</td>
<td>Improvement in communication among learners</td>
<td>3.60</td>
<td>1.13</td>
<td>Accept</td>
</tr>
<tr>
<td>4</td>
<td>Reinforcement of learning outcomes</td>
<td>4.10</td>
<td>1.02</td>
<td>Accept</td>
</tr>
<tr>
<td>5</td>
<td>Provision of direct experiences for learners</td>
<td>3.81</td>
<td>1.01</td>
<td>Accept</td>
</tr>
<tr>
<td>6</td>
<td>Motivation of learners due to personal involvement</td>
<td>3.92</td>
<td>1.11</td>
<td>Accept</td>
</tr>
<tr>
<td>7</td>
<td>Development of social skills</td>
<td>3.71</td>
<td>1.07</td>
<td>Accept</td>
</tr>
<tr>
<td>8</td>
<td>Adoption of a variety of methods in tackling a given problem</td>
<td>2.92</td>
<td>0.81</td>
<td>Accept</td>
</tr>
<tr>
<td>9</td>
<td>Dynamism and flexibility in learning</td>
<td>3.10</td>
<td>1.05</td>
<td>Accept</td>
</tr>
<tr>
<td>10</td>
<td>Stimulation of imaginative and conceptual thinking in learners</td>
<td>3.05</td>
<td>0.87</td>
<td>Accept</td>
</tr>
</tbody>
</table>

Table 2 indicates that all the items were accepted as benefits of adopting problem-based learning to teach entrepreneurship courses.

**HO**: There is no significant difference in the mean scores of OTM students taught entrepreneurship using traditional methods and those taught using problem-based learning.

Table 3: Summary of t test analysis of OTM students’ academic performance in entrepreneurship

<table>
<thead>
<tr>
<th>Method</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>df</th>
<th>t-cal.</th>
<th>t-crit.</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Method</td>
<td>70</td>
<td>52.24</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem-based learning</td>
<td>70</td>
<td>59.48</td>
<td>1.01</td>
<td>138</td>
<td>2.15</td>
<td>1.96</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

P = 0.05

The results in Table 3 shows significant difference in the mean achievement of students taught entrepreneurship with traditional and PBL methods since t. cal (2.15) > t. crit (1.96) at 0.05 level of significance therefore the null hypothesis was rejected.
Discussion of Findings

Table 1 revealed some benefits derivable from the use of traditional method of teaching entrepreneurship. Some of the benefits include promotion of large class communication and quick coverage of the syllabus. This finding supported the observation of Awutue, Efebo (2003) and Malma (2009) that despite its inherent shortcomings the lecture method is very beneficial in many ways Table 2 revealed that there were benefits derivable from the use of problem based learning. The method promotes dynamism and flexibility in learning. This finding buttressed the opinion of Baker et al (2006) that PBL makes learning more interesting and permanent. Lastly Table 3 indicated that there was a significant difference in the mean achievement of OTM students taught entrepreneurship using problem-based learning method and those taught using traditional method. This finding corroborated the findings of Akinyele, et al (2015) that NCE business education students taught entrepreneurship education using problem based learning performed significantly better than those taught using lecture method in entrepreneurship education.

Conclusion

From the results obtained in the study it is concluded that several benefits can be derived from the use of lecture and problem based learning methods for teaching entrepreneurship. The lecture method helps to: promote large class communication, stimulates students’ interest in the subject-matter, cover the syllabus quickly and expose learners to scarce materials while the problem-based method helps to: expose learners to real world challenges, promote team work, improve communication among learners, reinforce learning outcomes, provide direct experiences for learners, motivate learners due to their personal involvement, develop social skills in learners and stimulate imaginative and conceptual thinking in learners. Nevertheless it was discovered that problem based learning method is more effective in the teaching and learning of entrepreneurship courses among OTM students in polytechnics.

Recommendations

The following recommendations were made based on the findings of this study:

- The lecture method should be adopted only when and where due to time and space constraints.
- Students with poor performance in entrepreneurship should be encouraged to adopt problem based learning to make them perform better.
- Lecturers taking entrepreneurship courses should adopt flexible and dynamic methods of teaching in order to boost students’ performance.
- More emphasis should be placed on practicals in entrepreneurship courses.
References