Evaluating the Implementation of Project-Based Learning (PjBL): A Study at the English Language Education Study Program, Faculty of Education, Jambi University

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Abstract

The present study evaluated the implementation of Project-Based Learning (PjBL) by the lecturers at the English Language Education Study Program, Faculty of Education, Jambi University. Using information from 100 selected students through electronic email questionnaires with Likert’s 5 points-scale of frequency levels (never to always) concerning ten PjBL main principles, the results fell into the “good” category with an average score of (3.17). Principle 1 (Starting the class with driving questions/issues/problems); 2 (Students work independently in small groups based on a selected project); and 7 (The groups do project presentations for feedback) received the highest rate in the evaluation with an average score of (3.6) each, followed by the principle 4 (The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics) and the principle 9 (The students develop new soft-skills e.g. collaboration, problem-solving, critical thinking, and management skills) with the average scores of (3.5 & 3.2) respectively. The other principles such as “collecting information, facts, evidence, and data outside the classroom for the project work” (principle 5) and “receiving feedback and controls from the lecturers” (principle 6) still need to be improved and developed to achieve better results in the future.

Keywords: English, evaluation, project-based Learning (PjBL), tertiary education

Introduction

Project-based learning (PjBL) has been regarded as an innovative approach to learning in education (Greenier, 2020; Thu, 2018). Such an approach has been implemented in many educational disciplines and various levels or grades (Bell, 2010). According to Bell (2010), PjBL has been applied in various contexts and stages of education, from the lowest to the highest globally. PjBL is expected to help increase the learners’ learning autonomy and experience in a systematic process of exploration and inquiry (Barak, 2012). Bell (2010) adds that with PjBL, students are encouraged to learn independently through scientific discovery, invention, and inquiry. Students work collaboratively with strong socialization and become intrinsically accustomed to working out in the learning process at their own level (Kokotsaki et al., 2016). Maroset et al. (2021) claim that PjBL is an instructional method that increases the students’ active participation. They state that this active participation can be developed through active interaction and communication between the tutors and the students, along with setting up challenges such as brainstorming, role-playing, didactic games, and case studies. According to Muros et al. (2021), PjBL efficiently develops twenty-first-century skills, such as critical thinking, problem-solving, interpersonal communication, and media literacy, cooperation, and leadership.

The impetus of implementing PBL along with cased-based teaching methods (CM) has been recently recommended in Indonesian tertiary education. Such a scheme has been emphasized as one of the eight key performance indicators (IKU) that must be followed and fulfilled by all universities and seven other indicators (The Ministry of Education and Culture regulation, No 754 Year 2020). The seventh indicator is specifically measured by the number of subjects taught through either PjBL or CM by the lecturers. Such an order encourages the students’ active participation and collaboration during the learning process. As stipulated in the regulation of the Ministry of Education and Culture, the Republic of Indonesia number 3 in 2000 article 11, the teaching and learning process should fulfill the criteria of interactive, holistic, integrative, scientific, contextual, thematic, effective, collaborative, and student-centered (verse 1); and the interactive mode in the above point is targeted to achieve a maximum learning outcome through reciprocal interaction between students and lecturers (verse 2).

The two recommended teaching methods (PjBL and CM) are then characterized by a few criteria. The implementation of CM, for example, should include at least three aspects: (a) students play an active role as “a doer” in the learning process and are given ample opportunities to solve contextual cases or problems; (b) the students are directed to analyze the case through group work discussion to develop suitable solutions towards the case or problem; and (c) the class is addressed to active discussions over selected cases and the students take an active role and dominate the discussion under the supervision and direction from the
lecturers. BjBL, on the other hand, is determined through (a) students work in small groups over a selected project for a certain time; (b) each group is given a complex task or project assignment to do and work collaboratively to design an innovative product through a small research project; and (c) each group presents the project for discussions and feedback.

