

**Quality improvement of clinical learning environment:  
An appreciative inquiry approach**

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## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

## Abstract

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## Quality improvement of clinical learning environment: An appreciative inquiry approach

Taiwan faces crucial clinical training and healthcare system issues impacting the quality of the clinical learning environment (CLE). Previous studies demonstrated methodology weaknesses and limited scopes of CLE quality. This thesis aims to explore the key elements, impacts, and action plans informing and improving the CLE quality in Taiwan. Research questions include (1) What are key elements that would construct the quality of the CLE from trainees' and teachers' viewpoints? (2) Why are these elements crucial in forming a quality CLE in the Taiwanese sociocultural context? (3) What are the action plans that could be implemented to improve the quality of CLE and inform medical education practice? This thesis employed social constructivism as a theoretical framework and appreciative inquiry approach to design qualitative research using individual interviews with 12 medical trainees and 12 clinical teachers. Thematic analysis identified five themes as key elements: (1) Setting a learning community: creating a sense of belonging and opportunities for patient care practice. (2) Fostering learning goals and medical competencies on patient-centred care, clinical management, and interprofessional learning and practice. (3) Learning facilitation with supervision and autonomy, assessment and feedback in aligning with trainees' levels and psycho-sociocultural factors. (4) Role modelling and professional development: teachers' roles as facilitators, coaches, and mentors beyond knowledge providers. (5) Organisational culture, systemic regulation, and educational resources: a collaborative and non-blaming organisational culture for psychological safety; dual effects of duty-hour regulation on job stress and training course arrangement; simulation medicine training model for patient safety. Action plans included (1) The bottom-up Teacher Development Learning Community; (2) Longitudinal

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Integrated Clerkship model to ensure the “continuity” of clinical education, patient care, and supervision; (3) Empowerment and assessment system in aligning with patients’ complexities and trainees’ capabilities. Study limitations included a single researcher, predominant male participants, and inherent features of qualitative design. In conclusion, this study reveals the enabling and hindering factors in shaping the CLE quality and highlights psycho-sociocultural factors in mediating mutual engagement among medical teams and organisation. Collaborative action plans improve the CLE quality in the local institute and advance better educational practice in Taiwanese medical society.

**Keywords:** Clinical learning environment; quality improvement; appreciative inquiry; qualitative research; Taiwan

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

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Dedication to

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## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

## Table of Contents

Title page	
Abstract.....	i
Acknowledgements .....	iii
Table of Contents.....	iv
List of Tables.....	v
List of Abbreviations.....	vi
Chapter 1. Introduction.....	1
Chapter 2. Literature Review.....	13
Chapter 3. Methodology.....	46
Chapter 4. Findings .....	68
Chapter 5. Discussion.....	97
Chapter 6. Conclusion.....	120
References.....	131
Appendices.....	154

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

## List of tables

Table 3.1 The demographic profiles of medical trainees and clinical teachers	54
Table 3.2 Interview questions in linking with research questions and 4-D cycle of the Appreciative Inquiry model	57
Table 4.1 Setting a learning community	69
Table 4.2 Fostering learning goals and medical competencies	72
Table 4.3.1 Learning facilitation and balance between supervision and autonomy	76
Table 4.3.2 Assessment and feedback	81
Table 4.4 Role modelling and professional development	84
Table 4.5.1 Organisational culture and policy of teacher evaluation and development	88
Table 4.5.2 Systemic regulation and educational resources	91
Table 4.6 Summary of five themes and related sub-themes	94
Table 5.1 Grading levels of empowerment and assessment system for different levels of trainees	118

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

## List of Abbreviations

ACGME	Accreditation Council for Graduate Medical Education
AI	Appreciative Inquiry
CLE	Clinical learning environment
CoP	Community of practice
CT	Clinical teachers
KMUH	K Medical University Hospital
MT	Medical trainees
SDT	Self-determination theory
TMAC	Taiwan Medical Accreditation Council

## **Chapter 1. Introduction**

This chapter provides an overview of the research background and context and the supporting rationale for this thesis under the title “Quality improvement of clinical learning environment: An appreciative inquiry approach”. It consists of the following sections: (1) Multiple aspects of the clinical learning environment (CLE); (2) The role and investigation of the CLE as the quality assurance for medical education; (3) Medical education in Taiwan and its emerging crucial issues and challenges; (4) The rationale behind the thesis study on the quality improvement of the CLE; (5) The research context: profiles of K Medical University Hospital (KMUH) and personal professional roles; (6) An outline of the chapters of the thesis.

### **1.1 Multiple aspects of the clinical learning environment (CLE)**

The clinical learning environment (CLE) refers to a context encompassing the components of physical space, atmosphere, teaching and learning activities, and social engagement in the clinical education setting. The quality of the CLE could be analysed through the four interlinked aspects of “material, social, psychological and organisational dimensions” (Isba & Boor, 2011). (1) The material aspect represents physical places and facilities in the CLE to support learners’ essential need for clinical learning and working. (2) The social aspect indicates a social learning process encompassing the complex interactions with medical teams and patients during daily clinical learning and working activities (Haidet & Stein, 2006). (3) The psychological aspect refers to the psychological perceptions of the CLE that affect medical trainees’ emotions, values, behaviours, well-being, and reactions to the clinical learning and working process and outcomes (Boor et al., 2008). (4) The organisational aspect indicates how medical institutes exhibit a unique organisational culture in medicine and their priorities with regard to education and patient welfare, and how medical



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

institutes operate and manage clinical learning and working activities (Cottingham et al., 2008).

### **1.2 Investigating the clinical learning environment (CLE) as the quality assurance for medical education**

The quality of the CLE has been a central issue within medical education practice and research and draws greater attention of governing accreditation bodies and medical societies from local (Taiwan Medical Accreditation Council (TMAC), 2020b) to global settings (General Medical Council, 2020; Josiah Macy Jr. Foundation, 2018; Liaison Committee on Medical Education, 2016; World Federation for Medical Education (WFME), 2015). Standards request that medical schools and institutes pursue excellence in the quality assurance and improvement of the CLE to support medical trainees, teachers, and staff and ensure the quality of patient care and safety. Measurement of the CLE quality acts as the quality assurance mechanism and represents crucial indicators for understanding the operations and outcomes of medical education programmes by involving all stakeholders of medical trainees, teachers, medical educators, and leaders (Genn, 2001a, 2001b).

Furthermore, scopes of measuring CLE quality should cover multiple dimensions of learning, teaching, administrative management, and organisational objectives that would impact trainees' satisfaction and achievement and teachers' teaching performance and inform organisational development (Genn, 2001a, 2001b). A positive CLE created a supportive learning climate and ensured learners' learning outcomes, well-being, and professional identity formation (Nordquist et al., 2019). In contrast, within an unsupportive or intimidating CLE, medical trainees encountered learning difficulties and burnout and exhibited unprofessional behaviour, further threatening patients' health outcomes and even the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

healthcare system (Dyrbye & Shanafelt, 2011; Dyrbye et al., 2009; Nasca, Weiss, & Bagian, 2014).

The primary approach to understanding CLE quality is to conduct surveys and evaluate learners' perceptions of the CLE from the perspectives of teaching, teachers, the role of learners, the learning climate, the learning approach, and social support (Roff et al., 1997; Roff, McAleer, & Skinner, 2005). Most previous studies on the CLE have been quantitative surveys focusing on the statistical rigour in reliability, validity, and psychometric properties (Boor et al., 2007; Colbert-Getz, Kim, Goode, Shochet, & Wright, 2014; Soemantri, Herrera, & Riquelme, 2010). However, such quantitative surveys have lacked an in-depth understanding of the crucial factors and their underlying meanings in portraying the comprehensive scopes of the CLE.

Thus, another critical approach to understanding CLE quality is to clarify the crucial factors that might facilitate or hinder the quality of the CLE. A national stakeholder consensus study (Kilty et al., 2017) identified ten crucial domains as facilitators or barriers to the CLE quality. This consensus study demonstrated that the five most challenging domains were rated as follows: (1) Time to learn with senior doctors during patient care; (2) Organisations and conditions of work; (3) Motivations and morale; (4) Interactions and feedback in clinical teams; (5) Workplace culture (Kilty et al., 2017). These findings indicate that the quality of the CLE is linked with the crucial aspects of the social learning process embedded in the "community of practice" concept (Wenger, 1999, 2000). However, the results of this consensus study should be interpreted with caution because they were obtained from a Western national context and focused on the postgraduate medical education setting. Moreover, it is relevant to clarify whether the sub-culture in medicine within the broader organisational culture (Schein & Schein, 2017) affects the social learning process in the CLE.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

The sub-culture in medical organisations represents trainees' unspoken values and their perceptions of the learning climate within the CLE.

Accordingly, the consensus from a recent conference on the learning environment for health professions commended that future research should focus on the contributing factors in investigating and improving the quality of the CLE (Josiah Macy Jr. Foundation, 2018). However, local contextual settings and sociocultural factors could shape the positive or negative factors of the CLE quality (Gruppen, Irby, Durning, & Maggio, 2019; Nordquist et al., 2019). It warrants in-depth investigations to explore the enabling and hindering factors that might shape the CLE quality from the perspectives of local institutional settings and sociocultural factors in the Taiwanese context. Understanding medical education and its emerging issues and challenges in Taiwan will act as a foundation for researching and improving the quality of the CLE.

### **1.3 Medical education in Taiwan and its emerging crucial issues and challenges**

The outset of the medical education system in Taiwan could be traced back to Scottish and Canadian missionaries in 1895, followed by 50 years of Japanese colonisation (J. Y. Chou, Chiu, Lai, Tsai, & Tzeng, 2012). Following World War II, the Taiwanese government adopted the medical education system mainly from the United States, and it was designed to be a seven-year medical programme, including two years of general education for liberal arts, two years of an integrated course of basic science and clinical science, and three years of a clinical course (two years of clerkship and one year of internship). Medical graduates need to pass the national licensing examination to obtain the physician certificate for entering residency training and medical practice.

In 2013, the medical curriculum changed from a duration of seven years to that of six years for new medical students, with a new clinical training programme comprising two years

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

of clerkship and two years of compulsory postgraduate general medicine training (Y. Y. Chen et al., 2013; Chiu & Tsai, 2010). The main reason for replacing one year of internship with two years of postgraduate training is that previous final-year medical interns faced the risk of lawsuits by performing clinical tasks without a legal medical licence.

Currently, Taiwan consists of 13 medical schools (four public and nine private universities). In total, there are approximately 1300 to 1400 medical graduates annually. As for the workforce of physicians (Western medicine), the average is that of 20.99 physicians per one million population (Ministry of Health and Welfare (Taiwan), 2020). However, this official data reveals insufficient physicians and the maldistribution of several main specialities in rural areas.

Taiwanese medical society faces several emerging crucial issues and challenges that may impact the quality of the CLE in terms of the operations and outcomes of the undergraduate medical curriculum and the postgraduate training programme. These issues and challenges closely relate to healthcare system changes, deficiencies within the current medical programme, teachers' performance, and sociocultural factors in Taiwan.

Firstly, the implementation of National Health Insurance since 1995 has posed increasing commercialisation of medical care (J. Y. Chou et al., 2012; Chu, Weed, & Yang, 2009; Davis & Huang, 2008). The fee-for-service reimbursement system caused clinical teachers to spend more time and effort in medical service than teaching and teacher development programmes. The payment system was in favour of specialists over generalists. Medical practice overemphasised high-cost medical technology. Thus, medical training focused on too-early specialisation rather than on general medicine to prepare primary care physicians for the public. Physicians' professional values and medical decisions were eroded by concerning costs (J. Y. Chou et al., 2012; Davis & Huang, 2008).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Secondly, medical educators pointed out that the current medical programme and training system remained insufficient to well-prepare competent primary care physicians in Taiwan (Chu et al., 2009). The significant deficiencies of physician training included: (1) Trainees' competencies being insufficient to deliver human-based holistic care covering all bio-psycho-social aspects; (2) A lack of formal training to foster the knowledge and skills in teamwork and coordination for working with other health professionals. It could be explained by the medical profession's predominance and hierarchy of professional culture in medicine (Brandt, Kitto, & Cervero, 2018; Haizlip, May, Schorling, Williams, & Plews-Ogan, 2012); (3) Insufficient training in fostering awareness of quality improvement and the capability of making changes. Such an authoritative medical professional culture might make medical professionals reluctant to acknowledge their weaknesses and limitations and embrace them as new opportunities for changes and improvements (Brandt et al., 2018). Based on these deficiencies within current medical education training, the Taiwanese medical society has taken the following actions (Chu et al., 2009). Firstly, the Taiwanese government implemented medical curriculum reform in the form of a six-year medical programme coupled with two years of compulsory postgraduate residency training for general medicine (Y. Y. Chen et al., 2013; Chu et al., 2009), as mentioned previously. It emphasised training in acquiring the six core competencies based on the Accreditation Council for Graduate Medical Education (ACGME) framework from the United States (Swing, 2007). Core courses of the Taiwanese postgraduate training included medical law and ethics, infection control, evidence-based medicine, health quality, and community medicine. Thereafter, a universal clinical teacher development programme was initiated nationwide in major teaching hospitals in Taiwan. This teacher development programme aimed to foster clinical teachers' competence in bedside teaching skills, workplace assessment, and feedback for the ACGME competency-based medical education (Tseng et al., 2020). This report showed that teachers had gained

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

knowledge and confidence in teaching the ACGME core competencies. It is still to be explored how this new medical training model and teacher development programme could impact trainees, teachers, and the CLE quality.

