

# Characteristics of ‘Problem-Based Learning’ in Post-COVID-19 Workplace

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**Abstract** The COVID-19 pandemic forced many workplaces to adapt to drastic changes in the work environment around the world. Despite the changes in the previous years in relevance to new technologies and digitisation, the abrupt changes of the pandemic require steep-learning. As the world emerges from the lockdown, more collaborative approaches to solving complex problems are needed. Therefore, this paper investigates the requirements of Problem-based Learning (PBL) in the new normal; an era expected in the post-COVID-19 pandemic. This research uses the dimensions of both the new normal demands and the competency to be learned through the analysis of a questionnaire that investigates the need for PBL. The authors illustrate how the utilisation of PBL helps in the selective approach of the types of possible problems to be solved. The implication of this paper is that it shed light into the rising need for PBL as an attitude after COVID-19 and establish early tools to encourage further more in-depth research on the subject.

**Keywords** COVID-19, New Normal, Problem-based Learning, Workplace, Problem-Solving

## 1. Introduction

COVID-19 pandemic brought a bundle of complex problems to the world, that lead to multi-dimensional issues. The spillovers of the pandemic brought huge socio-economic problems that need to be solved by a generation rather than by experts or specialists of problems-solving.

The expectations of the new normal are much higher, and therefore the chances are higher. As per the study of Buheji and Buheji (2020), the new normal requires attitudes supported by problem-based learning (PBL). The competencies of PBL also need an attitude of Inquiry-based learning (IBL) that can help in critical thinking, Bird (2020), George (2011).

For years PBL has endured debates about its merits and weaknesses. Now and as we enter a new normal created by the COVID-19 pandemic, there is a good chance that PBL as a method delivers solutions through the process of conducting field research or managing a project. The field research links between theory and practice, and the application of skills and knowledge, Savery (2006).

In the same time, the situations emphasised by the

COVID-19 pandemic brought in also significant training needs for people in the workplace and the communities in all the sectors, Nurtanto et al. (2020). Professional development of the workplace has always been distinctive in its nature from both the academic approach in teaching and learning, and from the training approach where ‘learning by doing’ is required. Meister (2020).

The researcher defines the approach of problem-based learning (PBL) and describes the new normal after understanding the requirement challenges in post-COVID-19. The paper explores the problems that would enhance the learning capacity. Donthu and Gustafsson (2020).

The importance of mentors during the problem-solving journey is defined. The authors explore how PBL would help to contain the problems and build attitudes that address the untapped COVID-19 pandemic issues that await permanent solutions. Bird (2020).

## 2. Literature Review

### 2.1. Definition of Problem Based Learning (PBL)

Savery (2006) defines problem-based learning as a method that requires finding a sound or practical solution to a certain problem through the process of conducting research. PBL integrates with inquiry-based learning (IBL) through a mentor that triggers higher-order thinking which acts as a facilitator that helps to enhance the learning process to arrive at the information required. George (2011).

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PBL utilises the questioning technique of IBL to prompt the learning cycle. Savery (2006) argues that this learner's curiosity is the beginning of an effective PBL journey. This triggers a series of questioning, critical thinking that leads to problem-solving. PBL begins with a question followed by investigative solutions, creating new knowledge as information is gathered and understood, discussing discoveries and experiences, and reflecting on new-found knowledge. Savery (2006).

Marshall et al. (2008) seen that PBL is an effective method for preparing multidisciplinary learner groups, giving an example on the learning created during problem-solving of community health centers outbreak of SARS pandemic in Hawaii. This PBL experience found to help the overall increase in knowledge of bioevent preparedness. This experience increased the value of the multidisciplinary group process. Marshall et al. (2008).

## 2.2. Describing the New Normal

The COVID-19 pandemic made many communities and individuals experience a huge disruption to all parts of life and livelihood. These radical changes created a need to react, and to be prepared for the worst. The new normal need a mindset and a capacity to do business and deliver services in the future. New normal build conditions that need a reaction, then realisation and followed reflection on the essence of the sudden and frequent life challenges. Buheji and Sisk (2020). Levenson (2020), OECD (2019).

The coming of next horizons of the post-COVID-19 era could be characterised as the 'urgency of the moment' era. Thus, the competency here is about the capacity of not losing sight of the actions that might be needed for tomorrow. Buheji and Ahmed (2019).

The new normal comes to ensure the community and organisations rapid response and the efficient adaptation to change. This would ensure that the world would be more ready for its re-emergence with a stronger position after each shock, or crisis or global challenge. Politico Magazine (2020).