Review of the Related Literature

Many scholars and experts in education have pointed out the pivotal concepts of BjBL. Evidently, BjBL has been regarded as an innovative approach (Thu, 2018) that helps learners gain optimal achievement and understanding in the learning process. Kokotsaki et al. (2016) suggest that BjBL is a form of student-centered learning that encourages students to learn actively through personal inquiry and collaborative work. It probes both explorative and descriptive methods of inquiry that focus on an end product or work under the supervision of the teachers. The students actively learn through a contextual and meaningful experience (Wurdfinger et al., 2007). Styla and Michalopoulos (2016) claim that BjBL has been proven to increase students' social skills in four areas (cooperation, empathy, assertion, and self-control). These skills are crucial for the students to cater to their real-life experience. Guo et al. (2020) further stress that BjBL has been viewed as an auspicious approach to be implemented in higher education and has been empirically proven to improve the student's affective and cognitive outcomes. These outcomes are associated with students' perception, knowledge, and behavior.

Both methods provide three basic principles of BjBL. First, the learning is set up in a specific context, which allows the students to follow the content according to their learning capacity. Furthermore, every individual actively participates in the learning process through which everyone is creatively involved in every learning phase. Finally, they work collaboratively to achieve their goals in participative social interactions, discussions, and knowledge and skill sharing. Al-Balushi and Al-Aamri (2014) claim that BjBL is an innovative approach that requires a collaborative work of learning and a type of inquiry-based learning where the context of learning is provided through authentic questions and problems within real-world practices.

BjBL is often associated with other teaching approaches or methods that are student-centered in nature. Helle et al. (2006) assert that BjBL has a clear connection with problem-based learning as both focus on collaboration in achieving learning goals and the fact that both are based on problems or cases that need to be solved. The two methods, however, differ from one to another in the process and the target outcome. According to Helle et al. (2006), BjBL emphasizes the end product, while problem-based learning emphasizes the learning process. They further argue that BjBL may also be similar to other methods of instruction, such as experiential learning, as both consist of an element of experience and collaboration of the students in the learning process. These instructional methods also rely on every individual's active reflection and conscious engagement in learning (Wurdfinger et al., 2007).

Besides a collaborative aspect, BjBL is also regarded as a method that provides learners enormous opportunities, freedom, and challenges to investigate problems (Wurdfinger et al., 2007). According to Wurdfinger et al. (2007), in BjBL, students are guided to actively engage in the determination of the project with strong affective, ethical, and aesthetic dimensions of collaboration. Helle et al. (2006) suggest that BjBL encourages learners to develop new knowledge, skills, and understanding which are useful to achieve a concrete product at the end of the learning adventure. To achieve an optimal result, according to Holubova (2008), the ultimate product or project work can be completed through the use of videos, photographs, sketches, reports, models, and other collected artifacts.

Another essential element is that BjBL promotes links to students' active engagement in learning. Blumenfeld et al. (2000) and Krajcik et al. (1994) point out that such an active engagement is quite evident in BjBL as the learners are progressively involved in every single phase of observation, inquiry, discovery, and conclusion of the project. The students show and use their deeper understanding of essential ideas and apply them simultaneously in learning. They claim that BjBL allows the students to learn by doing and applying ideas to real-world activities and experiences. In this mechanism, the students conduct some sort of mini-research project where they will have to investigate questions, propose hypotheses and explanations, analyze the processes, discuss their findings and conclusions, challenge the ideas of others, draw conclusions, and set up recommendations. (Krajcik et al., 2002; Marx et al., 2004; William & Linn, 2003).

Basic Principles of BjBL

Thomas (2007) proposes five essential principles of BjBL (centrality, driving questions, constructive investigation, autonomy, and realism). Patton (2012) adds a few more characteristics central to BjBL, such as reflection, redrafting presentations, and project publications. Blumenfeld et al. (1991), Krajcik et al. (1994), and Krajcik et al. (2002) come up with five essential aspects, including (1) the class starts with a driving question; (2) students explore the driving question by participating in authentic, situated inquiry – processes of problem-solving that are central to expert performance in the discipline. As they explore the driving question, they learn and apply important ideas in the discipline; (3) students, teachers, and community members engage in collaborative activities to find solutions to the driving questions. This mirrors the complex social situation of expert problem solving; (4) while engaged in the inquiry process, students are scaffolded with learning technologies that help them participate in activities normally beyond their ability; and (5) students create a set of tangible products that address the driving question. These are shared artifacts that are publicly accessible external representations of the class's learning.