Thirdly, medical trainees face a substantial clinical workload and longer duty hours, around 80 to 88 hours per week (Ministry of Health and Welfare (Taiwan), 2019b). The intensive clinical workload and job stress could cause burnout and mental distress for medical trainees and health professionals, thereby impairing their well-being and performance (L. P. Chou, Li, & Hu, 2014; Lin & Lin, 2016; Lue, Chen, Wang, Cheng, & Chen, 2010; Tsai, Chen, Sun, Liu, & Lai, 2014). Evidence showed that weekly working hours significantly correlated with levels of burnout (Lue et al., 2010). This article reported that a problem-focused disengagement coping strategy and negative affectivity significantly predicted the levels of burnout (Lue et al., 2010). My previous study (Tsai et al., 2014) and other reports (Lin & Lin, 2016; Liu, Tang, Weng, Lin, & Chen, 2016) showed that trainees' mental stress and burnout were closely associated with the clinical workload, relationship pressure with teachers and patients, coping difficulties, and increased training demands and role responsibilities. It is worth clarifying the impact of sociocultural factors on the CLE quality and the mutual engagement and relationships between trainees and teachers.

Therefore, it is crucial to investigate the quality of the CLE under the influences of these intertwined crucial issues and challenges and how these issues and challenges affect institutional contextual factors and the operations and outcomes of clinical training courses.

### **1.4 Rationale behind the thesis research on the quality improvement of the CLE**

In Taiwan, quality assurance for the undergraduate medical programme was under the governance of the Taiwan Medical Accreditation Council (TMAC) (C. W. Lai, 2009; Taiwan Medical Accreditation Council (TMAC), 2020a), which was established in accordance with

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

the standards of international medical education (Liaison Committee on Medical Education, 2016; World Federation for Medical Education (WFME), 2015). Moreover, the Ministry of Health and Welfare regulated quality assurance for postgraduate medical training (Ministry of Health and Welfare (Taiwan), 2019a). These governing bodies acted as gatekeepers that oversaw the quality assurance and advancement of medical education and training programmes. The quality assurance mechanism of the governing bodies is a top-down external regulation, but a bottom-up internal self-organising approach to quality assurance from the local institute is equally essential. Based on a recent accreditation review report for the medical programme and clinical training of Kaohsiung Medical University (Taiwan Medical Accreditation Council (TMAC), 2016), the priority areas for quality improvement of clinical education included: (1) Fostering the ACGME's six core competencies through authentic learning experiences of hands-on patient care by means of formative and summative assessments; (2) Cultivating trainees' self-directed lifelong learning attitudes and skills; (3) Ensuring that trainees' competencies are well prepared for future postgraduate residency training and safe medical practice; (4) Enhancing faculties' capabilities of supervision, teaching skills, assessment, and feedback in meeting the requirements of the competency-based medical education model; (5) Recruiting more teaching track of clinical teachers and providing an encouraging promotional system for their career development; (6) Providing sufficient organisational support and resources for meeting the needs of trainees, teachers and departments, and establishing a quality assurance system to conduct programme evaluation regularly.

These external inputs could act as triggers to initiate the research and achieve the quality assurance and improvement of medical education programmes in the local institute. The quality of the CLE covers multiple aspects of clinical learning and working and could affect stakeholders' values, performance and interactions, the outcomes of learning and

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

teaching, and the quality of patient care (M. K. Chan, Snell, & Philibert, 2019; Nordquist et al., 2019). Accordingly, initiating the research on the CLE quality is a sound rationale and starting point in responding to external demands and internal drives for the continuous quality improvement of medical education. This rationale encourages me to design this thesis study to investigate the quality of the CLE from the viewpoints of stakeholders (trainees and teachers) and identify action plans for the continuous quality improvement of the CLE.

Notably, most previous literature on the measurement of the CLE through the use of quantitative surveys, as well as being conducted in Western national settings (Colbert-Getz et al., 2014; Gruppen, Irby, Durning, & Maggio, 2018; Soemantri et al., 2010). A recent scoping review (Gruppen et al., 2018) showed that most previous studies on the CLE were conducted by quantitative research design, with relatively fewer studies having a qualitative research design (only nine of 68 articles), mainly for nursing learners. A qualitative research design could enable researchers to investigate the quality of the CLE by asking open-ended questions and understanding the underlying in-depth social phenomenon (Flick, 2014).

Taken together, investigating and improving the quality of the CLE is a crucial research focus in responding to the external challenges and demands and the internal need to pursue excellence of medical education for the local institute and Taiwanese medical society. The qualitative design could allow me to explore key elements that may facilitate or hinder the CLE quality and further understand the underpinning significance to trainees, teachers and the local institute. Furthermore, I will encourage participants (trainees and teachers) to envision the desired goals and co-construct potential workable action plans with which to drive positive changes in the continuous quality improvement of the CLE.

Accordingly, this thesis study aimed to explore key elements, impacts, and action plans that would inform and improve the quality of the CLE in the local institute and advance educational practice in Taiwanese medical society. These research aims acted as the



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

foundation upon which to construct the research questions for guiding the research that will be presented in chapter 2.

### **1.5 Research context: Profiles of K Medical University (KMU) and KMU Hospital, and personal professional roles**

My institute, i.e. K Medical University (KMU), established in 1954, was the first private medical school in Taiwan. KMU holds two models of medical programmes (with a six-year medical curriculum and a four-year Post-baccalaureate Medicine programme). Thus, KMU enrolls approximately 210 medical students for each year cohort. It indicates that KMU has a greater teaching load than other medical schools in Taiwan. In comparison to other public medical schools, the private KMU obtains less financial support from the government, and its budget needs to be subsidised by support from affiliated teaching hospitals.

Furthermore, K Medical University Hospital (KMUH), established in 1957 in southern Taiwan, is the main affiliated tertiary teaching hospital. KMUH consists of around 1706 beds in 34 clinical departments and has approximately 420 clinical students, 260 residents, and 290 clinical teachers (attending physicians) annually (Kaohsiung Medical University Hospital, 2018). Moreover, KMUH faces competition for recruiting sufficient residents and health professionals with five other tertiary teaching hospitals in southern Taiwan.

KMUH is a non-profit organisation and presents its mission goals as follows (Kaohsiung Medical University Hospital, 2018): (1) Providing holistic care to pursue excellence in enhancing medical standards; (2) Cultivating outstanding talents to pursue excellence in teaching and research with both quality and quantity; (3) Becoming the most trusted medical centre to enhance patient safety and medical quality and to fulfil medical ethics and social responsibility. To achieve these mission goals, KMUH needs to establish a

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

long-term clinical training programme plan for trainees, a teacher development programme to enhance teaching competence, and a sophisticated programme evaluation system. The Department of Clinical Education and Training is the unit in charge of these essential tasks.

Concerning personal professional roles, I have acted as Teaching Associate Dean of the College of Medicine at KMU since 2012 and as Director of the Department of Clinical Education and Training at KMUH since 2014. My responsibilities include leading a taskforce of medical educators and administrative staff to organise undergraduate and postgraduate health professions education, including clinical training, assessment, programme evaluation, and managing educational resources. A core team of medical educators and I are responsible for accreditation affairs for the medical school and KMUH. To these ends, I aim to perform medical education research to validate the effectiveness of clinical training programmes and identify the workable action plans for continuous quality improvement.

Moreover, I actively participate in medical education reform for postgraduate general medicine training and clinical competence examination of the step II National Medical Licensing Examination. Furthermore, I act as a core member of national taskforce committees in Taiwanese medical society, including the Taiwan Medical Accreditation Council, the Taiwan Association of Medical Education, and the Joint Commission of Taiwan (the Ministry of Health and Welfare). These academic appointments and educational leadership roles enable me to assume responsibility as a practitioner-researcher, and encourage me to conduct this thesis research focusing on the quality improvement of the CLE in the Taiwanese context.

### **1.6 Outline of the chapters of the thesis**

Based on the introduction of the thesis mentioned above, I developed an outline as a roadmap for this thesis study.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Chapter 1 (Introduction) will outline the features of the clinical learning environment, Taiwanese medical education and its crucial issues and challenges, the research context, and personal professional roles. The rationale and the researcher's position allow me to conduct this thesis study to explore key elements and action plans that would construct and improve the quality of the CLE.

Chapter 2 (Literature Review) aims to review the literature by appraising its strengths and weaknesses critically. "Social constructivism" as a theoretical framework and research gaps will guide the formulation of the research questions and the pathways of the research approach.

Chapter 3 (Methodology) will elaborate on the researcher's worldview guiding the qualitative design within this thesis study. The research steps will cover participant recruitment, qualitative data collection employing individual interviews, thematic analysis, and ethical considerations.

Chapter 4 (Findings) will present the themes identified through the coding process. These themes represent key elements that would construct the quality of the CLE.

Chapter 5 (Discussion) will summarise the main themes within the findings and their implications in connecting with the research questions. It will address the impacts and significance for trainees, teachers and the local institute from the perspective of the Taiwanese sociocultural context. It will further propose action plans with which to drive quality improvement of the CLE.

Chapter 6 (Conclusion) will address the strengths and limitations of the thesis study and propose future research directions. The study findings of the thesis might exhibit the significance of informing the quality improvement of the CLE and providing insights for trainees, teachers, and medical educators to construct an ideal CLE and advance educational practice in Taiwanese medical society.

## **Chapter 2. Literature Review**

Chapter 2 presents the literature review to address the current knowledge on the quality of the clinical learning environment (CLE), crucial issues and theoretical framework relevant to this research topic. Section 2.1 reviews the current literature on the concepts of CLE, surveys for measuring the CLE quality and its strengths and weaknesses. Section 2.2 illustrates how crucial issues, both global and specific to the Taiwanese context, may impact the quality of the CLE. Section 2.3 highlights “social constructivism” as a theoretical framework for this thesis to elaborate on how sociocultural learning theory could portray the social learning process in which trainees and teachers interact with each other and engage with the organisational context in shaping the CLE quality. Finally, based on the above literature review and crucial issues, Section 2.4 highlights the research gaps and research questions to guide the research approach in exploring the key elements that would construct the quality of the CLE and establish potential action plans for improving the quality of the CLE.

Regarding the searching strategies for the literature review, I started the literature review by searching for the key terms on “clinical learning or educational environment”, “medical education”, “quality assurance”, “surveys”, and “workplace-based learning” using online databases, such as Education Resources Information Centre (ERIC), PubMed, and Google Scholar. After a critical appraisal process, I included the articles based on their relevance and impacts on the academic community. In contrast, I excluded the articles that were either irrelevant or had drawbacks in the research quality. I should strive to be objective and reflexive to avoid potential selection bias.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

### **2.1 Current literature on the concepts of CLE and surveys for measuring the CLE quality**

#### **2.1.1 Current concepts of the CLE**

Billet (2004) argued that learning was beyond the educational activities in formal settings like schools. Instead, the workplace was proposed as a learning environment where learners acquired knowledge and skills through participation in authentic work activities and interactions with instructors and peers (Billett, 2004). Workplace as a learning environment in the health care setting, clinical learning environment (CLE) should provide practice curriculum and opportunities to enable novice learners to engage with instructors and senior peers and acquire knowledge and occupational skills through observation and performing the tasks (Billett, 2016).

Thus, clinical placements within the intertwined learning environment and workplace where learners socially interacted, and learning took place through the participatory practice of tasks. This situated learning model takes place through a tailoring process of apprenticeship (Lave & Wenger, 1991) and a social learning process embedded in the concept of “community of practice” (Wenger, 1999). Applying the concepts of workplace learning and community of practice to health professions education (Billett, 2004, 2016; Wenger, 1999), the psychosocial dimension was highlighted as a solid foundation for constructing the quality of CLE (Gruppen et al., 2019). The psychosocial dimension comprised three interactive components, from personal, social, to organisation levels. In this context, individual learners interacted with the medical teams to develop personal growth and professional identity.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Meanwhile, learning climate and organisational culture also shaped the perspectives and meanings of learners. In contrast to the original craft apprenticeship model of legitimate peripheral participation (Lave & Wenger, 1991), an expansive or restrictive learning approach was introduced to illustrate the modern apprenticeship relationships within the workplace as learning environment through the lens of stakeholders' activities and organisational regulation (Engeström, 2009; Fuller & Unwin, 2003).

Overall, these interrelated concepts of “workplace learning as learning environment” (Billett, 2004, 2016), “community of practice” (Lave & Wenger, 1991; Wenger, 1999), “expansive learning” (Fuller & Unwin, 2003) have constructed a comprehensive conceptual framework to portray the interplays of personal, social, and organisational roles in shaping the quality of CLE. These personal, social and organisational factors acted as crucial indicators for determining the effectiveness of interventions towards the quality improvement of the CLE (Gruppen et al., 2018; Nordquist et al., 2019).

