# Facilitation Skills and Template for Facilitating Learning in a Problem-Based Learning Environment for Technical Teachers

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**Abstract**

*It is essential to determine facilitative skills and develop a template that will be required by a Technical Teacher for facilitative learning in order to implement problem-based learning classrooms. The study adopted the instrumentation design. The population for the study is 97, comprising of all Technical Teachers in Public Technical Colleges in Akwa Ibom State, Nigeria. Purposive sampling techniques was used to select 56 technical teachers to form the sample. The instruments for the study were tagged "Assessment of Facilitative Learning Skills Need of Technical Teachers Questionnaire" (AFLSNOTTQ) and "Template for Facilitating Learning Checklist"(TFLSC). Two tier method of validation was done. The first involved the face validation of the AFLSNOTTQ and the second was the content validation of the TFLSC by experts from the Department of Vocational Education, University of Uyo, Akwa Ibom State. The reliability of the instrument was determined using Cronbach alpha after it was administered on 30 teachers who were not part of the sample. This gave coefficients of 0.82 and 0.79 each for AFLSNOTTQ and TFLSC respectively. The Mean and standard deviation was used to answer research question one. On a four point rating scale, the weighted Mean is 2.50, hence, items with Mean responses below 2.50 indicate a skills Need while items on 2.50 and above indicate possessed skills by Technical Teachers. On ascertaining the skills gap, a template was developed and validated for technical teachers on how to facilitate learning in PBL classrooms. It was recommended among others that three options are now proposed for facilitator development, namely self, peer and group reflection.*

**KEYWORD:** *Facilitative learning, TVET, guided instruction, skills need, PBL*

## Introduction

Problem-based learning (PBL) is perhaps the most innovative instructional method conceived in the history of modern education. PBL was originally designed to respond to the criticism that traditional teaching and learning methods fail to prepare students for solving problems in real world settings. Instead of requiring that students study content knowledge and then practice context-free problems, PBL embeds students' learning processes in real-life, authentic problems. In problem-based learning (PBL) courses, students work with classmates to solve complex and authentic problems that help develop content knowledge as well as problem-solving, reasoning, communication, and self-assessment skills. These problems also help to maintain student interest in course material, because students realize that they are learning the skills needed to be successful in the field. Almost any course can incorporate PBL and most instructors and students consider the benefits to be substantial (Woei, David & Rude, 2008). The growing interest in problem-based learning comes from the integration of sound educational principles into a single,

consistent teaching and learning approach. This approach commonly consists of aspects of self-directed and life-long learning, with problem-solving and critical thinking skills developed through facilitated group learning.

A basic premise of problem-based learning is that students take greater responsibility for their own learning, with the benefit that they develop a wider range of transferable skills such as communication skills, teamwork and problem-solving. At the same time problem-based learning students perform just as well in examinations, but develop slightly better reasoning ability and have consistently higher levels of satisfaction (Norman & Schmidt, 2000, p.560).

In considering ways to improve problem-based learning, most of the effort has focused on the role of the tutors. Barrows (1992) asserted that the two major responsibilities of tutors in PBL are facilitating the students' development of thinking or reasoning skills that promote problem solving, meta-cognition, and critical thinking, as well as helping them to become independent and self-directed learners. Maudsley (1999, p.660) cautioned that the PBL tutor must balance a degree of participation in students' learning processes and refrain from the temptation to lecture. Aguiar (2000) conducted an exploratory qualitative case study that examined teachers' perceptions and experiences in their roles as PBL tutors. Five main themes emerged describing how tutors perceived their roles within PBL: (1) facilitating group work, (2) role modeling, (3) providing feedback, (4) imparting information, and (5) supporting students' professional development. Furthermore, Wilkerson and Hundert (1998) described the challenge of multiple roles experienced by PBL tutors and assigned the following names to the roles they identified in PBL tutors: information disseminator, evaluator, parent, professional consultant, confidant, learner, and mediator. Of all these, the most prominent role played by the PBL tutor is facilitation.