Thu (2018) ultimately provides a few prominent features of BjBL: active learning, real-world problems, interdisciplinary, cooperative learning, and an end product. These features are considered distinctive to BjBL, although other methods, such as problem-based and inquiry-based learning, are also believed to share some of the BjBL features. However, BjBL is associated with the feature of active learning, which is often viewed as the core focus of its nature. This is so because students are intensively involved in learning through various activities that connect to the students' real-life experience through enhancement of inquiries, planning, learning, organization, strategies management, and project evaluation. The feature of real-world problems characterizes BjBL in that it brings the concept of authentic contexts from various disciplines to be discussed in the learning process (Bell, 2010; Hanney & Savin-Baden, 2010; Thomas, 2000). It is argued that this concept of learning helps connect academic purposes and external social, political, and environmental aspects in the learning process (Bell, 2010).

The Historical Background of BjBL

Thu (2018) stresses that BjBL as an instructional teaching method is not a recent finding. Although its popularity has increased in the last few decades, according to Thu (2018), the original concept has been discovered over a hundred years since the recognition of the work of Dewey (1959), an educator and philosopher from the Laboratory School of the University of Chicago since (1959). BjBL has recently been adopted enormously all over the globe and has gained the spotlight in the field of education and sciences (Darwin & Stoeke, 2014; Kolmos, 2009; Lehmann et al, 2008).

Dewey (1959) argued that through BjBL, students will develop a personal investment in the materials if they engage in real, meaningful tasks and problems that emulate what experts do in real-world situations. In the last two decades, learning sciences researchers have refined and elaborated Dewey's original insights that active inquiry results in deeper understanding. Discoveries in the learning sciences have led to new ways to understand children's learning (Bransford et al., 1999). We build on four major learning sciences ideas: active construction, situated learning, social interaction, and cognitive tools (p. 318).
Statement of Problem

The present research is focused on evaluating the implementation of PjBL by the lecturers. The research is based on the students’ evaluation of the learning process in which PjBL was implemented and its basic principles. The study is deemed important as the quality of PjBL implementation affects the university performance and ranking capacity that will be measured periodically at national levels by the Ministry of Education and Culture. Ten basic principles of PjBL are set up based on government criteria or relevant theories.

Research Questions

Two research questions were posed in the study:
1. What is the student’s evaluation of the implementation of PjBL by the lecturers in the teaching and learning process?
2. How is the students’ satisfaction with the implementation of PjBL by the lecturers?

Methodology

The present research employs a mixed method of analysis: a descriptive-quantitative method or design with a simple statistical analysis. In this type of research, the data were based on qualitative measures, but simple statistics were also used in measuring frequencies, percentages, or other statistical techniques for comparison purposes (Creswell, 2014; Nassaji, 2015).

The research began with observing the latest phenomenon in Indonesian Higher Education Institutions where PjBL is being encouraged to be applied in teaching and learning. The data were collected from 100 purposively selected students to whom the questionnaires were sent electronically to their emails. The research was conducted online by distributing a Google Form questionnaire to the participants. The participants were selected from the English Language Education Study Program, Faculty of Education, Jamali University, who were studying in odd semesters (first, third, fifth, and seventh). One hundred of them (around 25 in each semester) were selected as participants. The questionnaires consist of 10 items about ten principles of PjBL with 5 Likert Scales, ranging from "never" to "always" categories.

To satisfy the naturalness of the responses from the participants, their names and identities were not revealed and treated as confidential. There would be no intervention to the data and the participants, but they would be expected to select each option according to their evaluations. Finally, the researchers analyzed the data through categorization, tabulation, and table or figure presentations, followed by interpretation through the findings and discussion sections. The procedures are as follows:
1. Grouping and tabulation
2. Mapping and categorization
3. Comparison of frequency (occurrence)
4. Table presentation
5. Analysis and interpretation
6. Conclusion

Then, the questionnaire responses were tabulated, analyzed, and presented in tables and figures. The researchers referred to the frequency level with an interval of one point derived from the five-scale tabulation. The frequency level is presented in Table 1.

Table 1
Category and Score

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
</tr>
<tr>
<td>Seldom</td>
<td>2</td>
</tr>
<tr>
<td>Sometime</td>
<td>3</td>
</tr>
<tr>
<td>Often</td>
<td>4</td>
</tr>
<tr>
<td>Always</td>
<td>5</td>
</tr>
</tbody>
</table>

After getting the frequency level of each PjBL principle, the researchers then interpret the level of evaluation obtained by calculating the interval of five scales of 1.00 on each category. The category level is presented in Table 2.

