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# PBL





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# Interdisciplinary Problem-Based Learning in Gerontological Nursing

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Gerontology is a study of processes associated with bodily changes from middle age through later life involving interdisciplinary investigations (Institute of Gerontology, 2021). Providing care for older people could be challenging because the presentation of disease symptoms are often atypical. Treatment effects often interact with their multimorbidity, leading to higher demand for support from an interdisciplinary team (Hofman, Van Den Hanenberg, Sierevelt & Tulner, 2017; Tonelli et al., 2017). Overcoming barriers to interdisciplinary teams working together has been an issue in gerontology that challenges many healthcare professional training programme (Schapmire et al., 2018). The conventional education curriculum design of gerontological nursing mainly focuses on nursing; this may ignore the interdisciplinary teamwork aimed at resolving most care needs of older people in real settings. Problem-based learning (PBL) is considered a pedagogical approach that adequately scaffolds interdisciplinary learning in higher education, given that the issues of interdisciplinary learning are specifically addressed (Stentoft, 2017).

As an example regarding interdisciplinary learning and PBL, the School of Nursing in The Hong Kong Polytechnic University (PolyU) commenced an interdisciplinary subject for all first-year undergraduate students since the early 2010s. In PolyU, there are six disciplines providing training at the baccalaureate level for healthcare professionals. These include nursing, occupational therapy, physiotherapy, optometry, radiotherapy, and medical laboratory science. A subject on inter-disciplinary teamwork is a requirement for all students in the first year of healthcare professional undergraduate programmes. Students learn together from the faculty members and clinical specialists of different disciplines about their roles and collaborations in various healthcare settings (e.g., hospital and community).

In the undergraduate nursing programmes, all students have to enrol in a subject on gerontological nursing in their senior year (i.e., year 3 of a 5-year programme). We also adopt an interdisciplinary approach to frame this subject. We teach this subject from the perspective of nurses as being a player in the interdisciplinary team. In this subject, PBL is one of the teaching methods. A 7-step approach is as follow: 1) clarify terms and concepts, 2) define the problem, 3) analyze the issues, 4) draw a systematic inventory of the explanation, 5) formulate learning objectives, 6) collect additional information outside the group, and 7) synthesize newly acquired knowledge (Hemker, Prescher, & Narciss, 2017). To start a series of scenarios about older people's ageing experiences at different stages and settings are provided to students in both written and video formats. Students form groups to identify and define the problems possibly faced by older people and their caregivers in the scenarios under the supervision of the group tutors' supervision. When the central issue is confirmed, the group members agree upon the learning objectives. Subsequently, with the tutor's guidance, students analyze problems by identifying the factors, giving explanations, posing solutions, and recalling personal experiences of the issues raised. Students have to report their learning progress following a pre-set schedule to their peers and the tutors. They learn through both face-to-face and online discussions with one another. At the end of the semester, students synthesize the

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acquired information through a presentation. In the presentation, students report the problems they identified from the scenario (i.e., those common clinical issues in real settings), the factors associated with the problems, the effects of various available interventions, and the implications to clinical practice. This assignment targets important learning objectives: PBL outcomes are established using pre-set rubrics that account for 50% of the subject assessment weighting.

Upon subject completion, students attend clinical practicum in settings where care for older people features an inter-disciplinary approach. Gerontological concepts are evident in post-acute rehabilitation units for older people, geriatric day hospitals, and community nursing services. Students again use PBL methods to identify the clinical problems of older people in these real settings. The clinical instructors will discuss and guide students on approaches to the gerontology-specified problems (e.g., deconditioning) that can be managed by using an interdisciplinary approach (Ploutz-Snyder et al., 2018). Because students are novice learner, they are only expected to participate in the verbal discussion of some real cases with the clinical instructors on how nurses could contribute to solving the problems and improving the quality of care as a player of the interdisciplinary team. Students also have a chance to visit different departments (e.g., physical training centre), attend mini-lectures at clinical settings, and discuss with various healthcare professionals, to visualize how the problems are identified, diagnosed and solved by an interdisciplinary team.

To implement the interdisciplinary PBL, the teaching team shares any consensus on some principles as outlined below (Stentoft, 2017):

- trigger students with complex and real-life problems;
- anchor the learning in a constructivist paradigm;
- ensure the learning is student-centred;
- encourage students to be self-directed and active;
- support students in critical thinking;
- ensure that teachers are the facilitators of the learning process;
- encourage students to work and learn in teams; and
- assist students in developing cognitive skills

In our experience, interdisciplinary PBL is very suitable for gerontological nursing education because the clinical problems in this area are highly complex, which always requires solutions from an interdisciplinary team perspective. For example, fall is a common problem in older people in hospitals (Masud & Morris, 2001). However, the reasons are multiple, such as inappropriate use of psychotropic drugs, lower limb weakness, visual impairment, cognitive impairment, incontinence (Oliver, Daly, Martin,

& McMurdo, 2004). To minimize the risk of falls, an effective interdisciplinary team is always needed to join hand to tackle these problems collaboratively. Successful interdisciplinary PBL depends on many factors beyond the curriculum structure design. In particular, the teaching team should involve faculty members from different disciplines (e.g. occupational therapy and physiotherapy); and be delivered in different settings (e.g., in university, hospital, and community) providing students with chances to develop their knowledge and skills through PBL. This approach students could transfer the knowledge acquired from the PBL to clinical practice. For the teaching team involved in PBL, self-observation and peer evaluations guided by validated instruments are very important (Garcia, James, Bischof, & Baroffio, 2017). As such, the team could learn from one another effectively. The worthiness of the interdisciplinary PBL is equally important. Traditionally, the success of the learning and teaching approach is judged by the students' academic performance (e.g., examination). Student satisfaction is evaluated by the students' feedback questionnaires (Imanieh, Dehghani, Sobhani & Haghghat, 2014). However, these measurements could be biased and fail to reflect the success of PBL strategies. Notably, PBL may also effectively promote independent learning, self-directed learning, self-reflectivity, critical thinking, and group process skills (Cooke & Moyle, 2002). There are various tools available to measure student abilities on critical thinking (Carter, Creedy & Sidebotham, 2015), self-directed learning (Cheng, Kuo, Lin & Lee-Hsieh, 2010), and teamwork (Gordon et al., 2016). Evidence shows that problem-based learning improves nursing students' ability beyond academic performance, such as critical thinking and self-directed learning (Choi, Lindquist & Song, 2014; Oja, 2011). Academics should consider adding evidence of these outcomes to the traditional outcome markers such as academic performance.

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# Using Student Feedback to Reflect on Authentic PBL (aPBL) in Undergraduate Engineering Education

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**Purpose:** The purpose of this study was to analyse student feedback and reflect on the experiences of convening a core module for Engineering undergraduates based on authentic PBL (aPBL), such that others may benefit.

**Methods:** We analyse student evaluation questionnaires (n = 110) from eight project cycles over four years. This includes responses to seven closed and two open questions. We use this feedback to stimulate reflections and suggestions for ways in which university educators can embrace these learning methods.

**Results:** Our results show the importance of organisation and its role on student satisfaction as well as the polar effect of industry partners in supporting students' pedagogy. Whilst students achieve numerous benefits, there is a need for formal reflection to better equip students to deal with unknown futures. Students appear to be not making explicit links with aPBL and employability.

**Conclusions:** The proximity of student experiences to the "real world" can be advantageous as it helps students prepare for uncertainty through responding to adversity. We make recommendations that include the need for formal reflection and to make external partners aware of their pedagogic responsibilities in an accessible way.

**Keywords:** Problem-Based Learning; Engineering education; Industry projects; Undergraduate teaching

## INTRODUCTION

The introduction of problem-based learning (PBL) into higher education curricula comes from the medical education discipline, to help prepare students for solving patient problems in clinical settings during the 1960s (Barrett, 2006). The medical school at McMaster University in Canada is largely credited with pioneering this practice (De Graaff & Kolmos, 2007), followed by other institutions, often in their infancy of setting-up programmes, their immaturity providing agility. The term problem-based learning was originally coined by Donald Woods from McMaster with subsequent work carried out by Harold Barrows, both of whom have helped perpetuate the value and acceptance of what at the time was an emerging field. It is defined as:

"PBL can be defined best as the learning that results from the process of working toward the understanding or resolution of problem. The problem is encountered first in the learning process and serves as a focus or stimulus for the application of problem-solving or reasoning skills, as well as for the search for or study of information or knowledge needed to understand the mechanisms responsible for the problem and how it might be resolved" (Barrows & Tamblyn, 1980)

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There is broad agreement in the definition of PBL, the most notable distinction between this and other forms, such as enquiry-based learning (Kahn & O'Rourke, 2005) is the order in which the problem is presented: explicitly, this is first, therefore coming before actions taken by students to gain knowledge, skills and understanding. The student-centred nature of PBL is a critical feature of this philosophy which is not as evident in other methods of teaching such as problem-solving learning (Savin-Baden, 2000). Some argue that PBL is an approach rather than a method and can be used for best effect at a programme level:

“PBL is an approach to structuring the curriculum which involves confronting students with problems from practice which provide a stimulus for learning.” (Boud & Feletti, 1998)

Arguably, one of the most important characteristics is that PBL is related to practice. It is and should be closely related to professional competences and those capabilities that are required of the graduate of the discipline (see for example Son, Lee, and Park (2016)). In medical education, this involves making a correct diagnosis and recommending treatment and for other professions, it includes preparing them for situations or scenarios that they will likely encounter, the specifics of which are unknown. Learning for a future context has been thoroughly analysed and approaches recommended that include the idea that university education should prepare students for an unknown future and to deal with situations that are new or are yet to be experienced (Bowden & Marton, 2003).

Critics of PBL argue that minimally-guided instruction produces inferior results when compared to guided instruction (Kirschner, Sweller, & Clark, 2006). Meta-analysis of outcomes of PBL and non-PBL methods based on literature conducted by Albanese and Mitchell (1993) found mixed results on a range of criteria, considering aspects including performance, cost and enjoyment of staff to teach. The authors concluded that caution should be exercised when making comprehensive, curricula-wide conversions to PBL (Albanese & Mitchell, 1993). Much of the evaluation of PBL has been conducted in the ‘home’ of PBL: medical education (Lohfeld, Neville, and Norman (2005), Hartling, Spooner, Tjosvold, and Oswald (2010), Marchais (1999)) and is therefore knowledge of its effectiveness is constrained by disciplinary boundaries.

PBL is credited with achieving wide-ranging pedagogical outcomes and changes to the ways in which students learn, with authors claiming it to be the most innovative instructional method conceived in the history of education (Hung, Jonassen, & Liu, 2008) and the most significant innovation in education for the professions for many years (Boud & Feletti, 1998). PBL is also

credited with supporting the development of generic attributes (Wood, 2003). Whilst criticism exists as to the implications and outcomes of PBL, it is clear that when used as part of a wider approach to learning, with appropriate support, there is strong evidence of the benefits of PBL.

### Engineering and pbl

As a discipline which is application-focused, Engineering is well-suited to achieving pedagogic benefits through PBL in course design. With Engineering, there can be confusion around the abbreviation because ‘PBL’ can refer to ‘project-based learning’, which often involves similar practices to problem-based learning. For example, it is reported that “what one institution practises as problem-based learning may look very much like what another institution practises as project work.” (Kolmos, 1996). A recent comprehensive review of PBL and comparison of different models established in different parts of the world has shown there is confusion in the field (Servant-Miklos, 2020). Engineering education utilises both project-based and problem-based work, alongside design-based learning (Barak, 2020) so one has to proceed with caution to ensure terms are not misconstrued or misinterpreted. For the avoidance of doubt, when we refer to PBL in this paper, we are doing so as problem-based learning, as defined above.

PBL has been used effectively in university Engineering programmes for more than thirty years, (Woods, 1996) with some evaluating that its use is better-suited earlier in programmes with project work occurring latterly (Perrenet, Bouhuijs, & Smits, 2000). Whilst consensus exists as to the merits and usefulness of PBL, some argue that it should form only part of a programme of Engineering education at degree level (Mills & Treagust, 2003). Due to the applied-nature of Engineering education, problems that are authentic in nature have considerable scope to elicit various types of learning such as application of theory, acquisition of new knowledge and the development of a range of transferable skills including problem-solving, teamwork, communication; contributing to potential professional practice. In similar contexts, longitudinal evaluation has shown three main advantages of PBL: 1) it facilitates training in technical, personal and contextual competences 2) real problems in the professional sphere are dealt with and 3) collaborative learning is facilitated through the integration of teaching and research (Ríos, I.D.L., Cazorla, Díaz-Puente, & Yagüe, 2010).

A key issue relates to authenticity or how “real” a problem in PBL is. Authenticity has been shown to have positive results in other disciplines for example through the use of clinical anecdotes in mental health education (Treolar, McMillan, & Stone,

2015). From the work undertaken by de Los Rios and colleagues, it is clear that the methodology used within Engineering curricula to devise projects that had relevance to local populations was an important factor in the design of the course (de Los Rios et al., 2010). The proximity of professional practice to PBL, sometimes referred to as authentic PBL (Barrows, 2000) or aPBL provides advantages over traditional methods of instruction, as evaluated by Woods (2012): troubleshooting skills are better; meaning-focused learning is promoted instead of surface approaches to learning; surveys of graduates and alumni are positive and student motivation is higher. In addition, the following careers skills are developed: problem solving, teamwork, confidence, life-long learning, information gathering, interpersonal relations, and communication (Woods, 2012).

How might one achieve aPBL in Engineering to help elucidate such benefits? Problems originating from, defined and supported by industry offer a means of achieving this. The use of consultancy projects with businesses is a commonly adopted approach within university management courses (Annarajula & Trifts, 2012). For many years, the Engineering Department at Lancaster University in the UK has used such a method as part of accredited four-year long Master of Engineering (MEng) integrated undergraduate degrees. This paper is a case study that uses student feedback data to stimulate reflection by the authors, including those responsible for convening this part of the course. It therefore draws on the experiences and perceptions of both the students and teaching staff to recommend enhancements to the course and ultimately to support the ongoing development of high quality aPBL. The next section provides further detail on the practical aspects of how the module has been managed. We use student feedback over four years (2016-2020) to draw on reflections which we believe will be of interest to people involved in establishing and/or co-ordinating aPBL activities within higher education allied to Engineering and physical science disciplines.

## METHOD

ENGR 445 is a 15-credit core module for all integrated masters (MEng) degree courses at Lancaster University, which has five undergraduate programmes: Mechanical Engineering, Chemical Engineering, Electronic and Electrical Engineering, Mechatronic Engineering and Nuclear Engineering. The module is split into three discrete sections: a taught component lasting ten weeks, delivered in Lent term of Year Three; a two-week industry-led PBL project in Summer term of Year Three and a two-week industry-led PBL project in Lent term of Year Four. Histor-

ically, the module had been delivered with a high degree of separation between the taught component and the two industry-led PBL projects. Assessment is typically two essays for the taught component (each worth 25%) and two group projects (worth 25%) for each industry-led PBL project. The taught component is intended to introduce students to a range of innovation, business and leadership concepts. Content includes intellectual property; strategic development; new product development; lean manufacturing; financial performance; human resource management; marketing and new venture creation.

The recruitment of industry-led PBL projects is co-ordinated and largely achieved through the dedicated industry engagement team for the Engineering Department. Through its professional networks, business support initiatives and reputation, it is generally able to recruit more projects than required. The aim is to secure sufficient projects for the numbers of students (generally teams of five) and relevant to discipline areas; see above for the course disciplines. Any organisation wishing to collaborate on such a project is required to complete an expression of interest (EoI) constituting company background, project brief and intended outcomes. A panel made up of academic and professional staff select the projects to be put forward to the students. Students are presented with the projects during a lecture, provided with the briefs and asked to submit their top four preferences. The convenor then uses this data to assign each student into a team. An academic is asked to supervise the team and mark the report, providing feedback. This process is the same in Year Four as in Year Three. The team make contact with the company, arrange a site visit if appropriate and an introduction (or 'kick off') meeting. The team have two full weeks to complete the project and submit their group report. Measures such as peer observation aim to assist with any unequal efforts from team members.

The industry-led PBL projects are preceded by some preparatory lectures which provide students with information on professionalism (including content such as meeting conduct, non-disclosure, communication), project management (building on content elsewhere in the curriculum) and practical/logistical arrangements (such as travel, booking meeting rooms etc). From the point at which the team are assigned their industry-led PBL project, a large emphasis is placed on the students having ownership of their project and hence responsibility for the success of their collective endeavour lies with them. The way in which students go about their projects generally reflects teaching of project management found elsewhere in the curriculum and includes the use of tools and techniques such as risk registers, work breakdown structures, Gantt charts and Pugh matrices. There is naturally an element of idiosyncrasy between groups, reflecting the

roles, styles and approach of individuals within the team.

Depending on the nature of the project, student teams may choose to structure their work in a way that best supports the achievement of their objectives, and may include time in computer labs (for example with projects that have a large design, simulation or modelling aspect) or in laboratories (for example where samples are required to be prepared and tested) or in workshops (for example where prototypes are required to be built and tested) or a combination of settings. Some students may also avail themselves of seminar rooms, using white boards for idea generation. Students are encouraged to write their report as they go although in some cases there is evidence this is left to the end. Marking criteria for each group report is: management of project (20%); technical content (30%); professional skills (30%) and report (20%).

To scaffold learning, each team has access to the module convenor for any practical, logistic or non-technical matters via an open-door policy, encouraging students to discuss challenges and help identify solutions. For technical expertise, the students also have access to a dedicated academic supervisor who provides appropriate direction, guidance and advice on any methodological approaches being used. Access to facilities for the purposes of fabrication and testing is often enabled by technical staff who are generally willing to provide additional guidance on particular processes and equipment. Following the submission of their reports, students are encouraged to complete a short, anonymous evaluation questionnaire using the university's virtual learning environment. This comprises seven closed and two open questions:

1. 'How did you rate the industrial project as a whole?'
2. 'How did you rate the support from Lancaster Product Development Unit during and pre-project?'
3. 'How did you rate the relevance of the industry project to your degree?'
4. 'How do you rate the experience and knowledge gained during the industrial project?'
5. 'How did you rate the commitment and contribution from the industry partner?'
6. 'To what extent would you agree with the following statement: the project was well organised.'
7. 'To what extent would you agree with the following statement: I felt sufficiently prepared for the project.'