### **2.1.2 Current surveys for measuring the CLE quality and its strengths and weaknesses**

Investigating the quality of the CLE has been a central issue and research focus in medical education and health care (Genn, 2001a, 2001b; Nasca et al., 2014; Weiss, Bagian, & Nasca, 2013). Providing a supportive CLE with robust quality assurance is crucial to promote trainees' learning outcomes and well-being and ensure patient care quality and safety (M. K. Chan et al., 2019; Josiah Macy Jr. Foundation, 2018; Nordquist et al., 2019).

Many research instruments have been developed to conduct surveys for measuring the quality of the educational environment or CLE in health professions education. One systematic review by Soemantri et al. (2010) examined the suitability of these instruments and reported that most research instruments demonstrated high reliability and validity in the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

CLE surveys. This report (Soemantri et al., 2010) concluded that the two most suitable and widely used valid survey tools were the Dundee Ready Education Environment Measure (DREEM) (Roff et al., 1997) and the Postgraduate Hospital Educational Environment Measure (PHEEM) (Roff et al., 2005) for the undergraduate and postgraduate health professional training settings, respectively. The DREEM survey consists of 50 items in five subscales as “students’ perceptions of teaching, teachers, atmosphere, students’ academic self-perceptions, and social self-perceptions” (Roff et al., 1997). The PHEEM survey consists of 40 items in three primary subscales as “perceptions of teaching, role autonomy, and social support’ (Roff et al., 2005). One follow-up international survey using exploratory factor analysis (Wall et al., 2009) identified three main factors exhibiting significant correlation with the original three subscales of the PHEEM survey. The most strongly correlated factor was the teaching subscale. Overall, the main strengths of the DREEM and PHEEM survey tools were their robust designing process based on previous relevant instruments and refinement by Delphi panels, focus groups, and nominal groups (Roff et al., 1997; Roff et al., 2005).

Another systematic review (Colbert-Getz et al., 2014) pointed out that most existing quantitative survey tools for the CLE exhibited content validity but still had limited validity evidence in internal structure, response process, and relationships with other variables and lack the theoretical basis in research design. For example, the questionnaire items construction and its analysis were restricted in the original PHEEM survey, and it needed more sophisticated statistical methods to improve its limitation (Schönrock-Adema, Heijne-Penninga, Van Hell, & Cohen-Schotanus, 2009). One study using the confirmatory factor analysis method (Schönrock-Adema et al., 2009) identified different dimensions of the quality of the CLE compared to the original PHEEM survey (Roff et al., 2005). This study provided more comprehensive aspects of the quality of the CLE as follows: (1) “Learning

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

content and coaching” factor focusing on the quality of teachers’ performance; (2) “Beneficial affective climate” factor relating to the social climate, learning atmosphere, and culture; and (3) “External regulation” factor referring to the well-organised systemic regulation of training courses in aligning with educational objectives (Schönrock-Adema et al., 2009).

Regarding the evidence of generalisability for applying the most used instruments, the DREEM and PHHEM surveys (Roff et al., 1997; Roff et al., 2005; Soemantri et al., 2010) to other countries, one systematic review (Miles, Swift, & Leinster, 2012) demonstrated that the DREEM survey could be adopted to international contexts and used for multiple purposes in various health professions, such as diagnosing the gaps between actual experiences and ideal expectations and comparing perceptions in different groups of stakeholders and training settings at both undergraduate and postgraduate levels. Another systematic review (C. Y. Chan et al., 2016) also indicated that the PHEEM survey could be applied to international contexts at both undergraduate and postgraduate training levels. The PHEEM scores positively correlated with the in-training exam grades and negatively correlated with burnout levels (C. Y. Chan et al., 2016). The above findings indicated that the DREEM and PHEEM surveys were applicable to different clinical training settings for various health professions and maintained high validity and reliability in applying to international contexts (C. Y. Chan et al., 2016; Miles et al., 2012). However, the DREEM survey exhibited the drawback of inconsistent reporting and statistical analysis methods in previous publications (Miles et al., 2012).

Moreover, most PHEEM survey publications have identified significantly lower scores in the subscales of “role autonomy” and “social support” dimensions compared to the teaching dimension (C. Y. Chan et al., 2016). Nevertheless, more studies are required to



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

investigate the relationships of PHEEM scores with other variables of learners' features and organisational factors, such as psychological needs and coping mechanisms. It also needs to monitor the effects of intervention plans on the quality improvement of the CLE (C. Y. Chan et al., 2016).

Furthermore, the mixed-method using quantitative and qualitative research could complement the strengths of each of these designs and cross-examine the validity of research findings (Creswell & Creswell, 2017). One multi-method case study conducted the PHEEM survey followed by a qualitative semi-structured interview to explore what factors could affect medical students' perceptions of the clinical learning climate among the different clinical departments (Boor et al., 2008). Three main themes were identified – “legitimacy, clerkship arrangements, and focus on personal development” – to explain the differences among clinical departments. Another three main themes were identified – “initial initiatives, continuing development, and clerkship fatigue” – to connect with medical students' characteristics. This mixed-method study (Boor et al., 2008) interpreted the meanings of findings using the concept of “expansive-restrictive continuum” (Fuller & Unwin, 2003). This article reported that departments with high PHEEM scores and positive aspects of themes would take an expansive learning approach in promoting learners' participation.

In contrast, the departments with low PHEEM scores and negative aspects of themes would take a “restrictive approach” to limit learners' participation and support. Thus, the strength of this mixed-method study (Boor et al., 2008) was in deepening the understanding of interrelated influences of the PHEEM scores and department culture on the quality of the CLE. In contrast, the weakness of this mixed-method study was the lack of data from clinical teachers' viewpoints on the clinical learning climate. This thesis plans to employ the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

qualitative research approach to obtain data from medical trainees and clinical teachers to expand the understanding of comprehensive viewpoints on the quality of the CLE.

### **2.1.3 Expanded scopes and sociocultural setting for investigating the quality of the clinical learning environment**

The most used DREEM and PHEEM surveys demonstrated high reliability, validity, and generalisability in international settings (C. Y. Chan et al., 2016; Miles et al., 2012; Soemantri et al., 2010). However, these two surveys, originally developed nearly two decades ago, may not reflect authentic situations and complex challenges in the current CLE. It requires designing and conducting new survey methods with expanded scopes to cover comprehensive aspects of the current CLE and enhance its understanding of influences by interrelated factors.

The recently developed Dutch Residency Educational Climate Test (D-RECT) instrument expands the scopes of the CLE survey (Boor, Van Der Vleuten, Teunissen, Scherpbier, & Scheele, 2011). It consists of 50 items and 11 subscales, including “supervision, coaching and assessment, feedback, teamwork, peer collaboration, professional relations between attendings, work is adapted to resident’s competence, attendings’ role, formal education, role of the speciality tutor, and patient sign out” (Boor et al., 2011). Compared to previous research instruments, the DREEM (Roff et al., 1997) and PHEEM (Roff et al., 2005), the D-RECT survey (Boor et al., 2011) demonstrated the strengths in expanding the broader dimensions of assessing the quality of the CLE and representing trainees’ authentic experiences and task requirements in the current complex learning and working contexts. The D-RECT instrument was designed based on a solid theoretical foundation of sociocultural learning theory by “community of practice” (Lave & Wenger, 1991; Wenger, 1999). Notably, the subscales of the D-RECT are interdependent and

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

intertwined. For example, effective clinical supervision is critical in ensuring the trainees' educational and professional development and safe patient care (Kilminster, Cottrell, Grant, & Jolly, 2007). The supervision relationship between trainees and teachers is also essential in providing the appropriate guidance, assessment, and feedback in light of trainees' experiences (Kilminster & Jolly, 2000). Thus, the interdependent relationships of supervision, coaching or guidance, assessment, feedback, and professional relationships might jointly shape the quality of the CLE.

The sociocultural factors should be considered in applying the questionnaire items and interpreting the findings when adopting the research instruments from Western to non-Western settings. One study from the Philippines (Pacifico, van der Vleuten, Muijtjens, Sana, & Heeneman, 2018) examined the extrapolation of the D-RECT survey from the Dutch to Asian context and found that some items needed to be modified and rephrased to fit the Philippines' hierarchical culture of respecting the authority of attending physicians. This article revised the instrument by modifying the numbers and wordings of items in the "attending physician's role" subscale.

Taiwan also exhibited a hierarchical culture with high power distance (Hofstede, Hofstede, & Minkov, 2010). Medical students and junior trainees tend to be intimidated by the authority of teachers and senior colleagues in the education system and in the professional culture of medicine (Cassell, 2005; Y. D. Chang, 2017; Chaou et al., 2017). My previous study pointed out the critical role of sociocultural factors in influencing the quality of the CLE by the dimensions of "relationship pressure and organisational support" (Tsai et al., 2014). The hierarchical organisational culture may exert emotional distress among medical trainees when interacting with supervisors or senior staff. Moreover, organisational support and mutual trust exhibited a significant correlation with the perceptions of the CLE quality

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

(Tsai et al., 2014). Thus, sociocultural factors need to fit the medical research design and the interpretation of the significance of research findings (Ho, Yu, Hirsh, Huang, & Yang, 2011).

### **2.2 Crucial issues and challenges impacting the quality of the clinical learning environment – both global and specific to the Taiwanese sociocultural context**

This study aims to explore the key elements that would construct the quality of the CLE and further identify the action plans to improve the CLE quality. The consensus of a recent conference on “Improving environments for learning in the health professions” (Josiah Macy Jr. Foundation, 2018) commented that medical educators and leaders should be aware of the reality of the healthcare system, national policy, medical training models, and stakeholders (both trainees and teachers) and their intertwined impacts on the quality of the CLE. Embracing the complexity of these impacts is the foundation for identifying elements and actions to improve the learning environment for better health professions education and clinical practice (Josiah Macy Jr. Foundation, 2018). Another report using a pragmatic approach (M. K. Chan et al., 2019) also proposed the strategy of examining the impacts of organisation and governance of an education system on the quality of the CLE from a three-level dimension. This dimension begins with a micro-level of training programmes followed by a meso-level of the faculty and medical institutes and a macro-level of the medical education system and national accreditation standards.

As mentioned in Chapter 1, the crucial issues and challenges, both global and specific to the Taiwanese context, may impact the quality of the CLE. These issues are involved with organisational culture, trainees’ role and engagement with medical teams, and healthcare system factors. The following section presents these crucial issues in more detail.

#### **2.2.1 Organisational culture and negative mindset professional culture in medicine**

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

The organisational culture may shape the members' beliefs and values and affect the quality of the CLE. Schein & Schein (2017) defined organisational culture as a phenomenon where members can feel and interpret the basic assumptions about embedded beliefs, values, norms, and rules within the organisation, such as its DNA. Schein & Schein (2017) further commented that organisational culture analysis needs to align with distinct subcultures in various disciplines and sociocultural contexts. The subculture of medicine is shaped by the assumptions and beliefs of medical learners, doctors, the medical team, and the broader medical society. However, medical education and the healthcare system encounter the incongruence dilemma of professional culture of medicine between espoused values and beliefs (indicating what we say) and reality (indicating how we behave) (Shanafelt et al., 2019). First, the espoused value states that high-quality patient care and medical education are top priorities for teaching hospitals, but this espoused value is eroded by economic concerns of service volumes and productivity. Second, the espoused value states that appropriate workload and self-care among health professionals are crucial in preventing medical errors and assuring their well-being. However, the reality counters this espoused value by excessive working hours and patient burden, leading to health professionals experiencing job stress and burnout, threatening healthcare quality.

Notably, the sub-organisational culture of medicine could be influenced by the macro-level national culture. Hofstede's surveys on the national cultural dimensions (Hofstede et al., 2010) demonstrated that Taiwan exhibited relatively higher scores in power distance, uncertainty avoidance, and long-term orientation and relatively lower scores in individualism and masculinity compared to Western countries. These data posed the possibility that these distinct working values of national cultural dimensions may influence the quality of the CLE at the organisational level in the Taiwanese context. My previous study demonstrated that the subculture of high-power distance in a medical organisation might exert emotional distress

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

and relationship pressure for trainees when interacting with teachers and senior residents (Tsai et al., 2014). One recent report from Taiwan also indicated that organisational hierarchy culture would cause medical clerks' negative affective reactions (Yeh et al., 2020). In contrast, a departmental harmonic culture and working practice in the CLE would enhance medical clerks' positive affective reactions and perceptions. (Yeh et al., 2020).

However, Hofstede's model of national cultural dimension should be applied with caution because the whole population could not be assumed to be homogenous within one particular organisation and one nation (Taras, Kirkman, & Steel, 2010). Moreover, national cultural values may change when political, societal, and economic systems evolve over the generations (Wu, 2006).

