A Model for Implementing Problem-Based Language Learning:
Experiences from a Seven-Year Journey

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Abstract. The purpose of this paper is twofold. First, it aims to identify the challenges and barriers experienced in implementing problem-based Learning (PBL) in a language program at Sultan Qaboos University in the Sultanate of Oman. Second, it proposes a working model for integrating PBL into an existing program. The research was conducted using a case study approach underpinned by design-based research principles. The proposed model came as a result of tracing the development of the program over a period of seven years with a total of 14 instructors and 2800 students. The model consists of a number of elements which include the use of hybridizing courses, the careful scaffolding of teachers and students, and the development of a PBL culture of collaboration and interdependence. Each of these elements is described from a process perspective, detailing how we attempted to implement them and how they reacted to challenges along the way. Even though the model was designed for a specific language learning and teaching context, it can be adapted to suit local needs. The model is unique in that it creatively integrates the relevant PBL and linguistic aspects that are often missing in PBL designs but are essential for a successful implementation. The skills training and the scaffolding that the model proposes can offer one means of working around rigid institutional and curricula requirements that often face PBL adoption. It is hoped that the model may support future implementations of successful PBL.

Keywords: English language teaching; hybridization; Oman; problem-based learning; scaffolding

1. Introduction
Problem-based learning (PBL) is described by Moss and Van Duzer (1998, p. 1) as "an instructional approach that contextualizes learning by presenting learners

with problems to solve or products to develop." PBL originated from the reforms in medical education at McMaster University in the mid-1960s. It was seen as a way to bridge the gap between the classroom and learners' lives beyond it. The approach has spread globally where it is seen as a way to meet the demands of the knowledge-based 21st century economy. PBL is based on cognitivist and constructivist theories to learning that focus on developing the cognitive processes and skills of the learners and providing them with opportunities to learning in situations that are relevant. Furthermore, PBL is seen as one realization of constructivism, where learners are actively involved in learning through cognitive processing and in interaction with the environment (Savery, 2006). In a PBL class, students work in groups and are presented with scenarios of real problems that they have to study and then provide researched solutions. Taking into consideration the fact that knowledge evolves through interacting, collaborating and negotiating with others, and hypothesizing and trying out ideas, in PBL learners develop a sense of ownership of the problem and its solutions. In recent years, there has been a significant increase in the use of PBL across many disciplines, age levels, and content domains (Savery, 2006), largely in response to the perceived inadequacy of traditional didactic practices in preparing learners for the changing needs of the 21st century workplace (Li & Henriksen, 2010). A growing body of evidence suggests that PBL can be more effective for the development of such skills as cooperative working, integrating information, critical thinking, problem-solving, communication skills, and self-directed learning (Dolmans et al., 2005; Hmelo-Silver, 2004; Kain, 2003). In addition, there is some evidence to support the idea that PBL is more effective in developing professional skills (Berkson, 1993) and generating greater student interest and motivation (Michel, Bischoff, & Jakobs, 2002). However, in practice, adopting PBL has proven to be challenging due to teacher beliefs and practices (Salam et al., 2009), the teaching of process skills, group dynamics, students' negative attitudes (Mansor et al., 2015), the specific nature of the PBL curriculum (Wee et al., 2000), and time constraints (Luk, 2004). These factors can all be impediments to the successful implementation of PBL. In practice, the integration of PBL has often been shown to be a lengthy and an arduous process that can stall or fail altogether (Lai & Tang, 1999). It is the aim of this paper to document the process of implementation of PBL and identify the variables that affect its success. Based on the review of the relevant literature, we noticed that this is often missing or described very briefly, which makes replication quite hard. In addition, this paper aims to add to the relatively small body of research that exists in the particular domain of language education.

In this way, the paper goes some way towards addressing a need identified by Dolmans et al. (2005, p. 739) when they suggested that "what is needed is research that bridges theory and practice and extends knowledge about developing and improving PBL in everyday practice." Universities are highly complex environments and many variables interact to make an innovation successful or otherwise. In addition to this, PBL is still relatively recent in English language teaching, but it has a particularly great potential to aid language acquisition and to emphasize the meaningful use of the language as a tool for communication and problem solving.

2. Literature Review
2.1. PBL and language learning
There is widespread acknowledgement that PBL can have significant benefits for learners. However, research into the design and implementation of PBL in English as a foreign language (EFL) contexts remains relatively piecemeal (Abdullah, 1998; Larsson, 2001; Mathews-Aydinli, 2007). A number of older, but still relevant, studies have described the programmatic adoption of PBL in business communication (Allen & Rooney, 1998), biomedical English (Wood & Head, 2003), and legal English (Ali & Abdul Kader, 2005). Greenier (2018) proposes an interesting instructional PBL model specifically designed for the second language learning context. The model "aims to tailor PBL to the language learning environment by attending to the development of intellectual competencies and content knowledge while simultaneously focusing on acquiring, practicing, thinking about, and experimenting with the target language" (p. 9). Other studies have investigated the effects of PBL on language performance (Jiriyasin, 2014), vocabulary acquisition (Lin, 2015), and perceptions of EFL students towards PBL (Azman & Shin, 2012). Lin (2016) argues that this dearth of research into PBL in EFL may be due to unfavourable conditions including resources, students' attitudes towards active learning, and time constraints.

