TEACHER CHALLENGE IN INDUSTRIAL REVOLUTION ERA: DEVELOPING CRITICAL THINKING SKILLS IN LANGUAGE TEACHING

Semi Sukarni

Purworejo Muhammadiyah University, Jln. K.H.A. Dahlan No 3 Purworejo, Indonesia
Corresponding email: semi.sukarni24@gmail.com.

Abstract
Industrial revolution era which signaled with disruptive condition will affect educational practices more specifically the practice of teaching and learning process. Learning process must be addressed for learners to acquire hard and soft skills to survive in the disruptive era. Besides, in the learning process, teacher must also provide teaching strategies to develop learners' critical thinking and problem solving skills. Teacher cannot dominate the class anymore as learners can get information and knowledge from outside of the classroom more particularly from the internet. The internet becomes source of learning materials as students can fine facts, opinions and new knowledge. The purpose of this paper is provide methods and strategies which can be used by teachers of English to teach English to develop students' critical thinking and to provide empirical studies about the application of the strategies. The discussion covers the teaching strategies which can help English teachers develop learners' critical thinking namely Inquiry-based Learning, Project-based Learning and Problem-based Learning. The studies shows that these strategies can be applied for teaching English at any school level.

Keywords: critical thinking, industrial revolution era, teaching strategies

INTRODUCTION

In the 21st century era graduates need to equip with hard and soft skills. The hard skills related to the graduate competencies in his/her area. While soft skills related to the personality and behaviour which are acquired through the learning process, establishing routines, custom and habit. The challenge is not only meet by the prospective graduate but the teachers as well. Teachers should not only able to result graduates with various hard skill but also result with graduates with good soft skills. This demand needs teacher consideration in selecting teaching strategies, methods, materials which need better teaching learning process to result better learning outcome.

In English class teacher also needs to adopt and adapt teaching strategies, methods and materials which will result better in English skills as well as training students to develop soft skills. According to Occupational Information Network (O'NET) framework that there are some skills which need to be acquired, among them are Analytical Thinking, Critical Thinking, Complex Problem Solving,

Creativity and Speech abilities and some of them included in soft skills namely Time Management, Responsibility, Initiative, Leadership, Adatability/Flexibility, Self Control and Cooperation (Forum, 2018).

To be able to achieve those skills English teachers need the teaching strategies which can develop students thinking skills such higher order thinking skills. These skills must be practiced throughout the learning practices which are chosen by teacher. The learning practices must be able to involve the learners actively by working collaboratively with other learners to do the meaningful language tasks.

The purpose of this study are to describe teaching strategies which can be used by teachers of English to develop students' critical thinking and to provide evidence of the application of the teaching strategies in English of foreign language contexts.

DISCUSSION

1. Critical Thinking

In this disruptive era, world problems seem more complex than before either they are directly or indirectly related to us or not. We must be able to use our knowledge and skill to solve it. Besides, there are also abundance information and news come to us almost every second. With the information we must be able to select which ones are beneficial to us. With the news we may not believe that everything is true. We only believe the true news from the reliable source. To be able to handle all these we need to have critical mind and think critically.

What is a critical thinking? There are several definitions and descriptions about critical thinking given by the experts. Critical thinking covers mental processes and strategies that students use to analyze and evaluate ideas, choices and concepts. According to Chaffee as cited by Stobaugh (2013) critical thinking is human active, purposeful, and organized effort to make sense of our world by carefully examining our thinking and thinking of others in order to clarify and improve understanding. Contreal (2005) as cited by Lin (2017) described critical thinking as a cognitive activity focusing on argumentation, which require the use of the mind. In this definitions we learn than critical thinking relates to other thinking activities connected to each other and find creative solution to problems.

The Partnership for 21st Century Skills (2011) identified four areas of critical thinking skills: (1) reasoning effectively- here learners use various type of reasoning (inductive, deductive) in appropriate situation. (2) using systems thinking - learners are able to analyze how parts of a whole interact to each other to produce overall outcome. (3) making judgments and decisions which include analyzing and evaluating evidence, arguments, synthesize and make connection between information and argument and interpret information and draw conclusion and (4) solving problems (Bishop,Ph.D, 2011). Which mean solving different kinds of non-familiar problems in both conventional and innovative ways.

2. Teaching Strategy

Inquiry based Learning

The first strategy to develop students critical thinking is Inquiry based Learning (IBL). Inquiry means question. Teacher often starts lesson in apperception by asking student a question as with a question makes a learner start thinking Inquiry based learning is a type learning achieved through the process of searching for information, knowledge, truth by questioning (Ong & Borich, p.29).