Table 2
Category of Evaluation

<table>
<thead>
<tr>
<th>Category</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very bad</td>
<td>0-1.00</td>
</tr>
<tr>
<td>Bad</td>
<td>1.01-2.00</td>
</tr>
<tr>
<td>Moderate</td>
<td>2.01-3.00</td>
</tr>
<tr>
<td>Good</td>
<td>3.01-4.00</td>
</tr>
<tr>
<td>Very good</td>
<td>4.01-5.00</td>
</tr>
</tbody>
</table>

Finally, all the data were gathered, concluded, and communicated respectively to answer the research questions posed in the study.

Results

The General Posture of the Evaluation

Despite the PjBL ten principles, the findings show that the students’ evaluation spread over all five options (never, seldom, sometimes, often, and always). The highest selection was given to the "often" category, with a total number of (24.8 %), followed by the category "sometimes" with a total of (23.3 %) in the students’ evaluation. The category "never" had the lowest rate, with only (14.6 %), while the categories "always" and "seldom" were relatively low, with only (19.5 %) and (18.8 %) respectively (see Table 3).

Table 3
The Distribution of Students’ Evaluation

<table>
<thead>
<tr>
<th>Options</th>
<th>Category</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never</td>
<td>146</td>
<td>14.6</td>
</tr>
<tr>
<td>2</td>
<td>Seldom</td>
<td>178</td>
<td>17.8</td>
</tr>
<tr>
<td>3</td>
<td>Sometime</td>
<td>233</td>
<td>23.3</td>
</tr>
<tr>
<td>4</td>
<td>Often</td>
<td>248</td>
<td>24.8</td>
</tr>
<tr>
<td>5</td>
<td>Always</td>
<td>195</td>
<td>19.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1000</td>
<td>100</td>
</tr>
</tbody>
</table>

The Average Score

A simple statistical calculation shows that the overall score of the students’ evaluation falls to (3.17) out of 5 maximum scores (Good category).

As presented in Table 4, the students’ evaluation of the PjBL implementation by the lecturers can be categorized into the "good" category with an M = 3.17. The result reveals that according to the student participants, the lecturers have applied the most basic principles of PjBL in their teaching. However, a few of them were still not fully implemented. The figures represent how the students evaluated each principle.

Table 4
The Average Score of the Evaluation

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>f</th>
<th>Sum of score</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>146</td>
<td>146</td>
<td>0.146</td>
</tr>
<tr>
<td>Seldom</td>
<td>2</td>
<td>178</td>
<td>356</td>
<td>0.356</td>
</tr>
<tr>
<td>Sometime</td>
<td>3</td>
<td>233</td>
<td>699</td>
<td>0.699</td>
</tr>
<tr>
<td>Often</td>
<td>4</td>
<td>248</td>
<td>992</td>
<td>0.992</td>
</tr>
<tr>
<td>Always</td>
<td>5</td>
<td>195</td>
<td>975</td>
<td>0.975</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1000</td>
<td>3168</td>
<td>3.17</td>
</tr>
</tbody>
</table>
When looking at each principle, it is obvious that the posture shows an uneven rate. Principle 1, for example, received a relatively good evaluation from the students. As presented in Figure 2, the highest rate was given to “always” category (36), followed by “often” (31). At the same time, other categories such as “never,” “seldom,” and “sometimes” were smaller in rate with only (7), (12), and (14) respectively. Figure 2 shows a negatively skewed trend with many scores addressed to the “often” and “always” categories (67 in total). Data reflects that the lecturers’ teachings were characterized mostly by beginning the class with driving questions/issues/problems related to the topics.

Principle 2: Students work independently in small groups based on a selected project.

The evaluation of principle 2 shows a similar posture. The highest proportion was addressed to the “always” category with a total score of (35), followed by the category “often” (29) and the category “sometimes” (17). Categories “seldom” and “never” were relatively low in rate, with only less than 10 in total. Like principle 1, principle 2 (students work independently in small groups based on a selected project) also displays that the lecturers will apply it in their teaching (see Figure 3).

Principle 3: The groups work based on schedule and timesheet as described in the syllabus.