The trend in some language teaching contexts has been to define goals independently from learners and context and to present language in a rigid, linear, and structured fashion and reinforce content through decontextualized practice. This often results in learners acquiring knowledge about the language but little ability to use it (Zhou & Niu, 2015). In contrast, PBL presents the target language as a tool for communication and solving problems. It "positions the target language as both the object and vehicle of learning, meaning students see the project as a meaningful enterprise with which to learn and use English with their peers" (Greenier, 2018, p. 1). It gives learners the opportunity to use the language through contextualized materials, topics, and activities in a way that helps students develop their communicative skills. Even though the problem is the starting point, the focus is on the learner (Palupi, Subiyantoro, Rukayah, & Triyanto, 2020). The teacher scaffolds the learning process to help the learner become autonomous. Thus, learners develop academic, linguistic, social, and personal skills through the chain of events leading to solving the problem (Gómez, 2016). In this way, students are engaged in exchange of meaning, discussion of possible causes and solutions, and reaching agreements. This meaningful interaction with real problems is believed to enhance learner motivation and communication in the target language. This is also in line with the widely held view of language as a tool for communication rather than a subject to be learned.

2.2. Challenges and barriers to effective PBL implementation
The introduction of a new teaching method into traditional language learning environments often creates a number of unique challenges for institutions, teachers, students, and other stakeholders (Grant & Hill, 2006). It requires a significant change in the mind-set of teachers and students. The implementation of PBL can create tension between the expectations associated with a new teaching approach and existing instructional methods, assessment, and curriculum. It can

also disrupt teacher expectations and assume that students have the requisite skills to deal with the new approach. As Greening (1998) observes, the shift to PBL can result in "wide-ranging changes to the values of traditional education, and cannot be realistically applied on top of existing infrastructure" (p. 10). Grant and Hill (2006) have recognized five key factors that influence teachers' adoption of student-cantered approaches, namely a) recognition and acceptance of new roles and responsibilities, b) comfort in the new (physical) environment, c) tolerance for ambiguity and flexibility in managing the new learning environment, d) confidence in integrating appropriate tools and resources, including technology, and e) integration of new pedagogies with realities beyond the classroom.

Indeed, the gravity and scale of these challenges may be one of the primary factors in explaining the slow adoption of PBL in the language education context (Grant & Hill, 2006). At the institutional level, administrative, financial, and management support is a necessary requirement to implement change and to help modify embedded systems and existing ways of working (Li & Henriksen, 2010). Wide-ranging changes result as a consequence of implementing PBL, and this may involve simultaneous changes in curriculum and assessment (Barron et al., 1998). At the curriculum level, alignment of existing curriculum objectives and PBL objectives can cause friction due to the different expectations and learning outcomes (Biggs, 1999). In addition, assessment of PBL may not concord with existing assessment regimes and practices due to very different objectives in terms of what is being tested and how it is being tested (McDonald & Savin-Baden, 2004).

As far as teachers are concerned, they may lack awareness of the PBL approach in the sense that they short of the necessary background knowledge or training and may be resistant to changing tried-and-tested methods (Kassem, 2018). Teachers may also struggle with the "managerial" aspect of PBL, and the increased responsibilities and demands on their time (Brinkerhoff & Glazewski, 2004). A number of studies have shown that teachers experience difficulties with planning and implementing PBL courses (Simons, Klein & Brush, 2004), frustration with students shifting to more active roles (Gallagher, 1997), and assessment of learning within a PBL context (Brinkerhoff & Glazewski, 2004). In the same vein, Krajcik, Blumenfeld, Marx and Soloway (1994) describe three levels of challenge that teachers face: 1) previous experiences, beliefs, commitment to the innovation, pedagogical and content knowledge, 2) classroom resources, support, size, and schedule, and 3) school policies (relating to curriculum and testing), and community support and involvement. In addition, teachers may find it difficult to adapt to the different expectations associated with facilitating PBL courses, particularly in terms of taking on the role of mentoring students (Dolmans & Wolfhagen, 2004). In the traditional classroom the focus is on the teacher as the *source of knowledge* or *expert* and the students are more passive recipients of knowledge (Rosenfeld & Rosenfeld, 2006). Yet, within a PBL setting, teachers take on new roles (William & Shelagh, 1993) and this may involve a "paradigm shift" (Camp, 1996, p. 1) in terms of their understanding of their professional identity. The shift from delivering information to facilitating learning may necessitate a deep-seated re-examination of pedagogical views and a re-evaluation of

fundamental teacher beliefs and attitudes towards teaching and learning (Rosenfeld & Rosenfeld, 2006). As William and Shelagh (1993) suggest, PBL "turns instruction topsy-turvy" (p. 26).