The characteristics of IBL are: lessons start with interesting and challenging questions; questions are open ended; the process is student center; the inquiry is spiral, not linear; students are assessed by appropriateness of their answer.
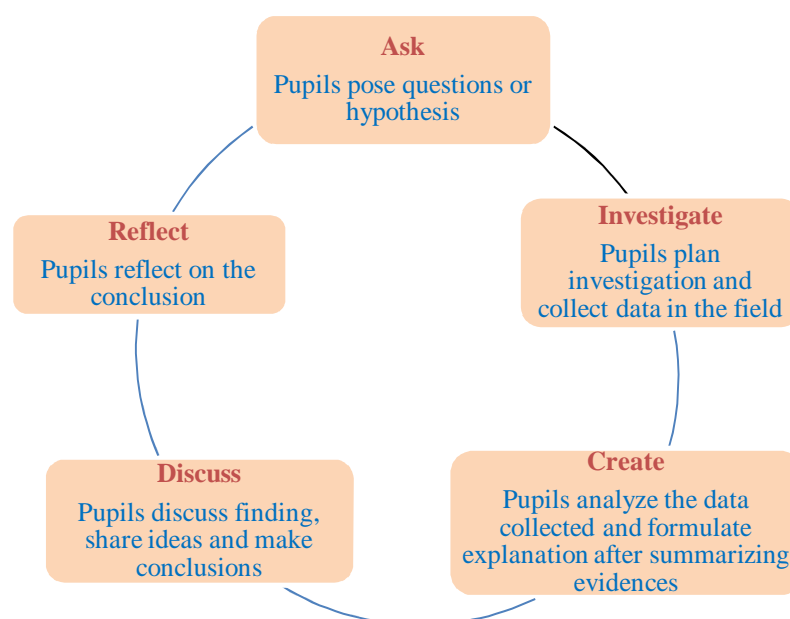
Teacher can apply IBL as the model below.

Figure 1: A model of Inquiry based learning adopted from Ong & Borich (2006, p.32)

The strategy can be used for teaching productive skills such speaking and writing. Teacher gives guidance or scaffolding in inquiry approach depend on students' ability as well as the students' major study. Below is the application of the instructional strategy in each step which was adopted from Ong and Borich (2006.p. 39)

Inquiry stage	Instructional strategy
Ask	To make meaningful question to students teacher asks students to: solve contemporary world problems; create a product/project or trigger imagination.
	Sample of question or hypothesis
	(1) What are the influence of social media to teenagers?

149

	(2) Living in big cities is more expensive than living in rural areas.
Investigate	Teacher gives sufficient time to search resources and information to investigate the question.
	Data are obtained from direct observation, reading texts, fieldwork, case studies or instrumentation.
Create	Teacher guide students to organized data. Teacher ask students to construct and analyze explanations and to discuss their insights and conclusion.
Discuss	Teacher serves as moderator and guide the students' discussion about the finding.
Reflect	Teacher suggests students to draw concept maps to reflect on their newfound knowledge.

Problem-based Learning

Problem-based Learning or shortened to PBL is an innovative self-directed collaborative approach to learning which makes use of students' problem-solving skills. This strategy is appropriate to be applied for developing the learners' critical thinking as well as soft skills.

PBL is defined an educational process that requires the learner to go through the same activities during learning that are valued in the real world Ong and Borich, 2006). Another definition of PBL is an innovative self-directed collaborative approach to learning which makes use of students' problem-solving skills Hmelo-Silver cited in Ansarian & Lin (2018).

PBL is a collaborative process where the students are grouped together in order to solve the problem given. PBL has the added advantage of engaging the student throughout the learning process, simultaneously teaching them crucial critical thinking skills.

There are some reasons why use PBL in the language classroom.

(1) Collaboration
PBL is a peer work. Here, learners collaborate with others to evaluate and analyze the learning problem. Then, they find resource to solve problem and compare their finding to other group.

(2) Constructivism
Start with problem, PBL process moves to solving problem by constructing alternative solutions based on obtained resource.

(3) Fit into post- method era
The concept of post-method era (Kumaravadivelu, 2003) was brought into the PBL stages in activating learners to solve real-life problems.

(4) Blended learning
The stages of PBL enable learners to use technology such the internet to find sources to find solution to problem. In this stage, the learner can use online source of Googling by connecting internet through their smartphone. So, PBL is potentially blend technology with traditional learning as teacher has roles to organize teaching process including giving feedback for their students.

(5) Active engagement
PBL promotes students active- engagement with their learning as PBL demands students participation Delisle (1997) and Ansarian & Lin (2018).

There are four steps in Implementing Problem-based Learning.

