

## Meeting The Demands Of The 21<sup>st</sup> Century English Language Learning Through PBL-LcCRAFT

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### ABSTRACT

Problem-Based Learning (PBL) Language Case Crafting (PBL-LcCRAFT) Model is a new PBL case design guide for language practitioners to craft PBL cases specifically for English Language teaching and learning. This paper describes five significant components in this new model that complement the 21<sup>st</sup> century learning skills. Data illustrated in this paper were drawn from an action research project on PBL case design training and model for English language practitioners. The four steps in the action research approach namely plan, act, observe and reflect were closely followed within two cycles of the research procedure. Data collection tools were observation checklist and focus group interviews with a group of English Language practitioners. The collected data were then analysed using content analysis for emerging themes and the findings were used to develop the new model (PBL-LcCRAFT). The outcome of this study is the new model which is a guide for crafting PBL cases specifically for languages. This paper discusses five interrelated components in the new model (*Ill-structuredness, Language in-use, Researching, Reasoning and Reflecting*) which language practitioners considered as significant components in crafting language cases. The key findings presented here are the five interrelated components in PBL-LcCRAFT that have assisted the practitioners to craft cases and the symbiosis between these five components with

the 21<sup>st</sup> century skills (i.e. knowledge, creativity, collaboration, critical thinking and communication skills).

**Keywords:** problem-based learning (PBL) language case crafting (PBL-LcCRAFT); 21st century skills; English language teaching and learning; action research

## INTRODUCTION

Problem-Based Learning (PBL) is an instructional model or pedagogical approach that covers a wide-range of educational practices (De Graaf & Kolmos, 2003) particularly to teach content area subjects. A PBL classroom requires students to work together to find solutions to a complex situation presented to them, decide what information they need to learn and what skills they need to gain in order to manage the situation effectively (Mohd-Ali et. al, 2016a). As for the teachers, despite the benefits this approach brings, there has been a call from them for a systematic way to design problems in PBL because creating problem is the most challenging task (Angeli, 2002). It is axiomatic that Hung's (2006) 3C3R Case-Design Model is the main PBL model used for case design. The elements that are the cornerstone in the model encompass content, context and connection as the core components; while researching, reasoning and reflecting are the processing components (Hung, 2006). Although it is mostly utilised by practitioners in many fields, this model seems to be lacking in its component to suit the language learning field. This is because in the existing model, 'content' is one of the core component which is crucial in crafting cases to teach content whereas language skill is the emphasis on language learning. This brings to the need to construct a PBL case crafting model specifically for languages. A two-cycle action research was conducted to develop a proposed model called the PBL-LcCRAFT which is germane to language case designers. Hence, this paper reports the findings of the action research on the five components of PBL-LcCRAFT and their connections with the 21st century language learning.

## LITERATURE REVIEW

Drummond-Young and Mohide (2001) offer an eight-step PBL problem for nursing education. However, the design model was too domain specific to be used for wider context or fields. Then, 3C3R model (Hung, 2006) emerged to cater for wider contexts in crafting PBL cases. PBL-LcCRAFT made its debut in 2016 and 2017 when findings from the two-cycle action research were reported and published in articles (see Mohd-Ali et. al, 2016b; Mohd-Ali et. al, 2017a). PBL-LcCRAFT reflects Hung's (2006) 3C3R case-design model in many ways where elements like context, connection, reflect, reason and reflect remain. The element of content in 3Cs has been taken out while all those in 3Rs are intact. This suggests that the knowledge processing for PBL-LcCRAFT is similar while the emphasis in the core components has been shifted. The shift is inevitable to address the needs in language learning where there should be more emphasis on language skills rather than the content.

As illustrated in Figure 1, the core components in PBL-LcCRAFT consist of context, ill- structuredness, language skills and all the three pivots around affective angle.