Central to the successful use of PBL methodologies is the preparation of teachers for the facilitator role as asserted by Maudsley (1999). PBL requires the teacher to function, in the main, as a facilitator rather than a transmitter of information. Teaching approaches of this nature pay due respect to the contributions of both teacher and student and result in a shared learning process. The leader of a PBL programme acts as a facilitator and trainer rather than a teacher, using their expertise not primarily to transmit facts, but to provide tasks, encouragement, guidance and support, as the participants tackle the problems they have identified. The skill of PBL facilitation according to Maudsley (1999, p. 658) is that of knowing when to provide assistance to the group, be it suggesting useful resources they might like to consider or interjecting with thought provoking comments to guide the breadth and depth of learning, without necessarily imparting facts. Instruction becomes interaction; the role of the teacher thus becomes that of facilitator rather than primary sources of knowledge. There is considerable research evidence in support of the educational value of facilitation in PBL (Albanese & Mitchell 1993).

A supportive and challenging learning environment is the keystone to a successful implementation of a problem solving work environment as found in industries (Elizabeth, Jocelyn & Simon, 2010). Thus, successful instruction in PBL is to find the right balance between the challenge and support offered to learners. "Challenge" is stretch learning: A challenge is an activity or task relevant for the job to be completed but requiring the trainee to reach out beyond their comfort zones. "Support," in a learning situation, does not mean sympathetic hand holding, but rather an environment where the learner can take risks and learn from failures while also being guided by the teacher. The best learning situations are those that provide a realistic level of challenge and enough support so that the learner feels comfortable asking for help when needed, understands that mistakes are an acceptable part of the learning curve and is willing to keep pushing forward even when faced with uncertainty. Frost (1996) opined that the need to develop facilitators equipped to support students engaged in PBL activities is deemed to be essential for progression of the implementation of problem-based curriculum innovations. For students to benefit most from PBL environment, it is essential for lecturers to be proficient in facilitating learning.

Facilitation is a goal-orientated dynamic process in which participants work together in an atmosphere of genuine mutual respect, in order to learn through critical reflection. (Burrows 1997, p.401). Within PBL tutorials, educational facilitation encompasses guiding learners through their own discovery without teaching in the traditional sense (Biley & Smith 1999). Facilitation involves interaction between teachers and students that involves questioning, dialogue, feedback and creating a structured environment to promote inquiry, exploration, discovery and engagement in a PBL class.

The PBL facilitator 'negotiates new understandings, utilizes effective interpersonal skills, and promotes open discussion in class' (Creedy 1993, p.212). Wilkerson and Hundert (1997) assert that the PBL facilitator may need to redefine their relationship with students and with programme content. To this end, the PBL facilitator will release

control of programme content and the learning process and form a learning partnership with students, trusting them to accomplish programme outcomes.

## Problem Statement

In the study by Martin, Chrispeels and D'eidio-Caston (1998), over 75% of the students felt that the faculty involved in the PBL course were passive and believed that their learning experiences would have been better if the instructors had more actively supported the students by being more facilitative of learning. The students' perception of the tutors' passive involvement may have resulted from the tutors' misinterpretation of facilitation and self-directed learning as being self-taught learning (Woei, et al., 2008, p494). The facilitator's role, while rather broad, is crucial to the success of the team. Failure to identify and play the roles of the facilitator in a PBL environment will lead to poor instruction, poor student engagement and low skills development.

## Purpose of the Study

The major purpose of the study was to develop guidelines in facilitating learning for Technical College teachers for instruction in a problem-based learning environment in Akwa Ibom State, Nigeria. Specifically; the study sought to

1. Determine the skills needed for facilitating learning by technical teachers
2. Develop a template for facilitating learning by technical teachers

## Research Questions

The following research questions will guide the study

1. What are the facilitating learning skills needed by Technical instructors in a PBL environment?
2. What is the content of the template for facilitating learning by Technical instructors in a PBL environment?

## Research Method

The research adopted the instrumentation research design. The population for the study is 97 comprising of all Technical Teachers in Public technical Schools in Akwa Ibom State. Purposive sampling techniques was used to select 56 technical teachers to form the sample. The instruments for the study were tagged "Assessment of Facilitating Learning skills Need of Technical Teachers Questionnaire" (AFLSNOTTQ) and "Template for Facilitating Learning Checklist"(TFLSC). Two tier method of validation was done. The first involved the face validation of the AFLSNOTTQ and the second was the content validation of the TFFSC by experts from the Department of Vocational Education, University of Uyo, Uyo, Akwa Ibom State. The reliability of the instrument was determined using Cronbach alpha after it was administered on 30 teachers who were not part of the sample. This gave coefficients of 0.82 and 0.79 each for AFLSNOTTQ and TFLSC respectively. The Mean and standard deviation was used to answer research question one. On a four point rating scale, the weighted Mean is 2.50, hence, items with Mean responses below 2.50 indicate a skills Need while items on 2.50 and above indicate possessed skills by Technical Teachers. Based on the observed skills gap, a template was developed for facilitating learning by technical teachers.