With regards to students, PBL can hinder academic achievement in different ways. This is especially true in contexts where students do not have the necessary skills to effectively engage with collaborative learning, have set expectations of how they will and should learn and how they should be taught (Smith & Wertlieb, 2005), and they may be unused to taking responsibility for their own learning. Besides, group dynamics can cause serious challenges for students, particularly when group members do not contribute or participate as required (Rowan, McCourt, & Beake, 2008), they cannot express their opinions, or feel that the group is dysfunctional (Azer, 2001). Students may also feel insufficiently prepared to work on their own with minimum intervention from instructors (Ge, Planas, & Nelson, 2010). According to Vermunt and Verloop (2000), the introduction of new approaches to learning can cause students to experience a temporary "friction" between the demands of the new learning environment and their preferred strategies, orientations, and conceptions related to learning, which can lead to frustration or withdrawal.

As a result of these challenges, practitioners are often hesitant to implement teaching approaches like PBL. Usually, an interplay of factors converges to lead to a failure in implementation. This paper aims to contribute to the above body of work to better identify the factors that play a role in determining the success or failure of implementing a new innovation, such as PBL. As Ward and Lee (2002) state, "The philosophies supporting PBL are well established, but the 'how tos' are in short supply" (p. 21). We attempted to offer a context-sensitive model. Four questions informed this process. First, what are the institutional constraints (e.g., existing curriculum outcomes, assessment practises and demands, resources, institutional support)? Second, what are the course constraints (e.g., timing, existing materials, alignment with other courses, specific language learning objectives, and skills focus)? Third, what are the factors related to teachers that need to be recognised in order to design an effective PBL course?(e.g. teacher background, changing roles, time constraints, management abilities, awareness of the PBL approach, training needs)? Fourth, what are the factors related to students that need to be recognised in order to design an effective PBL course (e.g., student background and expectations, motivation, learning styles and culture, language ability)?

3. Methodology
The research was conducted using a case study approach underpinned by design-based research principles. The work on implementing a problem-based learning approach started in spring 2011, and the course was implemented in the fall of that year. The model for implementing PBL was developed over the course of seven years and builds on insights and observations over 14 iterations of the course. Over the duration of course development and implementation, a total of 2800 students and 14 teachers were involved in the course. The students and

teachers were studied in their classes. These represented about 10% of the total population.

3.1. Design-based research

The theoretical framework for developing the model for PBL implementation followed the design-based research (DBR) principles. Wang and Hannafin (2005) define DBR in terms of "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p. 6). They go on to propose five basic principles that characterize DBR research: "Pragmatic, grounded, interactive, iterative and flexible, Integrative, and contextual" (p. 7). They elaborate on these principles by noting a number of features of DBR. Firstly, DBR engages with current real-world problems in real-world contexts through the design and implementation of interventions that extend a theory and refine design principles (Design-Based Research Collective, 2003). Secondly, they note that DBR requires collaboration between researchers and practitioners in order to achieve the objective of enacting real change (Design-Based Research Collective, 2003). Thirdly, they suggest that DBR is flexible in terms of its research methods and approaches, which are largely driven by the nature of the enquiry. They note that "design-based researchers utilize multiple mixed methods over time to build up a body of evidence that supports the theoretical principles underlying a specific innovation as well as refines the innovation itself in situ" (Wang & Hannafin, 2005, p. 8). Finally, DBR takes place over an extended period of time in order to develop and refine theory and practice through iterative design cycles focusing on analysis, design, evaluation, and redesign (Wang & Hannafin, 2005).

In the development of the present PBL model, the DBR process involved a number of different phases. Firstly, and prior to the design and implementation of the course, a comprehensive literature review was conducted in order to identify challenges and insights that could be gained from similar projects globally. Although the researchers identified some specific areas that were relevant to the project, they were conscious of the extent to which outcomes could be applied wholesale without sensitivity to the specific context. At this stage, the researchers also arranged a number of discussions and meetings with teachers and course developers to ascertain the specific particularities of the educational context. By prioritizing these variables and developing a consensus around our specific contextual requirements, a number of broad themes emerged from this initial phase including the need for hybridization, teacher and student scaffolding, and tools to aid the development of a *culture of PBL*. The second phase of the process involved the design and development of the content of the course, bearing in mind the themes that had emerged from the literature review phase. A distinction was made between the actual *content* of the course in terms of course materials (student course books, teacher books, online materials, etc.) and tools that supported the course (teacher training, materials and practises to support the development of a culture of PBL). The third phase of the DBR process involved repeated iterations, evaluation, and review of the course. Before and after each

cycle of implementation of the course, teachers reviewed the course and identified areas that could be improved and ways in which the objectives of the course could be better achieved. The outcome of the research was the production of a model of PBL implementation incorporating solutions to the design challenges faced throughout the implementation process.