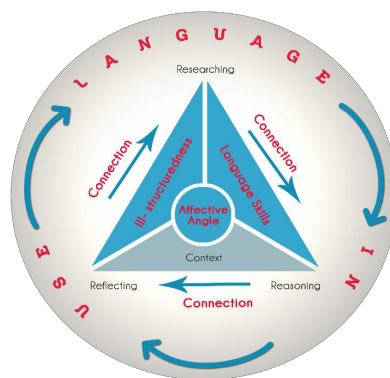


FIGURE 1. PBL-LcCRAFT (PBL Language Case-Crafting Model)

Context denotes the relevant information on the selected situation, ill-structuredness on the other hand, initiates needs to find information to solve a problem or handle a situation. The element of language skills refers to the objectives set or the targeted skills for language learning. The pivotal affective angle covers the psychological needs that move the learners to want to solve the problem. The affective angle includes six possible aspects: subject presence, location proximity, temporal proximity, personal interests, career interests, and unsolved problem. All the four elements are intertwined as each provides the background, parameter, vehicle and push to solve the problem identified. The information from the four elements is then processed. The processing components (researching, reasoning and reflecting) or the 3Rs in PBL-LcCRAFT are similar to those proposed in Hung's 2006 model. Researching means finding/locating related information; reasoning is the problem solving process; and reflecting means evaluating the information, practices or experiences for future use. The four core elements and the processing components evolve around language-in-use. In other words, language-in-use is the crucial underlying factor as the language needs to be practised in a meaningful context. Hence, language case crafters need to present the case that enables learners to inevitably use language to engage in compiling information in researching, evaluating the information and consequently solving the problem. For the purpose of this paper, only five components from PBL-LcCRAFT model are discussed: *Ill-structuredness, Language in-use, Researching, Reasoning and Reflecting, which are meant to assist case crafters in crafting cases aligning to the demands of the 21<sup>st</sup> century learning skills.*

In the 21<sup>st</sup> century learning skills (Figure 2), the basic learning skills of reading, writing and arithmetic or better known as 3Rs are still emphasised. However, these 3Rs exist alongside the new 4Cs – critical thinking and problem solving, communication, collaboration, and creativity and innovation. As for this study, the use of PBL-LcCRAFT for English Language PBL cases, only 2Rs (Reading and Writing) and the 4Cs would be relevant.

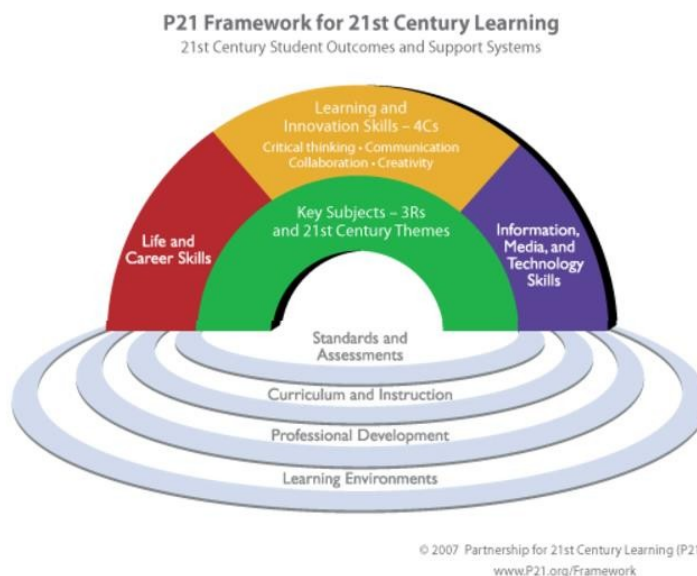


FIGURE 2. The 21<sup>st</sup> Century Learning (Outcomes & Support Systems)

The National Research Council of the National Academies of Science in Washington labels 21<sup>st</sup> century skills as Cognitive skills: critical thinking and analysis, Interpersonal skills: teamwork and complex communication and Intrapersonal skills: resiliency, reflection and contentionsness (Sparks, 2016). This leads to a framework characterised by a symbiosis between core subject knowledge and creativity, collaboration, critical thinking and communication skills; life and career skills; and information, media and technology skills. Thus, PBL cases crafted using the components in the PBL-LcCRAFT would create the opportunity for learners to enhance the 21<sup>st</sup> century skills since the learners will be involved in collaborative activities which require creative, critical, communicative and technological skills (21<sup>st</sup> century skills). In other words, learners will be acquiring life and career skills to prepare them for job markets since the PBL cases crafted using PBL-LcCRAFT provide opportunity for learners to enhance the actual skills needed in life and workplace. This shows the symbiosis between the components in PBL-LcCRAFT and the elements in the 21<sup>st</sup> century framework. Cator cited in Rich (2010), “technology allows for 24/7 access to information, constant social interaction, and easily created and shared digital content. In this setting, educators can leverage technology to create an engaging and personalised environment to meet the emerging educational needs of this generation. No longer does learning have to be one-size-fits-all or confined to the classroom. The opportunities afforded by technology should be used to re-imagine 21<sup>st</sup> century education, focusing on preparing students to be learners for life” (p. 2). Thus, twenty-first-century learning will ultimately be “learner-driven” (Hargadon in Rich, 2010).