Buheji (2020) mentioned that the 'next normal' or the post-COVID-19 era would not be similar to the pre-COVID-19 years. The pandemic would touch the main issues of life, what we believe in, how we think, how we visualise our role in life, our next generation essentials, how we would react to a coming life crisis.

## 2.3. Understanding the Challenges of the New Normal

The challenges of the new normal can be defined as a multi-dimensional, competence-based pieces of challenges that need more than the actual realisation. Buheji and Sisk (2020).

In order to measure the importance of PBL in the new normal, general recognition of the need of this new era and the rising demands of the community or the organisation condition, need to be tested and simulated, Marshall et al. (2008). Therefore, through understanding the basis for PBL,

measuring knowledge could be dealt with as discrete facts, where the competency and the abilities would be developed through interacting with ambiguous circumstances. This what differentiates the PBL experiential knowledge in the post-COVID-19 pandemic era. Buheji and Buheji (2020).

## 2.4. Requirements of Problem Solving in Post-COVID-19 & New Normal

Being prompted with a question the learner in the new normal is expected to evaluate the solutions, collate and understand available information to generate a new form of knowledge, discuss findings and experiences and last but not least reflect on establishing "new profound knowledge". One would assume that the majority of PBL attitudes development comes from mentors that use IBL. The questioning technique and the type of questions used are selected carefully to deliver the desired effects, which include prompting students to think critically and arrive at a solution and learn to depend on their own. Nurtanto et al. (2020).

The PBL approach creates more critical thinking, problem-solving, self-managed learning, adaptability, communication, interpersonal skills, and teamwork. These were referred to as "generic capabilities" and grouped into two higher-level categories. The first category is called "intellectual capabilities" and the second is called "working together capabilities". Meister (2020).

The sudden COVID-19 pandemic created a sudden event that created a consequence of broader changes in the modern world. However, this needs new attitudes and behaviours that could shape our life; amongst the top ones are the capacity to learn through problem-solving. Bird (2020).

## 2.5. Type of Problems that would enhance the Learning Capacity

The new normal speed and quality of changes bring in new possibilities for the type of problems to be solved. There is a type of questions which should be meaningful and should include more of higher-order and thought-provoking questions. Rather than asking a lot of questions, the mentor should encourage focusing on asking a fewer but "good" and meaningful question. George (2011).

Carder et al. (2001) believe that the case-based, problem-based learning (CBPBL) is what could change and demonstrate and identify any information needs. There is a specific type of problems and thinking that would address new normal requirements and improve what enhance the learning capacity that could come from collaboration, creative problem-solving and openness to new ideas.

In order to select the most suitable problem to work on objectively during the new normal, we need to capture the following key information: What is happening? Who is being affected? Where is it occurring? When and how frequently is it happening? How does the problem take

place? How to quantify of the impact of the problem? Therefore, the training needs assessment for any organisation during the COVID-19 pandemic and for the “New Normal” should be set up to address the type of problems that could be faced in the work environment. Nurtanto et al. (2020).

## 2.6. New Normal Attitudes and PBL

PBL attitude delivers a number of benefits as the capacity for the containment of the negative effects and how it can be mitigated. The other PBL is the capacity of conducting ‘root cause analysis’ that can bring an effective solution. Having PBL attitudes enhance the efficiency of doing business that leads to profitable operations, Donthu and Gustafsson (2020). PBL helps to create pulling together between the different functions or disciplines with varied backgrounds and experiences that will lead to the best quality inputs and most rounded solutions. Scientists are already working to understand how the Covid-19 virus works and, in due course, will further define the problem before working on a solution in the form of a potential vaccine. Bird (2020), Marshall et al. (2008).

There specific competencies variables that are controlled by attitudes that dominate the mindset. Therefore, attitudes are very important for managing the conditions of a sudden change of environment, as the COVID-19, where the working environment would be reshaping itself constantly, and uncertainty would be the norm. Thus, the educational institutions have a huge role to play in the creation of the employability competency attitudes that fits this uncertainty environment. Positive attitudes as proactiveness and preparedness would be highly expected attitudes of any labour market contender to show the readiness for the new normal. Levenson (2020), Fake, and Dabbagh (2020).