Process for Students:

(1) being introduced to the problem,
A problem statement should be: current events; based on curriculum; pupil interest (Ong & Borich, 2006) in addition, it should be grounded in students experience; accommodate various teaching and learning strategies Delisle (1997).
(2) exploring what they do and do not know about the problem,
(3) generating possible solutions to the problem,

(4) considering the consequences of each solution and selecting the most viable solution.

Students can proceed the PBL by applying Know-Need-Idea form. The figure below is a sample column for PBL worksheet in a form KNI form.

What we know	What we need to know	IDEAS

Adopted from (Ong and Borich, 2006)

Once the students complete the KNI form above they can organize their problem solution into completing the column which consists of Ideas, Facts, Learning Issues and Action Plan.

Column for the PBL process

Ideas	Facts	Learning issues	Action plan

Adopted from Delisle, (1997)

Here are the procedure in completing the column.

(1) Fill the ideas column with their possible solutions or ways to solve the problem.

(2) Record facts that we know about the problem
(3) Take those suggestions that we were not sure about by investigating in several resources
(4) Develop a plan

Some benefits of PBL

As mentioned by Ong and Borich (2006) there are some benefits for applying PBL in English lesson.

(1) Increases motivation to learn
In PBL learning happens through constructing meaning. In the learning process students become highly involved in analyzing problems and finding the solution which is meaningful to the students.

(2) Promotes learning in context.
Students acquire better understanding of the new knowledge when they can relate the new knowledge with the knowledge that they had already learned.

(3) Develops critical thinking, and communication skills
In PBL process, the students need to gather source, read it critically, analyze it, test hypothesis and report them to the class.

(4) Enhances retention of information

(5) Demonstrates the power of working cooperatively.
PBL is applied through small groups. Within the group students work together with member to build collaboration to develop learners' soft skill.

Project based learning

Project based learning or PjBL is a model that organized learning around projects. Projects may be complex tasks based on challenging questions or problems that involve students in design problem solving, decision making or investigation activities (Ong & Borich, 2006, p.32)

There are five attributes for being successful in applying Project based learning. These attributes called 5 A-s, namely:

(1) Authentic. The project is prefer to be real-world problem that mean a lot to the students.

(2) Academic rigour. The knowledge and concept in the project must be specific and sufficient in breadth and depth.

(3) Applied learning. Students have big opportunity to apply knowledge

(4) Active explanation. In gathering information, the students can go to the field to make interview for primary source. It can train the students to open up opportunity for higher order task such validating the accuracy of data.

(5) Assessment practice. The assessment in PjBL is not the traditional type but it can be carried out through self- assessment, peer assessment, journals, interview and presentation of the finding.

The following are general guidelines and strategies to apply Project-based Learning in the classroom as adopted from Ong & Borich (2006, p.59)

Provide an overview of project goal and assessment method and state the expectation. In this step the students learn the objective

Refine projects into smaller steps and pace the students. In order to make the project manageable, refine it into smaller parts.

Establish checkpoints and deliverables to track progress. In order to increase the success rate of PBL it is important to set up intermediate and checkpoints and deliverables.

Manage the students. As in PBL class the students work in group collaboratively, teacher needs to monitor the class for the less motivated students. Teacher need to identify the different students profile and manage them appropriately.

Provide the idea generation and problem-solving tools. In PBL students are required to implement idea generation technique and creative thinking skill, however, before giving the students task, teacher needs to provide training on thinking methods, introducing other necessary materials and tools during the lesson.

There are six steps in project design as it is explained by Kraus & & Boss (2013, p.54) namely:

Step 1: Identify Project-Worthy Concept

In this step teacher may start with question. What important and enduring concept are fundamental to learning English language. Identify four or five BIG concepts for each subject.

Step 2: Explore Their Significant Relevance

This step start with thinking process. Why do this topic matter? Think beyond school and ask: In what way are they important and enduring? What is their relevance in different people's lives? Explore each concept until students arrive at a short list of meaningful topics.

Step 3: Find Real-Life Context

Teacher can guide students to look back to three or four concepts that had been explored and think about real-life contexts. Who engages in this topic? For whom these topics are central to their work? Make list of professions for each concept. Next,

think, what are the interdisciplinary connection? For example, writing a prospectus for a venture capitalist and designing a marketing campaign.

Step 4: Engage Critical Thinking

Teacher can guide students to imagine the topics in a context of a project, what might teacher ask to the students. How teacher pushes past rote learning into investigation, analysis, and synthesis. Consider how teacher engage critical thinking in a project by asking students to compare and contrast; predict; understand cause and effect relationship; determine how part related to the whole system; identify patterns or trends; examine perspectives and alternates point of view and evaluate reliability of sources.