## METHOD

This study was conducted using an action research approach in which the four steps (plan, act, observe and reflect) were closely followed. This study employed two-cycle action research procedure in which the data from the first cycle was used to modify the second cycle to see the improvement of the area under study. In this two-cycle action research, the first cycle was to train the participants to craft PBL cases using the 3C3R model and an equally important aim was to see the feasibility of the model in crafting PBL cases for language classes. In the second cycle, the gathered data from the first cycle was used to improve the training and get feedback for further improvement on the training and the case-crafting

model. Eight research participants who are experienced English language practitioners with little or no PBL knowledge took part in this study.

These participants have been involved in the ESL teaching field at tertiary level for 10 to 15 years. The English Language course that they teach at the university is General English Proficiency Course (GEP). GEP, a foundation course, is geared towards developing a satisfactory level of language proficiency for learners. The PBL expert has more than eight years of experience in PBL approach in terms of teaching, research and publication in the field. Data from the practitioners were collected through observation checklist and focus group interviews. The observation checklist consists of the items to be observed: the challenges experienced by the participants to craft the PBL cases and the feasibility of the components in the 3C3R case-design model in assisting the practitioners to craft PBL cases. The researchers checked the appropriate items in the checklist based on what they see the practitioners did during the trainings. The checklist has of a list of questions to be considered by the practitioners in crafting the cases based on the key aspect understudy: language skills, context, affective, connection, researching, reasoning and reflecting.

Prompts were used to elicit more responses during focus group interviews using the data from the observation checklist. In the focus group interviews, questions were centered on the challenges and feasibility of using the model to craft language PBL cases. Thus, the data from the checklist guided the researchers to probe more about the challenges and feasibility. Open-ended questions were used in the interviews because this type of interview provides parameters within which interviewees can formulate answers in their own words (Mohd-Ali, et. al, 2016a). The interviews were recorded and transcribed to arrive at themes. The data from the observation checklist and interviews were used to interpret the experiences of the language practitioners in crafting PBL cases for GEP with the aim to provide a better guide to craft Language PBL cases in future. It is important to note that for confidentiality purposes, the participants are identified by alphanumerical codes (P1 - P6) as presented in the findings.

## FINDINGS AND DISCUSSION

In this section, the findings are discussed pertaining to the five components in PBL-LcCRAFT: *Ill-structuredness, Language in-use, Researching, Reasoning and Reflecting*.

### ILL-STRUCTUREDNESS

One of the important characteristics of a PBL problem is the element of ill-structuredness. Findings from the interviews reveal that the participants have benefitted in a variety of ways from the two PBL Workshops: the PBL Awareness and The PBL Language Case-Crafting. After two series of workshops, the practitioners were able to understand the concept of ill-structuredness better as they were able to craft the language cases/problems more easily with the ill-structured elements employed as expressed by P1 and P5. Relatively, these findings correlate with Chin and Chia (2005) whereby after the awareness and hands-on problem crafting workshops, the participating practitioners feel more confident and at ease to present the cases/problems to the students using the PBL approach. The following excerpts indicate this positive progress:

P1     *Yes...need to include now. The first time I didn't think about this.*

P5     *...second workshop is ok. More confident ill-structured is possible.*

P1     *Maybe I should have done it earlier...this component is very important.*



Another important point as highlighted by Jonassen cited in Sipes (2017), ill-structured problems are claimed to work best with PBL. As listed in Jonassen's typology of problems (all eight problem types), ranging from the well-structured to the ill-structured, 'dilemmas' is acclaimed to be having the criteria of the most ill-structured problems. Uniquely, 'dilemmas' will lead to a non-definite answer or decision and cause a lot of disagreements. Thus, the ill-structuredness as utilised in PBL turns out well for students in facing their everyday situations (Jonassen, 2011). Therefore, the lessons become more contextualised and meaningful to students (Sipes, 2017). Evidently, one of the practitioners (P1) highlighted the need of having the PBL language cases to be 'really' ill-structured to ensure its effectiveness in meeting the Learning Outcome (LO).