## Presentation of Findings

Research Question 1: What are the facilitating learning skills needed by Technical instructors in a PBL environment?

**Table 1: Summary of Skills Needed for Guided Instruction by Technical Instructors in a PBL Environment**

| S/N | Teacher skills in facilitation | Mean $\bar{x}$ | Std. Dev. | Remarks |
|---|---|---|---|---|
| 1 | Create and sustain an environment conducive for discussions and idea generation. | 2.31 | 0.93 | Needed |
| 2 | Develop group cohesiveness | 2.22 | 0.88 | Needed |
| 3 | Manages group- involvement processes | 2.08 | 1.00 | Needed |
| 4 | Promotes the development of action | 2.37 | 0.90 | Needed |

| | | | | |
|---|---|---|---|---|
| | and follow-up plans | | | |
| 5 | Establish timing as a ground rule. | 2.41 | 0.77 | Needed |
| 6 | Starts sessions on time | 2.22 | 0.50 | Needed |
| 7 | Manages the time to ensure all agenda topics are covered in the allotted time. | 2.32 | 0.91 | Needed |
| 8 | Ask in-depth questions | 2.13 | 0.86 | Needed |
| 9 | Use a variety of questioning techniques and types to generate discussion and facilitate a deeper level of thinking. | 2.03 | 0.98 | Needed |
| 10 | Share experiences that enhance credibility. | 2.17 | 0.89 | Needed |
| 11 | Use appropriate jargon for the topic and participants. | 2.34 | 0.77 | Needed |
| 12 | Maintain a positive, professional demeanour | 2.33 | 0.92 | Needed |
| 13 | Help participants to understand key concepts as they relate to the topics being discussed. | 2.19 | 0.89 | Needed |
| 14 | Help others to identify problems | 2.38 | 1.00 | Needed |
| 15 | Intervenes appropriately when things go wrong | 2.31 | 0.93 | Needed |
| 16 | Uses a systematic approach | 2.00 | 0.74 | Needed |
| 17 | Uses time efficiently. | 2.14 | 0.92 | Needed |
| 18 | Listens actively | 2.37 | 0.89 | Needed |
| 19 | Deals constructively with disruptive behaviours. | 2.44 | 0.96 | Needed |
| 20 | Shares objectives with the group | 2.14 | 0.92 | Needed |
| 21 | Cumulative Mean | 2.25 | 0.88 | Needed |

Table 1 gives the summary of the item analysis of the skills needed for facilitation by Technical teachers for implementing PBL environments. All the items have Mean responses below 2.50, the cut off Mean indicating a need. The cumulative Mean score is 2.25. This implies that the teachers will need training in all the areas identified.

Research Question 2: What is the content of the template for facilitating learning by Technical instructors in a PBL environment?

Table 2: Template for Guided Instructional Skills for Teachers Implementing Problem-based Learning Environment

| Issues | **Content** | **Guided Instruction Environment Activities** | | **Emphasis Covered** |
|---|---|---|---|---|
| | | **Teacher activity** | **Pupils Activity** | |
| Guidelines for instructional scaffolds | **1.Intentionality-** The task has a clear overall purpose driving any separate activity that may contribute to the whole<br>**2.Appropriateness:** Instructional tasks pose problems that can be solved with help but which students could not successfully complete on their own.<br>**3.Structure:** Modeling and questioning activities are structured around a model of appropriate approaches to the | 1. Pre-engage the students and the curriculum.<br>2. Establish a shared goal.<br>3. Actively diagnose students' needs and understandings.<br>4. Provide tailored assistance.<br>5. Maintain pursuit of the goal. | Tutees express new ideas, model their thinking, work together and benefit from knowledge and skills of other peers | Collaborative and critical thinking skills |