Responses for the first five use a five-point Likert scale: very poor, poor, satisfactory, good and very good. Responses for the final two closed questions use a five-point Likert scale: strongly disagree, disagree, indifferent, agree and strongly agree. The two open questions were: 'what were the most valuable aspects to the

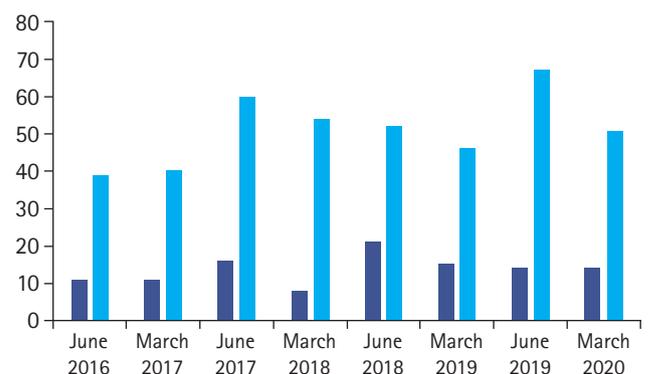
Industrial Project?' and 'how could the industrial project element of the module be improved?' It is fair to point out that the questions are themselves relatively limiting and will be improved in future to elicit feedback related to pedagogic quality. Notwithstanding these shortfalls, the analysis of data, particularly related to the open questions is of use in the design and execution of authentic PBL in higher education.

Data were collected from June 2016 to March 2020, providing eight data sets across four cohorts of students. Response rates varied from 14.8% to 40.4% (Figure 1). From 409 students participating in projects, a total of 110 responses were received over this time period; it is these data that provide the basis for the results. Note that students are asked for feedback for each project completed (IE one in Year Three and one in Year Four). Mean values were calculated for aggregated responses to questions 1 to 7. For the open questions, manual coding was undertaken based on twenty categories, ten for negative and ten for positive (Table 1). Example responses (Table 2) show how the coding methodology was applied to responses to questions 8 and 9.

## RESULTS AND DISCUSSION

### Importance of internal organisation

One of the most apparent observations from the results is the importance of internal organisation for students. It is clear from the responses received both in the closed questions (Q2 and Q6) related to internal organisation (Figure 2) and the open questions (Figure 3), that this area is significantly important and should not be overlooked if student satisfaction is to be maintained or improved. The two highest reported negative categories of 'internal organisation' and 'timing' constitute 37.1% of to-



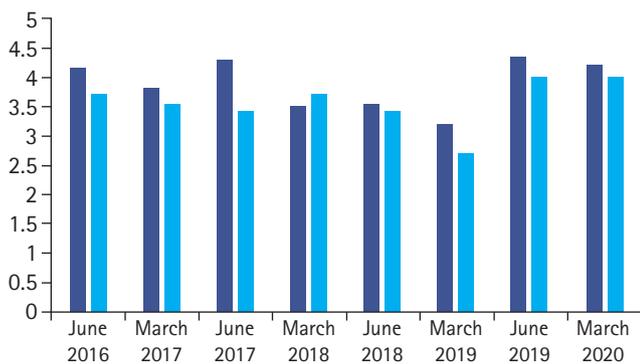
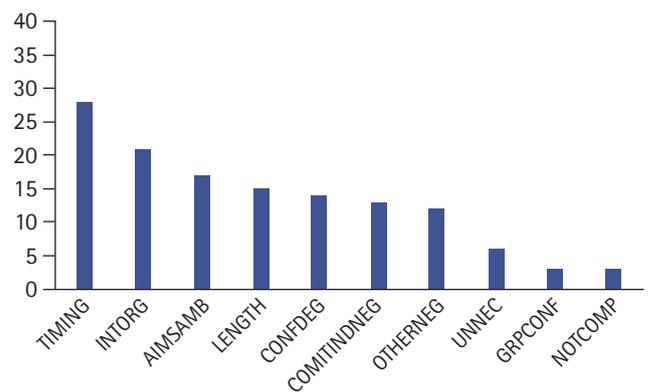
**Figure 1.** Total student cohort size (light grey) and number of responses (dark grey). Cohorts have a tendency to decrease overall in size between Year Three and Year Four due to non-progression of students who either opt to graduate with a BEng or who have been unable to meet the criteria to proceed to MEng.

**Table 1.** Coding categories used in the analysis of open questions

Description	Code
Timing (placing of the project at the time of the year)	TIMING
Length (too short)	LENGTH
Commitment from industry partner (lacking)	COMITINDNEG
Conflict of available project and degree discipline or taught content	CONFDEG
An unnecessary part of the degree	UNNEC
Group conflict and issues within teams/between team members	GRPCONF
Ambiguity in aims / objectives or aims / objectives were not appropriate in terms of size	AIMSAMB
Perceived discrepancies between project sizes / scopes. Not comparable.	NOTCOMP
Internal (Departmental) organisation, weighting	INTORG
Other negative	OTHERNEG
Application of knowledge gained in degree	APPKNOW
Development of transferable skills	DEVSKIL
Commitment from industry partner (positive)	COMITINDPOS
Collaboration with the industry partner	COLLIND
Exposure to new methods, knowledge, fields, sectors, products	EXPNEW
Autonomy / freedom as to how to complete the project	AUTCOMP
Enjoyable / satisfying / good fun	ENJFUN
Site visits	SITEVISITS
Employability-related, helping to secure job. Demonstration of experience/skills/knowledge.	EMPLOY
Other positive	OTHERPOS

**Table 2.** Example extracts to demonstrate how the coding methodology was applied

Project Period	Extract	Codes
June 2017	<i>"Working with an external company was a valuable experience, as it required skills that were not purely academic, such as communication, professionalism etc. Seeing how the skills we learn on the degree can be applied to the world of work, in a pseudo-consultancy format was also useful. This project could be brought up on a CV or in an interview as a useful demonstration of 'real-world' experience."</i>	COLLIND, DEVSKIL, APPKNOW, EMPLOY
June 2018	<i>"Longer time is needed to unpack all this information and work! Could have delved so much deeper into it had we been given more time"</i>	LENGTH
June 2019	<i>"We struggled with a lack of the required information from the company. An assessment of what the company intends to provide the students with, and evaluation of whether or not what they want is achievable would make the short timescale project much more feasible."</i>	COMITINDNEG, AIMSAMB

**Figure 2.** Mean responses to closed questions 2 (dark grey) and 6 (light grey), over time: 'how did you rate the support from Lancaster Product Development Unit during and pre-project?' and 'to what extent would you agree with the following statement: the project was well organised', respectively.**Figure 3.** Total negative responses by coding category

tal negative responses after coding, across all years. Further exploration of the data shows that this has changed over time with a peak during the centre of the data collection period which tapered either side of this increase.

### Mixed support from external partners in pedagogic development

Across most categories for the closed questions, there is a general uptick shown in the last two data collection points, which is a positive direction of travel. This is affirmed when analysing total positive and total negative responses to the open questions over time, with the last two data points showing more positive than negative. Some recent changes have been introduced which have aimed to better bridge the formal taught component with the industry group projects. The major exception to the rising trend reported above is the commitment from industry partners (question 5), which has appeared to flatline (Figure 5). Evidence from the open questions (Figures 3, 4) suggests this is an issue of a two-ended spectrum, as the negative commitment from industry category ( $n = 13$ ) is slightly higher than the positive commitment from industry category ( $n = 10$ ), ordered sixth and fifth,

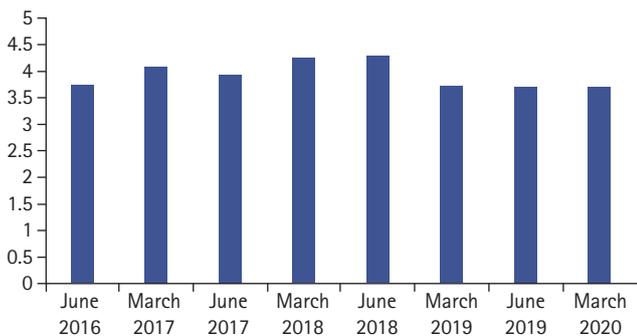


Figure 5. Mean responses to closed question 5, over time: 'how did you rate the commitment and contribution from the industry partner?'

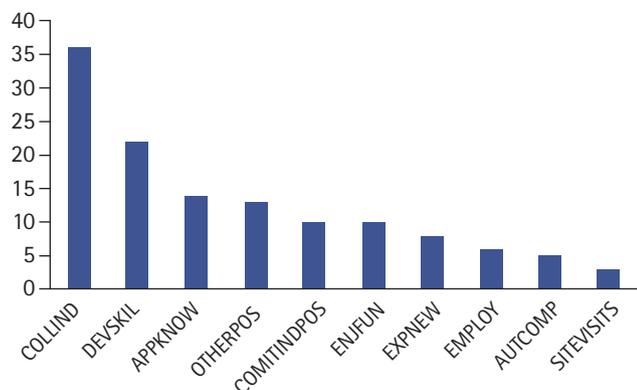


Figure 4. Total positive responses by coding category

respectively. This supports anecdotal feedback, suggesting some industry partners are extremely committed to both the endeavour and the educational experience it provides, whilst some are ambivalent to the point of nonchalance, displaying little regard for students' development.

### Students failing to connect previous experience as preparation

Evidence suggests that students who have taken part and completed the feedback do not necessarily connect previous experiences of similar activity with providing preparation for similar future activities. Figure 6 shows results to Q7 ('to what extent do you feel prepared for the project?') and bar the last two data collection points, all reported either the same or a reduction in feeling sufficiently prepared between third year and fourth year. We would have naturally expected students to have considered the first project as a means of preparing them for future similar situations and therefore this would have increased between years three and four. Given this did not happen, save for the last two data collection points this suggests more should be done on providing students with material related to PBL and the opportunity to formally reflect after their Year Three project, which is seen as an integral part of the learning experience:

"these experiential opportunities require careful planning and time for reflection must be built in if they are to be an effective way of providing university students with relevant employment skills, knowledge and awareness of employer culture." (Lowden, Hall, Elliot, & Lewin, 2011, p. vii).

The omission of such a vital part of the learning experience provides an easy opportunity for the current convenor to make improvements and provides affirmation to others of the validity of reflection.

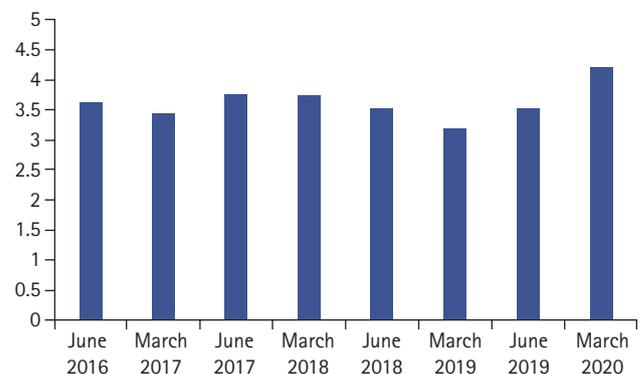


Figure 6. Mean responses to closed question 7, over time: to what extent do you agree with the following statement: I felt sufficiently prepared for the project.

### **Apparent lack of connecting aPBL with employability**

One surprising outcome from the data analysis was that students appear not to be making explicit connections between these authentic PBL experiences and their employability. This is evident in the frequency of the category ‘employability’ in the open questions which came eighth out of the ten used for positive, with six mentions across the eight data collection points (Figure 4). One explanation of this might be that students perceive their employability as being part of a richer picture that includes academic performance, voluntary work and paid employment, which all contribute to their skills development. However, it appears students who are failing to make connections between these experiences with employability risk being unable to use them when seeking employment. Given the range of transferable skills that can be demonstrated through these experiences with employers, this is something that requires more overt explanation with the students.

The following three results have been obtained from the experience in delivering and co-ordinating the activity described yet are not patent in the data collected. To exclude these from our reflections would have provided limited results to the reader, which we were keen to avoid, given our aspirations that our work be used for others to learn from. We have therefore included these as being supplementary to the data presented and contributing to a fuller description of our experiences.

### **Caution for control beyond the project team**

A recurring point that we feel warrants more than a fleeting mention is accommodating what may be referred to as the thirst to prototype. This appears to be especially common amongst Engineering and new product development projects. Experience shows us that any short timeframe project, such as these that require the sourcing and supply of parts from third parties is a highly risky endeavour and is likely to have a substantive bearing on the achievement of deliverables put forth by the external partner. For example, a particular component from an electronics supplier may be the difference between a working prototype or not. The absence of a simple measurement device may mean key results cannot be obtained. Any short-term project which is contingent on the provision of supplies by a third party should, from our experience be discouraged. There have been several cases where external partners have promised to provide materials (data, parts, specifications, models, drawings or material samples), which have not been provided at an acceptable point in time for work to commence. This has been wholly discouraging for the students who feel unable to pursue the aims of the project as they were initially described.

### **Maintaining authenticity supports real-world preparation**

There is a tangential but very important point to be made here. The hurdles and challenges faced in these projects are very authentic as they mirror some of those barriers that all professionals deal with on a regular basis. A clear example is that referred to above where delays from other organisations have a direct impact on workflow and hampers the ability of the team to progress the project. This proximity to the experiences of the “real world” can be advantageous as it helps students prepare for imperfection through responding to adversity. This can lead students to consider the value of being flexible, adaptable and solving unforeseen problems. However, this does not form a reliable grounding on which to base good quality learning experiences. Sufficient scaffolding needs to be in place to provide students with the necessary support for responding to the inevitable nuances created in this authentic environment. This resonates strongly with the concepts discussed earlier of preparing students for an unknown future (Bowden & Marton, 2003) to be an important responsibility of education providers.

### **Balancing student development with business support**

Moving a step further away from the data collected and analysed here is a point that rests at the intersection of business engagement/impact and quality of learning. To take the first of these, there may exist within the reader’s institution, department or other function a priority to work with external stakeholders as part of a growing prominence of the impact agenda in HE (McCowan, 2018). This may inadvertently or even surreptitiously cause a shift of focus into the reasons for aPBL towards the benefits to the business (be that design, fabrication, testing, simulating etc) to the point where this may overshadow other priorities. One has to be careful in the management of such teaching-industry partnerships that the focus is not one solely based on the interests of the external organisation. Whilst this of course is an important feature that helps the authenticity of aPBL as discussed earlier, it needs to be attended to in a way that is balanced and complementary to the quality of learning experienced by the students. Having individuals in bridging roles that can simultaneously broker and exploit the impact agenda whilst never losing sight of high-quality learning ought to be a key feature of symbiosis in practice.

### **Limitations**

There are a number of limitations to this case study that readers should be made aware of. First, the data collection method has been solely from feedback questionnaires with no opportunity to formally follow this up with students. Data has been there-

fore limited to only those respondents that elected to take part in the post-project evaluation. The questions in this evaluation are themselves not a good representation of how to seek valuable feedback and more consideration will be given to the modes of student feedback in the future. The effectiveness of these collaborations could further be better interpreted by having a similarly uniform means of collecting feedback from the collaborating businesses. The content of such data would be a helpful insight into how businesses view the projects and how improvements might be made from their perspective. Ultimately, this paper reports on one module and the feedback of students from one UK university department over a relatively short timeframe.

## CONCLUSIONS

An important element to the success of authentic PBL projects is that sufficient resourcing is required for developing and securing authentic problems from industry, a notion reflected by those evaluating curriculum design and implementation for health professional programmes (McMillan, Little, Conway, & Solman, 2019). This is ideally suited to individuals traditionally associated with technology transfer or knowledge exchange offices. At Lancaster University, these people form a growing cross-campus team of business partnership professionals, some in the centre, some embedded within departments or faculties. It is important that these people who may be developing projects have sufficient knowledge of the discipline content of the courses and any facilities that may be available to the students. The resourcing for internal organisation should not be underestimated too; this has powerful effects on student satisfaction. Given that these projects are rich, student-centred learning experiences, it is of no surprise that far more time and energy is required than for other (more traditional) teaching, such as lectures.

The recruitment, organisation and co-ordination of these activities require rich external networks alongside knowledge of teaching, the curricula and academic regulations and practice. This is rarely achieved by a single individual working alone; our experience shows that whomever takes a leading role, close collaboration between academic and professional staff will be required for success. This means professional services and academic colleagues working closely together, with mutually agreed responsibilities. The optimum mix will be dependent on circumstances at each department, university and the individuals involved.

University staff members who are proposing or who are doing aPBL should be satisfied that their endeavours will reap considerable benefits to their students and to external partners. The au-

thenticity of working with businesses with problems they face brings about a range of experiences; many are positive yet some of these can be problematic if promises of material is delayed. These can have consequences for the success of the project and motivation of students. However, exposure to the realities of working in industry is an important part of these experiences too and will no doubt prove to be reflective of the working lives students will go on to lead. Teaching staff should recognise and support this through appropriate scaffolding as attempting to eliminate it altogether would surely reduce the benefits to students.

Providing students with the formal opportunity to reflect using an appropriate structure such as the Gibbs reflective cycle (Gibbs & Andrew, 2001) is paramount if the students are to benefit from these experiential learning activities as much as possible. This will help them prepare for future unknown situations. Furthermore, making explicit connections between PBL and employability helps students recognise and articulate the skills they have had the opportunity to demonstrate. The value of students establishing their professional networks should also be a feature of any links university teachers are making.

We believe that businesses which bring the all-important “authentic” to aPBL should be better prepared to understand the educational importance of these activities for the students. We are not suggesting any transference of responsibility from university teaching staff to businesses; just that the latter simply has an increased awareness of pedagogy and how the best educational experiences can be achieved. This may even have an overflow effect and such appreciation may subsequently be absorbed into the organisation, beyond the project. This would be a powerful side effect and presents a compelling argument for making material accessible and useful.

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# Students and Faculty Perspectives of a Problem-Based Learning Online Nursing Ethics Seminar in Japan

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**Purpose:** This qualitative study captured nurse academics' experience of creating an online nursing ethics seminar at post graduate level through an action research process.

**Methods:** A template for reflections from students and staff about their experience of the seminar was used. Responses were received from students and staff who participated in the seminar and analysed for key themes.

**Results:** The 10 student participants and 5 Japanese teaching staff reported overall positive experiences with the implementation. Key themes emerging were building on learning; participation and group engagement; facilitation versus expert delivery; and translation into practice.

**Conclusions:** The findings are consistent with attempts to implement PBL and online learning elsewhere, but yet to be widely adopted in Japan. There is a need to embed inquiry-based learning PBL approaches in Japanese higher education. This study provides encouragement to participants and others considering implementing online PBL in nursing courses.

**Keywords:** Problem-based learning; action-research; education; ethics education; online learning

## Original Article

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## INTRODUCTION

The purpose of this study is to report on the creation of an online nursing ethics seminar using problem-based learning (PBL) through a participatory action research (PAR) process. Like many other universities across the world, Yamaguchi University School of Health Sciences were forced into a rapid transition into online teaching by the coronavirus pandemic (Kato et al., 2020). Use of web-based learning in nurse education in Japan has been limited and academics and students are largely unfamiliar with this mode of teaching as in Japan web-based learning tends to be used for the delivery of demonstration of clinical skills via video or as part of research degree supervision. There are few examples of the application of the principles of PBL as a teaching and learning strategy in nurse education in Japan. This paper reports on the development of an online seminar in nursing ethics for nurses studying at masters level using PBL through a PAR process. The seminar was created to trial PBL online and determine if adoption of PBL and online learning would be viable in ethics courses in nursing at Yamaguchi University.