Principle 3 shows a diverse trend in the student’s evaluation. Unlike principles 1 and 2, this principle receives a negative evaluation, indicating that the lecturers did not do very well applying it. As presented in Figure 4, almost 60% of the rate falls into the “seldom” and “never” categories, and the rest falls into other categories. The “always” category was given the lowest rate with only (11) in total. While “often” and “sometimes” receive less (29). Response reflects a low frequency of implementing this principle in the lecturers’ teaching.

Principle 4: The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics.

The evaluation of principle 4 shows another posture. Figure 5 represents the evaluation distribution, in which the highest rate was given to the category “often,” with a total of (39). The categories “always” were relatively high (21) and “sometimes” (22). The categories “never” and “seldom” were low in rate, with only less than (20) in total.

Principle 5: The groups implement small projects independently outside the classroom collecting information, facts, evidence, and data, to solve problems, build hypotheses, analyze and interpret data, and draw conclusions.

The evaluation of principle 5 shows that students work independently in small groups based on a selected project.
Principle 5: The groups implement small projects independently outside the classroom collecting information, facts, evidence, and data, to solve problems, build hypotheses, analyze and interpret data, and draw conclusions.

The student's evaluation of principle 5 shows a different trend. This principle receives a relatively bad evaluation where many responses were addressed to categories "never" (33) and "seldom" (25). Responses reflect that the students' implementation of small projects outside the classroom was not evident in the lecturers' teaching. By contrast, the categories "always" and "often" have a small rate in the evaluation (see Figure 6).

Principle 6: The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion.

Another different trend in the evaluation is seen in principle 6 (The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion). The category "sometimes" dominates the evaluation with a total rate of (40), while other categories such as "always" and "often" were lower in rate compared to "seldom" and "never" categories with a ratio of (26:33). This indicates that this principle was moderately implemented (see Figure 7).

Figure 7
The Groups Receive Supervision, Feedback, Evaluation, Information, and Control from the Lecturers over the Project Process and Completion

Principle 7: The groups do project presentations for feedback. The evaluation of principle 7 was relatively good. The majority of the responses fall to a positive trend, which is dominated by categories "always," "often," and "sometimes," with a total rate of (88). The rest falls into categories "seldom" and "never." Figure 8 presents the distribution of feedback.

Figure 8
The Groups do Project Presentations for Feedback

Principle 8: Students have individual/group evaluations.

Figure 9 represents the evaluation of principle 8. The responses fall into all categories with a flat proportion. However, categories "often" and "sometimes" have the highest rate (47) in total. The other three categories receive a relatively balanced rate (see Figure 9).

Figure 9
Students have Individual/Group Evaluations


Principle 9 the students' evaluation of whether PjBL increased their soft skills (collaboration, problem-solving, critical thinking, and management). In their evaluation, it is evident that the responses look moderate, although category "sometimes" dominates the rate (35) and categories "always" and "often" were significantly higher than categories "seldom" and "never" with a ratio of (39:26). This reflects that in general, the students feel that their soft-skill development was better developed through PjBL.

Figure 10
Each Group Develops New Skills (Collaboration, Problem-Solving, Critical Thinking, and Management)

Figure 11
Students Receive Enough Resources from Lecturers to Complete the Projects
Principle 10: Students receive enough resources from the lecturers to complete the projects. Regarding the provision of learning resources by the lecturers to support the students’ projects, the students evaluate that it falls mostly into “often” and “sometimes” categories (more than 50% in total, although the rate for categories “often” and “never” were also high with a total of 43 in rate [see Figure 11]).

Discussion

The results have shown that the implementation of PjBL by the lecturers in the teaching and learning process was categorized as “good.” However, a few principles were still not fully implemented. As suggested by Cocco (2006), an essential principle of this teaching method is the active engagement and participation of the students in the learning process. The lecturers have implemented such a principle well. The learning has been set up in a specific context, which allows the students to follow the content according to their learning capacity, and every individual engaged in active participation in which everyone was creatively involved in every learning phase. Furthermore, a collaborative measure has also characterized the learning processes and the students maintained conducive and interactive discussions and knowledge and skill sharing. Such an aspect plays an important role in PjBL, as stressed by Al-Balushi and Al-Aamri (2014), who claim that PjBL has both innovative and collaborative features. It also encourages students to expose inquiries by asking authentic questions, problems, and issues related to the topics of the lessons.