P1 *...when we were crafting in the 1<sup>st</sup> workshop, we were too specific. We want to make sure the students had this in mind and answered it in this way. So it becomes a task instead of PBL case...that what occurred. So, this time around I see that we were willing to let go, we were willing to make sure that it was really, ill-structured. Because there's more understanding of what is ill-structured and there's more understanding on what is a good PBL case I guess.*

In addition, with the right stimulus, language practitioners can encourage their students with PBL language cases that contain ill-structured problems. As "most of the authentic problems in our lives are ill-structured", Chin and Chia (2005) opine that in a more 'natural' (authentic situations), learners find learning more meaningful and relevant. Through cognitive processes, the learners are able to be creative and critical thinkers through formulating research problems, posing questions, designing and conducting investigations, making comparisons, proposing explanations and others. In the interview, two participants, P2 and P3, highlighted on this:

P3 *They will be able to do the task given to them. But, they will present, the solution, they will do the research. But, in term of language use, it is 50/50 and depends on the group. There will be some groups that will achieve the goals, while some, not. They might surprise us too. Because what I noticed is that when we crafted the problems. The problems have to be interesting to them. Yes, students' interest is important. Affective elements must be present. If we are able to get their interests on that, they will willingly do the research, come out with all sort of solutions and all that. Despite the language barrier they will do it. They will find a way.*

P2 *Yeah, it's true. I think that why we get context like always at the top because if it something unfamiliar to them, they will not respond and added with weakness or limitation of the language it will just fall flat.*

P3 *I remembered one time when we did another research in class, we were talking about online air tickets. The discussion with the students become heated. All the L1 and L2 were in use. They got somewhere. They responded to the topic, they were engaged with the discussion.*

Upon completing the two workshops, the participants have become well-versed with the importance of the PBL principles. In crafting the problems/cases, they included the 'ill-structured' element alongside with other elements (from the original Hung's 3C3R Model and emerging PBL language model) and learning outcome (language skills). The participants started thinking of ways to make the cases ill-structured by either reminding themselves about it, reducing the amount of details given or even crafting a more open-ended type of cases. This is evidently shown in the following excerpts.

P4 *Started with context and affective element. Thought about how important the topic to the students...try to make the case ill-structured.*

P1 *I think the same process that we went through I mean the first and second workshop while we were crafting we're thinking it is too specific to the point that the solution is fixed and at the same time we don't want it to be too open that anything goes and there's no learning outcome at all. I thought about make it more general.*

P4 *Not really sure but I thought about making the case less detailed.*

P6 *Know that I know the concept in PBL, making the case more open was considered.*

Four participants explicated the importance of ill-structuredness to be considered in crafting the cases and they managed to discover the basic tenet in crafting PBL cases which is the element of ill-structuredness.

P1 *The later model with ill-structured element actually amended based on the discussion that we had with both groups.*

P2 *I mean it's more polished that I would say so. Because you can see the connections between all the factors when you put it in this way. So, you have like the main is affective and context but its connected to ill-structuredness, learning objectives and all this. And you can see so, I think this is much more polish compared to the last one.*

P4 *We added another new dimension, Language In Use. But also remembered the basic principle in PBL...not very structured...I revised to make it less structured.*

P5 *As a teacher I always wanted to make things clear to my students...so I add more details. But after PBL workshop...I know it should not be. I think it is good if this 'structuredness' thing is included in the model to make us remember.*

The participants' feedbacks from the interviews clearly show the need for inclusion of 'ill-structuredness' component into the new model (Mohd-Ali et al., 2017a).

#### LANGUAGE-IN-USE COMPONENT

As language learning requires learners to learn and acquire the target language, there is necessity to address the language needs required by learners in learning the target language when crafting PBL cases. This was mentioned by the participants during the focus group interview sessions. As shown in the following excerpt, P1 highlighted the importance of language use in crafting PBL cases.

P1 *... and I believe that language is the main focus that you have to think about when you design the PBL case. We're thinking, alright, that is the problem, we have to think about the learning outcome which is language learning. We have to think about the reasons that would make them use the language for a reason. So I think, this is one essential part that I will consider when I am coming out with a model.*

Similar view was also voiced by the other participants, regarding the importance of language in-use in crafting cases for language classroom use. This issue was expressed by participants P2 and P3 as shown in the following excerpts about the language use is supposed to be 'meaningful'.

P2 *Because in order to solve the problems we need to use language, language use is (chuckle) is everywhere.*

P3 *True, because it has to be meaningful use of language foe students...we need to make sure of that.*

In the following excerpts, the participants pointed out the significance of language in-use to help solve and complete the task. The participants highlighted that Language-in-Use is not only the target language that learners used to access and present the relevant information gained but also that of what they acquired during the process.