### Background

Providing patient care based on ethical principles is required in every clinical setting from primary care to general hospitals. Thus, a sound grounding in ethics is essential for nursing students and nurses. There is a diversity of opinion about what should be included in ethics

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education, whether it should be taught as a separate subject or integrated into other units, scope, method of delivery, and how quality in ethics education is measured (Avcı, 2017). Japanese academics used narrative writing and narrative group work with post graduate students in a post graduate ethics course to effectively reveal nurses' cognitions and perceptions around ethics in nursing practice (Tsuruwaka & Asahara, 2018), however there are few examples of online PBL used in ethics courses in Japanese nurse education.

The existing ethics course for nurses at Yamaguchi University was run over a semester (15 weeks) for 1.5 hours per week by zoom in 2020 for postgraduate nurses with clinical experience enrolled in a masters program. The content of the existing ethics course included an introduction to ethics and its application to health and nursing in the context of adult nursing, maternal and child nursing, aged care nursing, and mental health nursing. Professors with expertise in these clinical areas co-facilitate the course. The mode of delivery was a series of fifteen 90-minute face to face lectures followed by a discussion with case studies used as stimulus material.

In order to determine the acceptability of using both online and PBL for future offerings of the ethics course, online seminars that used PBL principles were designed and delivered to volunteer participants for 90 minutes for each of 4 weeks.

Developing high-quality online courses requires skills in instructional design and the development of course materials, new ways of thinking about pedagogy, and has been viewed as being costly in time and money (Altbach & de Wit, 2020). Moving into an online teaching environment in higher education requires commitment from faculty and university management as it involves careful planning, upskilling of faculty members, and technical support. Recommendations for teaching medical students ethics (Goldie, 2000) are applicable to all health professional students and include a move away from teacher-centered to learner-centered teaching using PBL; a reduction in the amount of factual information students are required to master because the central focus of ethics in health professional practice is clinical reasoning and problem-solving and a corresponding move away from lecture delivery of content in ethics education towards small group case discussion (Goldie, 2000; Tsuruwaka, 2018).

Each of these recommendations is consistent with using PBL which can be both a curriculum design and a teaching/ learning strategy. Problem-based learning simultaneously develops higher order thinking and disciplinary knowledge bases and skills by placing students in the active role of problem solvers (practitioners) when presented with situations (ill-structured problem) that reflects the real world (Conway, Little, & McMillan, 2002).

A PBL approach tends to “turn regular learning upside down” because it requires that students identify issues and respond to problems before they are given instruction (Maxwell, 2020) and promote student engagement “solving a problem nested in reality” through the use of meaningful and authentic situations (Mikouchi, Akita, & Komura, 2019). For over half a century problem-based learning has been found to be equal to traditional approaches in terms of conventional tests of knowledge with students in PBL courses exhibiting better clinical problem-solving skills, interpersonal skills, and satisfaction with learning although definitive evidence of its superiority as a pedagogical approach has been disputed (Wosinski et al., 2018). Nevertheless, a systematic review of literature of the use of PBL in nurse education concluded that PBL fosters clinical reasoning in students where there is sound facilitation and quality group interaction (Wosinski et al., 2018). Although concerns have been raised about courses being delivered online (Altbach & de Wit, 2020), online ethics education for health professionals have previously been found to be effective in a range of contexts (Chao, Chang, Yang, & Clark, 2017; Cho & Shin, 2014; Leppa & Terry, 2004; Schröder-Bäck et al., 2014). However, it has been suggested that students may have concerns about online learning and be reluctant to participate, thus careful design of the learning experience is required to encourage interaction by using a problem-based learning approach using authentic, context-relevant stimulus materials (Zhang et al., 2019). As authors from Taiwan note, in countries where online learning is not in the model of learning, elements of PBL, such as small group case discussion, are used in nursing ethics courses but classes are not usually online (Chao et al., 2017). This study aimed to capture nurse academics and student perspectives of the implementation of a PBL online nursing ethics course in Japan.

## METHODS

### Approach

Nurse academics in Japan were required to immediately implement online learning in response to the coronavirus pandemic. The research group came together to explore the most effective way to implement online teaching and to learn and develop effective pedagogies for online teaching. This resulted in the involvement of two Australian nurse academic colleagues.

Action research was used to capture the experiences of nursing faculty in the process of creating the nursing ethics seminar. It is a cyclical mechanism of planning, acting, observing, and reflecting for strategic action and was chosen as a framework because it explicitly seeks to bring about change and improvement (Kember,

2002). It can be characterised as a 'bottom-up' quality enhancement process concentrating on issues of interest or concern relating to the delivery of online learning and assessment of the nurse academics. The movement in qualitative research has been away from validity criteria similar to those of quantitative paradigms "toward a greater variety of validity considerations that include the practical, the political, and the moral" (Reason, 2006 p.191). Action research is designed to address worthwhile practical real-world problems with reasonable actions therefore the primary rule in approaching quality is that researchers are aware of the decisions they have made and their consequences (Reason, 2006).

Core seminar content, student learning activities, and assessment strategies were developed to align with the learning objectives. Reading materials that included the principles of nursing ethics and approaches to examining ethical issues were distributed to students prior to seminar commencement. The first two sessions comprised introductions to the facilitators and participants, an explanation of seminar requirements, and an explanation about facilitation in PBL. Case studies were used as an aid to PBL to stimulate reflection, debate, and discussion around ethical principles (Schröder-Bäck et al., 2014). Stimulus material for PBL-style class discussion centered around a woman with dementia and ethical dilemmas around choice, patient safety, the duty of care, and end of life. The "four topics" approach to clinical ethics case analysis proposed by Jonsen, Siegler, and Winslade (2006), widely used in nursing ethics, was introduced at the beginning of the second day after students had examined the case. It was used to summarise the discussion and presented as a possible tool to use for analysis of ethical dilemmas and case studies. Each topic—medical indications; client preferences; quality of life; and context — prompts questions to be considered (Schumann, & Alfandre, 2008).

In the last two sessions participants presented and led a discussion on the case from their work context. The 10 student participants were divided into two groups for discussion. The "Zoom" cloud meetings platform was utilized in this study as a tool for virtual teaching to facilitate participation from those outside the university. Students were given clear instructions on how to use the platform and the breakout and chat functions used to facilitate an interactive online environment.

### Participants

Participants included both nurse academics as an action research team and student participants as learners in PBL. The participant-researcher team was made up of five Japanese and two Australian academics - all were professors. Japanese faculty members had expertise in a variety of nursing specialties including

ethics, older person's care, end of life care, and pediatrics and all had input into the design and delivery of the online seminar. The Australian academics supported the team with expertise in online learning, PBL and action research methodology.

Student participants were recruited by convenience sampling to participate in the seminar. The selection criteria for student participants were "at least 3 years of clinical experience" or "master's degree students". The group included clinical nurses about to enter graduate school, recent masters graduates, and those who wanted to learn nursing about ethics and PBL. Advertising was by poster and email. The purpose of the study and study methods was explained in a written explanation sheet, and all participants signed a consent to undertake the seminar and seminar evaluations. Participants were assured that pseudonyms would be used in reporting and publications and that personal details would remain confidential. Initially, 11 student participants commenced the online seminar, but one participant attended only one session, and the analysis includes only the remaining 10 participants' demographics, evaluations, and reflections.

Student participants had 8.9 ( $\pm 5.9$ ) mean years of nursing experience. Nine students had teaching experience of 6.2  $\pm 4.5$  years and had a master's degree or higher. Before the seminar, three student participants had experienced in nursing ethics, four had experienced using online resources, two had experience of PBL, however, no student participants had experienced learning nursing ethics online using PBL.

The mean years of nursing experience of nursing academics was 12.0  $\pm 11.7$ . Three of the group had previous experience teaching online, and four had experience teaching PBL. however, no staff participants had experience teaching had online ethics using PBL (Table 1).

### Data collection and analysis

The repeating process of planning, acting and observing, and reflection (Koshy, 2005) at the heart of action research guided the approach. Faculty members met online every two weeks starting in May 2020. Reflections were completed by faculty members after each meeting. In the initial two months, self-identified gaps in knowledge about PBL, effective online learning and the research methodology were addressed through literature review, presentations by Australian faculty members, and discussion. The following 6 weeks involved the development, refinement and evaluation of the online nursing ethics seminar comprising four 90-minute sessions. Recruitment of participants, rehearsal and evaluation took place between August and September 2020 and the four online PBL seminars were conducted be-

**Table 1.** Demographics

	Student participants (n = 10)	Faculty participants (n = 7)
Nursing experience (Mean, range)	8.9 (3–24) years	12.4 (3–35) years
Teaching experience (Mean, range)	6.2 (0–14) years	23.7 (20–31) years
License		
Registered Nurse	10 (100%)	7 (100%)
Registered Nurse–Midwives	1 (10.0%)	3 (42.9%)
Public Health Nurse	3 (30.0%)	1 (14.3%)
Others	Assistant Nurse (1)	Social worker (1)
Clinical Lab Technician (1)	School nurse (2)	
Nursing specialty		
Fundamental nursing	3	2
Adult nursing	1	0
Mental health	1	1
Pediatric nursing	1	1
Midwifery	1	1
Older care	2	2
Community nursing	1	0
Final education		
Bachelor	1 (10.0%)	0
Master	7 (70.0%)	0
PhD	2 (20.0%)	7 (100%)
Previous education experience		
Nursing ethics	3 (30.0%)	7 (100%)
Online education	4 (40.0%)	3 (42.9%)
PBL education	2 (20.0%)	4 (57.1%)

tween September 17 and October 9. Following each seminar, the faculty members analysed the data and met to discuss and evaluate the sessions. A research audit trail was kept by the principal researcher and collaborators to ensure transparency and auditability of the decisions made in relation to seminar design and researcher/participants' and students' reflections on the implementation of the ethics seminar.

A template was used to capture reflections from participants about the students' reported experience of the online learning platform and PBL and what was key learning and why it was important (Figure 1). The same template was used for both faculty participants and student participants. Written responses to questions in the template provided the qualitative data for the study. Reflections were transcribed verbatim and translated from Japanese to English by a bilingual researcher, then translated back into Japanese by another researcher to check that the translation was correct. Data were analysed using content analysis described by Thomas (2006). This inductive approach enabled themes to emerge from the raw data. First, two researchers (TES and KM) independently read the reflections several times to obtain overall

impressions and identify key content. Initial codes were generated and from these themes related to PBL, online learning, and teaching of nursing ethics were determined.

### Ethical Considerations

Explanations were given to faculty and student participants about study design, research methodology, purpose, method, anonymity guarantees, and the voluntary nature of participation before they consented. The research was approved by the Ethics Review Committee of Yamaguchi University Graduate School of Medicine approval number 625-1 and conducted in accordance with the Declaration of Helsinki (2013, Fortaleza Amendment).

The need to commence the development of online teaching prior to ethical approval for the study meant that faculty members consented to participate in seminar development prior to formal ethical approval. All faculty involved in developing the ethics seminar consented to participate in the collaborative research process as well as the seminar development process.

	My own reflections	The group's	Comments
what-was the focus on and learning			
so what-why was it importants -			
now what are the next steps and why these ones in this order?			

Example reflection

	My own reflections	The group's	Comments
what-was the focus on and learning	The focus this week was on the technological requirements for the on-line learning. I realize thar I am not familiar with the software and need support.	Much discussion around technology but there is expertise within the group	
so what-why was it importants -	We need to ensure that the IT supports our pedagogic strategies	Both faculty and students need easy access to the proposed platform	
now what are the next steps and why these ones in this order?	Need to do a fact finding before we develop activities further.	SS to approach IT service	

Workes example of the reflection template

Figure 1. A reflective worksheet and work example of the reflection template.

### Findings

Themes common to both faculty members and students emerged from the content analysis. These were *building on learning; participation and group engagement; facilitation versus expert delivery; and translation into practice*. Pseudonyms have been used to preserve anonymity.

### Building on Learning

The student participants learned about a series of thought processes, such as "clarifying issues based on ethical principles," organizing them, and considering intervention methods through group discussions of set cases and cases presented by them. The students reported that they learnt a lot and could engage in more detailed discussions that corresponded to "real" cases:

*Reviewing the case studies and the four-topics method, and ethical principles helped me see what information and issues needed to be ad-*

*ressed. I realized the effectiveness of using such principles and tools instead of vaguely thinking about them. (Lala)*

*The actual case study had a variety of individuals with diverse characters and a complicated relationship. (Shima) I felt like I was repeatedly repeating the same steps, but I felt like it was an essential process because I felt like actually repeating them helped me think in a broader perspective. (Momo)*

Faculty members also recognised the PBL process and related this to building knowledge for application as well as expressed their willingness to consider structures and content that allow student learning to build up:

*The steps of concretely assessing cases, examining ethical principles, and finding methods are essential for problem-solving. (Rin)*

*Understanding what students want to know and what is necessary for students is important. (Hina)*

Given PBL is designed to incorporate students' spontaneous problem-solving perspectives, some faculty members considered whether a framework would assist student's decision making but also thought that it might inhibit thinking:

*I have been using theoretical frameworks to teach ethical issues, but in PBL, students are free to use the frameworks they have learned. (Niko)*

*When thinking freely, I wonder whether to use a framework such as Jonsen's four-topics method .... On the other hand, that may hinder the free-thinking of students. (Yua)*

In the initial stages of the process, faculty members expressed discomfort in the form of anxiety about whether they knew sufficient about PBL:

*It's an educational method that I have never experienced before. (Yua)*

*I am not familiar with PBL techniques, so it is important to learn while doing it. (Rin)*

*I wonder how much information the lecturer/facilitator should provide to guide students to address problems. (Niko)*

At the development of the seminar, without previous experience of running PBL in this university, faculty members found it harder to plan the sessions, had concerns about student involvement, timing, and apparent lack of control. And as a result, rehearsed the sessions beforehand with the research team taking the role of students. Faculty members planned to give a lecture on the required content before the students' group discussion, but after the rehearsal, they modified their plan to focus on providing information online and group discussion. This led to the

following reflective comments:

*I found it challenging to use PBL effectively... I can't picture myself running a class for the amount of time I've been given. (Yua)*

*Since many things can only be learned through practice, rehearsals were held among members. (Niko)*

*To effectively use the seminar time, it is necessary to create a compelling atmosphere, and I learned that even a self-introduction should be related to the lecture and focus on the theme of the seminar. (Aoi)*

### Participation and group engagement

The value of being able to hear multiple perspectives on nursing situations and ethical viewpoints was appreciated by some students who were appreciative of the high level of education of their fellow students. The student participants drew on each other's experiences with the participating group members, recognized each other's diversity, and tried incorporate new perspectives:

*The group was able to exchange views on the status and experiences of past and current clinical experiences. The group members were a diverse group with a wide range of expertise. (Ai)*

*Group members took on the roles of moderator, scribe, etc., and made good progress. I sensed the high level of participants. (Kara)*

*I felt it was important to discuss in groups, as I found out that people have slightly different ideas based on their position and age. (Hanako)*

Drawing on participant's experiences, faculty members, adapted to PBL style and realized its strengths in student engagement and teacher ability to gauge student learning:

*Post-grad students have clinical experiences as nurses, and they already have encountered ethical issues in their practice, so asking questions in the PBL class encourages students to speak their opinions and experiences... (Yua)*

*I really know how we involve students in our seminar, such as asking a question. (Hina)*

In addition to comments about facilitation and interaction through engagement with a scenario as a group, student participants reflected on the use of the online platform for teaching:

*I felt that there were benefits to taking the course. I would not recommend it if someone were not comfortable with the online experience. (Momo)*

*I think online is a very effective way to present the materials and*

*view the presentations. I felt more comfortable participating online than in person. I would like to see more online sessions in the future. (Shima)*

and expressed some initial misgivings:

*Last time I felt embarrassed about being online and expressing my opinions in group work for the first time. (Ken)*

*There were people with different years of experience, and I felt a little uncomfortable speaking up at first. (Kim)*

The challenges in managing group discussions in the online environment because of the technology issues (such as the display of participants' screens) and the timing of comments, such as when to speak without interrupting others' conversation were highlighted:

*When we were sharing the screen, I was unsure when I was allowed to speak up because I couldn't see everyone's faces on the screen. (Nashi)*

*I want to be more active in speaking up and exchanging ideas next time, as time flies, when working in groups remotely, while I am observing. (Kim)*

Participants commented on the importance of online time management. Therefore, students became aware of the need to work on speaking "proactively", summarizing "appropriately", and creating "comfort" conducive to speaking to facilitate efficient online discussions:

*I thought that if I didn't actively participate in the discussion as part of the group, the group's opinions would only reflect some of the group's views. (Kara)*

*Since the time for group work is limited, I thought that if we learn to state our opinions straightforwardly and summarised, others will have more opportunities to give their views. (Momo)*

*I learned last time that in online seminars, it is essential to use voice and gestures and nodding to convey responses to others, and I realized this time it is important to try to give responses to others. (Ai)*

Faculty members also had initial misgivings about online, but these were overcome:

*I realized that communication could be established even online. (Yua)*

*I was impressed by the fact that we could connect and talk to people in Hyogo and Fukuoka prefectures because it was online. Participants seemed to adapt quickly to PBL and online. (Aoi)*

This changed to gradual growth in confidence:

*The session led by Prof. Yua was very smooth, and the participants spoke up a lot. The first day was a great success. There was not enough time to talk about each participant's ethical issues, but I think we can recover from that. (Niko)*

*In the case study, I asked lots of questions to the participants while communicating the PBL method. There were more comments than expected, and I felt that PBL was suited to ethics education. (Yua)*

### Facilitation versus expert delivery

Student participants linked the change in facilitation style to enhanced depth of discussion:

*I thought that the seminar was different from my previous experience in that the seminar instructor led the way, and the participants took the initiative to consider the issues and the solutions. (Kim)*

*I realized that it's not just about building up knowledge or training techniques, but it is interesting to learn processes and principles and apply them in practice. (Lara)*

*I feel that the online seminars provide an opportunity to exchange experiences with team members that I would not usually be able to attend, and I think the benefits of online seminars more and more with each session. (Ai)*

*Comparing the usual seminars at my workplace, to PBL, our ward ethics seminars are very short and do not lead us to in-depth discussion. Often there is no opinion from most of the participants. I want to learn more about the role of a facilitator in nursing practice, as I need to be a facilitator to get everyone to express their opinions. (Kara)*

The faculty members also studied and worked on implementing a "student-centered" teaching method to change their teaching style.