Step 5: Write a Project Sketch

Teacher can help students to write project sketch two or three. Give an overview each. Describe a scenario and activities students likely engage.

Step 6: Plan the Setup

In this step teacher guides students to write a title, entry event, and driving questions for the project.

From three strategies as explained earlier it can be concluded that the three strategies have similarities that each strategy starts with presenting problem but with different goals which require students to solve them by using critical and creative thinking.

3. Research review on the use of the language teaching strategies

Research on inquiry based learning

The strategy was first applied by Maming & Parepare (2018) which aimed to know the effectiveness of the inquiry based learning strategy in improving the students' achievement in psycholinguistics course. The subject of the research was the six semester students of English education study program of Faculty of Teacher training and Education of Parepare Muhammadiyah University. The instruments for collecting data were observation, interview and questionnaire. In learning process there were several learning activities such as observation, asking question, collecting data and making conclusion. It focused on analytical and critical thinking. The result of the study showed that the students involved actively in the learning process. The result of the questionnaire showed that most students agreed that the strategy could build their interest, motivation and creativity. In addition the strategy could create meaningful and enjoyable learning atmosphere and it was effective to improve students' achievement.

The second study was conducted by Singman (2017) which aimed to investigate the effects of wikis on the EFL learners' IBL process. Forty nine EFL

students participated in the study. There were two groups the wiki group (n=24) received wiki mediated instruction and the non wiki group (n=25) received traditional inquiry instruction. Data were collected through surveys at the stages of pre-search, exploration, and completion of the IBL activity. The instruments were used to measure differences in knowledge accumulation, as well as the challenges the students acquire during the inquiry process. The result showed that the use of wikis could provide students go beyond information accumulation and move toward generating more integrated and synthesized knowledge and addressed the challenges of tradition IBL including planning the tasks, organizing multiple resource s, managing inquiry process and coordinating the final product.

The third study was conducted by Isra & Asrobi (2018) which aimed to investigate the use of inquiry based learning strategy in teaching writing skill. The subject of the study was the eighth grade of MTs. NW Dames students. The data were collected by using pre and post- test. After pre-test, the researchers conducted treatment in teaching by using IBL strategy. To analyze the data t-test by using SPSS 22 was applied. Based on the t-test result revealed that inquiry based learning strategy was significantly effective in teaching writing skill.

Problem based learning

The strategy was first applied Kadhim (2019) which aimed to investigate the effect of Problem based Learning on EFL learners' achievement. She involved thirty learners of training course in Development and Continuous Education Centre in Bagdad University. Fifteen learners were assigned to experimental group were taught using PBL and another fifteen learners for control group were taught using traditional method for 16 meetings. The result showed that the experimental group was better than the control group. The problem based learning maximizes the learners" involvement in the learning process and the instructor enabled learners to use the language meaningfully.

The second study about the implementation of Problem based learning was conducted by Campos (2017). It aimed at discovering the perceptions of 54 pre-service teachers about the impact of PBL activity in the development of key competencies, including higher order thinking skills and reflective, research, knowledge transfer/integration, social, and self-management skills. Two instruments were used to collect the data, first questionnaire to obtain pre service teacher perception on the contribution of PBL experience to the development of cognitive skills, and to their capacity to think critically. And second observation to group performance to obtain evidence of the level of achievement. The finding revealed that PBL was perceived very positively by participants and the reflective learning processes were enabled and strengthened by implementing PBL activities challenged pre-service teachers to search for, sort out and analyze and synthesize information as well as relate to various knowledge.

The third study was the application of Problem based learning approach to English Class conducted by Lin (2017). The aim was to examine the effect of the Problem based learning in English course in Chinese-speaking university students" willingness to communicate (WTC). There were 43 participants received PBL instruction in small group setting whereas 45 in another group received teacher-lectured (TL). The finding showed that PBL group significantly outperformed the TL group.

Project based learning

The strategy was first applied in Fragoulis (2009) which aimed to describe the implementation of project work in the teaching English in Greek Primary school. The participants were 15 sixth grade primary school aged 11-12. The participated teachers were a school teacher who had experience in implementing modern teaching methods and an English teacher. The project was a project work in order to make students aware of the history of the area where they live and use it for interdisciplinary work and to make use of new technology. Some activities to complete the project were done among them were choosing topic, structuring the project work, gathering information, analyzing of data gathered and evaluating the project. The benefits of from the project were achieving cognitive, emotional and psychomotor aims, motivation, communicative competence.