A few other essential principles of PjBL still need attention from the lecturers. As shown through the findings, it is obvious that students have not yet been exposed to work independently outside the classroom, especially in collecting data from various resources in their attempts to solve the problems they were investigating. Such a dilemma may be affected by a limited capacity and lack of practice in classroom learning. Students were not accustomed to doing this, so they found it hard to implement it. Limited resources availability may also be another drawback from which information and data can be obtained in the students’ areas. Publication of the project, which leads to the product that the students were trying to propose, remained low in the study. In fact, as Patton (2012) suggested, presentation and publication have become central features of PjBL. Again, the students’ lack of practice and control from the lecturers may be a factor that triggers this.

The use of technology to support the student’s project was not apparent in the study. As stated by Blumenfeld et al. (1991), Krajcik et al. (1999), and Krajcik et al. (2002), this aspect is deemed important as it drives students to be scaffolded with learning technologies that help them participate in classroom activities normally beyond their ability, and students are encouraged to create a set of tangible products that address the driving question. Such a phenomenon can be understood as neither students nor lecturers being adequately supported by updated technological equipment.

The feature of real-world problems the lecturers have exposed in teaching and learning processes is another interesting thing to note. As Thu (2018) points out, real-world problems are said to characterize PjBL in a way that it is a distinctive nature of PjBL, which is often viewed as the core focus of its nature. This is so because students are intensively involved in the process of learning through various activities that connect to the students’ real-life experience through enhancement of inquiries, planning, learning, organization, strategies management, and project evaluation. The feature of real-world problems characterizes PjBL in that it brings the concept of authentic content from various disciplines to be discussed in the learning process (Bell, 2010; Hanney & Savin-Baden, 2010; Thomas, 2000). It is argued that this concept of learning helps connect academic purposes and external social, political, and environmental aspects in the learning process (Bell, 2010). Although the results of the present study have shown a relatively high evaluation from the students (especially principal 1), the selection of the real-world problems exposed in the classroom might not have been well achieved.

Conclusion

The study has shown that the lecturers’ implementation of the PjBL method in the teaching and learning process was evaluated as “Good” by the students, with an overall score of (3.7). The ten main principles of the method were well presented and applied and they increased the students’ soft skills such as collaboration, management, problem-solving, and critical thinking. The student’s ability to work out the project independently outside the classroom, especially in the supplementary and collaborating aspects, and evidence from various external resources, still needed to be improved, along with providing students with valuable insights, feedback, and control from the lecturers during the discussion and presentation work.

References


### Appendix 1

To what extent do you evaluate the implementation of Project-Based Learning (PjBL) by the lecturers in the classroom activities/practices?

<table>
<thead>
<tr>
<th>No</th>
<th>Learning practices</th>
<th>Options</th>
<th>Total</th>
<th>Ave</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>The class starts with a driving question/issue/problem related to the topic to be discussed or solved</td>
<td>7</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Students work independently in small groups based on a selected project</td>
<td>6</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>The groups work based on schedule and timesheet as described in Syllabus</td>
<td>23</td>
<td>37</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>The groups discuss, pose, inquire, analyze, and evaluate issues or problems related to the topics raised by lecturers</td>
<td>8</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>5</td>
<td>The groups implement small projects independently outside classroom collecting information, facts, evident data, to solve problems, build hypotheses, analyze and interpret data, and draw conclusions</td>
<td>33</td>
<td>25</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>The groups receive supervision, feedback, evaluation, information, and control from the lecturers over the project process and completion</td>
<td>13</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>7</td>
<td>The groups do project presentations for feedback</td>
<td>5</td>
<td>7</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>Students have individual/group evaluation</td>
<td>19</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>9</td>
<td>Each group develops new skills (collaboration, problem-solving, critical thinking, management, etc.)</td>
<td>10</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td>10</td>
<td>Students receive enough resources from lecturers to complete the projects</td>
<td>22</td>
<td>21</td>
<td>24</td>
</tr>
</tbody>
</table>

Total: 146 | 178 | 233 | 248 | 195 | 1000 | Ave=3.17 | 41.7%

Note. 1 = never; 2 = seldom; 3 = sometime; 4 = often; 5 = always.