*I have to flexibly deal with and facilitate it based on the opinions given, not on a well-prepared lesson plan. (Yua)*

*One-way teaching does not result in secure knowledge and skills that can be applied in practice. It does not lead to consideration of ethical issues. (Niko)*

*The lectures that are delivered by the instructor are not suitable for PBL. Summarization is not done by the faculty but by the students who have learned. (Niko)*

However, the process was not always a satisfactory experience for the faculty members, especially when it came to the participants' case studies from clinical practice:

*One group did not ask questions, which is a basic technique of PBL. They seemed not to utilize the previous learning... To be honest, I was disappointed when I saw the case study progressing aimlessly. (Yua)*

*At the time of the group discussion, I may have overstated my opinion, and participants may have expressed their views but may not have a conclusion. (Rin)*

*It is always difficult to ensure that the participants have a common understanding of the current situation when discussing a case. (Aoi)*

In the initial stages of participation in the seminar, some students mentioned that they expected and wanted them to "fully engage in discussions. However, some groups found that group discussions did not work as well for them as they would have liked: when it came to concluding the cases they brought from their practice and recommending nursing actions:

*There's no correct answer, but we have to make a consensus on an intervention. (Fuyu)*

*I don't think there is a right answer to this question of nursing ethics, but I would like to think about what the nursing profession can do to complete the discussion. (Hanako)*

as well as when time was insufficient to engage in rich, in-depth discussion:

*The time was limited, but the same people spoke up during the group sessions, and I wish everyone could have spoken up a little more. There were times when I didn't even have a chance to give my opinion. (Fuyu)*

Faculty members decided to go back to the principles of PBL, reconfirm the goals of this seminar and communicate them to the students, and believe in the ability of the students:

*Next time, on the final day, we will review the basic method of PBL and then start the case studies. Follow-up training can be held, but it will not be dealt with unless it is an idea from the participants based on PBL. It will be a future theme. (Yua)*

*The conclusions of the group discussion may vary from participant to participant. We don't have to draw one conclusion. (Rin)*

*I felt the group discussion was a little bit different. But I expect they are adult learners, so they know what and how to do. (Hina)*

With encouragement and support from their colleagues, staff shared feelings of being reassured and confident in the PBL process:

*I'm glad I believe in the power of the group. I feel that the presentation exceeded my expectations. (Niko)*

*I felt participants developed rich ethical sensitivity. (Rin)*

*In my previous review, I was concerned that the content they had learned was not being utilized. However, participants' abilities to deal with ethical issues were undoubtedly maturing. (Yua)*

### Translation into practice

The majority of comments were related to the translation of PBL and online teaching into the broader practice of faculty as some students in the seminar were also faculty members, and the experience prompted them to reflect on their teaching, evaluating the experience both from the viewpoint of themselves as the student and as an educator. Their reflections noted the collaborative aspects of PBL and reflected a deepening understanding of the subject matter and technique as well as highlighting the value of working as a team of staff committed to collaborative learning and development of capability in PBL and online teaching. For example, members of the group initially, struggled with aspects of facilitating PBL and discussed it with other faculty members. Furthermore, faculty members also reflected on the important step of changing practice behaviours:

*I now think that online is useful because it fosters independence for those with a given level of motivation. Even if it was difficult for me to change my thinking (Yua)*

*I thought that asking students about their experiences, rather than teacher-led, and connecting their questions and emotional responses to their learning would motivate them to learn. (Aoi)*

*Planning and implementing this seminar has changed the style of my lectures. Teachers tend to want to conclude quickly, but students can draw their own conclusions, so minimal support is needed to prevent them from going in the wrong direction. (Niko)*

*I hope that the participants will apply what they have learned in their clinical and educational settings. The group members (students) continue to grow [develop] I expect the students to take what they have learned in the seminar back to their clinical practice or workplace and discuss it to deepen their understanding. (Niko)*

## DISCUSSION

According to [Baume \(2021\)](#) graduates need to be fluent in the five Cs: Creativity, Communication, Collaboration and Criticality and Competence ([Baume, 2021](#)). Baume highlights the difference between teaching, which usually involves telling students facts and information, and learning which involves using teaching methods, such as PBL, to cause students “to explain, to apply, to

critique, to combine into new forms, what they have been taught.” ([Baume, 2021](#)). Rapid advances in health sciences have led to content heavy nursing curricula leaving little space for learning how to critically think ([Feller, 2018](#)) and nurse educators should carefully consider adopting curriculum and teaching approaches that enhance lifelong learning.

### Effectiveness of PBL methodology in nursing ethics

The nature of applied ethics makes it eminently suitable to support the development of key learning competencies in post graduate nursing students as ethical situations necessitate exploration of different perspectives and justification of proposed actions and PBL provides a mechanism for achieving this in a facilitated, collaborative learning environment. An interactive situational e-learning system developed for undergraduate nurses in Taiwan was found to develop students' competence in ethical reasoning ([Chao et al., 2017](#)). In our study, the active role students described was effective in sharing experience and exploring different perspectives as well as exploring ethical issues in the stimulus material. However, a review of the global literature on the teaching of ethics suggests that lecture-style delivery is a popular way of teaching ethics ([Avci, 2017](#)). In most instances tangible cases are used to facilitate understanding and has been found to be useful by students and educators but the successful depends on the quality of the case used ([Avci, 2017](#)).

### Faculty and students' exposure to a PBL approach

Students entering new learning environments will have preconceived ideas about how that environment will function. Previous qualitative studies described nursing students' anxieties when beginning a PBL program ([Klunklin et al., 2011](#)). It has also been noted that when students encounter a new way of learning in higher education, they bring their previous experiences with them ([Otting et al., 2010](#)). In our study, students indicated ability to readily adapt to, and satisfaction with, the online seminar. Although this must be treated with caution because of the small numbers involved, this contrasts to the commentary about the 2020 worldwide move to online education which suggests that on the whole students across the globe were dissatisfied ([Altbach & de Wit, 2020](#); [Sun, 2020](#)). It may be that as experienced nurses and post graduate students, students in this study were more familiar and better prepared for learning using practice-based scenarios and technology for communication than undergraduates might.

Despite case-based learning being effective Taiwan and Japan continue to use lecture-style teaching because students are said to feel uncomfortable in an interactive learning environment

(Lin, Lu, Chung, & Yang, 2010). Further, Marumayama and Uenoe (2010; p438) have asserted there are missed opportunities for teaching and learning in professional ethics courses as “difficulties in professional ethics education in Japan are caused by the fact that both teachers and students lack experience in leading and participating in discussion-based-classes and misunderstand the effectiveness of a case-based pedagogy”. In this study “comfort” was mentioned by several participants. Culturally, there may be a reluctance to ask a question for which the other may not have an answer and causing discomfort – thus PBL and similar pedagogies may be perceived as against traditional values of unquestioning acceptance of the teacher (Davies & Ikeno, 2011; Okada, 2016).

Our study has demonstrated that it is possible to implement PBL online rapidly when staff are actively engaged, supportive, open-minded, willing to change, adapt, reflect, and work collaboratively – i.e. model the behaviours of an effective PBL group as they seek to respond to a changing higher education context. The study has demonstrated that for faculty who participated in the online PBL ethics seminar design and implementation, there is a burgeoning paradigm shift among teachers from teacher-centered learning to student-centered cooperative group learning, and from expert-teaching knowledge to practice-based learning. This is a key difference between traditional instruction and PBL (Woods, 2003). In addition, staff also experienced working together to develop the seminar (i.e. their ‘real world problem’) in an online environment and had experience of inquiry process in action research beginning at the initial moment of the idea and continuing well after any formal research is complete (Reason, 2006) as they move to continuing and broadening their efforts to implement PBL online in the nursing courses at Yamaguchi University.

### Differences between online and face-to-face PBL

The pandemic created sudden dislocation, uncertainty and inconvenience (Pokarier, 2020) but the crisis has been seen as perhaps representing a transformative moment for online teaching across the globe (Altbach & de Wit, 2020). Further, referring to the rapid move to online learning and need to move academics into this modality, Sun (2020) remarked that “Teaching online is like asking people who know how to drive to fly a plane”.

In an online learning environment, students or faculty members have to keep their eyes on the screen and lecture within a narrow field of view. This makes it difficult to maintain concentration and to study for long periods of time. In other words, it is necessary to manage time effectively. On the other hand, such collaborative management of classes by students and faculty with

an eye on time can lead to effective learning of key skills. Students are expected to have the ability to listen intently to the opinions of other students, grasp the context, and summarize and express their own opinions effectively while thinking.

Altbach and deWit’s pessimism about “faculty of a certain age” lacking “both the experience and stamina to learn new and highly unfamiliar methods and technologies” (Altbach & de Wit, 2020) was also not realized. In our study, academics were able to rapidly adapt material that had been presented in a lecture and case study format. It did not take a lot of resources and training, adapted quickly and easily because of broad experience as teachers and in clinical environments. Their current clinical knowledge meant that the case study was rich in detail and authentic. All were highly experienced in teaching in a face-to-face setting but, as Kilgour et al. (2019, p.1416) described the move to online teaching was “deeply unsettling because [it] can run counter to the habits, conviction and experience gained in a non-online environment.” However, the response of staff in this study to the “supreme command” (Kato et al., 2020) to move to online teaching was to embrace the opportunity and aim to provide a quality experience for the students. When applied to online pedagogy in higher education contexts, academic staff become the learners as they extend their on-campus teaching knowledge into the online realm. In this setting, the identification of threshold concepts has the potential to inform the content of professional development (PD) programs for novice online teachers.

### Limitations

There were limitations to this study. Student and staff feedback was suggestive that the experience was a positive one. However, faculty members and student participants in the study were all volunteers and may have been more positively disposed toward PBL and online learning than others. We plan to apply the learning from this research to large-group classes in graduate and undergraduate courses.

## CONCLUSIONS

This paper has reported on the first foray into PBL and online learning by nurses as a group at Yamaguchi University. The study is small but nevertheless important in communicating our experience to others considering adopting PBL in online or face to face environments.

The process of implementing an advanced ethics seminar using PBL for graduate nurses in an online mode also entailed a parallel process of the PAR process itself being conducted via Zoom with the research team meeting only in an online environ-

ment due to the pandemic. As a result, participant academics perhaps emerged from this research process with new skill sets in PBL, action research, online teaching and online research collaboration.

In Japan there has been a recognition of the need for inquiry-based learning in secondary school education in order to transition to a knowledge-based future (Mikouchi et al., 2019). The term "active learning" has been used to improve university education since 2012 (Report of the Council of Education, August 2012), and problem-based learning, has been widely adopted. Although the need for critical thinking has been mentioned in nursing education in Japan for some time, teaching methods have not been consistent. Through the action research process, our experience was that the team rapidly adjusted to the online mode without a requirement to extensive training or expensive resources and plans to include an online PBL approach in future offerings of other nursing ethics courses at Yamaguchi University.

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# Implementing Best Practice in Training Problem-Based Learning Tutors

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**Purpose:** In order to implement problem-based learning (PBL), extensive staff training is required. The purpose of this study was to qualitatively evaluate the efficacy of a training programme for inexperienced PBL tutors.

**Methods:** Data included anonymous feedback from programme participants, semi-structured interviews with programme participants, and feedback from students.

**Results:** Data from these independent sources were analysed, resulting in three main themes that painted a comprehensive picture of the success and limitations of the PBL tutor training programme: I) pedagogical knowledge of PBL was obtained but needs to be reinforced by practice; II) the mock tutorial was a relevant experience; III) a written PBL tutor guide supports training efforts.

**Conclusions:** Using diverse sets of data, this study demonstrated that the acquisition of pedagogical knowledge is contextual and partial, and multiple sources of knowledge are required to achieve a complete and interpretable picture of the subject.

**Keywords:** Problem-based learning; staff development; biomedical science education; qualitative analysis

## Original Article

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## INTRODUCTION

In biosciences education at the undergraduate level, it is critical for students to develop oral and written science communication skills, with a focus on acquiring and synthesising information from the scientific literature. To achieve this, we elected to incorporate two problem-based learning (PBL) problems selected to align with ongoing research in the Biosciences Department, considering that a PBL problem should cross boundaries between disciplines, i.e. aspects of molecular biology, cell biology, and physiology should be covered in a single problem in biomedical sciences education (Jonassen, 2008). These problems were carefully constructed to present learners with real-life scenarios and allow students to approach a problem with a great degree of intellectual freedom, while remaining embedded within the core curriculum (Hung, 2008). Crucially, PBL provides a cognitive challenge by not providing all the necessary information, thereby driving self-directed knowledge acquisition (Allen, 2011).

PBL tutors provide support to students during the tutorial by using a Socratic style of teaching to draw as much as possible out of the learners through a constructive questioning process (De Grave, 1999). Importantly, the skills needed to effectively run a PBL tutorial need to be in place before implementing this style of teaching. However, very few members of academic staff assigned to carry out PBL in the department had any experience using this teaching style, so a training course for staff was designed and implemented. This was developed as a one-day training session to provide members of academic staff with a pedagogical background on the benefits and limitations of PBL, as well as practical experience working with this method (Walsh, 2005). The emphasis was on teaching academic staff how to guide students through

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the PBL process and to meet their learning objectives in a constructivist way (Savery & Duffy, 2001). Additionally, the course focused on encouraging students to contribute actively to the group. Feedback methods were discussed, as were methods to evaluate the group process. The course concluded with a mock PBL tutorial to observe the process in action, as well as how to spot frequently-occurring problem situations and take adequate action. Upon conclusion, the participants received a certificate of participation and provided anonymous feedback on the training course content.

The purpose of this study was to qualitatively evaluate the efficacy of this training programme based on data acquired from members of academic staff who participated in the training course and who subsequently implemented PBL in their tutorial groups.

This structured enquiry was performed (Servant-Miklos, 2019). Using this approach, interpretations were made based on qualitative data obtained from participants to assess the success and limitations of the training course. Data acquisition for this project used different sources to perform an inductive analysis (Servant-Miklos, 2019). This research comprised three types of primary sources: anonymous feedback acquired via a questionnaire completed by participants immediately after the PBL tutor training course, data acquired via semi-structured interviews with members of staff who completed the training course and subsequently served as a PBL tutor, and feedback from students on the Year 2 PBL module in that same academic year. The data from these three independent sources were analysed to assign meaning to the qualitative data, with the ultimate aim of continually improving the provision of PBL tutor training.

### Acquisition of skills through PBL tutor training

The PBL tutor plays major roles in ensuring that student learning takes place and in providing a positive and informative PBL experience. The primary role of a PBL tutor is to serve as a facilitator during the tutorial, which should be primarily student-led. In an ideal PBL setting, students identify the gaps in their understanding, formulate learning objectives, and assign learning tasks. Smooth progression through these steps requires a tutor who should be able to identify issues within and beyond the context of the problem that may lead to missed student learning opportunities. The tutor should understand the subject matter of the problem before the tutorial starts, establish ground rules within the tutorial group, and monitor both student progression and group dynamics during the tutorial (Chan, 2008).

Ideally, a PBL tutor should be highly informed, well-prepared, and intensely critical. However, becoming a skilled PBL tutor is

not as easy as it looks. It requires thorough training, intense preparation, and a great deal of practice to gain any sense of confidence at all (Chan, 2008).

Training PBL tutors is therefore crucial to implementing this type of curriculum change. Training workshops and role plays should be implemented to help staff develop a facilitative-collaborative teaching style in which the tutor fosters critical thinking and encourages students to synthesize information (Nesargikar, 2010). PBL tutors also need to develop a sound understanding of group dynamics, in order to keep the group focused on the task at hand. Finally, the shift from didactic learning, in which the instructor is inarguably an expert on the material, to a situation of facilitated learning may make PBL tutors feel insecure. In fact, a study by Finucane et al. (2001) showed that only a small proportion of staff volunteer to be PBL tutors; interestingly, the volunteer rate is higher in tutors who had previously experienced PBL as a student (Finucane, 2001).

### The process of developing the training workshop

Based on the pedagogical literature concerning PBL tutor training programmes and development, five levels of training are required (Price, 1997):

Level 1: An introduction to PBL as a learning model, along with the theoretical underpinnings of PBL as a constructivist, student-centred model of learning. This step allows participants to understand the benefits and limitations of PBL, as well as expectations on the part of the tutor.

Level 2: Observation of a mock PBL tutorial conducted by an expert tutor (the course instructor), including observation of the tutor role, the process of formulating learning objectives, and the presentation of researched material. This step helps to foster understanding of the tutor and student roles in PBL.

Level 3: Acquiring hands-on experience as a tutor, followed by a critical evaluation of the tutor role. In some cases, the best way to learn is by doing!

Level 4: Practising the tutor role in a number of academic cycles. This allows tutors to continuously develop their PBL tutor skills and reflect on this process.

Level 5: Ongoing review, reflection, and modification of the PBL curriculum. This involves interactions between tutors to share best practice, reflections on the delivery of PBL and learning outcomes, and modifying practice as necessary.

The PBL tutor training course covered Levels 1 and 2 of this paradigm, whereas feedback was obtained after participants had achieved Level 3 learning. The morning session (Level 1) included a lecture and small group activities on the process of PBL and the support for using this teaching method in the literature. The

afternoon session included a mock tutorial (Level 2) in which course participants observed the PBL process in action. This was a somewhat contrived setup the first two times the course was run, as the tutorial group was comprised of previously briefed graduate students who had rehearsed the entire scenario. Based on comments from participants, this was changed in the third iteration of the course to using the participants as the tutorial group, providing an active rather than passive PBL experience; this received highly favourable feedback. Participants also received a PBL Tutor Guide and some literature on the use of PBL in biomedical science education.

### Level 1: Pedagogical concepts in PBL

Based on current philosophical views of human learning, knowledge is not absolute, but is rather constructed through interactions with the environment (Dolmans, 2002). A learner who constructs new knowledge based on a real-life scenario is thus at the centre of the educational process; this educational approach is called constructivism (Savery & Duffy, 2001). PBL embodies the constructivist approach to learning since PBL tutors do not simply disseminate information to students, but instead provide students with the opportunity and tools to answer their own questions. In this way, PBL tutors are in fact teaching the ability to learn, an important skill that has the potential to impact the student's life beyond the PBL tutorial.

PBL can be seen as a type of cognitive apprenticeship (Hmelo-Silver, 2004), since PBL contextualizes learning using complex, relevant problems. Tutors make key contributions via their expertise on the subject matter, demonstrated by asking questions that provide a scaffold for student learning. This role is critical, since the tutor must continually monitor the discussion, guiding students away from unnecessary tangents and ensuring that the recommended learning objectives are met. As students become more experienced with PBL, the tutor can provide progressively less scaffolding and guidance, until finally the students master the PBL technique and can carry out the process with minimal tutor guidance (Hmelo-Silver & Barrows, 2006).

Tutors need to provide feedback to students on multiple aspects of learning by assessing tutorial participation, knowledge acquisition, and written work. Importantly, tutors should also receive feedback from students on their ability to lead the tutorial, and continually improve their teaching practice over multiple rounds of PBL (Vogt, 2017). My goal in designing this aspect of the training course was to not only teach PBL as an educational method, but also to motivate tutors to promote the learning process using PBL in a way that benefits students and staff equally.