P2 *...during the problem solving process, the students will use language.*

P3 *Everything that they know...to complete the case.*

P2 *Yes, they will use language to solve and complete the task.*

P3 *...we can be quite certain that at least some usage of language item of the target language that we want to focus, they will use.*

P1 *...But let's say they want to say something, they discover they didn't have the vocabulary or the knowledge for that. So, in a way language-in-use refers to also what they need to learn, the words, to get it done.*

Importantly, majority of the teachers agreed that language use is an essential element to be included in the existing model, as it is the heart of meaningful language learning task within the PBL teaching and learning activities.

#### **LANGUAGE-IN-USE AND THE 3RS (RESEARCHING, REASONING AND REFLECTING) COMPONENTS**

In the new model, the 3Rs – Researching (finding and locating relevant information), Reasoning (problem solving process) and Reflecting (evaluate information, practices or experiences for future use) – are retained. The bigger element in crafting a language PBL case is ‘Language-in-Use’ where the entire focus in designing a PBL case for a language class is on how language is used in the lesson so that it can be practised by the learners in a meaningful context. The general purpose of the 3R components is to facilitate meaningful engagement in scientific inquiry and problem-solving processes as well as to cultivate effective and efficient learners and problem solvers. Both the Language-in-Use and the 3R components have significant and strong link in language teaching and learning. When crafting a PBL language case using the PBL- LcCRAFT model, Language-in-Use is the focus. The main objective is to ensure and enable learners to use language meaningfully when they solve the case given to them.

When the case is given to the learners, they are expected to engage in research activities: searching, compiling and reading/synthesizing the information related to the case. These research activities require the learners to use language extensively while engaging in systematic researching processes. In the midst of engaging in the research activities, the learners use the language with a purpose of completing the task (i.e. discuss ways to search for the materials, clarify ideas, discuss on points for presentation or practise their presentation notes). With the teachers’ emphasis, the learners might even need to record and email their discussions which require them to use the target language. This is how Language-in-Use is directly related to one of the 3Rs i.e. Researching. The next component is the Reasoning component. At this stage, the learners are actively involved in problem solving processes. They apply the information gathered during the Researching stage to solve the case. The learners analyse information and generate, test and hypothesise solutions. They put their knowledge into practice rather than just memorising it. Language is put into use when they deliberate and discuss with their group members.



Both Researching and Reasoning processes occur simultaneously and reiteratively, and they complement each other in enabling an effective and efficient problem solving process (Hung, 2006). The Reflecting component refers to learners' ability to evaluate the information, practices or experiences they have gathered for future use. In other words, the information (i.e. relevant ideas to solve the PBL case), practices (i.e. using the right keyword for internet search, looking for relevant information, discussing and convincing team members of a possible solution) or experience (i.e. the PBL process, learners' independent roles, soft skills) which are obtained through 'learning by doing' in the process of completing the PBL cases would be internalized and become transferable to similar situations in the future. This is the stage where the PBL process is optimised by ensuring the maximum effects of other components in the PBL case. At this point, learners integrate what they have learned and go beyond the intended scope of the PBL case and develop self-directed learning skills. This includes their reflection on their language use. The reflection component also allows learners to be independent and reflect on their knowledge of their language use.

### PBL-LCCRAFT MODEL AND 21<sup>ST</sup> CENTURY SKILLS ATTAINMENT

In this era of change, there is a need for creating a responsive learning environment, which encourages employing methods that are productive in the students' learning of English (Hazita et al., 2013). The next question is how the components in the new model of PBL-LcCRAFT specifically the five components - *Ill-structuredness, Language in-use, Researching, Reasoning and Reflecting* - aid teachers to assist learners to be productive in learning and inculcating 21<sup>st</sup> century learning skills in the classroom. The fundamentals of 21<sup>st</sup> century learning skills are widely discussed in the recent years due to the globalization, global economy and advancement of technology and communication technology. Due to these developments, learners are expected to display a different set of knowledge and skills. For the purpose of discussion of this paper, we will use the P21 Framework for 21<sup>st</sup> century learning, established by Partnership for 21<sup>st</sup> Century Learning (<http://www.p21.org/our-work/p21-framework>). The framework outlined four significant areas that students in the 21<sup>st</sup> century would need to master which includes:

- i. key content knowledge ,
- ii. learning and innovation skills (inclusive of critical thinking, communication, collaboration and creativity).
- iii. information, media and technology skills
- iv. life and career skills