The CLE may also be situated within a medicine-specific professional culture. Haizlip et al. (2012) pointed out that professional culture in medicine exhibited a negative bias and problem-focused mindset that may cause several adverse effects and consequences in medical education and practice. The negativity bias mindset refers to the fact that humans tend to be more attentive to the negative rather than positive sides in processing information, memories, and experiences (Vaish, Grossmann, & Woodward, 2008). A qualitative study (Pololi, Conrad, Knight, & Carr, 2009) pointed out that a negative mindset professional culture is prevalent in medical organisations and causes negative relational themes among medical faculties, including "disconnection, competitive individualism, undervaluing humanistic qualities, deprecation, disrespect, and the erosion of trust". Only a few faculties expressed positive relational themes of "collaboration with patients, learners, and close colleagues". This article concluded that a negative mindset professional culture in academic medicine might threaten a faculty's professional morale and performance and trainees' development in terms of compassion and competence.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

A negative mindset and problem-focused professional culture in medicine may also cause tense relationships among interprofessional medical teams and impede fluid interactions and collaborative performance required for an effective CLE (Brandt et al., 2018). This negative mindset professional culture could narrow the scope of ideas and make medical teams resistant to change in seeking new possibilities of action plans to create ideal clinical learning and working environments (Fredrickson & Losada, 2005). There is a need to take a positive mindset approach and create a supportive CLE to counter this negative mindset of medical professional culture.

### **2.2.2 Role responsibility of trainees and adaption to the transition changes in clinical workplace learning**

Medical trainees encountered transition difficulties in adapting to the critical training points from pre-clinical to clinical and undergraduate to postgraduate training courses (Teunissen & Westerman, 2011). The perceived transition difficulties included the following. First, pre-clinical knowledge and skills could not meet the clinical work demands, and cognitive overload of excessive new information impaired their clinical performance (van Hell, Kuks, Schönrock-Adema, van Lohuizen, & Cohen-Schotanus, 2008). Second, trainees encountered adapting challenges, including task demand from patient management, feelings of uncertainty regarding what should act, and problems of professional socialisation (K. Prince, Boshuizen, van der Vleuten, & Scherpbier, 2005; K. Prince, Van de Wiel, Van der Vleuten, Boshuizen, & Scherpbier, 2004). Third, trainees experienced being stressed because of new role responsibility in terms of patients' outcomes, making clinical judgment decisions, tension while working with senior doctors, and managing relationships with multi-professional teams (Brennan et al., 2010).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

According to a qualitative study from the UK Foundation Programme for medical graduates and supervisors (Illing et al., 2013), on-the-job learning was the main category of identified themes. Medical graduates perceived the role transformation from observers to participants in the clinical activities through the community of practice. Furthermore, medical trainees gradually mastered clinical and practical skills through more opportunities of engaging with patients and supervisors. This CLE enabled Foundation doctors to be better prepared for future practice. However, medical graduates and supervisors highlighted the areas for improvement in the CLE, including the gaps between simulation training and working in the hospital, prescribing medications, acute patient management and time management. These findings reflected the importance of the workplace as learning environment and situated and social learning model through the community of practice as the fundamental concepts for constructing the CLE quality (Billett, 2004; Lave & Wenger, 1991; Wenger, 1999).

Another national survey of the UK Foundation Programme demonstrated significant variations in preparedness for meeting trainees' roles and job responsibilities from the trainees' and supervisors' perspectives (Van Hamel & Jenner, 2015). Trainees perceived the pathological anxiety attributed to the varied quality of the working environment and preparation for the practice among the different institutes. The emerging research issues were how to improve preparedness and patient safety and how the structured induction training provided the shadowing of workplace learning during the transition from medical school to the postgraduate programme (Blencowe, Van Hamel, Bethune, & Aspinall, 2015; Van Hamel & Jenner, 2015).

It is crucial to investigate how learning environment and training models might facilitate and hinder the junior trainees' transition experiences. A qualitative longitudinal



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

study in the UK setting focused on the transitions from Foundation Programme trainees to trained doctor roles (Gordon et al., 2017). The results identified the crucial facilitating and hindering factors at the various individual, interpersonal, systemic, and macro levels. The facilitators included living arrangements to new work and life, supportive relationships for seeking advice and feedback, mentoring system, and opportunities for formal training fellowship. In contrast, the inhibitors included uncertainty of looking for new work, isolation feeling, demands of clinical requirements, learning new systems, and assessment of competencies. This report stressed the importance of a systemic approach for facilitating the transitions for trainees by providing formal and informal support and guidance and more opportunities and flexibilities of training arrangements (Gordon et al., 2017).

Moreover, transition difficulties were associated with the inherent national cultural dimensions of medical trainees. One study reported that international medical graduates from non-Western countries exhibited transition difficulties when joining a new clinical placement in the UK (Morrow, Rothwell, Burford, & Illing, 2013). This report indicated that medical graduates with higher indices of national cultural dimensions in power distance and uncertainty avoidance experienced adjustment problems in dealing with interpersonal relationships and willingness to ask for help (Morrow et al., 2013). In contrast, international medical graduates with lower indexes of individualism and masculinity tended to speak up less about personal problems and had less self-confidence in self-assessment (Morrow et al., 2013).

Regarding medical trainees at different transition stages in Taiwan, my previous study (Tsai et al., 2014) also demonstrated that trainees' mental distress was negatively correlated with the overall quality of the CLE. Specifically, mental distress scores were negatively correlated with the values of relationship pressure and mutual trust in postgraduate residents

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

who had higher working demands and responsibility in patient care and may encounter more significant transition challenges from medical students to doctors. It is still uncertain whether transition difficulties affect the participants' perceptions of the CLE quality and its quality improvement programme.

Overall, these transition difficulties were closely related to changes in roles and responsibilities and connected with cognitive and environmental factors (Bullock et al., 2013). One recent qualitative study of first-year residents (L. Y. Chang, Elias, Cacciatore, & Winkel, 2020) identified the main themes of transition challenges categorised into two groups: individual aspect, referring to “professional identity, self-awareness, professional growth, approach to learning, and personal balance” and external aspect, referring to “professional relationships, the context of learning, and challenges in the context of their new role”. However, this study's drawback was arbitrarily dividing these interrelated factors into two aspects. The factors were interdependent and interlinked with residents' complex learning experiences in adapting to radical transition changes. For example, professional identity and growth – referring to role responsibility, autonomy, and self-care in the internal aspect – were closely associated with professional relationships and contextual learning and challenges in the external aspect – referring to supervision, mentoring support, and managing uncertainty.

Furthermore, adapting challenges could also be derived from changes in the medical curriculum reform and training model. One Dutch qualitative study (Velthuis, Varpio, Helmich, Dekker, & Jaarsma, 2018) identified the main challenges: (1) Dealing with a large group of diverse stakeholders: different backgrounds and department representatives had diverse perspectives on the curriculum change plan process and needs for resources; (2) Dealing with resistance: anticipating resistance derived from stakeholders' disagreement with new curriculum directions, concerns about more job demands, and uncertainty of the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

outcomes. Buy-in strategies were required to overcome resistance; (3) Steering the change process: It was challenging to balance taking full responsibility for leaders and empowering freedom among participating stakeholders. These challenges may affect all stakeholders throughout the curriculum reform, including trainees, teachers, educators, and leaders.

The Taiwan medical society recently faced radical changes in launching a new six-year undergraduate medical curriculum coupled with a two-year postgraduate general medical training starting from the 2013 academic year (Y. Y. Chen et al., 2013). The Taiwan medical society adopted the Accreditation Council for Graduate Medical Education (ACGME) core competencies framework from the USA (Swing, 2007) as the universal clinical training model under the governance of the Taiwan Medical Council of Accreditation (Taiwan Medical Accreditation Council (TMAC), 2020b) and the consensus of the Taiwan Association of Medical Education. The rationale for adopting the ACGME framework was to respond to the global trend and need for competency-based medical education emphasising the learner-centred and outcome-based approach (Frank et al., 2010). The ACGME framework consisted of six core competencies of “patient care and procedural skills, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice” (Swing, 2007). The ACGME training model was expected to enhance the trainees’ competencies for safe medical practice and ensure learning outcomes according to authentic workplace assessment and universal standards (Frank et al., 2010; Swing, 2007). However, the following issues need to be addressed when implementing the ACGME training model based on competency-based medical education (Touchie & Ten Cate, 2016). These include (1) The faculty needed sophisticated training to master the capabilities required for teaching and assessment methods; (2) It needed comprehensive task-based assessment methods according to the grading levels of empowerment and entrustment criteria to ensure patient safety and trainees’

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

training outcomes; (3) It required more logistics resources and administrative support that may limit its implementation in the resource-limited medical institutes.

Furthermore, implementing the new ACGME core competencies training model in Taiwan posed significant challenges to medical trainees, teachers, and leaders in terms of learning approach, faculty development, and organisational support (Y. Y. Chen et al., 2013; Chu et al., 2009; A. T. Li & Lin, 2014; Tseng et al., 2020). These reports highlighted the following findings and recommendations. First, trainees are expected to take more responsibility for patient care and their learning to acquire core competencies through working with interprofessional teams. For example, interpersonal relationship and communication skills were better trained and assessed through learning from direct patient care and working with interprofessional teams. Second, teachers need comprehensive faculty development to build their teaching beliefs and style from a teacher-directed to a learner-centred approach. They should develop the teaching capabilities and skills in clinical teaching, workplace assessment, and feedback methods required for the comprehensive aspects of ACGME six core competencies, not just medical knowledge and patient care. Third, leaders need to put more efforts into engagement and coordination with teachers, trainees, and administrative staff; invest adequate resources in simulation, electronic educational system, and supporting personnel; set standards for assessing learning outcomes; and monitor the progress of quality assurance (Y. Y. Chen et al., 2013; Chu et al., 2009; A. T. Li & Lin, 2014; Tseng et al., 2020). The ACGME competency-based medical education model was just recently introduced to Taiwan. One study of key informant interviews from medical leaders in Taiwan reported that the differences in sociocultural factors and the environment for clinical practice and training should be considered when applying the ACGME training model from the United States to Taiwan medical community (J. Chang, Chen, Chu, & Chang, 2016). Thus, in-depth research is required to obtain the stakeholders'

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

input to understand their needs and clarify the enabling or hindering factors of the CLE that might affect the training effectiveness of the ACGME competency-based medical education.

In sum, trainees may encounter transition difficulties and adaptive problems as they enter critical points of clinical training and encounter a new medical curriculum and training model. These challenges could act as a new learning opportunity for trainees to cultivate coping skills and capability of developing progressive independence (Cho, Marjadi, Langendyk, & Hu, 2017; Teunissen & Westerman, 2011; van der Zwet et al., 2010) and also a driving force for teachers and educators to master better teaching competencies, initiate research, and promote educational scholarship and leadership (O'Sullivan & Irby, 2011; Steinert, Naismith, & Mann, 2012; Stenfors-Hayes, Weurlander, Owe Dahlgren, & Hult, 2010).

### **2.2.3 Mutual engagement and relationships of trainees with teachers and teams**

Mutual engagement is a crucial component in the social learning process based on the concept of “community of practice” (Wenger, 1999, 2000). Engagement facilitates a meaningful experience and feeling of belonging in the learning community of practice in which learners and team members interact, talk to each other, and work together to solve situational problems (Wenger, 1999, 2000). Several issues on engagement should be addressed in the clinical workplace as a learning environment. First, clinical learning takes place through encountering authentic situations and requires learners’ everyday thinking and acting through active engagement with experienced teachers and peers in the physical and social environments (Billett, 2004, 2016). Thus, “continuity” acts as the central principle in clinical education by which trainees could continuously engage with the clinical curriculum for learning and patient care under supervision by teachers (Hirsh, Ogur, Thibault, & Cox, 2007). However, “continuity” in learning, patient care and supervision was still a significant

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

challenge in the current CLE under frequent rotation of the training model and the cost-oriented healthcare system (R. H. Ellaway, Graves, & Cummings, 2016; Hirsh et al., 2007). Continuity issue is to be explored in researching the quality of the CLE.

Second, effective engagement could be determined by two crucial factors. The first factor is learners' readiness in terms of what they know, can do, and value in the aspects of conceptual, procedural, and dispositional knowledge (Billett, 2015). The second factor is teachers' direct and indirect guidance in facilitating the setting of learning goals, transmitting tacit knowledge, clinical reasoning, and decision-making, and building trainees' competence in organising daily clinical works (Billett, 2016). However, effective engagement and guidance could be hindered by inadequate opportunities or teachers' negative models and practice of harmful hidden curriculum (Hilton & Slotnick, 2005; Lawrence et al., 2018) as well as the problem-focused and negative mindset professional culture in medicine within the CLE (Haizlip et al., 2012).

Third, one recent qualitative study reported that trainees' engagement with team members in the CLE could be determined by alignment or misalignment between trainees' goals and interests and the expectations from the community of clinical practice as a workplace learning environment (Olmos-Vega et al., 2019). Misalignment would emerge if trainees' intention and the agency did not match the community's expectations and needs or supervisors' assigning tasks did not relate to trainees' goals. Thus, barriers to relationships and engagement of trainees with teachers, medical teams, and contexts could threaten the quality of the CLE and learning outcomes (Berkhout, Helmich, & Teunissen, 2016; Billett, 2016). It is relevant to explore the influencing factors and establish feasible pedagogies to overcome these barriers.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

The trainee-teacher relationship also plays a critical role in shaping the hidden curriculum in the CLE (Haidet & Stein, 2006). Psychosocial factors and relationships constitute the critical dimensions of the CLE through which trainees interact with teachers and medical teams and construct meaningful learning experiences (Gruppen et al., 2018; Schönrock-Adema, Bouwkamp-Timmer, Hell, & Cohen-Schotanus, 2012). Meanwhile, mutual engagement and collaborative relationships between trainees and teachers could promote mutual trust and facilitate the process and outcomes of feedback (Abruzzo, Sklar, & McMahon, 2019; Sargeant et al., 2018).