### Level 2: Running a tutorial and managing group dynamics

The goal of a PBL session is for the students to investigate a scenario presented to them that provides some but not all of the necessary information (Maudsley, 1999). They then follow the seven-step PBL process:

1. Identify the main problem to be solved, i.e. "Why did X cause Y to become ill?"
2. Determine which aspects of the problem require explanation by brainstorming their ideas as a group. The aim in this step is to develop a mind map that allows the students to generate hypotheses and analyse concepts in the scenario.
3. Investigate previous knowledge by suggesting explanations for the scenario and appraising what they believe to be relevant.
4. Formulate learning objectives by identifying gaps in the students' understanding of the scenario and identifying what needs to be pursued. Each student is then assigned one learning objective.
5. Research the assigned learning objective between sessions.
6. Explain the essence of the learning objective by synthesising information prior to the tutorial and sharing this new knowledge with the group during the tutorial.
7. Critically evaluate the acquired material via a group discussion, and come up with a cogent perspective of the issues raised in the scenario.

Finally, all group members reflect on and evaluate their performance by discussing the group process and learning, as well as personal contributions and achievements; this assessment should always include the tutor.

As mentioned above, this aspect of the training course was first carried out through a prearranged mock tutorial (in the first and second workshops); based on participant feedback, this was changed to a more active, spontaneous mock tutorial in the third workshop, using course participants as the tutorial group members. In its current iteration, the training course also incorporates video clips as an interactive tool to improve the ability of future PBL tutors to recognize specific obstacles to functional group dynamics and to help them develop effective intervention strategies. Previous research has shown that this type of tool is well-accepted and can be readily integrated into a PBL tutor training workshop (Bosse, 2010).

An ethnographical approach was taken to consider the epistemology, ontology, and axiology of the methods used to assess the impact of the PBL tutor training course. Westbrook argues for the 'ethnography of current situations', a type of refunctionalised ethnography in which critical reflexivity is used in such a way that self-consciousness is not only deployed as a critique after the

event, but is rather part of the design of the project from the beginning.

A thematic analysis was performed on how well participants felt that the PBL tutor training course achieved two distinct learning objectives: (1) acquiring knowledge of the pedagogical aspects of PBL and (2) mastering the practical aspects of running a PBL tutorial.

Semi-structured interviews were carried out with academic staff who participated in the training course and who subsequently implemented PBL in their tutorial groups. These interviews focused on two specific themes related to the implementation of PBL, i.e. the principles of PBL (pedagogical background, roles of group members, group dynamics, use of Bloom's taxonomy (Bloom, 1956), the formulation of learning objectives) and the implementation of PBL (leading a PBL tutorial, providing support to students, delivering and providing feedback on assessments).

## METHOD

### Data collection

Data were obtained through anonymous feedback forms collected immediately after the training course and through semi-structured interviews with members of academic staff in the Biosciences Department at Aston University. All interviews were recorded in audio and subsequently transcribed and a thematic content analysis was performed on the transcripts. Based on a theoretical framework, a list of topics (pedagogy, mock tutorial, and tutor guide) and codes to guide the initial analysis was prepared and data were encoded. Subsequently, the grouping of codes was carried out based on the thematic areas. Recordings were destroyed after the transcript was checked for accuracy. Student feedback from the 2018-19 cohort of the PBL module was also included in the analysis.

The scope of this study was delimited to members of staff who took part in one of three PBL tutor training workshops in June/July 2018 and who acted as a tutor for the PBL module in the 2018-2019 academic year. The course participants covered a broad range of academic and pedagogical experience, including the Head of Department, the Programme Director and other professors, as well as more junior members of academic staff (Lecturers, Senior Lecturers, and PhD students with a teaching role). Staff who attended the training course but who did not teach on the module, and PBL tutors who taught on the module but did not attend the training course were not included in the study. From a pool of 22 eligible participants, interviews were completed with 10 participants, which provided a representative

sample of this group and achieved data saturation.

### Data analysis

The output from the semi-structured interviews (10 interviews, each averaging 12 minutes in duration) was evaluated thematically with the objective of modifying the tutor training workshop to provide an improved learning experience for academic staff. By collecting, evaluating, and implementing this feedback, my primary aim was to transform my teaching practice and enhance my ability to provide pedagogical instruction to my peers.

As the instrument used in this study has not previously been used to assess the outcomes of PBL tutor training in this context, this study should be considered a pilot study; efforts will be made to establish the reliability and validity of the instrument. The output from the semi-structured interviews were evaluated qualitatively with the objective of modifying the tutor training workshop to provide an improved learning experience for academic staff. By collecting, evaluating, and implementing this feedback, my primary aim was to enhance the provision of pedagogical instruction to members of academic staff. (Table 1)

### Ethical considerations

The study was carried out in accordance with the principles of the 1975 Helsinki Declaration. Consent was obtained from the Aston University Ethics Committee prior to the collection of data in the form of semi-structured interviews. Participation was voluntary and written consent was obtained from all participants prior to commencing the interview. Participant confidentiality was highly prioritised and thoroughly maintained; only the researcher had access to the data. All results were documented and recorded without any possibility of tracing individual participants.

As a limitation to this study, members of academic staff may not have felt comfortable describing perceived failures in their delivery of PBL. Likewise, participants may have been hesitant to criticise the efforts of a colleague. To mitigate the chances of this study inducing psychological harm to participants and to the investigator, a debriefing document was provided to all participants with information on where and how to obtain mental health counselling.

## RESULTS

### Anonymous feedback

In the anonymous feedback forms collected after the training course. Feedback was generally positive (Very Good) or highly

**Table 1.** Instrumentation: Interview questions**Theme 1 – The principles of PBL**

Q1. Do you feel that you have gained adequate knowledge on the seven-step PBL model?

Q2. Do you feel that you have an adequate understanding of the participant roles in PBL (i.e. Chair and Scribe)?

Q3. Do you feel that you were well-prepared to manage group dynamics in a PBL setting?

Q4. Do you feel competent in using Bloom's taxonomy in the formulation of learning objectives?

**Theme 2 – Implementing PBL**

Q5. Did you find that the mock tutorial was an effective component of the tutor training course?

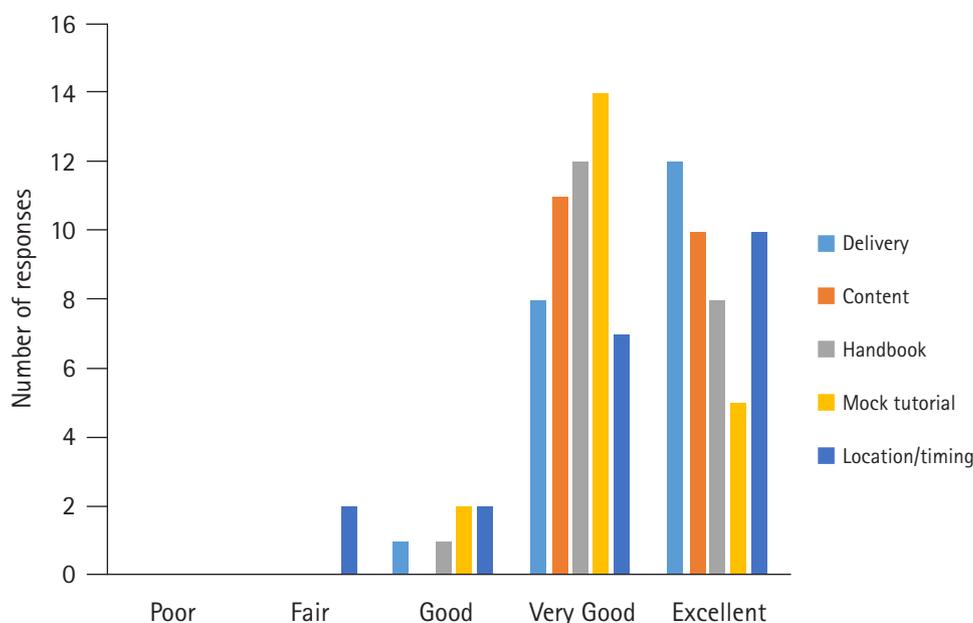
Q6. Did you feel adequately prepared to lead PBL tutorials?

Q7. Did you feel adequately prepared to implement self and peer assessments in the PBL tutorials?

Q8. Did you feel confident in assessing student performance during PBL tutorials (professional behaviour, contribution to process and contribution to content)?

Q9. Did you feel that you were well-prepared to deliver the assessments for the PBL component of the Year 2 Key Skills module?

Q10. Did you feel that you were well-prepared to provide feedback on these assessments?



**Figure 1.** Analysis of data derived from anonymous feedback collected immediately after the PBL tutor training course. Participants were asked to assess the quality of the training course in terms of the delivery, content, handbook, mock tutorial, and location/timing. Attributes are scored on a five-point Likert scale as poor, fair, good, very good, and excellent. In total, 21 responses were received.

positive (Excellent) when participants were asked to comment on the delivery, content, handbook, mock tutorial, and location/timing of the training workshops (Figure 1). Some improvements were suggested with regard to the handbook (improving pagination) and the mock tutorial. Specifically, major issues were raised by participants regarding the mock tutorial, particularly in the second session, as it was felt that this had been over-prepared and did not reflect a real tutorial situation. Based on this feedback, the mock tutorial was changed in the third session to a more spontaneous format, with training course participants taking part in the mock tutorial themselves.

*Outstanding idea, well evangelised and explained! Should be rolled out as widely as is practicable. Training day was well-designed and mock tutorial run-through was a great idea. Very sensible and effective to do it on one day to provide an immersive experience. Splitting it into multiple shorter sessions would lessen the impact. Participant, session 1*

*Delivery and content really useful as I haven't done much PBL. Mock tutorial was useful to see, including some amber (slightly problematic) behaviour. Makes sense to run the course on one day rather than prolong it. Participant, session 1*

*Really nice to see a mock tutorial, but it felt a bit staged (because they did it before). Participant, session 2*

Only suggestion would be to use 'less groomed' students for the mock tutorial to make a more accurate experience for how it might work for real, as a way to show what would happen. Participant, session 2

Mock tutorial was very informative and gives a good idea of what to expect. Participant, session 3

### Semi-structured interviews

From a pool of 22 eligible participants, I achieved data saturation after completing 10 interviews. The characteristics of participant responses during the interview are detailed in Figure 2, with data coded as a positive response to the question (green), a mixed or negative response (amber), or a negative response (red).

For the most part, participants agreed that they had learned a retained a good part of the material presented in the tutor training course. Participants were provided positive feedback on

knowledge transfer on the roles in a PBL tutorial and how to run a tutorial, on the use of peer- and self-assessments, and in the use of Bloom's taxonomy (Bloom, 1956). More mixed feedback was obtained on questions pertaining to the seven-step PBL model, gauging student engagement, how to guide students through the PBL assessment, and on the utility of the mock tutorial. The highest number of neutral/mixed responses was obtained for the question on managing group dynamics in a PBL setting – five out of ten participants did not feel that this had been adequately covered by the training course. Taken together, these data demonstrate that participants were quite comfortable with the more straightforward concepts covered in the course, but more complex issues concerning interpersonal relationships should be dealt with in more detail in future iterations of the course.

A sub-analysis was performed to assess if experience level had an effect on the depth of learning on the PBL tutor training course. Responses from junior members of staff (P4, P5, P7, P8)

Legend: ■ Positive opinion ■ Neutral/mixed opinion ■ Negative opinion

Question	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Q1. Do you feel that you have gained adequate knowledge on the seven-step PBL model?	Green	Green	Green	Amber	Green	Green	Green	Green	Green	Amber
Q2. Do you feel that you have an adequate understanding of the participant roles in PBL (i.e. Chair and Scribe)?	Green	Amber								
Q3. Do you feel that you were well-prepared to manage group dynamics in a PBL setting?	Green	Amber	Green	Amber	Green	Amber	Green	Green	Amber	Amber
Q4. Do you feel competent in using Bloom's taxonomy in the formulation of learning objectives?	Green	Green	Amber	Green						
Q5. Did you find that the mock tutorial was an effective component of the tutor training course?	Green	Amber	Green	Green	Green	Green	Green	Green	Amber	Amber
Q6. Did you feel adequately prepared to lead PBL tutorials?	Green	Amber								
Q7. Did you feel adequately prepared to implement self and peer assessments in the PBL tutorials?	Green	Green	Amber	Green						
Q8. Did you feel confident in assessing student performance during PBL tutorials (professional behaviour, contribution to process, and contribution to content)?	Green	Amber	Green	Green	Green	Amber	Green	Amber	Green	Green
Q9. Did you feel that you were well-prepared to deliver the assessments for the PBL component of the Year 2 Key Skills module?	Green	Green	Green	Amber	Green	Green	Green	Amber	Green	Green
Q10. Did you feel that you were well-prepared to provide feedback on these assessments?	Green	Amber	Green	Amber						

Figure 2. Coding of data derived from semi-structured interview transcripts. Participants were recruited to participate in this study by answering a series of ten questions on different aspects of the PBL tutor training course, with a specific focus on pedagogical knowledge transfer (Q1-Q4) and the acquisition of practical skills (Q5-Q10). The study was conducted with the approval of the Aston University Ethics Board and carried out in accordance with the Declaration of Helsinki. Green: positive opinion Amber: Mixed/neutral opinion; Red: negative opinion.

were somewhat different to those obtained from more experienced members of academic staff (P1, P2, P3, P6, P9, P10). Specifically, the more junior participants seemed to acquire knowledge more readily and retain it better, with a higher proportion of positive responses compared to staff members (85% vs. 77%, respectively).

Overall, the participants were forthcoming with their answers, providing elaborate responses to most questions. The thematic analysis resulted in three main themes that paint a comprehensive picture of the success and limitations of the PBL tutor training course. The themes were: I) pedagogical knowledge of PBL was obtained but needs to be reinforced by practice; II) the mock tutorial was a useful and relevant experience but requires improvement and; III) the PBL tutor training guide was a useful resource and should be retained in future training efforts (Figure 3).

*Theme I. Pedagogical knowledge of PBL was obtained but needs to be reinforced by practice.*

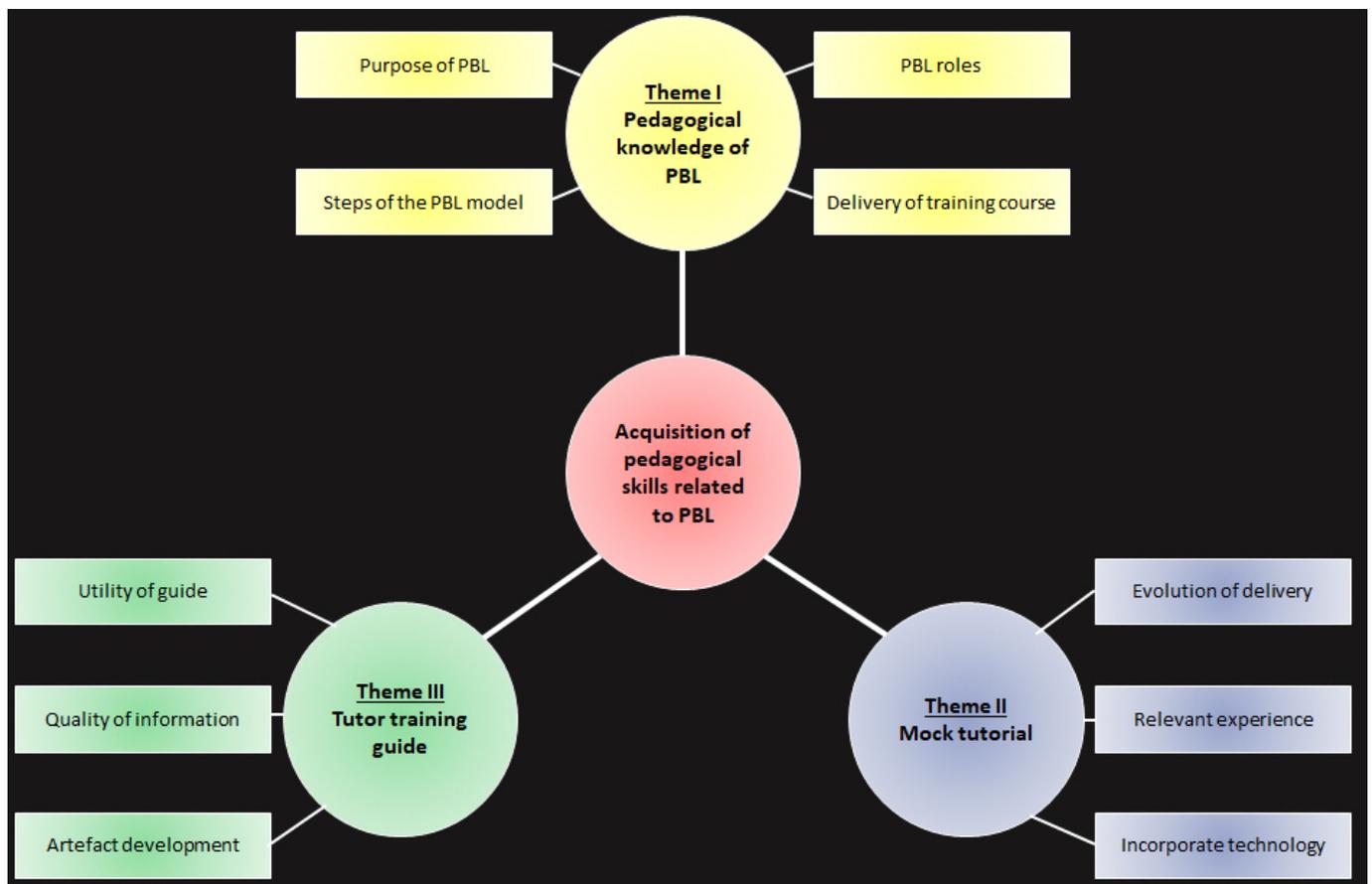
This theme describes how well training course participants acquired and retained knowledge on the pedagogical support for

PBL, according to the work experience of the participants. This theme sheds light on the efficacy of Level 1 of training course, in the context of staff who had also completed Level 3, i.e. acquiring hands-on experience as a tutor, followed by a critical evaluation of the tutor role. In order to better understand how this response was affected by different factors, four sub-themes were delineated, focused on understanding the purpose of using PBL, the steps of the PBL model, the different roles in a PBL tutorial, and the quality of knowledge transfer.

Participants seemed to clearly understand the importance, impact, and pedagogical support for the use of PBL.

I think the training course was a good introduction to the model, but I think actually going to the first tutorial with the students kind of really consolidated that. But I think going through that training course and knowing the background a bit gave me a bit more confidence in that first tutorial to at least appear to the students that I knew what I was doing. P2

I didn't know anything about it beforehand, so the training was quite helpful and the handbook was really helpful because it was



**Figure 3.** Thematic analysis of the PBL tutor training programme. Three major themes arose: The themes were: I) pedagogical knowledge of PBL was obtained but needs to be reinforced by practice; II) the mock tutorial was a useful and relevant experience but requires improvement and; III) the PBL tutor training guide was a useful resource and should be retained in future training efforts.

a period of time in between the two. I think I understood the concepts and why we were doing it. P6

I think the training was very clear and it was all laid out very well. P7

I think I've gained adequate knowledge, it's just a question of practicing it. I understand what needs to be done, it's just critical to implement in practice. P10

Most participants mentioned that they understood the seven-step PBL model and noted that this was clearly described during training and in the PBL tutor training guide, but some participants mentioned difficulty in remembering the steps in detail after some time had passed.