3.2. The context
The study took place at Sultan Qaboos University, a government university in the Sultanate of Oman. English is the medium of instruction in six of the nine colleges (medicine, science, agriculture, engineering, commerce, and nursing) and in certain majors in the other three colleges (arts, education, and law). Upon admission, all students sit for an English language placement test that places them into one of the six proficiency levels in the general foundation program. Students study English for one or more semesters after which they proceed to studying college courses and continue to receive additional English language support through credit courses.

The PBL course design was applied to one of the credit courses, titled LANC 2058, which is a course taken by College of Science students. This alternative course design was adopted because of the need to restructure the existing course that was no longer deemed to be suitable in terms of addressing student or college needs. Four teachers from the Language Centre were assigned to the development of the course and worked in coordination with the College of Science. The course itself (LANC 2058) is a credit English course with a specific focus on supporting the English language needs of undergraduate science students specializing in a range of subject areas.

As discussed above, the potential benefits of PBL are substantial; however, overcoming institutional, teacher and student-related challenges is an important, if not central, component of implementing PBL in a language learning context. Indeed, an awareness of these challenges can determine the relative success or failure of implementing PBL (Barron et al., 1998), assist in a clearer conceptualization of course design, and improve course quality, relevance, and delivery (Greenier, 2018). A lot of the literature assumes PBL will be implemented within a native speaker context, in an institutionally-ready environment with teachers and students who are adequately prepared for the transition (Tally, 2015). In the researchers' case, the context was very different. Students were non-native speakers of English, the institution was largely driven by traditional approaches to teaching, curriculum, and assessment, and teachers and students had very little exposure to PBL. The implementation of PBL in its *pure* form was not deemed to be feasible or realistic.

As a result of the literature review, and drawing on Tomlinson (2011), a design framework of agreed principles was developed. The development of this framework involved the design team reaching a consensus around the principles that would shape and inform the PBL course design. Each team member was asked to identify and prioritize the design principles that best reflected the researchers' particular context based on their understanding and interpretation of the literature. A number of broad principles that would shape the approach to

course design were developed through a process of discussion and elimination (Tomlinson, 2011). The broad principles the researchers agreed on were hybridization, scaffolding (teachers and students) and culture development. The researchers recognized that there were numerous other variables to be considered; however, the specific variables the researchers selected helped in factoring into course design the specific challenges and issues the researchers faced in terms of developing and designing a PBL course suited to the specific needs of the context. In the next section, these variables are discussed in more detail.

3.2.1. Hybridization

PBL is not a linear or rigid approach; it is very flexible and can be modified to suit different contexts and used in different ways, while retaining its core principles (Barrows, 1986). Barrows (2000) describes a number of areas in which PBL can be modified, including problem format, the role of the facilitator, and students' degree of responsibility for their own learning and assessment (p. 2). Indeed, Malik and Malik (2018, p. 8) suggest that "it may be more useful to visualise PBL as a continuum rather than one immutable process" (p. 1). To this end, a distinction can be made between "standard" and more "hybrid" forms of PBL. Standard PBL can be described in terms of "PBL curricula where lectures and other didactic sessions are (very) judiciously used to support the active, self-directed, and student-centred learning triggered by problem scenarios" (Lim, 2012, p. 1), and minimal levels of scaffolding are used. On the other hand, hybrid PBL actively scaffolds the PBL process with the use of traditional methods of instruction like lectures, tutorials, and more guided and structured support of the inquiry process (Mar et al., 2016). In other words, the distinction between standard and hybrid forms of PBL lies in the level of supplementation, facilitation, support, and scaffolding that students are exposed to in the inquiry process. Standard PBL formats provide little or no support and promote a more self-directed and self-regulated learning environment. More hybrid forms of PBL integrating scaffolding may be more suited to institutions that "want to benefit from the advantages of PBL methodology but do not want a complete reform to switch to an entirely PBL-based curriculum" (Mar et al., 2016, p. 1). They may also assist in addressing concerns practitioners may have about reconciling PBL with existing curricula and assessment demands by offering a compromise in terms of introducing PBL into an existing curricula and assessment framework (Chian, Bridges & Lo, 2019).

3.2.2. Scaffolding language students

In the language learning context, the implementation of standard PBL can raise a number of issues and challenges for students (Norzaini & Kor Shin, 2012). Students may not have the requisite language and study skills to engage effectively with the PBL process, and they may lack awareness of the expectations of PBL because of their educational backgrounds and lack of exposure to different teaching approaches. Studies have shown that a lack of adequate language skills can lead to inhibition and insecurity and hinder student performance in a PBL setting (Engelbrecht & Wildsmith, 2010).

The use of scaffolding can help mitigate these issues through the supportive use of lectures, tutorials, and course materials. In a language learning context, this can be organized through the division of dedicated language input classes and PBL classes. Ertmer and Simons (2006) show that "students perform better, achieve more, and transfer problem-solving strategies more effectively" (p. 50) when supported through a scaffolded process of learning. The importance of language development supporting medical PBL courses has also been highlighted by Singaram et al. (2011, p. 162) who see it as a way "to improve and encourage tutorial group discussions and interactions, which would then enhance the quality of collaborative group learning and academic success in higher education settings".