Potential dilemmas still affect the trainee-teacher relationship, such as expert authority vs flexibility in teaching role; inclusion vs separateness in communication model; support vs challenge in teaching style; and conflict of priorities between practice, teaching, and research in teachers' duties (Tiberius, Sinai, & Flak, 2002). The traditional status of power and authority in teachers' roles should also be challenged and appropriately used to prevent trainees' mistreatment and inappropriate obedience (Cassell, 2005).

Taiwanese society is influenced by Confucius cultural values of emphasising harmony in social relationships and respecting the seniors. These cultural values could affect the medical trainees' performance and social relationships with teams and patients (Ho, Lin, Chiu, Lingard, & Ginsburg, 2012). This study (Ho et al., 2012) found that medical students tend to obey the teachers' orders, follow senior residents' advice, and do what they are told. Medical students would be concerned about their relationships with others and face the dilemma of disclosing the truth and reporting others' inappropriate behaviours (Ho et al., 2012). Thus, medical educators need to consider cross-cultural differences between focusing on social relationships in Confucian society in Taiwan and individualism in Western society. It is worthwhile to explore the impacts of sociocultural factors on the quality of the CLE that

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

may be related to the interactions and interrelationships of mutual engagement among trainees, teachers, and teams. More in-depth investigations are required to explore how trainees and teachers negotiate and construct mutually acceptable professional interrelationships under Confucius cultural values and hierarchy in organisational culture in Taiwan medical institutes.

### **2.2.4 Clinical workload and healthcare system factors**

This section focuses on the emerging challenges of clinical workload and organisational hindering factors. Medical trainees and health professionals encounter intensive clinical workload from long duty hours, job demands of complex patient care, and administrative requirements. The workload would lead to burnout and professional misconduct (Dyrbye et al., 2010; Dyrbye et al., 2014). A European cross-country survey for health professionals also found that burnout was significantly correlated with unhealthy behaviours such as higher consumption of fast food and alcohol, use of pain killers, and a habit of less exercise (Alexandrova-Karamanova et al., 2016).

Taiwanese medical trainees and physicians work at hospitals for long duty-hours of around 80 to 88 hours per week (Ministry of Health and Welfare (Taiwan), 2019b), equivalent to or longer than the limit of other Western countries (Philibert, Friedmann, & Williams, 2002; Temple, 2014). This intensive clinical workload and job stress would lead to burnout and mental distress, poor performance, and impaired well-being (L. P. Chou et al., 2014; Lue et al., 2010; Tsai et al., 2014). The workload could also cause potential medical errors, threatening patient safety (K. Y. Chen et al., 2013).

This urgent issue calls for attention and actions in creating a supportive CLE and safe medical practice (Weiss, Wagner, & Nasca, 2012). Medical societies worldwide, including in Taiwan, have established a duty-hour regulation to mitigate the workload and job stress,



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

promote trainees' professional development, and enhance patient safety (Accreditation Council for Graduate Medical Education, 2011; Bolster & Rourke, 2015; T. H. Wang, Drolet, Tsai, & Liu, 2017). However, duty-hour regulation may also affect the residents' training outcomes, and more investigations and long-term observation are required to understand the balancing views of trainees, teachers, and programme directors and evaluate the effects on trainees' professional development (Bolster & Rourke, 2015; Temple, 2014; T. H. Wang et al., 2017).

The impact of changes in the healthcare system should also be addressed in Taiwan. Implementing the National Health Insurance system since 1995 was a milestone in the revolution of the healthcare system in Taiwan; this also impacted medical education and the quality of the CLE (J. Y. Chou et al., 2012; Chu et al., 2009; Davis & Huang, 2008). This universal coverage of health insurance demonstrates the beneficial effects on public health, such as life expectancy and health disparities (Davis & Huang, 2008). However, it also exerted adverse effects (J. Y. Chou et al., 2012; Chu et al., 2009; Davis & Huang, 2008), such as (1) Hospital management policy and cost concerns may override professional values and judgement; (2) Excessive patients swarmed into large tertiary teaching hospitals for high biomedical technology and specialists' medical service; (3) Medical teachers would encounter competitive needs in terms of teaching including medical services for patient care, research, and administrative affairs (J. Y. Chou et al., 2012; Chu et al., 2009; Davis & Huang, 2008). Thus, the policy and regulation of the Nation Health Insurance system could affect the quality of the CLE in many ways, such as hindering professionalism in education, doctor-patient relationship, and teachers' commitment to teaching. The potential long-term impact of the healthcare system changes on the CLE quality needs to be clarified.

## **2.3 Social constructivism as a theoretical framework and its role in researching the clinical learning environment**

### **2.3.1 A brief introduction of social constructivism in aligning with the concept of community of practice**

Applying relevant theories to social science research enabled researchers to examine the nature of a phenomenon, make the meaning explicit, and challenge the paradigms (Bloomberg & Volpe, 2018). It was equally crucial to apply theories in medical education research to enable researchers and educators to frame critical questions, challenge their pre-existing knowledge and thinking, and further inform the educational practice (Hodges & Kuper, 2012; Kauffman, 2018).

I proposed social constructivism as a theoretical framework for this research to align with sociocultural learning theory and practice to investigate the quality of the CLE. Vygotsky (1978) developed the “social constructivism” theory and asserted that learners need to construct knowledge, understand the world, and make sense of their learning experiences in coordination with other members and the learning environment at a social level (Amineh & Asl, 2015; Schunk, 2012). Social constructivists present knowledge as a human product that is socially and culturally constructed and emphasise that learning is a social process through learners’ active engagement with social activities of interactions and collaboration (Amineh & Asl, 2015; Schunk, 2012).

Thus, social constructivism represents a sociocultural learning theory supporting the community of practice as a platform to develop a social learning process in the workplace (Billett, 2004; Wenger, 1999, 2000). The concept of community of practice (Wenger, 1999, 2000) is defined as learning taking place in a social system through building the components

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

as (1) Meaning: learning as experiences. Members create meaningful learning experiences; (2) Practice: learning as doing. Members participate in tasks to develop competence and share ideas and resources to sustain action; (3) Community: learning as belonging. Members create a sense of belonging to a community; (4) Identity: learning as becoming. Members make sense of how learning changes who they are and create one's personal identity (Wenger, 1999, 2000).

From the lens of social constructivism, the CLE could be viewed as a “learning community of practice” in which clinical learning takes place through participatory practice in patient care (Billett, 2016; L. C. Li et al., 2009). In this learning community of practice, medical trainees could learn and work with medical teams (Kauffman, 2018). Based on the shared features of social constructivism and community of practice, the focus of clinical learning and working should shift from an individual's personal growth to mutual interactions and engagement, sharing knowledge and experience, and building a sense of belonging through a learning community of practice within a network of teams (Kauffman, 2018; L. C. Li et al., 2009). While investigating the quality of the CLE, one needs to understand that the CLE constitutes two overlapping domains of “educational” and “working” dimensions (Nordquist et al., 2019). The educational domain of the CLE refers to clinical training courses, competency framework, assessment, and the desired learning outcomes. The working domain of the CLE indicates how trainees learn and work with teams and participate in patient care in the clinical context. In this learning community of practice in the clinical setting, the “educational dimension” (clinical learning) and “working dimension” (practice for patient care) are inseparable (Parboosingh, 2002).

This social learning process in clinical education could portray how medical trainees engage with teachers and teams and learn from the participatory practice of patient care as

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

well as share the goals and experiences in clinical learning and working environments (Cruess, Cruess, & Steinert, 2018; Egan & Jaye, 2009; Olmos-Vega et al., 2019).

Furthermore, a scoping review (Gruppen et al., 2018) identified the psychosocial dimension as a critical component determining the quality of the CLE through the lens of sociocultural learning theory (Lave & Wenger, 1991) and the concept of community of practice (Wenger, 1999, 2000). Thus, social constructivism is a relevant theoretical framework to support the crucial dimension of the psychosocial aspect in assessing the quality of the CLE and evaluating the effectiveness of interventions for quality improvement (Gruppen et al., 2018; Gruppen et al., 2019). These psychosocial factors include goal direction, personal growth, identity formation, mutual engagement, social relationships, and interactions with medical teams in learning and patient care.

### **2.3.2 Social constructivism linking with the quality of the clinical learning environment**

Regarding the linking of social constructivism with the quality of the CLE, the “relationship dimension” was identified as one key element of the theoretical basis in assessing the quality of the CLE (Schönrock-Adema et al., 2012). The relationship dimension refers to building positive relationships through open communication, friendliness, social and interpersonal support, cohesive bonding, and team spirit. In addition to the relationship dimension, this article pointed out other two key elements of “goal orientation” and “organisation and regulation” in assessing the CLE (Schönrock-Adema et al., 2012). The “goal orientation” dimension evaluates whether personal learning objectives are linked with the content of educational programs for personal growth and self-enhancement. The “organisation and regulation” dimension refers to maintaining a well-organised system and operation to facilitate learners’ learning and working in unpredictable clinical settings and promote organisational innovations in response to changes (Schönrock-Adema et al., 2012).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

However, the interactions and interrelationships of these three key elements still need to be clarified. The following questions could be raised: “Does the relationship of trainees with teachers and teams affect their goal orientation?” and “How do trainees perceive the systemic operation of educational courses and adapt to the regulation of organisation in their clinical learning and working?”

Social constructivism could provide insights for medical trainees and clinical teachers in clinical learning and teaching (Kauffman, 2018). Clinical learning should be viewed as an active social learning process in which trainees should actively engage with teams and participate in learning activities and patient care practice beyond assimilating personal cognition. Clinical teachers needed to transform their role from information providers to facilitators, coaches, and mentors beyond transmitting knowledge to medical learners (Harden & Lilley, 2018). From the perspectives of social constructivism (Amineh & Asl, 2015; Kauffman, 2018), on the one hand, teachers act as facilitators, coaches, and mentors in guiding the trainees to foster their knowledge, skills, and professional attitude under supervision (Harden & Lilley, 2018; Kilminster et al., 2007). They provide trainees with opportunities to participate in clinical tasks and ensure that they can accomplish more challenging tasks and become progressively independent (Billett, 2016).

On the other hand, trainees should actively engage in learning and working activities and take more responsibilities for their learning (Amineh & Asl, 2015; Kauffman, 2018). To achieve this learning goal, trainees should prepare themselves to reach the desired readiness to foster the essential competencies for patient care (Billett, 2015). It is worthwhile to evaluate the learners' self-efficacy of self-regulation and motivation.

### **2.3.3 Social constructivism in connecting with “self-determination theory” for the quality of the CLE**

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Social constructivism also emphasises that human mental activity is closely associated with social experiences, and learners and teachers share mutual responsibilities and roles in achieving learning outcomes under an appropriate learning environment (Amineh & Asl, 2015). Learners' self-efficacy shapes how they discover and attain knowledge and skills under the guidance of teachers and senior peers. Teachers assign challenging tasks and provide scaffolding support to enhance trainees' capabilities and problem-solving skills (Kauffman, 2018). The above notions of social constructivism raise the need to explore the trainees' intrinsic motivation, and goal orientation might affect mutual interactions between trainees and teachers and shape the quality of the CLE. These factors could be explained by "self-determination theory" (SDT) (Ryan & Deci, 2000). The SDT theory explore how motivation and personality guide human development and self-regulation of behaviour by satisfying three basic psychological needs for "competence, relatedness, and autonomy". These three basic psychological needs were defined as (1) The need for competence refers to the learners' aspirations and actions that enable learners to gain and enhance their skills and capabilities; (2) The need for relatedness indicates a feeling of being connected with others and a sense of belongingness within learning and working environments; (3) The need for autonomy denotes holding the free will to make a choice and act in whatever way they considered significant (Deci, Olafsen, & Ryan, 2017; Ten Cate, Kusurkar, & Williams, 2011).

Most previous studies on CLE surveys (Boor et al., 2011; C. Y. Chan et al., 2016; Miles et al., 2012; Soemantri et al., 2010) focused on medical learners' perceptions of satisfaction in terms of teaching quality in the CLE rather than touching upon their motivation and perceptions of psychological needs. Notably, a scoping review commented that learners' intrinsic motivation is significantly interlinked with sociocultural theories and the learning process but still act as theoretical and practice gaps in CLE surveys (Gruppen et al., 2018; Gruppen et al., 2019). It requires more understanding of how learners'

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

psychological needs interact with contextual factors of the CLE. Thus, social constructivism theory provides the rationale to explore the potential interdependent relationship between learners' perception of psychological needs and the quality of the CLE. It is relevant to explore the role of psychological needs based on self-determination theory or other potential factors in determining the quality of the CLE and mutual engagement between trainees and teachers.