I think so. In the training session that you ran, you basically laid out all the different stages very well, and having that handbook really helped. I left that a bit, "oh my god, this is a lot to take in", but then you take time to process it and then look through everything and actually it's pretty straightforward. I thought I came out having done that better, I mean it all made sense to me. P8

I don't think I could repeat them back to you now. P5

Could I remember them now, no, but I understand the process. P3

Many participants shed light on the importance of understanding the roles in PBL, but there was some doubt regarding the responsibility of the tutor in filling these roles, particularly the Chair role.

I think the training course and the booklet that you gave out as part of that training course very clearly defined those roles. P2

Yes, I [understand]. Definitely the Scribe. Chair, I think I do. I was sometimes a bit confused if it's a student who has to be the chair. I don't think they're quite up to it yet. P10

Following the completion of the training course, most participants felt adequately prepared to run the PBL component of this module, but some aspects of how to assess PBL performance could be clarified further.

I was adequately prepared, but I think the students struggled a little bit with the peer assessments. I think we could get them to do more honest peer assessments earlier. We do some peer assessments like 'rate the person in your group' and they all put 5 out of 5 because they're all their friends. I think I was fine with it. Self-assessments are interesting as well. I think all the students are all I would say quite harsh on themselves but generous to others. I think they see room for improvement in themselves but they're not very good at being critical of others. P1

I thought the handbook alongside the training course gave me everything I needed to know to run those tutorials. P2 It's one of those things, isn't it? You're as prepared as you can be, and then it's about having that experience and knowing how to manage a room. P4

I think a few more guidelines on what the criteria are, as in what constitutes professional behaviour, would have been helpful, but I just read between the lines and kind of figured out what it was. P2

*Theme II. The mock tutorial was a useful and relevant experience but requires improvement.*

Several participants elaborated their answers on the challenges inherent in staging a performance of what would normally be a spontaneous event, while others provided broad non-detailed answers. The sub-themes that were generated were: the best format for the mock tutorial is to have training course participants act as the tutorial group, the mock tutorial provided a relevant real-life experience, and the implementation of technology would improve participant preparedness for the PBL tutorial setting.

Participants in the first two PBL tutor training sessions felt that the mock tutorial felt somewhat contrived, particularly those who attended the second session. The mock tutorial had initially been carried out by a number of graduate students under the direction of the course instructor as Chair, and certainly by the second time around, the students had become comfortable with their set roles in the group, leading to a somewhat rehearsed delivery. Based on anonymous feedback from course participants and the generous support from one particular colleague (P2), the mock tutorial was redesigned for the third set of trainees, in which the course participants experienced a PBL tutorial for themselves; participant P2 served as a 'plant' in the group and provided a brief presentation on a learning objective selected from the PBL problem. This was met with varying degrees of enthusiasm (bolstered by the provision of biscuits) but, in my opinion and the opinion of some course participants, made for a more relevant and valuable learning experience.

Yes. It gave us a chance to see real students doing it and to see what kind of problems may come up as well. It was useful. P7 – session 1

Yes, because it was really nice to see it in practice. The only downside was of course they were all really good at it, and I feel like it might have been useful for when they don't want to say anything have a bit more idea of how to coax it out of them. P6 – session 2

I think it could have been better, because some of the students had done it before for another session, hadn't they? So, if it was more fresh, I think it would have been better, because they knew already what the failures in the previous go had been, so it seemed a little bit rehearsed, if that makes sense. So, if it had been new students each time, I think it would have been better. P9 – session 2

It definitely helped, but because it was staged, it didn't really

prepare you for real life as well as I would like. P10 – session 2 I don't know if there is any other way to do it...you've got to have a demonstration on how it works. We did it in two different ways. The first one when I was trained was when we had graduate students mocking up one and then in the second one I actually did a bit of a presentation. I think it was useful to see it but also to participate in it to see how it works. It's something that sounds conceptually complex but it's not, once you actually get down to do it. I think it's good to sort out timings as well, because you've got this list of things to do, and you're like, 'will that work in an hour?' and then it does. P1 – session 2

Yes, I did. I think I learned then about firstly the order in which to do things and exactly how those worked because it's a model and it's never a perfect system in every situation, it's going to be different. So, it was interesting to see how that worked from a tutor point of view but also being in the tutorial and having that experience of how I fit in that tutee dynamic. I think being on that side of it helped. P4 – session 3

Participants reported that the mock tutorial provided effective preparation for PBL tutorials with students, but the issue of managing group dynamics was raised, particularly with regard to dealing with quiet or apprehensive students.

I think it's good doing it in tutorial groups where you already know the students – with second year students you've had them in first year, so you know you their perceived strengths and weaknesses, you know the ones who you think you can rely on to be chatty and talk about things and the ones you need to push more. If you went blind into a group, it would be more difficult to gauge dynamics to start with. It would be nice to have some interaction with them before you try and do PBL I think. P1

I'm not sure the training course can prepare you for all scenarios. I was expecting silence from the students and actually I kind of got the opposite, where they were rather vocal and it was reining them in. But I don't think that you can prepare for that in a training scenario, because you never know what you're going to get in the real situation. P2

I think you provided something as much as possible to prepare us for what the tutorial was going to be like, but the unknown is what the group dynamics are, how many people are going to turn up on the day, how keen students are. My sessions were at 9 o'clock in the morning, and probably they're not the most awake and the most motivated to do things. Not that there's anything you can do about that. There's so many factors. I think by the time we got around to the second one, they'd got into what was expected of them. P5

I think it helped me in terms of what the dynamic would be like and how to actually run the session, but my particular stu-

dents really struggled with that. They weren't very cooperative let's say, so it was a lot of me having to lead everything. Nobody really wanted to be the scribe or the chair and it was, "I'm just going to sit here and look at you". P8

*Theme III. The PBL tutor training guide was a useful resource and should be retained in future training efforts.*

Many participants mentioned the value of the PBL tutor training guide as a resource for late consultation, especially given the span of nearly four months between the training session and the first PBL tutorial.

Because there was quite a big gap between having the training course with you and the start of the academic year, I had to go again to the documentation and revise it. But that was fine, because you gave us a very nice guide, so I could just go and read through it again. P9

A number of participants noted the good pedagogical practice of providing a dynamic verbal/oral training session in person as well as a static resource for later reference.

Yes, we had a good training session with you and the booklet we got before, which was really useful. With good pedagogy in mind, you had a written thing and an oral delivery thing so you had a balance. The booklet is great to refer back to. P1

Some participants provided a critical appraisal of the contents of the PBL tutor training guide, with useful suggestions on how to provide more complete and comprehensive information to future PBL tutors.

I think the manual was very good and having all the learning objectives there for yourself to see was really useful. But I think perhaps the information was there, but we weren't made aware of it, like the presentations that were given to the students beforehand. So, perhaps something to take into account is to tell all the tutors involved to take a look at those presentations because there's some information there that wasn't in the manual. I think that's the only criticism. P9

One of the overarching themes from the thematic analysis is that while no participants felt completely unprepared for PBL delivery, there remains considerable variability in staff comfort with using this teaching technique and in the delivery of PBL tutorials. This finding was also reflected in student module assessments.

From discussing with other tutor groups, there is sometimes a substantial difference in what they have been briefed in terms of exactly how things are presented or learning objectives etc. I am aware that these are very well teething problems but it made it quite confusing during peer study sessions and helping each other on things when we have been told to do contradictory things... so maybe be more clear between tutors what exactly they are ask-

ing for so there's a continuity between groups. As some have had a lot more information than others etc...other than that, very happy with the module, really enjoyed it, there should be more modules like this especially in terms of putting it into a case study; it makes the scenario relatable and easier to understand and retain. PBL module student, 2018-19 academic year

## DISCUSSION

Based on anonymous participant feedback and semi-structured interviews, PBL training course participants seemed to readily acquire and retain information on the general PBL process and the use of assessments in this style of teaching. The most negative feedback was in regard to the mock tutorial (especially in session 2) and the comfort level of participants in managing group dynamics. As mentioned above, the mock tutorial aspect of the training course was first carried out using a group of previously briefed students (in the first and second sessions); based on participant feedback, this was changed to a more active, spontaneous mock tutorial in the third workshop, using course participants as the tutorial group members. Additionally, the current iteration of the PBL tutor training course has been modified to incorporate video clips as an interactive tool to improve the ability of future PBL tutors to recognize specific obstacles to functional group dynamics and to help them develop effective intervention strategies. Previous research has shown that this type of tool is well-accepted and can be readily integrated into a PBL tutor training workshop (Bosse et al., 2010).

As part of this thematic analysis, the coding of participant responses was analysed again by separating participants into two groups: junior members of staff with relatively little teaching experience and more experienced permanent members of academic staff. Somewhat surprisingly, participant feedback as provided through the semi-structured interviews was more positive from the junior members of staff, who seemed to be more adaptable and eager to take on a new teaching role, despite the steep learning curve inherent in becoming a PBL tutor. Future analysis in this direction should focus on this aspect of the data by asking more specific questions on the degree of staff engagement with the PBL process as well as on other factors that may influence this, such as time availability and staff stress levels.

Kincheloe and Steinberg theorize that critical multilogical epistemology and connected ontology form the basis of research bricolage. These philosophical notions have informed the interpretation of the data obtained in this study and allowed for a more sophisticated understanding of the complexity of knowledge production and retention. Such complexity demands a rig-

orous mode of research that is capable of dealing with the complications of socio-educational experience and avoids the reductionism of many mimetic research methods (Kincheloe et al. 2011). In this sense, the use of semi-structured interviews provided a rich account of the issues related to skill acquisition in an academic environment. Importantly, the topic of this research was not the interview itself, but rather the issues discussed in the interview, with a focus on the successes and shortcomings of a training programme. These interviews were used to gain insight into people's subjective experiences and attitudes while still allowing for depth and complexity in the data and subsequent analysis (Peräkylä and Ruusuvori, 2011).

## CONCLUSIONS

In performing the qualitative thematic analysis obtained from student evaluations, anonymous written feedback, and semi-structured interviews, an interpretive approach of analytical realism was employed, i.e. finding connections in data obtained from the real world in which we live and interact (Kamberelis and Dimitriadis, 2011). Applying the concept of analytical realism was crucial to enhancing the reliability, credibility, relevance, and importance this qualitative research study. Therefore, using diverse sets of data, meaning has been created through interactions with real-life participants in the training course, both immediately after knowledge transfer and following a period of using this knowledge in a practical setting. The results of this study have demonstrated that all knowledge is contextual and partial, and multiple sources of knowledge are required to achieve a complete and interpretable picture of the subject (Kamberelis and Dimitriadis, 2011).

Clearly, there is a need for additional research on the outcomes of the PBL approach, particularly regarding methods of assessment, the need for collaborative practice, and the application of concepts to practice. Future studies in this regard will provide a crucial evidence base for learning and practice, information literacy, as well as reflection on learning and practice that will support the broader implementation of PBL.

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# Distance Education An Opportunity to Support Nursing in Southeast Asia

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**Aims and Objectives:** This discursive paper aims to discuss the potential creation of a bridging BNS program in selected Southeast Asian countries to increase the number of nurse educators for the goal of having local educators to increase the number of nurses in their respective countries.

**Background:** Nursing in Thailand has evolved from its original support by the past King and Queen of Thailand. Now, most nurses have a BNS degree for entry into practice. The Chiang Mai University has succeeded in delivering nursing and training programs in Association of South-east Asian Nations (ASEAN).

**Design:** A discursive article is describing a distance educational model.

**Methods:** Literature from nursing education in Thailand, World Health Organization (WHO) projected shortage of nurses, nursing education reform, and distance education nursing programs informed this article's opinions. The use of distance education bridging BNS programs has the potential to build faculty capacity quickly.

**Conclusions:** Thailand can educate, to some extent, through distance education, international nurses within the ASEAN region. Providing baccalaureate education will increase the capacity of many of these countries to educate their nurses.

**Relevance to Clinical Practice:** Creating opportunities for preparing baccalaureate nurse educators for low-income countries within South East Asia supports improving health outcomes.

**Keywords:** ASEAN; International nursing; Nursing education; Nursing policy; Overseas study; Thailand

## INTRODUCTION

This discursive paper aims to discuss the potential creation of a nursing baccalaureate bridge program in selected Southeast Asian countries to increase the number of nurse educators, thereby increasing the number of graduates, to address the nursing shortage in those countries.

## BACKGROUND

A strategic response to the needs of Asian populations should begin with a feasibility study on how best to develop leaders who can assume responsibility for curriculum review and renewal in their own countries. Thailand has the experience to take the lead in a curriculum development initiative that builds new education programs in developing countries. There should be careful consideration given to the type of educational programs that will lead to graduate outcomes. Professional attributes should include inquiry processes, critical thinking, sound therapeutic practices, ethical-legal standards, and information literacy that enables an evidence-base for practice.

## Concept Analysis

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In Thailand, nursing has a long tradition. In 1896 Thailand's established its first nursing school. Nursing was first introduced to Thailand by Queen Sripachariantra, the wife of King Rama V, as a response to personal tragedy. Losing her child to cholera, coupled with the high maternal death rate at the time, compelled her to advocate for modern nursing. Given the high regard that Thais have for the royal family, royal support for nursing allowed the profession to be accepted and well respected. Required in 1978, all nursing schools offer a four-year baccalaureate program with an additional six-month midwifery certificate. The program was later revised to four years, inclusive of nursing and midwifery (Anders & Kunaviktikul, 1999). The role of professional nurses in Thailand parallels the nursing journey found in high-income countries (Liu et al., 2015).

Currently, there are ninety-four nursing schools in Thailand, and all expect one to offer a four-year Bachelor of Nursing Science (BNS) program that includes midwifery. Of those, twenty have graduate degree programs, with eight offering doctoral programs. In Southeast Asia, Thailand has and continues to be a leader in nursing education.

Thailand is in a unique position to support and build capacity in nursing in other Southeast Asian countries and providing regional support in nursing education is a priority (Kunaviktikul et al., 2019). Both the World Health Organization (WHO) and the International Council of Nurses stress that the sustainable development goals and universal health coverage are only achievable with a professional nursing and midwifery workforce (International Council of Nurses and Nursing Now Welcome 2020 as International Year of The nurse and the Midwife, 2020). However, to reach these goals, changes are needed in nursing policy and credentialing. An educated nursing workforce is a key to increasing support for policies on nursing licensure, competencies, and credentials (Kunaviktikul & Guptarak, 2019).

In Southeast Asia, nursing education has substantially improved through the availability of bachelor's degree bridging programs and master and doctoral degree programs (Kunaviktikul et al., 2019). Given the success in nursing education, as evidenced at Thai universities, Thailand is poised to assist the Association of Southeast Asian Nations (ASEAN) nursing leaders and clinicians in meeting sustainable development goals related to universal health coverage. Thailand has a history of providing international assistance, and nursing and midwifery capacity building for ASEAN nurse educators could be a part of Thailand's international outreach.

## STRUCTURAL EMPOWERMENT

Kanter (2008) describes how workplace systems shape employee health and organizational performance. Two primary empowering frameworks are important: the structure of opportunity and the structure of control. Opportunity refers to nursing abilities to improve, learn, and develop knowledge and skills, such as earning a BNS degree. Power is the ability to mobilize information, support, and resources within the organization. Applying Kanter's structural empowerment can increase nurses' empowerment through advanced nursing education, such as achieving BNS degrees. The changes in nursing knowledge can increase positive behaviors within the nursing practice environment. Per Kanter, in theory, more empowered nurses change their practice behaviors (Kanter, 2008).

## NURSING IN SOUTHEAST ASIA

Context and culture matter when the wellbeing of the population needs to be promoted and managed. Across the world, nurses offer the right skill set and attribute to respond to their people's needs. Nevertheless, more than 80% of nurses worldwide are in countries that comprise half the world's population. In 2016, the nursing shortage was around 6.6 million, and in two years, it marginally declined to 5.9 million in 2018. Approximately 5.3 million (89%) of the deficiency are in low-and low-middle-income countries, with the number of nurses barely keeping pace with population growth. The nurse-to-population density has marginally improved, with the most massive gaps found in East Asian countries (State of the World's Nursing Report -2020, 2020).

The nursing shortage, including midwives, in low-income Southeast Asian countries, is projected to be 1.9 million (Shamila, 2020). Dr. Poonam Khetrpal Singh, WHO Director for the South-east Asia Regional Office, notes that improving education, deployment, and rural retention of nurses and midwives is a top priority. The number of nurses and midwives in the region is improving, with 3.5 million nurses and midwives equaling 18 per 10,000 people in 2018, up from 2.9 million nurses and midwives in 2014, 16 nurses/midwives per 10,000 people (Shamila, 2020). While this progress is encouraging, more drastic changes and improvements are needed. The regional average is still far below the global average of 37 nurses per 10,000 population and the required minimum of 40 nurses per 10,000 population. By 2030, the Southeast Asia region will require an estimated 1.9 million nurses (Shamila, 2020).

Laos, Cambodia, Myanmar, and Vietnam have the most significant disparities in nursing within Southeast Asia. The WHO

State of the World's Nursing Report - 2020 notes that there are 6,734 nurses in Laos, of which only 10% are professional nurses (baccalaureate trained). By 2030 the nursing shortage is estimated to range between 5,000 to 6,000, resulting in 9.5 nurses per 10,000 ([State of the World's Nursing: Lao People Democratic Republic, 2020](#)). There are only 6.9 nurses per 10,000 population in Cambodia, 74% of whom are professional nurses. The projected nursing shortage in Cambodia ranges from 10,000 to 20,000 by 2030 ([State of the World's Nursing: Cambodia, 2020](#)). In Myanmar, there are 6.7 nurses per 10,000 population. There are 35,947 nursing professionals. The projected shortage is between 100,000 and 200,000 by 2030 ([State of the World's Nursing: Myanmar, 2020](#)). Data for Vietnam in the WHO report is mostly missing. The report indicates there are 106,654 Vietnamese nurses with no indication of the number of professional nurses. There are currently 11.4 nurses per 10,000 in Vietnam, with an estimated shortage of between 40,000 and 50,000 nurses by 2030 ([State of the World's Nursing: Viet Nam, 2020](#)).

There was a clear need for a strategic approach to the problem. The ASEAN Mutual Recognition Arrangement (MRA) on Nursing Services was adopted in 2006 to promote greater nursing cooperation between ASEAN member states. In response to the establishment ASEAN Economic Community in 2015, the Southeast and East Asian Nursing Education and Research Network (SEANERN), composed of representatives from 13 countries and regions, was founded in 2015. SEANERN's purpose is to support policy development to strengthen nursing education, clinical skills, and research capacity and promote nursing mobility across national borders. Members have reported significant variation in educational, regulatory, and clinical competencies that have restricted and continue to limit MRA policy implementation.