In addition to language input, there are a range of other skills that can help facilitate students through the PBL process. These skills can be broadly divided into three main categories; interpersonal skills (people), research skills (process skills), and design and information technology skills (product related skills). This broad categorization of skills can be a useful way to conceptualize a PBL course particularly in terms of developing relevant and targeted scaffolding for students and guiding students through the PBL process. In a language learning context, the identification of these skills can also help guide the development of language support components of a course (Kim, Belland, & Axelrod, 2019).

The first set of skills are (is?) the interpersonal and thinking skills (people skills). Tally (2015) identifies five essential skills for ensuring student success in PBL: communication, inquiry, collaboration, research, and activation of prior knowledge. She proposes the use of a rubric with which "teachers can identify which skills their students have and rate their ability in that skill using a numerical scale" (p. 27). Peterson (1997) focuses on the interpersonal aspect of PBL and argues that without the adequate development of interpersonal skills "student learning can be frustrated" (p. 2). The interpersonal skills proposed for more effective student engagement with PBL include consensual decision-making skills, dialogue and discussion skills, team maintenance skills, conflict management skills, and team leadership skills (p. 2). In addition, a number of mechanisms are recommended which can assist in the development of these skills, including pre-requisite skills development courses, teaching skills in other courses running simultaneously with PBL, and integrating interpersonal skills into the PBL course itself (p. 6). A number of other studies advocate a range of 21st century skills that can help students to address the challenges of PBL (Dede, 2010; Lemke, 2002). These skills include critical thinking, problem solving, collaboration, communication, and creativity (Dede, 2010; p. 10).

Another level of skills that students require in order to effectively engage with PBL involves research skills (process). In the conventional understanding of PBL, students work collaboratively to solve ill-structured problems through a process of extended inquiry, and this process can be structured or guided through a series of steps or stages (Yew & Goh, 2016). Generally speaking, this process follows a number of steps (see Figure 1). Learning institutions across the world have modified this process in order to better adapt to their own needs and learning conditions. For example, Stix and Hrbek (2006) propose a more detailed and

comprehensive nine-step learning process. Some institutions have also divided the PBL process into different stages (Wee, 2004), phases (Aarnio, 2015) and ladders (Othman, Salleh & Sulaiman, 2014). A number of studies have examined the different steps of PBL and how they impact on learning (Hmelo-Silver & Barrows, 2008; Visschers-Pleijers et al., 2006; Visschers-Pleijers et al., 2004). These studies found that the organization of process steps and tutor facilitation can have a significant impact on learning achievements. Other studies found that time spent on the problem analysis and that definition stage had a significant impact on learning achievement (Van Den Hurk et al., 2001). By anticipating and organizing these steps, teachers can think more clearly about the skills, input activities, and support they will provide.
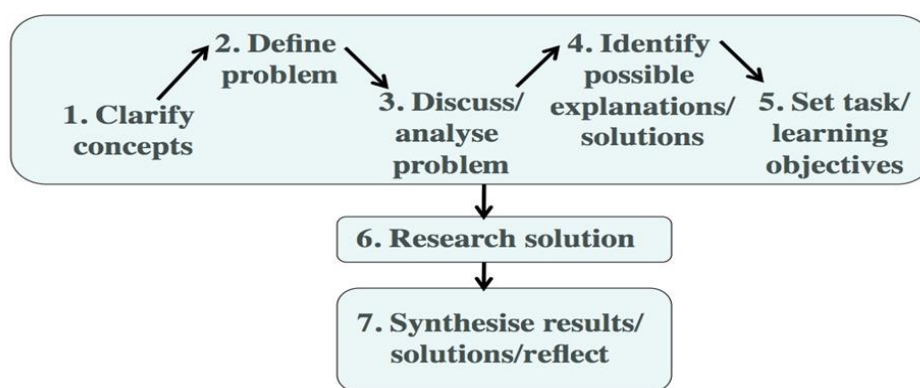

Figure 1: Steps of problem-based learning

Along with people and process skills, students' engagement with the PBL process can be facilitated through the use of information technology skills (product skills). These skills can help students both in terms of the steps in the PBL process and the production of public products to communicate solutions to their particular problems. In relation to the PBL process, technology can help students though the use of applications that promote discussion, reflection, presentation, collaboration, and assessment (Donnelly, 2005). Technology can also be used as a tool "to build interactive learning environments where students can play an active role in the learning process" (Lee, 2013, p. 7). In relation to products, technology can support the more effective production and presentation of public products promoting PBL solutions (Donnelly, 2005). This may involve developing presentations, posters, brochures, websites, blogs, and other ways of communicating their solutions. The use of different levels of scaffolding can help students notice and reflect on the process of problem solving and provide valuable input in terms of language learning objectives. However, scaffolding may also be a useful way of addressing the concerns and challenges that teachers face in adopting a new teaching approach.