### **2.4 Identification of research gaps and formulation of research questions**

The above literature review has portrayed the current knowledge, related strengths and weaknesses, and their applicability in CLE surveys. Most previous studies investigating the CLE were quantitative surveys. The systematic reviews (C. Y. Chan et al., 2016; Colbert-Getz et al., 2014; Miles et al., 2012; Soemantri et al., 2010) demonstrated that the two most widely used research instruments, the DREEM and PHEEM (Roff et al., 1997; Roff et al., 2005), exhibited high validity, reliability, generalisability in international settings. However, previous quantitative surveys in the literature were still insufficient in covering the whole picture of the CLE and clarifying the key elements that would construct the quality of the CLE, specifically, in connecting with the sociocultural context. These limitations and crucial research issues could serve as the research gaps for this study. The research gaps are listed as (1) Need for in-depth qualitative research to explore the key elements that would construct and improve the quality of the CLE and understand their underlying meanings; (2) Need for exploring the influences of organisational and sociocultural factors specific to the Taiwanese context on the quality of the CLE; (3) Need for exploring the role of mutual engagement and supervisory relationships and identifying action plans for quality improvement. The elaborations on these research gaps are stated below.

### **2.4.1 Need for in-depth qualitative research to explore the key elements that would construct and improve the quality of the CLE and their underlying meanings**

First, the DREEM and PHEEM surveys (Roff et al., 1997; Roff et al., 2005) had the deficiencies of restricted dimensions in item constructions and lack updated modifications to reflect comprehensive trainees' tasks and authentic realism of the current CLE. The recently developed D-RECT survey (Boor et al., 2011) corrected the above deficiencies and exhibited more comprehensive and expanded dimensions for measuring the quality of the CLE. Moreover, a large-scale survey proved that the D-RECT survey could drive quality assurance and continuous quality improvement of residents' training (Silkens, Arah, Scherpbier, Heineman, & Lombarts, 2016). The findings of this study demonstrate that D-RECT scores increased significantly yearly during a 3-year follow-up. This significantly positive trend of quality improvement of the CLE along with time may be explained by the fact that monitoring the quality of the CLE itself could drive the stakeholders, including trainees, teachers, programme directors, and hospitals, to pursue the goals of quality improvement, facilitate positive changes, and share best practice.

However, this study (Silkens et al., 2016) had the pitfall that using repeated measures of the quantitative method tended to generate statistically significant changes in the variables but could not explain the contributing factors for the observed changes. Therefore, in-depth qualitative research is required to clarify the underlying contributing factors that may enhance or impede the quality of the CLE. Specifically, the contributing role of organisational culture is the main point to be explored to explain the quality improvement of the CLE in the long-term D-RECT survey as suggested in the literature (Silkens et al., 2016).

A scoping review (Gruppen et al., 2018) also reported that most previous studies on quality improvement of the CLE had a quantitative research design. Quantitative surveys



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

could explain the correlation relationship between the quality of the CLE and relevant variables. For instance, the quality of the CLE was correlated positively with the learning outcomes while negatively with burnout levels, respectively (C. Y. Chan et al., 2016; Colbert-Getz et al., 2014; Miles et al., 2012; Soemantri et al., 2010). Relatively few studies on investigating CLE surveys had a qualitative research design, and most of the existing qualitative research on the CLE focused on the nursing discipline (Hooven, 2014). This gap raises the need for the qualitative research design of this study to explore the key elements that construct the quality of the CLE and facilitate the understanding of the underlying meanings (Flick, 2014) beyond statistical rigours of validity and reliability (Colbert-Getz et al., 2014; Soemantri et al., 2010). This approach could establish the foundation to generate feasible action plans for continuous quality improvement of the CLE.

### **2.4.2 Need for exploring the influences of sociocultural factors and healthcare system specific to the Taiwanese context on the quality of the CLE**

Organisational and sociocultural factors play a role in determining the quality of the CLE in many aspects through the lens of social constructivism (Allman, 2020; Wenger, 1999, 2000). These include learners' engagement with the social world of the workplace as a learning environment (Billett, 2004), learners' outcomes in clinical reasoning (Jessee, 2016) and teachers' decision on empowerment for trainees' autonomy and entrustment in assessment (Chirkov, 2009; Philibert, Elsey, Fleming, & Razack, 2019), and congruence of mutual feedback between trainees and teachers (Ramani, Konings, Ginsburg, & van der Vleuten, 2019). In the Taiwanese context, sociocultural factors also exert significant effects on medical trainees' mental distress (Tsai et al., 2014), affective reactions (Yeh et al., 2020), and ways of dealing with social relationships with medical teams and patients (Ho et al., 2012). However, the above literature has several limitations, such as limited participants'

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

background of undergraduate nursing students only (Jessee, 2016), limited numbers of case study examples without a comprehensive study design (Philibert et al., 2019), and the single source of evidence from the trainees only (Ho et al., 2012; Tsai et al., 2014; Yeh et al., 2020). There is a need to explore the comprehensive perspectives of trainees and teachers to examine their similarities and differences in viewpoints and expectations. The comprehensive views of learning goals, mutual role responsibilities, and strategies from trainees and teachers may help establish the appropriate instructional design for the CLE in aligning with sociocultural settings (Grabinger, Aplin, & Ponnappa-Brenner, 2007), especially in connecting with the Taiwanese local sociocultural context.

### **2.4.3 Need for exploring the influences of contextual factors and systemic regulation on the quality of the CLE**

Organisational contextual factors include physical and virtual learning spaces and educational resources (Gruppen et al., 2018; Nordquist et al., 2019), organisational policy, and systemic regulation of educational programmes (Schönrock-Adema et al., 2012) that constitute the essential components of the CLE. The well-organised contextual factors and systemic regulation are essential to support the learners to learn and work seamlessly in chaotic clinical settings. Physical and virtual learning spaces involve the systemic operation of information technology for clinical care, online learning, and educational management (Gruppen et al., 2018; Nordquist & Laing, 2015). Moreover, the simulation medicine system has become an increasingly crucial component of the CLE in enhancing trainees' competencies training and ensuring patient safety under the training model of competency-based medical education (Cook et al., 2011). A concept analysis investigated the role of the simulation medicine system in the CLE in nursing education and found that it could provide multiple practice opportunities and enable learners to reflect on their decision-making skills

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

(Flott & Linden, 2016). Notably, systemic regulation of a well-organised course arrangement also acted as a critical factor in the quality of the CLE (Dolmans, Wolfhagen, Heineman, & Scherpbier, 2008).

Contextual factors of learning spaces, simulation medicine, and systemic regulation of course arrangement and delivery still need to be fully addressed in investigating the quality of the CLE and interventions for its quality improvement in medical education. A scoping review (Gruppen et al., 2018) pointed out that relatively few studies touched upon the relationships of physical and virtual learning spaces with quality improvement of the CLE compared to other components of psychosocial and organisational dimensions in the literature. Taiwan recently implemented a new medical curriculum and training model of competency-based medical education. It requires in-depth research to explore and understand the influences of the contextual factors relating to physical and virtual learning spaces, educational resources, simulation medicine, and systemic regulation of course arrangement and delivery on the quality of the CLE and establish action plans for programme evaluation and continuous quality improvement of the new medical curriculum and training model of clinical training. There may be other potential crucial contextual factors and organisational policies and regulations that could shape the quality of the CLE and impact the professional development of trainees and teachers.

The above research gaps identified from the literature and crucial issues and challenges specific to the Taiwanese sociocultural context drive me to formulate the following research questions for this thesis.

*RQ1. What are the key elements that would construct the quality of the CLE from the viewpoints of both medical trainees and clinical teachers?*

*RQ2. Why are these identified elements considered crucial in forming a quality CLE in the*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*Taiwanese sociocultural context?*

*RQ3. What are the emerging action plans that could be implemented to improve the quality of the CLE at the local institute and inform medical education practice?*

These research questions will guide this thesis process, including the construction of interview questions and directions of the discussion.

## **2.5 Summary**

This literature review portrays the current knowledge and crucial issues and challenges relating to the CLE quality in Taiwan. Social constructivism was proposed as the central theoretical framework in connecting with the concept of “community of practice” as a social learning platform and process in the CLE. The crucial issues and significant limitations of previous literature relating to the quality of the CLE were highlighted to identify research gaps for this study. It is relevant to conduct this thesis research to explore the key elements that would construct the quality of the CLE and its underlying meanings. It needs to explore how the sociocultural factors, healthcare system, organisation contextual factors might shape the quality in the Taiwanese context. This approach enables me to design workable action plans to improve the quality of the CLE in aligning with the local institutional needs and the Taiwanese sociocultural context.

### **Chapter 3. Methodology**

This chapter will cover the key components and steps of the methodology: (1) Philosophical worldview — the researcher’s stance expanded from positivism to social constructivism; (2) Qualitative research design focused on “appreciative inquiry” as a central methodological approach. Data collection was carried out via semi-structured individual interviews; (3) Data analysis was conducted by thematic analysis and ensuring the trustworthiness issues; (4) Ethical considerations.

#### **3.1 Philosophical worldview: Researcher’s ontological beliefs and epistemological stance**

The philosophical worldview reflected the researcher’s personal ontological beliefs to inform the research inquiry and the theoretical orientations, and further represented the epistemological stance to guide the research approaches (Creswell & Creswell, 2017; Creswell & Poth, 2018). It played a crucial role in leading the whole research process of this thesis: guiding the choice of research approach, formulating the research questions, and presenting and interpreting the research findings. Creswell and Creswell (2017) highlighted the four philosophical worldviews as the foundation to guide the research design. These include the following: (1) “Positivism” employs scientific methods to determine a cause–effect relationship. This worldview is a reductionist approach based on a hypothesis. (2) “Social constructivism” seeks complex views and subjective meanings of individuals’ experiences and acknowledges that the researcher’s background and beliefs might shape their interpretation of the truth. (3) “Pragmatism” emphasises the need to clarify problems within the research context and strives to implement workable solutions through multiple approaches. (4) A “transformative worldview” focuses on the needs of individuals or groups and proposes an action agenda for reform and change. In the next section, I will address my

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

ontological beliefs and epistemological stance to state how I understand the features of new knowledge and how I approached the research and interpreted the meanings of the findings.

### **3.1.1 Researcher's worldview: Expanding from positivism to social constructivism**

A researcher's worldview could be shaped by multiple dynamic factors, from the researcher's previous research training background and experience and inherent self-concepts to the research context in terms of practical, political and sociocultural perspectives (Creswell & Poth, 2018). My worldview was formed and shaped by my training background, research experience, and the research issues in this thesis study.

I have been trained as a clinical researcher in biomedical science during my early academic career, having been an attending physician since 1991 at the K Medical University Hospital (KMUH). I adopted the stance of "positivism" to investigate cause-and-effect phenomena through empirical observation and measurement (Creswell & Creswell, 2017). Positivism worldview has driven me to construct knowledge and skills in quantitative research and has enabled me to conduct basic and clinical medical science research and publish articles (mostly on experimental and clinical investigations).

In addition to biomedical science, I later recognised the need for expanding my research scope and capabilities in medical education when I took charge of the training programme for medical students and residents at the Department of Clinical Education and Training of KMUH. To this end, I studied and obtained the Master of Health Professions Education at Maastricht University (the Netherlands) in 2011. As a result of this master programme, I have acquired key concepts of learning theories and fundamental capabilities in conducting quantitative and qualitative research, from design and implementation to publication. Still, my master thesis research was quantitatively oriented.

Thereafter, I was appointed Associate Dean of the College of Medicine at KMU in 2012 and Director of the Department of Clinical Education and Training at KMUH in 2014.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

These professional roles have required more responsibilities of me in order to implement effective medical education programmes and seek quality assurance by means of programme evaluation and medical education research. To this end, I designed quantitative research employing questionnaire surveys and comparative statistical analysis to investigate the quality of the CLE in my local institute. I published a research article entitled “Clinical learning environment measurement for medical trainees at transitions: relations with sociocultural factors and mental distress” (Tsai et al., 2014). The study results demonstrated sociocultural relevance and contextual significance in a survey of the quality of the CLE from the evidence of a Taiwanese medical institute. This research experience formulated my research interest in how the quality of the CLE could be shaped by sociocultural factors and how it might impact participants within a medical organisation. This quantitative research displayed the explicit phenomena of the quality of the CLE in general. However, it hardly clarified the implicit meanings that participants might hold in clinical learning and working contexts. A question needs to be answered concerning the precise role of clinical teachers in affecting the quality of the CLE. Thus, it is necessary to explore and understand personal experiences, social relations, and local knowledge and practice of life-worlds via the qualitative research approach (Flick, 2014).

Furthermore, I reflected that I needed to gain more experience and capabilities in conducting qualitative research to touch upon my research issues in medical education. I collaborated with one of my colleagues from the Department of Medical Humanity and Education at KMU. We conducted qualitative research to explore clinical teachers’ perspectives on cultural competence in medical education (Lu, Tsai, & Tseng, 2014).