Bird (2020) confirms that individuals’ attitudes in the new normal require that each person be wary, prudent, deliberate, composed, adventurous, carefree, excitable, and intense. These attitudes can be retained from problem-based learning (PBL) in mitigating risks in the new normal and in eliminating the uncertainty. The learning gain through problem-solving with a prudent attitude can help to understand as much as possible the frequency and speed of changes happening and the reasons behind those changes. PBL would help to build the focus needed on the bigger picture of the journey we are going through, i.e. the relation of what we are going through to both our life and our livelihood. Nurtanto et al. (2020).

People that gain PBL attitudes would compose risk tolerance. This builds confidence in opinions and perspectives. The learning created by PBL opens new ideas that are highly adaptable.

## 2.7. Importance of Mentors During Problem Solving Journeys

Mentors should aim to differentiate the different needs and interests of their students and try to tailor their

questions based on those different interests and needs. In other words, the mentors should put the questions into context. To build in-depth questions, we need to design an understanding to create a width of ideas by asking open (divergent) questions that have more than one answer. This opens the horizon to think, reflect and be creative.

The mentors should provide people to think about a question after it has been paused and not directly choosing to answer. The mentors should also make sure that they leave some elapses between students answer and another and give more feedback and weight to each answer.

Instead of depending on voluntary participation, mentors should empower all people to answer and give each a chance to have his or her voice heard. This could happen by selecting the people who would answer the questions. The mentors should provide some useful feedback after each answer.

## 2.8. Untapped COVID-19 Pandemic Problems that Await Solutions

The pandemic brought challenges and opportunities that are engulfed with many problems. There are many untapped problems that still need to be tackled, which could address the rising needs of humanity due to the pandemic. The solutions could form a central part of the early responses to the pandemic and manage the new environment is created. Marshall et al. (2008).

PBL helps to put the curiosity spirit that would address the root cause. This would ensure that the untapped problems would not be addressed by the symptoms only, but rather by the causes of those problems. PBL would help to address what we need to learn in order to find the root cause through experimentation. This would help us to select the data are we going to collect.

## 2.9. Role of PBL in COVID-19 Problems Containment

PBL helps in developing a problem containment plan where the cost of the problem could be avoided. To eliminate any problem in the new normal, it is necessary that we ensure that the problem does not worsen before being resolved. Developing a containment plan through PBL can help to free up resources which are highly needed at the time of the pandemic. Problems due to social distancing and the lockdown can be contained. Marshall et al. (2008).

To give an example, Laxton et al. (2020) seen that PBL brings many containments to COVID-19 pandemic issues related to the policy, collaboration, individualisation, leadership, and reorganisation of post-acute and long-term care.

## 2.10. Coming Technology Role in Spreading PBL in the New Normal

O'Brien et al. (2019) proposed a strike balance between PBL and current emerging trends, technological updates, implementation strategies, and research methodologies.

O'Brien emphasised the importance of workplace learning which varies in each organisation today depending on the type and technology used. Designing PBL programs, promoting it, and implementing it would create impactful learning opportunities, regardless of the sector and industry type.

With the advent of technological platforms and apps we are witnessing huge development in 'experiential learning' that supports the workplace learning. With PBL and technology we can measure 'innovative thinking' and develop the new normal workplace-related professional competence. Buheji and Buheji (2020).

### 2.11. Role of PBL to Validate Permanent Solutions

PBL can bring in different generations together and close both generational and cultural gaps as well as addressing learning disabilities. With its impressive breadth of coverage and focus on real-world problem solving, PBL can serve as a comprehensive tool for examining and improving practices in global workplace learning in the new normal. Many challenges can be explored and the outcomes can be implemented in a way to prevent problems from occurring again.

Learning analytics, adaptive learning, and calibrated peer-review are all type of PBL processes that allow human attributes to be more caring, creative, and engaging in problem-solving. Norman (2008) believed in PBL as a means for educational innovation that is built by the thoughtful observer who questions the pervasiveness of the "scientific method." Norman saw that patient-management problems, modified essay questions, can enhance the behavioural objectives, and learning styles. Fake and Dabbagh (2020).

## 3. Methodology

The methodology of this paper is focused on the type of problems that need to be solved through PBL in relevance to post-COVID-19 and new normal demands. The methodology should enhance social acceptance to learn through exploring problems that are relevant to life and livelihood.