Using PBL-LcCRAFT, teachers would be able to create lessons that help learners to attain 21<sup>st</sup> century learning skills. Generally, the cycle of Researching, Reasoning and Reflecting in PBL-LcCRAFT advocates the 21<sup>st</sup> century learning and innovation skills. In solving a particular PBL case, students would be involved in locating information, and later analyzing and synthesizing information through collaborative efforts with their peers. Then, through the process of finding the solutions or alternatives to the problem, students would apply similar critical thinking skills. In addition, at the final stage of Reflecting, students would be given the chance for creative activities and evaluate the information gathered. In this challenging stage, the learners were expected to use all the gathered data and acquired skills to evaluate the information to arrive at the most viable conclusion. All these knowledge process refers to the learning and innovation skills outlined by the 21<sup>st</sup> Century Learning.

## SKILLS FRAMEWORK

Furthermore, the emphasis of ill-structuredness and language in use components in the PBL-LcCRAFT will aid teachers to enhance the intensity of these 21<sup>st</sup> century learning and innovation skills in the students' PBL learning experience. Ill-structuredness here means the lack of structure or information in designing the PBL cases. The lack of structure provides a gap or a missing link in the PBL cases for students to explore further. In manipulating the element of ill-structuredness, teachers could promote the use of information, media and communication skills in the PBL cases. For example, a PBL case which requires the learners to look into a bully case based on a newspaper report (i.e. a bully victim in school). In completing the PBL case, the learners will search for relevant information via online or other means and also might use a graphic design to create a poster. In this instance, due to the nature of the ill-structured case, learners were not closely guided but rather self-directed through group collaboration and technology use in completing the assigned PBL case. Hence, the creativity and innovative skills of the learners were enhanced through self-directed activities due to two reasons: the nature of the case (ill-structuredness) which requires their interpretation and the freedom to explore various options to arrive at the most viable end result.

The next significant element in PBL- LcCRAFT is the Language-In-Use. This is a substantial component as it highlights the importance of acquiring the language skills in the process of solving a PBL case. The emphasis of this component in this new model is timely as meaningful language use, specifically the English language communication skills, has been regarded a key content knowledge in the 21<sup>st</sup> century skills. The component of Language- In-Use is represented as embodying the whole process of Research, Reasoning and Reflecting. This shows that teachers should consider this component at all times in designing their PBL cases.

## CONCLUSION

PBL-LcCRAFT is a suitable case-design model to craft language cases for the 21<sup>st</sup> century language classrooms as the components in the model align with 21<sup>st</sup> century skill (i.e. knowledge, creativity, collaboration, critical thinking and communication skills). The five interconnected components (Ill-structuredness, Language in-use, Researching, Reasoning and Reflecting) alongside with other components in the model, are expected to guide the case-crafters to craft language cases to meet their respective classroom needs. Ill-structuredness, one of the components stressed by many participants, is the key aspect that need to be highlighted to all case-crafted. This is further supported by one of the participant's insights into the nature of being a teacher who always think about whether or not the learners would be able to complete the cases if the cases are 'ill- structured'. Thus, if the component is visibility placed in the model, the practitioners would always remember to incorporate this component in crafting Language PBL cases. As for the processing components, the 3Rs, they serve as the operating system in completing the whole PBL process. During these processes until the end of the PBL completion, they will be using the language i.e. language in-use. This is how Language-in-Use enfolds the whole model.

The participants' comments and opinions were crucial in the formulation of PBL-LcCRAFT as their engagement at crafting the cases is combined with their professional background, knowledge and experiences as language practitioners. This gives implication to a concrete platform in the design of the new model, specifically for General English Proficiency course. Their responses are unique and crucial in view of the slight differences in case-design between language and content subjects. The convergence of new knowledge and

flexibility experienced in the study (during the two workshops) yield a deeper understanding involving the components discussed above, for PBL language case-designs. In this instance, all the five components explicated in this paper, clearly show that learning a language is not merely about learning to communicate, but rather it acts as a conduit for learners to critically and creatively use the language to develop and improve solutions.

Thus, PBL-LcCRAFT which incorporates the basis of 21<sup>st</sup> century learning skills (knowledge, innovation skills, information/technological skills and life/career skills) is not only expected to guide English Language practitioners with limited case-design knowledge but also practitioners teaching other languages, to craft PBL cases to meet their learners' language learning aims.

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