While the ASEAN Mutual Recognition Arrangement (MRA) on Nursing Services allows for nursing mobility across the region, which theoretically could assist with nursing shortages within the region. The essential nursing regulatory differences are challenging. All ASEAN member states have a nursing licensing examination system. Nursing education varies across ASEAN countries, and professional licensing requirements differ among ASEAN nurses. General communication and nursing examinations are typically in the country's native language. ASEAN has almost as many languages as member states. The availability of health professionals also varies; in some areas, the availability of a skilled health workforce at a regional level is above the threshold. Myanmar, Cambodia, Vietnam, and Laos fall below the WHO threshold ([Efendi et al., 2018](#)).

In theory, through the MRA, ASEAN nurses can practice in

member states that are signatories to the agreement. However, to be fully operationalized is the implementation of the MRA. However, the MRA does provide a potential avenue for nurses from the ASEAN region to have access to employment and educational opportunity in member countries ([Te et al., 2018](#)).

## PROPOSED BSN BRIDGE PROGRAM FOR NURSE EDUCATORS IN SOUTHEAST ASIA

Given the significant need for nurse educators, international nursing programs in the region can help address this demand. Given the advanced nursing education system in Thailand, many Faculties of Nursing can provide capacity building to nurse educators within the ASEAN. For example, the Chiang Mai University (CMU) Faculty of Nursing one of the leading nursing educational schools and offers bachelor's, master's, and doctoral degrees. CMU is known for international education and training programs throughout Asia and other regions. The China Medical Board Foundation, USA, partnered with CMU to fund graduate education for nurses from China, Laos, Myanmar, and Vietnam ([Kunaviktikul et al., 2014](#)). Armed with state-of-the-art nursing knowledge, graduates from these programs can better contribute to their home countries as nurse educators. These competencies, in turn, build the capacity of professional nurses and nursing education in these countries.

Ewha Woman's University in Seoul, Republic of Korea, successfully implemented a bachelor of nursing degree program in Cambodia. The quantitative analysis showed that the students' nursing competencies increased. Unpublished at present is a description of the program. The study provides evidence to support the effectiveness of higher education for nurses in developing countries and highlights the potential for high-quality human capital to be developed in nursing ([Cha, et al., 2020](#)).

The proposed program would be conducted in collaboration with SEANERN. It would initially explore creating a BNS bridge program with identified educational institutions within Thailand and the identified countries. Given the urgent need for additional nurse educators, nursing institutions in these countries' inquiries will occur to gauge their interest in the BNS bridge program. If there is an interest, the next step is to create a partnership between various Thailand universities, the China Medical Board, SEANERN, and identified countries.

Sought from various sources will be funding, assuming there is an interest from the targeted countries. The identified team will work with recipient countries to partner with respective Ministries of Education and Health and university leadership to seek

in-country approval and potential funding support.

The development of BNS bridge programs for nurse educators is urgently needed. Graduates from these programs will be nurse educators prepared to contribute to their home country's nursing workforce. Graduates would then serve as faculty and facilitate the updating of nursing competencies in Southeast Asia.

## PROVEN STRATEGIES FOR BUILDING CAPACITY AMONG NURSING FACULTY

The China Medical Board Foundation (created by the Rockefeller Foundation in 1914) has been a significant funder of nursing initiatives in Southeast Asia. In the last decade, the China Medical Board funded the CMU Faculty of Nursing to strengthen nursing education in Cambodia, Vietnam, Myanmar, and Laos.

The Program for Higher Education in Nursing (POHNED) was a dual master's degree program between Chiang Mai University and a Chinese university. Initial students came to CMU for intensive graduate courses. Later, faculty from CMU traveled to the partner university in China to teach classes. English was the language of instruction, including English language textbooks. Gradually, more and more instruction was handed over to the Chinese university under CMU faculty members' supervision until they could offer these graduate classes independently. Overall, the program supported nursing education in eight national medical universities in China. A total of 84 master-prepared nurses graduated from the program. POHNED is responsible in part for modernizing nursing education in China.

Chiang Mai University has demonstrated the feasibility of the model in providing high-quality short training courses and degree programs for nurses and participants from more than 50 countries trained (China Medical Board Foundation, nd). It is reasonable to assume that the same model used in collaboration with other partners will also be successful.

## DISTANCE EDUCATION – A COST-EFFECTIVE OPTION FOR BNS BRIDGE PROGRAMS

The BNS bridge program would be a collaboration with selected universities with nursing programs. Chiang Mai University and other Thailand universities would provide the curriculum and classes through distance learning. Learning management platforms do not require significant bandwidth, and the internet is widely available throughout the region. Therefore, distance

BNS bridge programs can be cost-effective. One designed Thailand university will lead the partnership.

Thailand has a robust internet infrastructure. There is adequate internet connectivity on university campuses to provide a stable platform to deliver distance education. A May 2020 report on internet capacity in Southeast Asia reports the following internet penetration for countries targeted for the bridging program: Vietnam at 70.4%; Cambodia at 47.9%; and Laos at 42% ([Internet Penetration in Southeast Asia as of May 2020, by country, 2020](#)). All partner universities have internet availability on their respective campuses for student use in the bridge program.

Thailand university partners would provide online faculty. Each host country would provide a program coordinator, internet connection, and laptops for student use, and a local coordinator at each university to manage the program. The local coordinator would facilitate student enrollment, infrastructure support, coordination, and other help as needed. This person does not necessarily need to be a nurse. The initial training sessions for the coordinators will orient them to their responsibilities. Depending on funds, the coordinators would travel to the lead university in Thailand for orientation and training.

Moodle, an open-source learning management system, could be utilized as a distance education platform. Moodle is the world's most popular learning management system. The platform is compatible with both PC and smartphones. The system would be an ideal platform requiring little expenditure, other than training faculty members to use the platform (Moodle, n.d.). There will be separate training on using Moodle and troubleshooting technical issues with the various partner universities' information technology departments.

Students will have access to preloaded laptops with all textbooks required in the program. Backup laptops will be available to the partner university for use, as necessary. Included with the onboarding will be tutorials on how to use the laptop would be included with the onboarding of students ([Lall et al., 2019](#)).

Curriculum modification may be needed to meet the targeted countries' needs and conform to local nursing requirements. However, the integrity of the degree would still need to meet Thailand's university partner requirements. The instruction will mirror existing distance education programs at the host faculty of nursing programs. Modifying the academic assignment will be made as necessary to ensure homework and other critical thinking engagement activities reflect nursing issues in the students' country.

The evaluation protocol will follow (with modification as necessary) the existing BNS Bridge Program instrument. Included as necessary will be additional questions related to distance edu-

cation and program support.

Teaching a generic entry into practice curriculum would be impractical, given the need for clinical faculty and skills labs. The curriculum will be the same as used at the collaborating Thailand universities. There would be only one course offered per semester year-round. Given that the students will be nurses who are employed full time, offering one class per semester should not significantly impact their workload. Through this model, an innovative international BNS bridge degree taught entirely online is possible.

The participating universities may have to create a credential assessment system to ensure that students entering the program are qualified. Successful models, particularly in US medical schools, have proven to increase matriculation and successful completion of minority students (Samuel, 2020). These programs included academic coaches to support writing, developing portfolios, test-taking strategies, and guidance on using laptops and related software programs. Additional support includes using library resources and intensive case management to support students. The lead Thailand university will provide academic coaches to help the students.

Face to face individual support can be provided via video conferencing using widely available platforms such as MS Office Teams, Zoom, or Skype. On-site visits to ASEAN partner universities would be useful. However, given the cost of travel, site visits would be limited. English is the language of instruction, and Google Translate could be a useful tool to assist students with limited English competency. Translation resources for the four target countries' primary languages are available (Google, n.d.).

It is critical that funding for this program includes resources for the development of nurse educators. Working with the World Health Organization, the World Bank in South Asia, non-governmental agencies, local universities, and national governments Ministry of Health and Education, identifying funding sources to bolster nursing education in the region is achievable. The initial costs would be for a part-time coordinator, nursing faculty, laptops, textbooks, and the internet.

## CONCLUSIONS

Nursing in Thailand has sustained remarkable growth in the past 50 years. The efforts of nursing leaders in Thailand have resulted in significant financial support for nursing education from the Thai government. Progress towards fulfilling the vision of nursing as promoted by Thailand's beloved king and the queen has enabled Thailand to develop nursing expertise on par with nurses in high-income countries. The opportunity for Thailand

to build capacity for nursing faculty in the region can help achieve sustainable health goals and universal health coverage. The potential contribution has already begun through collaborations with many low- and middle-income countries. The ability of Thailand to support other ASEAN countries in nursing education is unlimited. Distance education provides a high-quality, low-cost option for ASEAN nurses seeking BNS degrees.

## RELEVANCE TO NURSING PRACTICE

The need for additional nurses throughout ASEAN, particularly Vietnam, Cambodia, Myanmar, and Laos, is urgent. The density of nurses per population in most ASEAN countries is below WHO recommendations (*State of the World's Nursing Report -2020, 2020*). The traditional method of funding students to move abroad to attend nursing programs is no longer financially viable. Cost-effective distance learning programs provided by nurse educators from the region familiar with the customs, culture, and nursing practice present an opportunity to build nursing capacity. Starting with a pilot bridging BNS program in target countries taught via distance, modalities can demonstrate if such an option is worthwhile.

Given the urgency of meeting the shortage, low- and middle-income countries cannot increase nursing faculty capacity without assistance. Low technology delivery through existing infrastructure with collaborating educational institutions is doable. With laptops preloaded with all textbooks, virtual libraries, eBooks, and faculty access, sound academic programs are feasible. The alternatives to building capacity without high cost are, for most countries, not possible.

Beginning with a BNS bridge program can help provide a cadre of nursing educators in the partnering countries. Program graduates can later go on to become candidates for the master and potentially Ph.D. or DNP programs. Some Thailand universities have a proven track record of success with nursing education in the region. The need to build nursing capacity is urgent. An innovative approach to nursing education is critical. Distance education provides such an approach.

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# Reflections on Critical Thinking in the Nursing Process and Japanese Nurse Education

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This reflective paper examines nurse education in Japan in the context of a rapidly changing and increasingly complex health care environment. The purpose of this paper is to i) provide an overview of Japanese changing nursing discipline ii) make an appraisal of whether the core elements of the Nursing Process are sufficient to ensure optimal nursing responses to person-centered care, iii) examine issues around the management of change that need further exploration if nurses in Japan are to continue to have a central role in responding to consumer/patient needs. Following an overview of the current nurse education system and supporting nursing organizations we critically examine the existing curriculum and models of practice including the nursing process in the light of the need for practice-ready reflective nurses.

**Keywords:** Curriculum; Nurse education; Nursing process; Critical thinking; Educational reform

## INTRODUCTION

Ideas about professional education and practice change over time. Paradigm shifts take time, but new ideas are tested and expanded upon even if regulation and policies remain static. Responses to changing patterns of disease and advances in the technology impacting education and practice lead to inevitable change. Leadership for innovation is essential but personal and professional styles influence the reception of ideas for change.

Nursing education in Japan has historically emphasized the development of nurses with the ability to work immediately after graduation through the acquisition of specialized knowledge and skills. Today, with advanced medical technology and the diversity of consumer values in Japan paralleling those in western countries, nurses are required to acquire knowledge that can be applied in diverse health settings and to be able to make accurate clinical judgments irrespective of the context of practice (Alfaro-LeFevre, 2010; Herdman & Kamitsuru, 2017). Critical thinking ability is highlighted as a key element of competence for skill development for evidence-based practice and learning to grow as a nurse and to undertake research. The 'critical' element is at the core of the stronger focus on thinking skills and attitudes that support the nursing process and nursing practice (Kusumi, 2015).

Critical thinking is defined as "...reflective and reasonable thinking that is focused on deciding what to believe or do (Eniss, 1985)." Critical thinking is a complex process in any circumstance and there are no right definitions (Alfalo-Lefevre, 2017). The standards of the American Nurses Association (ANA, 2015) describe a competent level of nursing care within the nursing process as demonstrative of critical thinking model. The nursing process includes the components of assessment, diagnosis, outcomes identification, planning, implementation, and evaluation. The ability to think 'critically', collect information from multiple viewpoints,

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and make judgments, seems to be a fundamental skill that is essential to nursing practice as represented by evidence-based nursing (EBN), learning and research processes that nurses need to develop (Alfaro-LeFevre, 2010; Herdman & Kamitsuru, 2017; Ogata, 2016). However, it can be difficult for nurses to engage in critical thinking in their busy daily practice. Besides, as nurse educators, we sometimes feel some personal resistance to innovation when students demonstrate critical thinking in nursing education because in the Japanese context this could be seen as a barrier to 'respecting harmony (Tsujimura, et al., 2016; Turale, Ito, Murakami, & Nakao, 2009).'

In this paper, we discuss the context of nurse education in Japan before discussing the nursing process model and its applicability in the contemporary clinical environment. This paper also discusses how important the ability to think critically when difficult nursing clinical judgement is needed and provides a perspective for solution-oriented strategies when routines are disrupted.

## PURPOSE

The purpose of this paper is to i) provide an overview of Japan's changing nursing discipline ii) make an appraisal of whether the core elements of the Nursing Process are sufficient to ensure optimal nursing responses to person-centered care, iii) examine issues around the management of change that need further exploration if nurses in Japan are to continue to have a central role in responding to consumer/patient needs.

## FACTORS AFFECTING DEVELOPMENT OF CRITICAL THINKING IN NURSING EDUCATION

### Background and policy

A major driver of policy change in nurse education and the qualifications framework has been Japan's rapidly aging population (Primomo, 2000); the resulting increasing complexity in clinical care has led to an expansion in the scope of practice and increased emphasis on ongoing professional education (Japanese Nursing Association, 2016a; 2015). The aging population has also meant a move towards community-based care. The demands for high levels of medical and nursing care are increasing in line with other countries in southeast Asia (Nurjono, et al., 2020). Professional health services are also becoming more diversified and complex. These changes have occurred as a result of the country's declining birth rate as well as a response to the 'super-aging' population, the increasing sophistication of medical care and changes in public awareness about health services.

Japan is moving towards a more community-based treatment model. The various policies and systems related to treatment and rehabilitation developed by the Ministry of Health, Labour and Welfare (MHLW) are rapidly shifting from the traditional hospital-based to a community-based system: in Japan this is referred to as establishing "the Community-based Integrated Care system" (Ministry of Health, Labour and Welfare, 2016). The number of people aged over 75 has increased along with an increase in those with dementia. The comprehensive support and service provision systems in local communities enable people to continue living their own lives in their familiar communities as much as possible until the end of their lives. It has become essential for health and welfare service providers, including nurses, to support people living in the community from a person-centered perspective. Given these catalysts for change, the expectations for renewal placed on the nursing profession are high. Japanese nursing education used to have as its foundation nursing care in the hospital but now nursing care at home is becoming more and more a part of practice. Therefore education also needs to include more community-based perspectives involving persons with dementia in community. These medical and nursing systems in community set a unique example for the world. Now more than ever, nurses need to be able to make accurate clinical judgments irrespective of the context of practice (Alfaro-LeFevre, 2010; Herdman & Kamitsuru, 2017) to respond to changing consumer situations.

### *The role of nursing associations in Japan*

Many professional nursing bodies in Japan are dedicated to the development of nursing as a discipline, quality of nurse education, and nursing care. These have a role in setting the nurse education agenda and standards of nursing practice. There are 46 nursing societies within the Japan Association of Nursing Academies (JANA) such as the Japan Academy of Nursing Science and Japan Society of Nursing Research, which serves to encourage collaboration between societies, contribute to nursing development, and disseminate position statements to the society and nationally. Japanese academics promote the development of nursing science and nurture young scientists through these nursing societies. The Japan Association of Nursing Academies has responded to the Ministry of Health, Labour, and Welfare's policy with a statement on changes in health care, childrearing, and long-term care, health, and welfare services from their professional standpoints.

The Japanese Nursing Association is the largest nursing organization in Japan, shapes the future of nursing in Japan and has as its mission the improvement of standards of professional nursing working conditions for nurses as well as developing nursing ex-

expertise ([Japanese Nursing Association, 2015](#)). This is detailed in the Japanese Nursing Association publication "The future vision of nursing: Nurses' endeavor towards 2025" outlining its mission for the reconstruction of health, medical and welfare systems. Many Japanese organizations including the Ministry of Education, Culture, Sports, Science and Technology (MEXT); Ministry of Health, Labour and Welfare; and the Japanese Nursing Association emphasize lifelong learning for nurses.

### *Preparation for nursing practice in Japan*

Longstanding concerns about the educational level and status of Japanese nurses have come from within and outside the country ([Long, 1984](#)): educational programs were considered to "lack theory, focus on a pragmatic rather than a critical approach to nursing practice, be primarily taught by physicians due to the shortage of qualified nursing faculty and be short ([Primomo, 2000](#))." It is important to acknowledge that ideology and culture will have an impact on the nature and extent of change in any context of practice or education ([McMillan & Little, 2019](#)).

There are three routes to becoming a registered nurse in Japan. These include a three-year diploma course; a three-year college course leading to an Associate of Science in Nursing (ASN) or a four-year university-based Bachelor of Science in Nursing (BSN) program. Graduates of courses have to take national examinations to qualify to apply for a nursing license. There are three main classifications of nurses: public health nurses, midwives, nurses (including assistant nurses) ([Japanese Nursing Association, 2016a](#)). The standards for nurse education are the same for all these options based on principles established for college/university and prescribed in legislation. The Ministry of Education, Culture, Sports, Science, and Technology regulates baccalaureate and higher degree programs, licenses the schools, and determines the curriculum ([Primomo, 2000](#)). Other directives come from Specified Rules of Schools and Vocational Schools for public health nurses, midwives, and registered nurses from the Ministry of Health, Labour, and Welfare. Given the complex nature of the regulatory frameworks, some nurse educators involved in course design, development, and implementation have concluded that there is little room for manoeuvre in the saturated curriculum ([Ishibashi, et al., 2017a](#)).