Through the evolutionary changes of professional roles and academic research experience throughout my career, I gradually developed my ontological and epistemological stances on qualitative inquiry based on social constructivism in addition to positivism (Creswell &

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Creswell, 2017; Creswell & Poth, 2018). I recognised the importance of using a different thinking approach and a different way of asking more open-ended questions and seeking the underpinning in-depth meanings within medical education research via qualitative inquiry.

### **3.1.2 Social constructivism: Guiding the research design and approach and informing the research questions**

Social constructivism has been described as an “interpretive worldview or paradigm” for most qualitative research (Denzin & Lincoln, 2018). The premises of social constructivism (Creswell & Creswell, 2017; Creswell & Poth, 2018) suggest: (1) Individuals engage and understand the multiple realities of the world through constructing meanings of their lived experiences. (2) Research focuses on understanding the specific contexts and cultural settings in which participants live and work. (3) Researchers explore participants’ views and subjective meanings of complex situations socially constructed through mutual interactions among individuals. (4) Researchers should be aware of the potential influences of personal backgrounds, beliefs, and cultural experiences on their interpretations (Creswell & Creswell, 2017; Creswell & Poth, 2018).

Social constructivism exhibited relevance to this thesis in guiding the research design and approach and informing the research questions. Firstly, this worldview provided the rationale behind applying a qualitative research design within this thesis study. As mentioned in the previous chapters of Introduction and Literature Review, the majority of existing studies on the quality of the CLE have focused on learners' perceptions through the use of quantitative surveys. Very few of them have been qualitative inquiry approaches that explore and compare in-depth viewpoints from trainees and teachers concerning their interactive relationships with the sociocultural aspects and contextual factors of medical organisations. Social constructivism has enabled me to identify the key elements that may determine the



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

quality of the CLE under the influence of a unique professional culture in medicine and a Taiwan-specific sociocultural context.

Furthermore, social constructivism addressed the research issues of quality improvement of the CLE and informed the research questions. This philosophical stance enabled me to explore the quality of the CLE through the lens of sociocultural learning (Wenger, 2000). I argued that the quality of the CLE would be co-constructed through the participation and activities of the stakeholders (i.e. medical trainees and clinical teachers) and their interactions with the learning and working contexts.

From the stance of social constructivism, I formulated the research questions (RQ), as shown in the Introduction, to explore the participants' perspectives on what they perceived to be the truth. They might be subjective and need to be negotiated with sociocultural norms. RQ 1 aimed to obtain the participants' viewpoints on positive experiences, meanings, and values and further identify key elements that would construct the quality of the CLE. Next, RQ 2 explored the meanings and impacts of these key elements on the participants themselves, the local medical institute, and the medical society in the Taiwanese context. Based on these findings, RQ 3 encouraged participants to construct common goals and action plans towards the quality improvement of the CLE. By presenting these research questions, I provided opportunities for medical trainees and clinical teachers to discuss their lived experiences in clinical learning and teaching and identify patterns of the social phenomena of the CLE that they perceived. Furthermore, they portrayed the expectations in designing and implementing action plans for creating an ideal CLE and better educational practice in the local medical institute.

### **3.2 Appreciative Inquiry as a central research methodological approach**

I employed the "Appreciative Inquiry" (AI) model (Cooperrider, Whitney, & Stavros, 2008; Whitney & Trosten-Bloom, 2010) as the central methodological approach in this thesis

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

research. There were several reasons to choose this approach. Firstly, it is relevant to apply the positive core-based and strengths-oriented AI model to counter the negative mindset and weaknesses-focused professional culture in medicine (Haizlip et al., 2012). AI model was developed based on a positive psychology-based paradigm for organisational change through the 4-D cycle of discovery, dream, design and delivery/destiny (Cooperrider et al., 2008; Whitney & Trosten-Bloom, 2010). Medical educators have applied the principles and practice of the AI model to seek the positive potential of innovation in medical education (Sandars & Murdoch-Eaton, 2017). The appreciative pedagogy could enhance the effectiveness of curriculum development and evaluation (Rama, Falco, & Balmer, 2018) and promote the culture of professionalism and faculty development (Fryer-Edwards et al., 2007; Quaintance, Arnold, & Thompson, 2010).

Secondly, the AI model holds the constructionist principle derived from social constructionism that meanings of knowledge are collectively generated through the social interactions of team members (Cooperrider, Whitney, & Stavros, 2008; Gergen, 1984). This constructionist principle suggests that social knowledge is created by what members imagine and believe through the change process of discovery (Cooperrider & Whitney, 2005; Gergen, 1984; Whitney & Trosten-Bloom, 2010). Therefore, it is relevant to apply the AI model to this thesis study based on its constructionist principle in linking with social constructionism. This approach has enabled me to explore participants' multiple viewpoints and understand their underlying meanings within learning and working contexts through collective language and interactive conversations (Cockell & McArthur-Blair, 2020).

Finally, the AI model is an iterative process in which the participants could engage in dialogue, discover the meanings and values of ideals, and envision new possibilities and the desired future (Cockell & McArthur-Blair, 2020; Cooperrider & Whitney, 2005). It further

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

enabled the participants and researcher (me) to co-construct, design, and implement action plans and, finally, sustain positive organisational changes via collective action.

In addition to the AI model, other qualitative methodological approaches could also be considered. Ethnography is a qualitative approach to describe and interpret the patterns of social behaviours, values, and beliefs of a cultural group (Creswell & Poth, 2018). By ethnographic approach, researchers directly observe and collect the data about the participants' behaviours through more prolonged immersion and participation in the field (Patton, 2015). The strengths of the ethnographic approach are understanding the phenomenon or patterns of how participants behave, work, and live in a natural setting and enabling researchers to generate a cultural interpretation of the specific group of population (Creswell & Poth, 2018). In the educational context, the ethnographic approach enables researchers to investigate actual learning and teaching activities and interactions among the participants and explore how the organisational culture of learning environment affects the participants' behaviours and interactions with the context (Flick, 2014).

However, the challenges of ethnography need to be addressed (Creswell & Poth, 2018). It requires prolonged time for exposure to the field to observe and collect authentic data. There is a potential gap and tension between what cultural group members say, what they do, and what they believe. In applying the ethnographic approach to the clinical learning and working context, the following issues need to be considered: potential intrusive feelings to participants, patient privacy concerns, and unpredictability of changeable educational schedules in the clinical settings. Based on the above considerations, the ethnographic approach could be reserved in future studies after obtaining the foundation knowledge of CLE quality using the current approach in the thesis study.

### **3.3 Qualitative research design and data collection**

#### **3.3.1 Qualitative research design**

Based on the previous discussion of the researcher's worldview, the stance of social constructivism enabled me to employ a qualitative research design using interviews to ask open-ended questions to explore the diverse perspectives on learning, working and teaching experiences in the CLE through the direct voices of medical trainees and clinical teachers, probably unheard previously. These perspectives may represent the common ground, diverse standpoints, and relationships between trainees and teachers that would shape the quality of the CLE. Hopefully, this qualitative research would understand the participants' perceived meanings and generate new knowledge on what key elements would construct and improve the quality of the CLE. Moreover, the AI model could be viewed as a social constructionist approach to exploring the relational process co-constructed by participants through the coordination of language, actions and artefacts (Van der Haar & Hosking, 2004). Thus, it was suitable to apply the AI model (Cockell & McArthur-Blair, 2020; Cooperrider et al., 2008) as a positive-mindset-oriented research approach to tackling the issue of prevalent negative professional culture in the CLE (Haizlip et al., 2012).

#### **3.3.2 Participant recruitment**

Before recruiting the participants, I have obtained ethical approval for the research by the Ethical Review Committee of the University of Liverpool (**Appendix A**) and the Institutional Review of Board of Kaohsiung Medical University (**Appendix B**). I complied with the ethical regulations throughout the research process.

Two groups of potential participants, i.e. medical trainees and clinical teachers, were recruited from a medical university-affiliated teaching hospital (pseudonym KMUH) in

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Taiwan. KMUH consists of approximately 680 medical trainees (420 clinical students and 260 residents) and 290 clinical teachers (attending physicians) annually (2018 data).

The purposive sampling of research participants was used to select the representative medical trainees and clinical teachers. The candidate participants were chosen because they played active roles in engaging in the coordination and programme evaluation of clinical education and training on the research focus of quality of the CLE. To ensure better representativeness and heterogeneity, I applied the following inclusion or selection criteria for recruiting candidate participants: (1) Medical trainees were team leaders of clinical training courses in rotation. I invited candidate participants of medical trainees with various training levels, including undergraduate medical students (junior clerks and interns) and postgraduate medical residents. Both undergraduate and postgraduate trainees performed different responsibilities of clinical tasks and might encounter distinct learning experiences. The estimated number was that of 85 candidates. (2) Clinical teachers were departmental coordinators of clinical training courses. I invited candidate participants of the frontline clinical teachers with various seniorities of teaching experience and from different clinical departments. The estimated number was that of 86 candidates. The above approaches enabled me to obtain diverse perspectives of authentic learning and teaching experiences from representative research participants. I aimed to recruit 12 participants for each group of medical trainees and clinical teachers under consideration of the research purposes and logistical issues. The demographic information of trainees and teachers is displayed in **Table 3.1**.

**Table 3.1 The demographic profiles of medical trainees and clinical teachers**

<b>Medical trainees (N=12)</b>	
Mean age	28.6 ± 4.9 years (range 24 to 38-year-old)
Gender	10 males/2 females

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Training levels	6 clinical students; 6 residents
<b>Clinical teachers (N=12)</b>	
Mean age (years)	43.9 ± 6.0 (range 37 to 59-year-old)
Gender	9 males/3 females
Average teaching experience	10.8 ± 5.0 years (range 3 to 22)
Clinical departments	10

It should be noted that the demographic profiles displayed the study participants were to be male predominant. The unequal gender ratio could be explained by pre-existing higher proportions of male candidate participants of trainees and teachers in my institute. Still, I need to consider the study limitation of this unequal gender ratio of participants and its impacts on the validity of study findings.

The exclusion criteria pertaining to participants' recruitment were as follows: (1) Medical trainees were below the age of 20 years and were unable to provide informed consent without parental agreement (according to Taiwanese law); (2) Those who worked for me or were being supervised by me directly.

An invitation letter with the Participation Information Sheet (**Appendix C**) was sent to all potential candidate participants via email through departmental administrative staff. This document clearly stated my role as a student researcher and the research purposes for the Doctor of Education programme at the University of Liverpool, UK. Participants had up to seven working days to consider or ask any questions. If they agreed to participate in this research or had any further questions, they could contact me using the contact information provided on the Participation Information Sheet. The paper format of the Participant Consent Form in English and Chinese (**Appendix D and E**) with a signature was obtained

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

immediately prior to the interview. More ethical considerations have been described in section 3.5.

### **3.3.3 Data collection and validation: Semi-structured individual interview**

The philosophical stance of social constructivism enabled me to conduct qualitative research and collect the data by using a semi-structured individual interview with medical trainees and clinical teachers. I have chosen the individual interview as the data collection method in this thesis for its strengths. Participants have more time and freedom to express their voices without potential influence from others (Patton, 2015). The individual interview method also allows for collecting diverse and independent viewpoints from representative trainees and teachers. Still, the advantages and disadvantages of various data collection methods should be evaluated under scrutiny.

Critically, other potential data collection methods might be considered to cross-examine the evidence in fitting different research contexts (Patton, 2015). For instance, the focus group interview method could collect the data more efficiently and allow participants to interact and generate more thoughts and ideas. However, focus group interviews might make participants hesitate to express their independent viewpoints under peer pressure and with potential influence by others.

In addition, fieldwork observation could also be an optional data collection method (Patton, 2015). The strengths of fieldwork observation are collecting the first-hand information of routine and incidental activities within the organisation, capturing the facts of participants interactions, and understanding the meanings of cultural setting. However, there are potential barriers and variations of fieldwork observation (Creswell, 2015; Patton, 2015). Mainly, participants might refuse to be observed or adjust their behaviours under observation. The accuracy of fieldwork observation data depends on the researchers' skills

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

and objectivity. It is challenging to observe the activities and record the field notes of observation information simultaneously (Creswell, 2015).

I planned to connect the interview questions with the 4-D cycle of the AI model: (1) Discovery, (2) Dream, (3) Design, and (4) Delivery/Destiny (Cooperrider et al., 2008; Watkins, Mohr, & Kelly, 2011). The 4-D cycle of the AI model included: (1) Discovery: focusing on positive core values and exploring and appreciating peak and meaningful experiences; (2) Dream: envisioning the potential and the opportunities that may achieve higher purposes of personal learning goals and organisational missions; (3) Design: defining value-based propositions and co-constructing concrete action plans; (4) Delivery/Destiny: empowering the team of stakeholders to implement action plans and sustain positive outcomes of change (Cooperrider et al., 2008; Whitney & Trosten-Bloom, 2010).

Interview question protocols were formulated and revised according to comments and suggestions by Ethical Review Committees and supervisors. These protocols were approved by the Ethical Review Committee at the University of Liverpool (**Appendix A**) and the Institutional Review of Board (IRB) at Kaohsiung Medical University Hospital (**Appendix B**). The final version of interview protocols for the medical trainees (**Appendix F and G in English and Chinese**) and the clinical teachers (**Appendix H and I in English and Chinese**) were applied in the individual interviews.