The research follows three approaches:

### 3.1. Dimensions of PBL

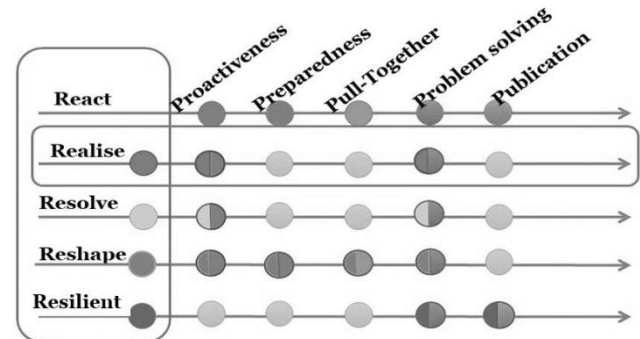
#### 3.1.1. Dimension of New Normal Demands (5Rs)

The pandemic of COVID-19 brought to us new situations that we need to live for many months. These realised facts called the new normal demands that can as a result of our reaction to COVID-19 problems, or their spillovers. This first dimension focuses on the demands of the new normal and its frequently repeated phases, or trends, where people to be functional, competent and employable. These demands, as shown in Figure (1) can be summarised from the work of Buheji and Buheji (2020), in 5Rs: react, realise,

resolve, reshape and be resilient. Harvey (2001).

#### 3.1.2. Dimension of Competency to be Learned (5Ps)

There are a set of COVID-19 competencies to be learned in order to manage to live, survive and develop in this unprecedented era. These competencies can be summarised by the 5Ps, as shown in Figure (1) represented by the proactiveness, preparedness, pulling-together, problem-solving, followed by the last constraint as publishing and publicising. Buheji and Buheji (2020).



**Figure (1).** Illustrates the New Normal 2-D Employability Competency Framework (Source: Buheji and Buheji (2020))

### 3.2. Analysis of Questionnaire Approach

- Analysis of a questionnaire with a scope to see what and how the youth see the coming problems and the type of learning they need.
- The analysis focuses on the challenges, lockdowns, disruptions and threats which the world is going through and still going through with the COVID-19 pandemic.
- The analysis was carried in June 2020 where more than 346 youth participants from age (13 -27 years) who are in schools, universities, on training, employed (full or part-time), or unemployed, etc. regardless of their background, education level, success, etc.
- The filled questionnaire comes from 12 countries from all over the world continents.

### 3.3. Analysis of IIEP Research Conducted Based on PBL Approach

Based on PBL attitude embraced by the International Inspiration Economy Project (IIEP) researchers', specific researches were selected and published to address both the new normal demand and establish learning for a specific competency. This work should help to clarify the importance of PBL in general and specifically in managing the challenges in the post-COVID-19 era.

## 4. Data Analysis

### 4.1. The Need of PBL after COVID-19

Descriptive statistics have been used in the study to

analyse the findings. Mean, and standard deviation and proportions have been used to estimate the results of the study. However, for the purpose of this research here are the flat results.

Table (1) shows that the majority of respondents feel unstable and being unsecured during the challenges of the COVID-19, besides the dramatic change in the world requires focused PBL programs. The respondents also seem

to be looking indirectly for PBL programs that could be integrated with the global changes due to the pandemic and in the way we solve problems and develop policies that address both: communication needs and the necessary business protection. The PBL would help to address the majority of the respondents worries about finding the best ways to fight COVID-19.

**Table (1).** Represent the Youth Demand for PBL in the New Normal

Sections	Strongly agree		Agree		Not Sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1-I feel unstable and unsecured with my future plans because of the COVID-19	76	22%	125	36.10%	53	15.30%	67	19.40%	25	7.20%
2-I think that a challenge like COVID-19, is a great growth driver for humans	135	39%	142	41%	51	14.70%	12	3.50%	6	1.70%
3-The world economy will change dramatically in a few years because of the COVID-19	171	49.40%	131	37.90%	34	9.80%	10	2.90%	0	0
4-We have to develop new policies for social and personal communications because of the world COVID-19 experience	171	49.40%	134	38.70%	35	10.10%	5	1.40%	1	0.30%
5-We have to develop new security policies in the field of business protection because of COVID -19	196	56.60%	129	37.30%	17	4.90%	4	1.20%	0	0
6-New crises – bring new opportunities, it's better to stay positive	195	56.40%	107	30.90%	35	10.10%	8	2.30%	1	0.30%
7- Each person should find their own way to fight the COVID-19 issues	102	29.50%	142	41%	48	13.90%	43	12.40%	11	3.20%

**Table (2).** Represent Sample of List of Research that used PBL to solve problems that helped Competency Development and Fulfilment of New Normal Demands