| | | | | |
|---|---|---|---|---|
| | task and lead to a natural sequence of thought and language.<br>**4.Collaboration:** The teacher's response to student work recasts and expands upon the students' efforts without rejecting what they have accomplished on their own. The teacher's primary role is collaborative rather than evaluative.<br>**5. Internalization:** External scaffolding for the activity is gradually withdrawn as the patterns are internalized by the students. | 6. Give feedback<br>7. Control for frustration and risk<br>8. Present information in a just-in-time approach<br>9. Assist internalization, independence, and generalization to other contexts | | |
| essential elements of Guided instruction | 1. Allow time for class discussion of the problem.<br>2. Assign students to groups by an arbitrary method.<br>3. Scaffold<br>4. Build upon the lesson.<br>5. Introduce a problem at the beginning of the class, or during the previous class, with a very brief "mini-lecture."<br>6. Generate interest and controversy and cause the learner to ask questions.<br>7. Effective tutoring | (1) Introduce a problem at the beginning of the class, or during the previous class, with a very brief "mini-lecture."<br>(2) The teacher is open to new ideas.<br>(3) The teacher encourages freedom to express new ideas by students<br>(4) Provides sufficient resources for instruction<br>(5) Creates idea time in class<br>(6) The teachers uses playfulness and humour in class<br>(7) The teacher encourages debates in class<br>(8) The teacher validates the students by supporting their ideas<br>(9) Provide support to students by offering information in just-in-time approach<br>Fading. The final theoretical feature requires that the | The tutees demonstrate group-processing skill, ask questions to clarify misunderstanding.<br><br>The tutees reasoning out answers, post questions, make connections between concepts<br><br>The tutees show comprehensive understanding of and respect for one another as well as interaction and interactivity | Creative, Collaborative, problem solving and work skills. |

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|---|---|---|---|---|
| | | teacher fade the support provided to the learner(s). | | |
| Evaluation | | 1. Construction of Knowledge/ Individual accountability.<br>2. Challenging work is given to students<br>3. The teacher asks question and gives class work | The tutees articulate their ideas, respond to their peer-mate points, develop technical skills and demonstrate creative and analytical skills as well as other soft skills | Collaborative learning skills/ work skill- |
| Summary | The tutor summarizes the lesson based on the objectives. | Reward and recognition | Students celebrate their success | |

Table 2 shows the summary of the template for the use of guided instructional strategy in a problem-based learning environment. The teacher is expected to familiarise with the tenets of scaffolding for effective mentoring of students in a PBL environment. Some of the tasks in the guidelines for guided instruction as identified by the template are Allow time for class discussion of the problem; assign students to groups by an arbitrary method; Scaffold; build upon the lesson; introduce a problem at the beginning of the class, or during the previous class, with a very brief "mini-lecture"; generate interest and controversy and cause the learner to ask questions and effective tutoring.

## Discussion of Findings

Findings of the study have identified the skills needed for the implementation of a PBL environment by Technical teachers. The skills required are problem selection skills, guided instructional skills and educational assessment skills. Subsequently a template and training modules was developed and validated for use in the training of teachers for using PBL. The findings identified the skills needed in problem selection as skills in generating a problem for the class. The task by the teacher is to identify a real life issue and the problem should be in context to the objectives of the lesson and should contain multiple solution paths, be open-ended and complex enough to require collaboration and thinking beyond recall. The problem should also be exciting to learners and keep them motivated. The findings are in line with the report of Alastair (2002, p.65), which found that systems of teacher education share certain characteristics and have some notably distinctive features. Competence-based education is now accepted and understood to be essential.

Furlong (2000), also found that given the perceived advantages of PBL as defined and as practiced for some time within health care professions, there would, on the face of it, appear to be a good case for the introduction of this methodology within initial teacher education. There is of course nothing new in utilizing case studies or simulations in education (or teacher education The difference between these and PBL, is however, a significant one. Whereas case studies and simulations may essentially be illustrative in nature, they do not necessarily problematise the issue. Moreover, they are most likely to lead to tutor explanation and/or exposition rather than to further student-driven investigation and reporting back. In other words, such studies and simulations do not necessarily constitute the spine of the learning - whereas in PBL this is generally the case. Utilizing PBL techniques involves an important power shift from the tutor to the learner, as well as significant developments in the role of the tutor her/himself.