3.2.3. Scaffolding teachers

Teachers face a range of unique challenges when adopting and implementing innovative teaching approaches like PBL, and these challenges can create a significant barrier to successful implementation (Grant & Hill, 2006). Mergendoller and Thomas (2005) note that during classroom implementation "the

overlapping, wide-ranging, and changing demands of PBL management and instruction are difficult to master, and novice PBL teachers frequently experience dilemmas and difficulties" (p. 35). This is largely because most teachers do not have experience with student-centred learning approaches (Land, 2000). The situation may be even more challenging in the case of PBL as the definitions of some of its underpinning conceptions, such as critical thinking, are still not widely accepted.

In addition, the skills and resources required in traditional teacher-centred classrooms are very different from those required in student-centred classrooms, and the way teachers manage and direct learning may require fundamental changes (Brush & Saye, 2000; Krajcik et al., 1994). As Tally notes "Traditional pedagogy is challenged when PBL is implemented in the classroom and teachers are forced to question their educational beliefs. This creates a struggle within as teachers try to adapt to a new way of looking at education while also trying to meet the educational needs of their students" (2015, p.18). As a result, supporting teachers throughout the process of adoption and implementation has long been recognised as a central priority (Fullan, 1992), and it has been noted that "there is a need for PBL-specific professional development as well as school support structures for teachers engaged in the PBL implementation process" (Bradley-Levine et al., 2010, p. 6).

A number of studies have examined teacher scaffolding in the process of PBL planning and implementation. This was in terms of the use of specific scaffolding strategies to support teachers (Ertmer & Simons, 2005, 2006) and the use of hard and soft scaffolding throughout the process of PBL adoption (Brush & Saye, 2002) to simultaneously enhance student learning and provide teachers with valuable feedback and direction. They propose the use of digital platforms to act as an interface between teachers and students in order to promote reciprocal feedback. These scaffolds provide support for students while also providing teachers with valuable feedback for developing and improving instructional inputs. Ertmer and Simons (2005) argue for a conception of teacher scaffolding that reduces PBL's complexity while also increasing the teacher's ability to independently implement PBL in the classroom (p. 5). They also make a distinction between efforts to support planning of PBL and supporting implementation. In relation to the process of planning, they stress the importance of driving questions and note that these driving questions should be broad, meaningful, and relevant and also lend themselves to deep student investigation. They also argue that good planning should consider the availability of resources and identify strategies for creating student ownership of the problem. In terms of implementation, they argue for the creation and development of collaborative classroom culture and strategies to maintain student engagement. The development of a "collaborative classroom culture" requires a shift in terms of the student/teacher relationship, expectations, and ways of working (Lee & Blanchard, 2019).

3.2.4. Developing a culture of PBL
While traditional classrooms are teacher-centred and promote a conception of learning that focuses on extrinsic rewards, the right answer and strict codes of control, behaviour, and discipline, PBL is student-centred. PBL promotes

collaborative learning and rewards flexibility and critical thinking. This can lead to greater learner autonomy which is seen as a way of empowering students to take responsibility for their own learning inside and outside the classroom boundaries, a skill that is much needed at the university level (Borg & Al-Busaidi, 2012ab; Reinders & Benson, 2017). The development of a learning environment in which students work productively, collaboratively, and independently requires that they "have shared goals and experiences, feel empowered to contribute, trust in one another, and feel understood and capable as individuals. These attributes enable teamwork, cooperation, a willingness to negotiate, and the ability to draw on one another's skills" (Kane, 2016, p. 3). Successful implementation of PBL also requires a willingness on the part of teachers to change their role from a directive to a facilitative role.

Shifting from traditional instructional methods to a PBL approach necessitates a requisite shift in classroom culture, involving both students and teachers. In other words, the implementation of PBL requires not only introducing a curriculum but also living out the underlying principles and values that underpin the approach (Bergeron, Schrader & Williams, 2019). In order to do this, teachers need to provide opportunities to practise and develop the required skills and also provide structural support for students in terms of fostering positive attitudes towards collative learning, individual accountability and learner autonomy. Classroom culture can be defined as:

> *"The often unspoken and frequently unconscious assumptions about how people (both the teacher and the students) will behave during the lessons – Where will people sit, or stand? Who will speak, when, and what about? What types of behaviour are appreciated, tolerated or frowned upon?" (Swift, 2006, p. 1)*

Kennedy (2002) elaborates on this definition by including "the social rules, beliefs, attitudes and values that govern how people act and how they define themselves" (p. 430). Attention to developing a classroom culture is particularly important in the implementation of PBL because the development of a culture of inquiry and collaboration will necessarily impact on the quality of student learning. It is also an important aspect of PBL implementation because students and teachers may be used to particular ways of working and have entrenched attitudes and expectations of what it means to teach and learn. Boss and Larmer (2018) note:

> *"Classroom culture takes on particular significance in PBL. When the goal is to foster inquiry, risk taking, persistence, and self-directed learning, culture is too important to leave to chance. Building the right culture for PBL requires on-going effort and attention by both teachers and students. Instead of being hidden, a PBL culture needs to be openly constructed, reinforced, and celebrated." (p. 14)*

A classroom culture that promotes collaboration and interdependence can be instituted through the use of various strategies, including routines and protocols, mini projects, group reflections and the development of a vocabulary, or ways of talking about PBL (Boss & Larmer, 2018). In addition, the use of intentional practises that model, reinforce, and reproduce classroom behaviours that support PBL principles can help to promote a culture of thinking. These practises and

routines can help structure the relationship between teachers and students and also promote conducive cognitive, emotional, and social learning structures (p. 32). Students' attention must be drawn not only to content but also to the various levels of skills that projects promote. Through the use of rituals, explication, and reinforcement, students can be made aware of people skills (group formation, roles, team-building, collaboration, communication, consensual decision making, etc.), process (defining the problem, planning, research, etc.), and the products they will produce (presentations, posters, websites, etc.). In addition, a learning environment which promotes reflection at every stage of the PBL process allows more scope for the development of a reinforcing culture of reflection.

As discussed above, there are a number of broad considerations that can aid practitioners in terms of conceptualizing and designing a PBL course. In the next part of the paper, the researchers review and outline the researchers' experience of implementing PBL and how these considerations informed the practical experience of conceptualizing, designing, and implementing a PBL course in an EFL context.

At this stage, the researchers were more aware of the constraints, challenges, and issues that would shape the researchers' course design. Furthermore, they were better placed to think about the overall design of the course and the extent of hybridization in terms of inputs and assessments, scaffolding, teacher training, and culture development. As a result, the researchers came to the following conclusions regarding the intended design:
1. Develop a hybrid approach to PBL incorporating a mixture of traditional inputs and assessments
2. Incorporate language skills input to support the PBL content
3. Scaffold the course (through hard and soft scaffolding) in terms of people, process, and product skills
4. Train and support teachers and learners before, through, and after the implementation
5. Develop and promote a culture of PBL for both students and teachers.

The specific context where the model was developed also necessitated designing the course around a specific process of research. In other words, the researchers had to pre-empt or predict the process of problem-solving that students were likely to go through in order to design relevant scaffolding and language input. The proposed model is shown in Figure.2. The model builds on insights gained throughout the process of implementation and incorporates key lessons that the researchers were able to draw from their experience. The model reflects the researchers' understanding of the literature in the area of PBL implementation and the broad challenges faced by PBL course designers globally (Chakravathi & Heleagrahara, 2010; Luk, 2004; Wee et al., 2000). It also reflects the specific challenges the researchers faced in the process of implementing PBL in the researchers' localized context. In addition, it draws on discussions with teachers, students, and course designers in terms of the features and characteristics of the course that were innovative or differentiated this course from other courses. Finally, it consolidates the insights gained through consecutive iterations of the course.

4. The Resulting Model

This section describes the model representing the full implementation of the program, in its final instantiation. This represents the key pedagogical principles discussed above (hybridization, scaffolding, and the development of a PBL culture) as instantiated in the Sultan Qaboos University (SQU) specific context. Although the researchers do not propose this model as an example to follow for others, given that each context is different and is likely to prompt additions and/or changes, they include it here as one possible pathway with all its different strands as necessitated in the researchers' environment. The researchers also include it to show the entire range of design elements and how they come together in practice. It is the researchers' hope that this will provide readers with ideas for planning their own PBL program.

The model as shown in Figure 2 is based on the pre-defined process of problem solving described above and builds on insights gained through consecutive iterations of the course. The model can be divided into three main levels; the student process, skills support, and language input. Firstly, and at its core, it shows the steps students proceed through in order to complete the PBL component of the course (stage setting, analysing and defining the problem, research, presentation, and reflection). Students are presented with an ill-structured, real-world problem and work in groups to resolve the problem through predefined steps. The number of steps and how the process is broken up is dependent on a number of factors including the timeframe of the course, assessment, and course objectives. These steps also act as the organizing feature or backbone of the course in terms of providing a solid foundation around which to add or design supplementary support and scaffolding. The course was designed around five main component steps with students completing each step in approximately two-three weeks. The second level of the model is the student scaffolding and support in terms of input that supports students through the process of PBL. Students receive scaffolding throughout the process of problem solving through hard and soft inputs at the level of the people skills they require to complete the tasks, raising awareness of the process they are going through, and designing products that communicate their solutions effectively. Visualizing the scaffolding in terms of people, process, and product skills allows for more targeted and needs-driven support for students. In the researchers' particular case, a student handbook was created and organized around the PBL steps. The student handbook provided a range of activities and materials that students completed at each stage of the PBL process. The materials and activities were designed in response to three main questions: What people skills do students require to compete this component of the course? How can students' awareness of the process of problem solving be raised? How do students design better products for communicating their solutions? The third level of the model is the language input. In researchers' particular case, this was the hybrid part of the course which used traditional inputs in terms of a course book which was designed based around the language learning objectives of the course. This part of course was taught traditionally but progressed in tandem with the PBL course so that language input was aligned to the steps in the PBL process. Finally, the