The second was Kavlu' study (2017) of the implementation of Project based learning in EFL Classroom. He did observation in Fezalar Educational Institutions where PBL was implemented. He obtained data by conducting semi-structure interview related to the reason of implementing PBL, the advantages and the disadvantages, the success of the implementation of PBL The results showed that the implementation of PBL in Fezalar Educational Institutions was successful and it got many advantages. Students not only enhanced the language skills but also social communicative skills Kavlu (2017).

The third was a study about Project based learning Activities and EFL students productive skill which was conducted by Astawa, Artini, & Nitiasih (2017). It aimed to investigate the effect of Project-Based Learning on students' English Productive Skills and how the activities influence teaching and learning process in a public junior high school in Bali-Indonesia The data were collected using speaking and writing tests. The result showed that a significant effect PjBL on students' English Productive Skills. PjBL was also improved enthusiasm, confidence, creativity, self-directed learning and collaborative learning skills.

The three samples of application in each strategy-IBL, PBL, PjBL give evidence that the three strategies can be applied in teaching English as foreign language (EFL). From the three studies in each strategy had shown the improvement in learning outcome.

CONCLUSION

Based on the discussion above, some conclusions can be drawn. English teachers need to improve their teaching strategies in order that the students can develop their critical thinking skills to be able to survive in the in industrial revolution era. Critical thinking skills can be developed by choosing the right strategy through the learning tasks which are meaningful to the learners. The English teachers can apply the teaching strategies namely Inquiry-based Learning, Problem-based Learning and Project- based Learning as these strategies have proved to be effective in improving not only learners' achievement, critical thinking skills but also soft skills in EFL contexts.

REFERENCES

Ansarian, L., & & Lin, T. M. (2018). *Loghman Ansarian · Teoh Mei Lin*. Singapore: Springer.

Astawa, N. L. P. N. S. P., Artini, L. P., & Nitiasih, P. K. (2017). Project-based Learning Activities and EFL Students ' Productive Skills in English. *Juornal of Language Teaching and Research*, *8*(6), 1147–1155.

Bishop, J. P. . (2011). Century Skills (P21). *Partnership For 21ST Century Skills*.

Campos, D. M. (2017). Problem-Based Learning : An Experiential Strategy for English Language Teacher Education in Chile Aprendizaje basado en problemas : una estrategia experiencial. *Profile*, *19*(1), 29–40. Retrieved from http://dx.doi.

Delisle, R. (1997). *How to Use Problem-Based Learning in the Classroom*. Virginia: Association for Supervision and Curriculum Development.

Forum, W. E. (2018). *The Future of Jobs Report 2018*. Geneva: World Economic Forum.

Fragoulis, I. (2009). Project-Based Learning in the Teaching of English as A Foreign Language in Greek Primary Schools : From Theory to Practice. *English Language Teaching*, *Vol.2*, *No.*, 113–119. Retrieved from www.ccsenet.org/journal.html

Isra, H., & & Asrobi, M. (2018). The Use of Inquiry-Based Learning Strategy in Teaching Writing Skill for the Eighth Grade Students Junior High School. *Voices of English Language Education Society*, *2*(1), 30–37. https://doi.org/10.29408/veles.v2i1.606.g429

Kadhim, S. H. (2019). The Effect of the Problem Based Leraning on EFL Learners' Achievement, (January).

Kavlu, A. (2017). Implementation of Project Based Learning (PBL) in EFL (

English as a Foreign Implementation of Project Based Learning (PBL) in EFL (English as a Foreign Language) Classrooms in Fezalar Educational Institutions (Iraq). *International Journal of Social Sciences & Educational Studies*, *Vol.4*, *No.*(October). https://doi.org/10.23918/ijsses.v4i2sip67

Kraus, J., & & Boss, S. (2013). *Thinking Through Project-Based Learning*. Singapore: SAGE Publication Asia-Pacific Pte. Ltd.

Kumaravadivelu, B. (2003). *Beyond Metothods-Macrostrategies for Language Teaching*. London: Mary Jane Peluso.

Lin, L. (2017). The Application of the Problem-Based Learning Approach to English Class : Chinese-speaking Learners " Willingness to Communicate. *International Journal of Education*, *9*(3), 1–20. https://doi.org/10.5296/ije.v9i3.11414

Maming, K., & Parepare, U. M. (2018). The Effectiveness of Inquiry-Based Learning Strategy to Improve the Students ' Achievement on Psycholinguistics Course.

Singman, C. (2017). Towards an Inquiry-Based Language Learning : Can a Wiki Help ? *IInternational Journal of Research in English Education*, 32–46.

Stobaugh, R. (2013). *Assessing Critical Thinking in Middle and High Schools*. London: Routledge.