The findings of the study show the facilitation skills needed for implementing a problem-based learning environment. The teacher is expected to familiarise with the tenets of scaffolding for effective mentoring of students in a PBL environment. Some of the tasks in the guidelines for guided instruction as identified by the template are Allow time for class discussion of the problem; assign students to groups by an arbitrary method; Scaffold; build upon the lesson. The findings if the study is corroborated by (McKenzie, 2000) which found that the major responsibilities of the teacher during the modeling stage of cognitive apprenticeship are structuring situations of

expert practice and demonstrating the expert's thinking process in a manner that does not overwhelm students. The goal of this stage is to build mental models of experts' cognitive processes so that students can eventually work on their own. Scaffolds are developed in order to assist student with a difficult task. The key is that the assistance is planned in advance. Since it involves a process that cannot be directly observed and experienced, cognitive modelling according to Holton, Derek, and Clark, David (2006, p.135), requires more sophisticated planning to apply in classrooms than does modelling of physical performance. The modelling of cognitive processes requires the following: modelling an expert's performance; Externalizing internal/cognitive processes (verbalizing thought processes); encouraging students to think like experts and treating them as experts; modelling the performance in different contexts and demonstrating how to cope with difficulties

## Conclusion

Facilitating PBL will necessitate some teachers abandoning previous teacher-centred practice in favour of student-centred approaches. For other members of the teaching team, ongoing development of these approaches will be required. The study concludes that the extent to which individual teachers will require changing their pedagogic practice in order to become facilitators of PBL will vary according to their current values, beliefs and attitudes concerning teaching and learning

## Recommendations

Based on the findings of the study, the following recommendations are made

1. A staff development strategy is required by the technical schools' board to assist teachers in developing their skills in facilitation.
2. Three options are now proposed for facilitator development, namely self, peer and group reflection.
3. Institutional support is required in the form of time for teachers to stand back from teaching to reflect on personal practice and recognition for improved practice, e.g. academic opportunities to research and publish.

## References

Aguiar, A. C. (2000). Consequences for faculty of changes in medical education: the experience of tutoring a course about the patient–doctor relationship. Ph.D. dissertation. Boston, MA: Harvard University (*Diss. Abstr. Int.*,61,1853B).

Alastair, D. M. (2002). Problem-based learning in initial teacher education: taking the agenda forward. *Journal of Educational Enquiry, 3*, 60-78.

Albanese M & Mitchell S (1993) Problem-based learning: a review of literature on its outcomes and implementation issues. *Academic Medicine, 68*, 52-81.

Barrows, H. S. (1992).*The tutorial process*. Springfield, IL:Southern Illinois University School of Medicine.

Biley, F. C. & Smith, K. L. (1999). Making sense of problem-based learning: The perceptions and experiences of undergraduate nursing students. *Journal of Advanced Nursing 30*, 1205–1212.

Burrows, D. E.( 1997). Facilitation: a concept analysis. *Journal of Advanced Nursing* 25, 396–404

Creedy, D. (1993). Developing PBL facilitation skills. In G.Ryan (Ed.) *Research and development in problem based learning* (pp.211–218). Australian Problem Based Learning Networks Sydney.

Elizabeth, G., Jocelyn D & Simon, F. (2010). *Principles of Learning: Advancing Performance in Today's Workplace*. The Forum Corporation of North America. Paper No FOR5102.

Frost, M. (1996). An analysis of the scope and value of problem-based learning in the education of health care professionals. *Journal of Advanced Nursing* 24,1047–1053.

Furlong J (2000) *Teacher education in transition: re-forming professionalism*? Buckingham: Open University Press.

Holton, Derek, and Clark, David (2006). Scaffolding and Metacognition. *International Journal Mathematical Education in Science and Technology*, 37, 127-143.

Martin, K. J., Chrispeels, J. H. & D'eidio-Caston, M. (1998). Exploring the use of problem-based learning for developing collaborative leadership skills. *Journal of School Leadership, 8,* 470–500.

Maudsley, G. (1999). Roles and responsibilities of the problem based learning tutor in the undergraduate medical curriculum. *British Medical Journal*, 318, 657–660

.

McKenzie, J. (2000).Scaffolding for Success. Beyond Technology, Questioning, Research and the Information Literate School Community. Retrieved from http://fno.org/dec99/scaffold.html on 21 February, 2015.

Wilkerson, L. & Hundert, E. (1997). Becoming a problem based tutor: increasing self-awareness through faculty development. In D. Boud & G. Feletti (Eds). *The challenge of problem-based learning*. (2nd Ed.). London, Kogan Page.

Woei, H., David H. & Rude, L. (2008). Problem-based lerning. In M. Spector, D. Merrill, J. van Merrienböer, & M. Driscoll (Eds). *Handbook of research on educational communications and technology*, 3rd Edition: (pp.485-450). GA, Erlbaum.

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