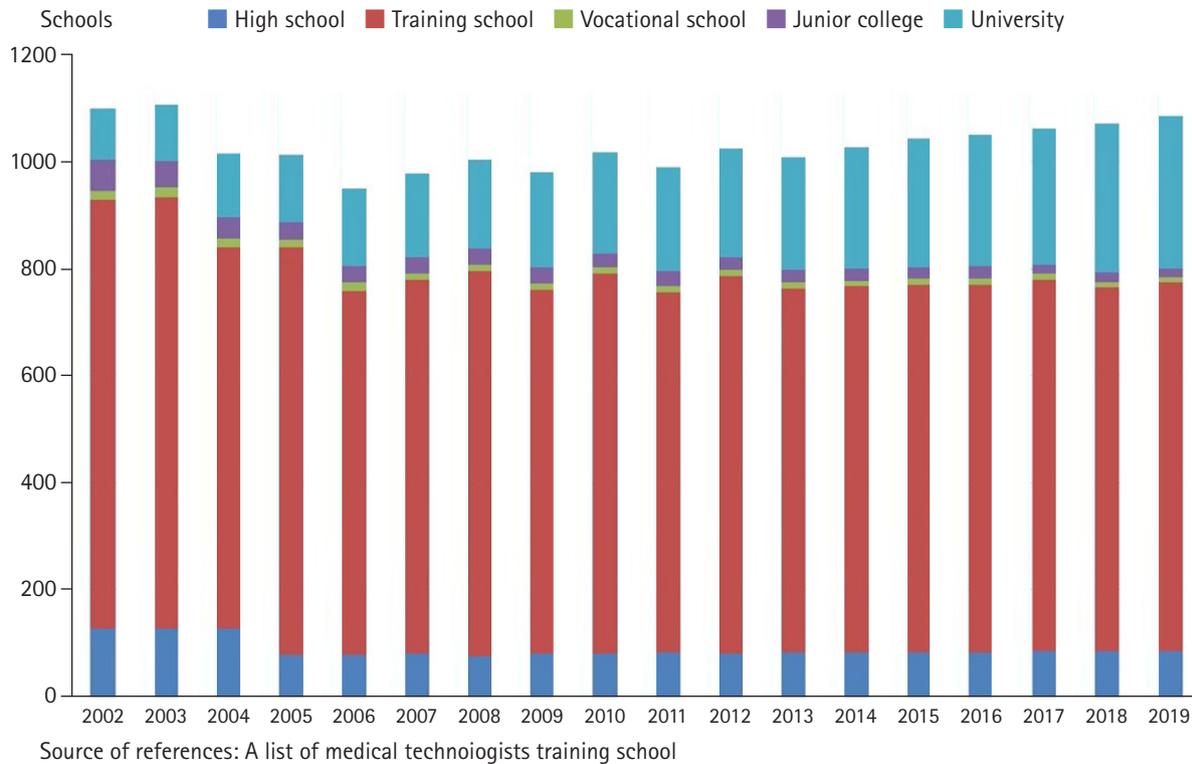
In response to projections for the increases in demand for qualified nurses, the number of nursing schools has increased rapidly and, in 2019, Japan numbered 1,085 nursing schools ([Ministry of Education, Culture, Sports, Science and Technology, 2019](#)). Training schools outnumber university faculties by 2.4 times and enrol the largest number of students ([Figure 1](#)). As a result of this growth, there is a shortage of a new generation of

qualified nursing faculty. The Japan Association of Nursing Programs in Universities (2020) report provides a profile on 65-year faculty members in 2018: 0.3% at national universities, 1.7% at public universities, and 8.3% at private universities. Private universities have a lower percentage of faculties in their 30s than national or public universities. Many senior nursing academics have also retired from government universities at the designated retirement age of 65 and some continue to work in private universities where there is less regulation regarding age. The implications of the rapid increase in schools are not yet apparent but shortages of doctoral-prepared nurse educators ([Japan Association of Nursing Programs in Universities, 2020](#)), and high workloads and lack of culturally appropriate nursing models have long been noted as problematic ([Turale, Ito, Murakami, & Nakao, 2009](#)). The first doctoral nursing program in Japan began in 1966, and the number of schools and graduates is increasing. According to the 2018 Fact-finding at Japan Association of Nursing Programs in Universities ([the Japan Association of Nursing Programs in Universities, 2020](#)), approximately one third (34.2%) of faculty members of nursing programs in universities had obtained a doctorate. Most nursing doctoral students acknowledge the consistency between curriculum developments and the goals within the university's philosophy and mission ([Miki, Gregg, Arimoto, Nagata, and Murashima, 2012](#)). There are challenges within faculties given the limitations in infrastructure supporting a doctoral program, such as funding sources and available human resources ([Arimoto, Gregg, Nagata, Miki, & Murashima, 2012](#)).

## THE NURSING CURRICULUM IN JAPAN

There is a range of nurse education courses in Japan all of which prepare students to take the national examination required for registration. The national examination ensures the minimum competencies for nurses to provide safe and quality care, but nursing competencies are complex. While the national examination tests knowledge and some attitudinal qualities, it does not assess clinical skills or arguably critical thinking or all the required competencies. In a Canadian context, the view is that teaching to a test and creating a curriculum around a specific examination is counterintuitive and not consistent with sound principles of curriculum development ([McGillis Hall, Lalonde, Kashin, Yoo & Moran, 2018](#)).

University and college faculty construct their curriculum implementation plans relying on a model within a curriculum that includes the core educational content for BSN programs in all nursing faculties in universities and colleges. The learning objectives to be utilized are prescribed when the curriculum plan is



**Figure 1.** List of nurses training schools by year in Japan Retrieved October 1, 2020, from [https://www.mext.go.jp/content/20200417-mxt\\_igaku-100001205\\_21.pdf](https://www.mext.go.jp/content/20200417-mxt_igaku-100001205_21.pdf)

created (Committee for Fostering Human Resources in Nursing Education, Ministry of Education, Culture, Sports, Science and Technology, 2017) to respond a social change and contribute to assure quality of nursing bachelor degree program. The learning objectives mainly consist of the following categories - society and nursing, basic knowledge for comprehending nursing objects, professional basic knowledge for nursing practice, essential basic knowledge for nursing practice in various situations, clinical practice, and nursing research. The list provides evidence that content within curricula is covered and thus ensures the Japanese graduate can confidently and competently carry out the contemporary role of the Registered Nurse in that country. There are prescribed competencies that students are expected to have achieved at graduation. These statements about graduate abilities are similar in some ways to those expressed by many schools of nursing: professionalism, nursing knowledge and practice, ability to respond to issues based on evidence, communication, collaboration in health, medicine and welfare, management of quality and safety, scientific investigation, commitment to lifelong learning, an ability to assume an expanding role as required by society (Ishibashi, et al., 2017b; Okura & Takizawa, 2018).

## COMPARISONS IN EDUCATION PRACTICES

The subject-based nursing curricula in Japan contrasts to the concept-based curricula in most Western universities and the delivery model has been predominantly face to face. The complexity of health care worldwide requires nursing graduates to use effective thinking skills and many nursing programs are revising curricula to a concept-based model that encourages problem-solving, effective thinking, and the transferability of knowledge (Baron, 2017). Subject-based curricula usually require students to memorize a great deal of knowledge that is required for a short time and there is limited time for them to develop critical thinking and clinical reasoning skills (Baron, 2017). Nurse educators in Japan need to make a major shift in their teaching philosophy and teaching style to promote problem-solving and critical thinking.

A 2003 report (National League for Nursing) calling for a radical paradigm shift in nursing curricula and transformation of current teaching methods rather than merely reorganization of subjects or adding more content into a saturated curriculum remains relevant today. The report also mentioned that many academics had had no formal input on how to teach adults and many educa-

tors continue to teach the way they were taught. Early demands for change remain appropriate today; teacher centred-approaches may not prepare graduates for the ambiguities and uncertainties in healthcare systems that demands flexibility and an ability to think critically (National League for Nursing, 2003). Building a Problem-based Learning (PBL) approach into the curriculum has been mooted as a way to increase critical thinking and problem-solving abilities (Chang, Chang, Kuo, Yang, & Chou, 2011; Conway & McMillan, 2018).

There have been moves to introduce non-traditional modalities such as blended learning (Tokunaga, Yamaguchi, & Yamamoto, 2017); simulation (Tamaki, et al., 2019); service learning (Glauberman, Mashino, & Qureshi, 2019); and PBL (Itatani, Nagata, Yanagihara, & Tabuchi, 2017) but these have been predominantly small-scale time-limited initiatives and there has been limited evaluation. To address concerns about the assessment of clinical skills there have been moves to introduce the Objective Structured Clinical Examination (OSCE) (Takishita, Iwasaki, Yamamoto, & Matsuoka, 2017; Yamazaki, Kawata, & Kawasaki, 2020) which is a valid and reliable tool for evaluating clinical competence in medical and nursing education. This is not widely used and assessment of clinical nursing skills remains a concern within the curriculum (Takishita, et al., 2017; Yamazaki, et al., 2020).

### Regulation of the curriculum

Educational contents of the curriculum are regulated by the Public Health Nursing, Midwifery and Nursing School, and Training School by the Ministry of Health, Labour, and Welfare. Programs across nursing schools can differ but still meet these standards. The revision of designated rules for Public Health Nursing, Midwifery, and Nursing School and Training will be launched in April 2022. In 2016 the Committee for Fostering Human Resources in Nursing Education, within the Ministry of Education, Culture, Sports, Science, and Technology reviewed the core abilities for nursing practice within bachelor degree programs and achievement of goals at graduation. They found that “The model core curriculum for nursing science education” for BSN program and enumerated learning objectives within “The model core curriculum for nursing science education” should act as a reference point from which to construct curriculum in each university (Committee for Fostering Human Resources in Nursing Education, Ministry of Education, Culture, Sports, Science and Technology, 2017; Horinouchi, et al., 2018). The core set of competencies mentioned in the model specifies 5 groups of abilities necessary for nursing practice: One group “Basic nursing knowledge underlying nursing practice” incorporates profession-

al knowledge and skills needed and includes implementation of the nursing process.

### Standards and the Nursing Process

The Japanese Nursing Association publishes Standards of Nursing Practice which include responsibilities, contents, and measures in nursing practice, and apply to all public health nurses, midwives, nurses, and associate nurses regardless of workplace context (Japanese Nursing Association, 2016b). It focuses on judgment as a necessity for nursing practice based on professional knowledge and records a series of nursing processes.

Members of the nursing profession continuously observe individuals, families, groups, and communities needing nursing care; make comprehensive assessments based on clinical reasoning and judgment to plan, implement, and evaluate care. Nursing processes are documented in the patient’s file to document nurses’ judgments and actions. This record is used by the treating healthcare team and has a role in guiding care. The records have a vital role in the maintenance of continuity, consistency, quality improvement, and objectivity in nursing practice.

The nursing process provides a template for nurses to consider the need to collect data, plan care, implement care, and continuously evaluate each step of nursing care (Alfaro-LeFevre, 2010; Herdman & Kamitsuru, 2017). It provides nurses with a ‘helicopter view’ of the overall approach to care. However, additional attention needs to be paid to the development of the necessary ‘thought processes’, that is those that focus on critical thinking, inquiry, reasoning and judgment and an ability to reflect on whether nursing actions have been ‘therapeutic’ (important to the patient and helpful in symptom management of their symptoms). This series of actions within a prescribed process is intended to enable nurses to respond quickly in dynamic situations and move flexibly when changes occur in people’s health conditions and life circumstances. They can adjust support for better management of the environment and use various resources as necessary. Without a focus on the development of an inquiry process, the nursing process could lead to a ‘transactional’ approach that is not consistent with a professional level of care.

### Critical thinking, clinical reasoning, and clinical judgment

Strategies to improve critical thinking skills, active learning, independent decision-making and problem-solving skills of Japanese students across all academic disciplines were promoted in the 2002 White Paper of the Japanese Education (Ministry of Education, Culture, Sports, Science and Technology, 2002). The new knowledge society demanded high levels of creativity, individuality, and analytical skills (Rear, 2012).

There have been numerous attempts to define critical thinking, it relates to nursing because of its contribution to clinical competence (Chang, Chang, Kuo, Yang, & Chou, 2011; Yildirim & Ozkahraman, 2011) which is rooted in the ability to verify assumptions, interpret, analyze, evaluate and support reasoning (Paul, 2007). Facione, Facione, and Giancarlo (1994) developed the California Critical Thinking Disposition Inventory constructed from Openmindedness, Analyticity, Cognitive Maturity, Truth-seeking, Systematicity, Inquisitiveness, and Self-Confidence: Makimoto (1997) translated it into Japanese. Facione (2011) meanwhile, sought consensus (or perhaps compromise) from expert opinion to come up with the six broad categories - interpretation, analysis, evaluation, inference, explanation, and self-regulation. The Japanese scales measuring critical thinking orientation were developed by Hirooka, Ogawa, & Motoyoshi (2000) with subscales of objectiveness, sincerity, and an 'inquiry-mind', and also by Hirayama & Kusumi (2004) with subscales of awareness for logical thinking, 'inquiry-mind,' objectiveness, and evidence-based judgment. There are various definitions and rating scales developed in other countries or disciplines used for basic educational evaluation as well as for the definition of nursing judgment capacity in Japanese nursing research (Ogata, 2016). Ogata (2016) also identifies the challenges of teaching critical thinking and fostering clinical judgment in nursing practice.

Clinical reasoning and judgment are clinically applied examples of critical thinking and reasoning. Tanner (2006, p.208) defined the term "clinical reasoning" as the processes by which nurses make their judgments, and it includes both the deliberate process of generating alternatives, weighing them against the evidence, and choosing the most appropriate within those patterns. Also, "clinical judgment" refers to an interpretation or conclusion about a patient's needs, concerns, or health problems, and/or the decision to take action (or not), to use or modify standard approaches, or improvise with new ones as deemed appropriate by the patient's response. Reflection in action or reflection on action facilitates thinking and learning toward increased nursing competence (Schön, 1983). The nursing curricula, assessment, and teaching style all need to foster the development of critical thinking, clinical reasoning, and critical appraisal (Papathanasiou, Kleisiaris, Fradelos, Kakou, & Kourkouta, 2014; Parkes, Hyde, Deeks, & Milne, 2011). The same challenge about clinical reasoning and judgment exists in Japan as well, and a critical thinking scale has been used for evaluation in fundamental education or clinical nursing practice (Ogata, 2016).

### Clinical reasoning, the nursing process, and nursing diagnosis

A range of healthcare professionals collaborate to deliver care and each discipline has its own body of knowledge so a common understanding of therapeutic intent is essential to facilitate accurate communication. A NANDA-International Nursing diagnosis is "a clinical judgment concerning a human response to health conditions/life processes, or a vulnerability for that response, by an individual, family, group or community" (NANDA-International, 2020). It then guides the selection of nursing interventions to achieve outcomes for which the nurse has accountability (Herdman & Kamitsuru, 2017).

A Japanese version of nursing diagnosis has been developed (Kuroe, et al., 2020). The NANDA-International nursing diagnosis was introduced and a Japanese research society of Nursing Diagnosis established in 1991. The society transitioned to the Japan Society of Nursing Diagnosis in 1995 to guide its use in Japan. The project reports by the Japan Society of Nursing Diagnosis indicated that the medical health records of more than half of medical institutions have introduced NANDA-International nursing diagnosis in Japan with regional variations (Egawa, Kuroda, Fukuda, & Furukawa, 2016; Fukuda, et al., 2019) but only about approximately half of the educational institutions promote the nursing diagnosis as part of the nursing process (Egawa, Kuroda, Fukuda, & Furukawa, 2016; Fukuda, et al., 2019). The nursing diagnosis expresses one set of common nursing terminologies, but momentum for the development of a Japanese-style nursing diagnosis that takes into account Japan's cultural soil, laws, and medical system has increased (Kuroe, et al., 2020).

The inclusion of clinical reasoning into the undergraduate nursing program was recently mandated by the Ministry of Education, Culture, Sports, Science, and Technology (Odajima & Furuichi, 2020). A search of the Ichushi-Web hosted by the Japan Medical Abstract Society revealed that clinical reasoning in nursing is an increasingly popular research concern. Before 2010 there was no mention of this topic but since 2012, 197 papers as of September 2019 with keywords of "clinical reasoning" and "nursing" have appeared, including conference abstracts. Most of these have been commentaries and there are only 8 original research studies (Table 1).

### Challenges

Ideology, tradition, and culture impact the development of effective clinical reasoning or nursing diagnosis model for nurses. Ideological reasons include the strongly patriarchal and hierarchical health system in which physicians traditionally make decisions for patients and have an authoritarian leadership style

**Table 1.** Japanese nursing trends in clinical reasoning

year	Original paper	Review	Commentary	Conference abstracts	Others
2010	0	0	1	0	0
2012	0	0	11	0	0
2013	0	0	21	3	2
2014	2	0	19	0	0
2015	1	0	19	0	4
2016	1	0	21	5	1
2017	1	1	43	6	0
2018	0	0	4	4	0
2019	3	0	14	10	0
Total	8	1	153	28	7

(Powell, 2006). The need to educate Japanese nurses as independent practitioners with a unique skillset rather than being subservient to their medical colleagues has been recognized (Primomo, 2000) but a strongly hierarchical patriarchal health system is resistant to change (Omura, Stone, & Levett-Jones, 2018; Taylor Slingsby, Yamada, & Akabayashi, 2006). Increased autonomy will require nurses to have well developed critical thinking skills.

Traditionally in Japan, there is a "very sharply defined ranking and status hierarchy" (Fujihara, 2020, p.551) as well as an occupation-based, seniority-based social status hierarchy: doctors and professors have high social standing (Fujihara, 2020), and nurses lower. This affects nurses' autonomy and opportunities for independent problem solving and decision making. Gender also plays a strong role in status differences between a predominantly male medical workforce and a predominantly female nursing workforce.

It has been argued that critical thinking is a culturally-based concept and is neither characteristic nor suited to people from Japan and Southeast Asia more widely (Atkinson, 1997). Atkinson argues that critical thinking fits uncomfortably with Japanese collectivist harmony-seeking culture. Many of Atkinson's arguments have been refuted: it is simplistic to think of Japanese society as mono-cultural; and the critical thinking process itself can be conducted in a collegial rather than confrontational way (Rear, 2012). There is an appreciation of the importance of the development of a skillset suited for today's society and there is a Japanese version of the 21st Century Competencies called "Ikiru-chikara (Zest for life)" that emphasizes the importance of logical critical thinking, problem-solving, metacognition, collaboration and self-direction (National Institute for Educational Policy Research, 2014). This has been introduced into Japanese primary and secondary education systems that precede entry to universities. Higher education for nursing should include perspectives and responses to educational and societal changes. Further devel-

opment is needed.

## CONCLUSIONS

The needs of health service consumers and patients and the context of health care have changed in Japan as they have elsewhere across the world. Paradigm shifts take time but there is evidence of many elements of professional practice and education that have changed globally. The context and culture of the academic environment have also changed evolutionarily over the last three decades. The need for more revolutionary change in nurse education arose as e-technologies became prominent in the academic workspace and the context of increasing clinical complexities. If the nursing process as a model for clinical nursing in Japan is to serve as a sound basis it needs to be underpinned by reflective practice and critical thinking. This requires that these processes are included in the nurse curriculum and faculty members need to achieve a full appreciation of the use of critical thinking, clinical reasoning, and clinical judgment within a process-oriented philosophy and methodology if they are to develop a level of comfort in encouraging this among their students. Clinical skills are part of a bigger therapeutic process. Teachers need to develop skills in causing students to 'think about what needs to be done for and with their patients'. There needs to be a relationship between any nursing framework like the nursing process and the development of sound judgment and decision-making that leads to appropriate therapeutic actions.

Recently, the drastic change imposed on the health service and higher education sectors across the world because of the emergence of COVID 19, provides a chance to consider different educational strategy for approaching the necessary steps (Morin, 2020). In most instances, an evolutionary or revolutionary change agenda requires considerable professional development of all stakeholders in any processes of professional practice and

curriculum renewal.

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