Problems Solved	Competency Learned	New Normal Demands Addressed
1-Minimising Stress Exposure During Pandemics Similar to COVID-19, (Buheji et al., 2020a)	Proactiveness	React
2-Mitigating the Tsunami of COVID-19 through Sustainable Traceability. (Buheji, 2020a)	Proactiveness	Realise
3-Stopping Future COVID-19 Like Pandemics from the Source- A Socio-Economic Perspective 'Re-inventing Zoonotic Virus Foodborne Diseases Inspection'. (Buheji 2020b)	Preparedness	Resolve
4-Mitigation of Risks of Complications and Deaths among the Elderly during Pandemics- Designing an Integrated Communication Framework Based on the Accumulated Experience of the Elderly Risks during the COVID-19 First Wave. (Buheji et al., 2020b)	Problem Solving	Resilient
5-Designing Intelligent System for Stratification of COVID-19 Asymptomatic Patients. (Buheji and Buhiji, 2020)	Proactiveness /Pull-together	Reshape
6-COVID-19 Information-Seeking Behavior and Anxiety Symptoms among Parents. (Ebrahim et al., 2020)	Pull-together	Realise
7-Hearing the Silent Voices of COVID-19 Patients on Mechanical Ventilators: The Use of Augmentative and Alternative Communication (AAC) Approach. (Buheji et al., 2020c)	Problem-Solving /Pull-together	Reshape
8-'Lessons from the Front-Line' Facing the COVID-19 Pandemic Learning. (Buheji and Ahmed, 2020)	Pull-together	Realise
9-Nursing Human Factor During COVID-19 Pandemic. (Buheji and Buhaid, 2020)	Problem-Solving	React
10-Children and Coping During COVID-19: A Scoping Review of Bio-Psycho-Social Factors. (Buheji et al., 2020d)	Problem-Solving	Resolve and Reshape
11-Alleviation of Refugees COVID-19 Pandemic Risks- A Framework for Uncertainty Mitigation. (Buheji et al.,2020e)	Proactiveness	Resolve
12-The Extent of COVID-19 Pandemic Socio-Economic Impact on Global Poverty. (Buheji et al., 2020f)	Preparedness	React
13-Planning Competency in the New Normal– Employability Competency in Post- COVID-19 Pandemic. (Buheji and Buheji, 2020)	Preparedness	Realise

## 4.2. The PBL Influence on Selecting Research of the COVID-19 Pandemic

Since the early weeks of the year 2020, the IIEP research team started a program for publishing selected research topics that address the 'untapped problems' that need to be addressed to enhance the 'learning capacity' about the opportunities and the risks that the COVID-19 pandemic brings in relevance to the 'new normal demand'. Based on the list shown Table (2), of published research of the 'untapped COVID-19 pandemic solutions project' in Researchgate <https://www.researchgate.net/project/IIEP-COVID-Solutions-Opportunities>, the *dimensions of the 'new normal demands' (5Rs) and the 'dimensions of competency to be learned (5Ps)'*.

## 5. Discussion and Conclusions

### 5.1. The Value of PBL to Life and Livelihood

Since the new normal would be full of ambiguity and disruption, tailor-made schemes and structured learning programs in the workplace will not address the disruptive conditions in the different communities. Thus, problem-based learning (PBL) programs would be the most suitable alternative. PBL programs also help the workplace to adopt 'learner centered approach' faster without undermining the educational and training requirements.

The combination of both learner-centred and problem-based learning approach has been proving to be effective where there are already many successful stories in medical sciences and engineering fields. These experiences need to be transformed into other disciplines in the new normal to enhance the capacity and viability towards newly realised life and livelihood challenges.

### 5.2. Limitation and Implications of This Research

The limitation of this research is that it did not cover what are the pre-requisites to start PBL programs in the workplace. The authors believe this unique pre-requisite prior knowledge needs special dedicated research which is beyond the scope of this work. The other limitation of this paper is that it did not specify what the characteristics of the mentors that would manage the PBL are, and what is their role on the individuals and organisational learning style.

The implication of this paper is that it raises the attention of the training provider the importance of PBL and how to start implementing it in the new normal. Building PBL as attitude provides the necessary support in a remote working environment that will encourage staff to undertake tasks in full autonomy and work independently utilising appropriate individual learning styles. During PBL maintaining the authority of each individual is part of the effective learning cycle. This might be more suitable with the spread of working from a home approach that many organisations adopted during and after the crisis.

The other implication of this research is that it opens

better understanding of PBL existing flexibility and the depth of knowledge that it could bring during the crisis. This research support also the transition towards the common practice expected at the workplace during the "New Normal".

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