model incorporates teacher scaffolding and culture building as important elements in the PBL process.
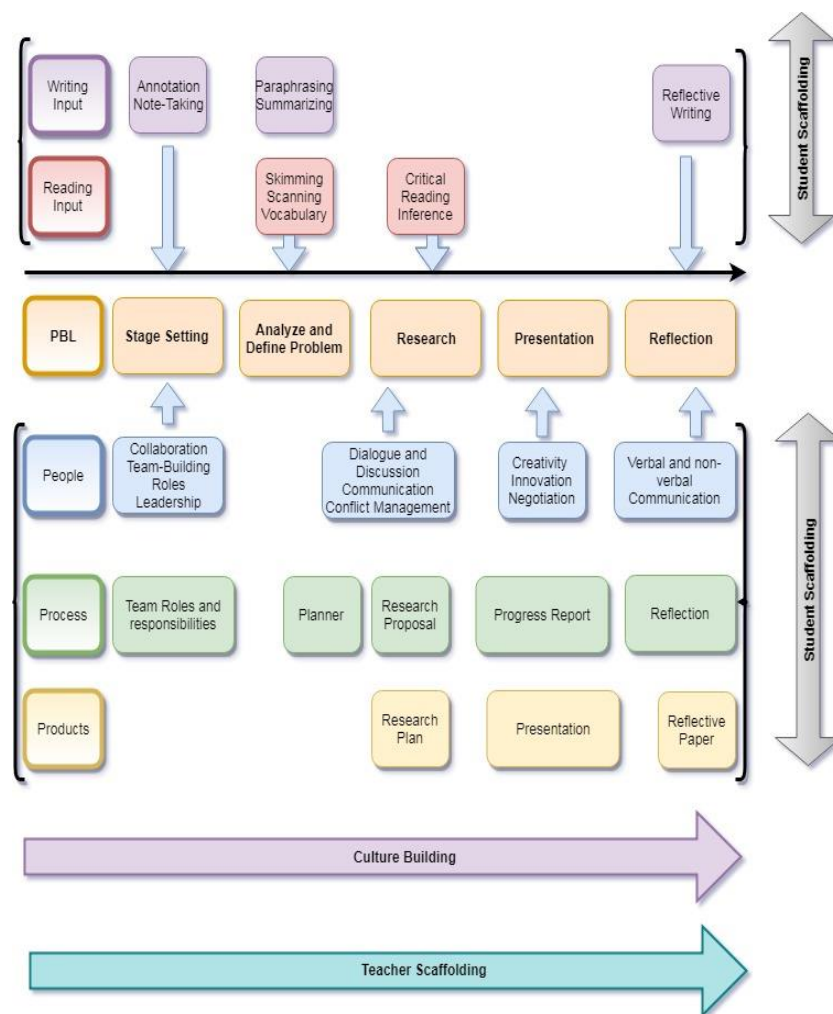

Figure 2: The proposed PBL Model

The model is meant to be understood as a work in progress which can be adapted, shaped, and modified to suit different contexts. While the model offers one way of conceptualizing PBL in a specific context, it also offers a framework for course designers in terms of contemplating possibilities, challenges, and opportunities for the development of PBL courses in other contexts.

5. Conclusion and Limitations

Despite its considerable potential, PBL faces significant challenges in its implementation in language education context. From the researchers' experience, there are a number of very specific factors that can inform course design. These factors are related to the institution, the prevailing culture and the background, and experience and expectations of teachers and learners. Hybridization, scaffolding and developing collaborative cultures of learning are important means of supporting the process of implementation and informing the design of courses. Conceptualizing PBL courses in terms of the barriers and constraints, the

skills focus, and the extent of scaffolding students and teachers require, can offer one means of working around rigid institutional and curricula requirements.

As with any research, it is important to highlight the limitations of the study. First, this study was conducted using a case study approach underpinned by design-based research principles. It is seen as an alternative model for enquiry. Therefore, unlike conventional research studies, the present study did not contain data or information about participants. Second, the researchers were not able to empirically test the impact of the proposed model on student learning. The main objective of this study was first to examine the challenges and offer an alternative to the existing course design.

6. Recommendations for Future Research
The present study has attempted to proposed a working model for the integration of PBL in language education. Future studies could test the effectiveness of the model. This would require collecting primary data from different participants. PBL is rather new in English language teaching, but it has a great potential to support language learning and teaching. Therefore, future studies could extend this model to other contexts and assess its feasibility and impact. Future studies could also extend the scope of the model to school children as a way of making language learning more purposeful and relevant to students' needs and interests.

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