The following **Table 3.2** displays the interrelationships among research questions, 4-D cycle phases of the AI model and example interview questions.

**Table 3.2 Interview questions in linking with research questions and the 4-D cycle of Appreciative Inquiry model**

Research Questions	4-D Cycle Phases	Interview Questions
1. What are the key elements that	<b>Discovery</b>	1. <i>Please tell me the positive</i>



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

would construct the quality of the CLE from the viewpoints of both medical trainees and clinical teachers?		<i>clinical learning (teaching for teachers) experiences or exemplary teachers you have ever experienced at this teaching hospital.</i>
2. Why are these identified elements considered crucial in forming a quality CLE in the Taiwanese sociocultural context?	<b>Dream</b>	2. <i>What are the most crucial factors that may construct an ideal CLE? Why are these factors so crucial?</i>
3. What are the emerging action plans that could be implemented to improve the quality of the CLE at the local institute and inform medical education practice?	<b>Design</b>	3. <i>If you could make three wishes, what desired goals and practical action plans should be designed to improve the quality of our CLE?</i>
	<b>Delivery/Destiny</b>	4. <i>From the standpoints of yourself and the organisation, what actions could be done to accomplish these plans and generate the positive changes in constructing our ideal CLE?</i>

Interview question protocols were formulated and revised according to comments and suggestions by Ethical Review Committees and supervisors. These protocols were approved by the Ethical Review Committee of the University of Liverpool (**Appendix A**) and the Kaohsiung Medical University Hospital (**Appendix B**).

I conducted the interviews using an electronic audio recorder in a private meeting room from 14<sup>th</sup> September to 21<sup>st</sup> November 2018, and each interview lasted for around one

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

hour. Then, the audio data were transcribed into text transcripts for the next step of data analysis. The transcription process took about three times longer than the interview time. The transcripts contained information on participants' anonymous labels, interview dates and locations. In practice, I applied interview principles and skills to collect relevant and authentic information from the interviewee participants (Creswell, 2015; Patton, 2015), including (1) Designing an interview protocol using a mix of questions with prompts, topics, and probing issues; (2) Asking clear and open-ended questions to elicit more in-depth responses, such as using icebreakers regarding participants' recent experiences or stories. I used probes and follow-up questions to clarify thoughts and underlying meanings; (3) Applying a non-judgemental and neutral attitude and building a rapport with participants to encourage them to speak openly and share their stories; (4) Listening attentively to participants' voices regarding what they perceived in reality, and keeping the participants in line with the study's central topic. I encouraged them to share stories about how they have interacted with others and confronted surrounding situations specific to the Taiwanese sociocultural context. I prepared for unexpected responses and embraced them with a reflective and flexible mindset. For example, some participants stated the deficiencies of the current CLE in my local institute. It is crucial to establish mutual trust to better engage with participants to obtain honest opinions that might be difficult to collect through formal program surveys.

Crucially, potential personal subjectivity and missing errors should be considered because this doctoral thesis study was conducted by me as a single researcher. This issue required me to apply triangulation steps to enhance the research robustness of the thesis. The first step was to validate the interview data (Creswell, 2015; Flick, 2014; Patton, 2015), including (1) double-checking the text transcripts with original audio data to ensure consistency, (2) auditing the interview data by comparing them with written summary field

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

notes taken during the interviews, and, (3) if necessary, confirming the data with the original participants for clarification. The second step was to undertake prolonged engagement throughout the research process (including data collection, coding analysis, and presenting the findings) (Creswell, 2015; Flick, 2014; Patton, 2015). The third step was to ensure the researcher neutrality and reflexivity and seek external review from my supervisors.

### **3.4 Qualitative data analysis**

#### **3.4.1 Thematic analysis as the main qualitative analytical method**

I employed thematic analysis as the main qualitative analytical method in this thesis. Thematic analysis functioned as an effective and flexible qualitative research tool to extract, analyse, identify and report meaningful patterns or themes within the interview transcript data (Braun & Clarke, 2006). In this thesis, I adopted the stance of social constructivism in conducting thematic analysis to generate new knowledge by making sense of participants' unique life experiences and phenomena within the research context (Braun & Clarke, 2006; Creswell & Creswell, 2017; Creswell & Poth, 2018).

The thematic analysis presented the following strengths and weaknesses. Firstly, it exhibited the flexibility to analyse the various forms of qualitative data collection, including interviews, conversations and discourse (Braun & Clarke, 2006). Secondly, the thematic analysis could be conducted using both inductive and deductive approaches (Braun & Clarke, 2006). In the inductive approach, themes emerged and were identified from the collected data themselves via an open-ended or bottom-up way. Some underlying latent themes could be synthesised as new theories. The weakness of inductive thematic analysis was its difficulty in linking implicit codes to specific research questions.

In contrast, themes were identified in a top-down way in the deductive approach. This deductive thematic analysis could be driven by the researcher's theoretical interest in the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

specific questions, focus or area (Braun & Clarke, 2006). However, the weaknesses of the deductive approach included that the coding process could be affected by the researcher's assumptions and that the obtained data were less rich in description (Braun & Clarke, 2006). For the thematic analysis in this thesis, I applied both inductive and partially deductive approaches to maintain openness and link with the research questions. Using the inductive approach, I identified themes from the immersion and coding process of the interview data. By means of the deductive approach, I extracted themes based on the theoretical framework of self-determination theory and previous literature on the CLE.

In practice, I conducted the thematic analysis through the following iterative steps (Braun & Clarke, 2006; Creswell, 2015; Flick, 2014): (1) Familiarising with the data by reading through all of the words and lines and noting down initial ideas; (2) Generating initial codes and labelling them by making sense of the data systemically; (3) Searching for themes: sorting and collating relevant codes into potential themes relevant to the research topic and context; (4) Reviewing themes: refining the extracted codes and themes, focusing on either data extracts in the themes or the whole dataset, removing the less relevant codes or themes; (5) Defining and naming themes: generating clear definitions and names for each theme and subtheme. These themes could be reworded and refined as a thematic map or category to clarify the interlinks of the whole themes; (6) Producing the report: demonstrating coherent and logical data, supporting example quotations, and making arguments in linking the research questions. This final report aimed to illustrate the essence of the whole story, not merely displaying the data.

### **3.4.2 Establishing trustworthiness in research data**

As a single qualitative researcher in this thesis study, I was hardly value-free entirely. Thus, it was crucial to ensure the accuracy of the qualitative research throughout the research process, including the data collection, analysis, interpretation and reporting (Patton, 2015).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

To this end, I strived to follow the criteria pertaining to “trustworthiness” proposed by Lincoln and Guba (1985) in achieving the rigour and quality of the qualitative research. Trustworthiness addressed the issues of credibility, transferability, dependability and confirmability for qualitative research in parallel with internal validity, external validity, reliability, and objectivity for quantitative research (Nowell, Norris, White, & Moules, 2017; Patton, 2015). Firstly, “credibility” (in parallel with internal validity) emphasises the “fit” between participants’ viewpoints on lived experiences and the researcher’s interpretation through the reconstruction and representation of the collected data (Nowell et al., 2017; Patton, 2015). My approach was to perform triangulation steps to enhance the credibility, as described previously in section 3.3.3.

Secondly, “transferability” (in parallel with external validity) refers to the generalisability of qualitative research (Nowell et al., 2017; Patton, 2015). My approach was to expand the sources of data collection by interviewing medical trainees and clinical teachers, and this approach allowed me to cross-examine the evidence and compare the similarities and differences between trainees and teachers. Furthermore, thick descriptions could help readers understand and transfer the meanings of findings in different cultural contexts. For example, I provided a thick description and explained the specific meaning of the joke term “roadblock” for junior clerks because they perceived their role to be that of bystanders (rather than helpers) in Taiwanese teaching hospitals (Y. D. Chang, 2017).

Thirdly, “dependability” (in parallel with reliability) addresses the researcher’s responsibility to ensure that the research process is logical, traceable, well documented, and ethically sound (Nowell et al., 2017; Patton, 2015). My approach was to perform the triangulation steps through the research process of data collection, transcription of the audio files into text, and data analysis by checking the agreement of coding by making memos and via a constant comparative method, as described previously and in the literature (Creswell,

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

2015; Flick, 2014; Patton, 2015). Furthermore, I followed ethical regulations and kept the research records in case of external audits.

Fourthly, “confirmability” (in parallel with objectivity) asserts the authenticity of findings and the objectivity of interpretations (Nowell et al., 2017; Patton, 2015). For this criterion, I presented the findings based on participants’ first-hand raw data in an online presentation of the University of Liverpool and asked for external feedback from supervisors and student peers. Furthermore, I prepared my Discussion chapter to elaborate on how I interpreted the findings and reached a conclusion based on their relevance and theoretical basis.

Importantly, I acknowledge the language barriers in translating the interview transcripts from Chinese to English that might have affected the trustworthiness of the data collection and interpretation. Although the English proficiency level of participants was competent in expressing their opinions, I conducted the interview using Chinese Mandarin to ensure the accuracy and efficiency of mutual communication. To ensure the agreement of contextual meanings between Chinese and English, I strived to translate the interview data, identified themes and quotations in aligning with the Taiwanese sociocultural context. Some key terms might be specific to the Taiwanese sociocultural context. For example, the term “roadblock” implied the specific self-description of junior clerks in Taiwan based on the prevailing fact that most junior clerks considered their roles like the hurdles instead of active helpers in the teaching hospital. This specific term of “roadblock” was quoted by our trainees in this thesis and another report from Taiwan (Y. D. Chang, 2017). Therefore, the language barrier was a challenge in qualitative research when specific concepts and language usage could be interpreted differently within non-English cultural settings (van Nes, Abma, Jonsson, & Deeg, 2010). For this issue, I tried to present the quotations of interview data in plain English, rather than using overly elegant language that may affect the credibility.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

It should be noted that my position acted as an insider researcher might have caused ethical concerns. Although I, as an insider researcher, had the advantage of better understanding the crucial issues and the authentic situations in the research context, since I was a single researcher in this thesis study, potential personal subjectivity and bias might affect the data interpretation. For this issue, I kept neutral and reflexive to interpret the findings and embrace unexpected responses or extreme cases. I reviewed the interview data carefully to ensure I did not miss the hidden critical messages and potential insights of results. Furthermore, I sought critical review and feedback from supervisors to ensure the robustness of thesis research.

Thirdly, there might be different interpretative perspectives from the Taiwanese sociocultural context. Confucian culture (with its dominant norms and social values) remains in the educational system in Taiwan (Hofstede, 1986; Hofstede et al., 2010). It was supposed that trainees should respect teachers. Trainee participants might not challenge teachers' performance or will express viewpoints in a softer way. Thus, we might not be able to hear authentic voices. This issue could affect the credibility of the data. Trainees' concerns about complex social relationships with teachers and teams should be considered (Ho et al., 2012). I would assure the trainees of the privacy of personal information and the importance of expressing authentic viewpoints.

To respond to these challenging issues, I should consciously maintain reflexivity to enhance trustworthiness throughout the research process (Flick, 2014). I reflected that my personal background, beliefs and bias might impact how I extract the codes and themes, interpret the findings, and draw the conclusion.

### **3.5 Ethical considerations**

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

The ethical considerations of the thesis research have been reviewed and approved by the Virtual Programme Research Ethics Committee (University of Liverpool) and the Institutional Review of Board (IRB) (K Medical University Hospital, Taiwan). (**Appendix A and B**).

I addressed all the potential ethical issues throughout the research process. Potential influences of inherent power distance for me as a senior leader in the local institute and the sociocultural factors in Taiwan should be considered (Hofstede et al., 2010). I reassured the participants that I would strictly follow the research ethics guidelines throughout the research process. I explained to the participants that my role in this research study was student researcher for the Doctor of Education programme in conducting this thesis research.

Before the research interview, I ensured the participants that there was no potential threat to their rights and no impact on their evaluation outcomes by whether or not participating in this research. The participant recruitment process was carried out in a non-coercive way, and all personal information and privacy would be protected.

During the interview, I engaged the participants in building mutual trust, asking them open-ended questions, and encouraging them to express their voices without hierarchical pressure and bias. I reminded myself to avoid subjective comments and allowed the participants to express personal viewpoints with freedom and autonomy.

After the interview, all sensitive personal identities and information were removed. Participants' identities were protected by using anonymisation with pseudonyms. I replaced the full name of the local institute with a pseudonym "KMUH" under the consideration of potentially risked identification of the small sample of participants.

### **3.5.1 Informed consent**

I assured that participants should have the freedom and autonomy to decide to participate in and withdraw from the research at any time without any pressure. Non-



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

participation and withdrawal from the study would not affect participants' study, work, performance evaluation, and promotion. To the best of my knowledge, there were no perceived physical or psychological adverse effects, risks or hazards with regard to involvement in the research. If participants had any concerns, they could contact the Institutional Regulation Board at KMHU as the research advocate for participants in providing counselling services and protecting their rights. The signed informed consent forms were stored in a protected cabinet within my private office.

### **3.5.2 Anonymity and confidentiality**

To ensure privacy, I conducted the interviews in a safe location, such as in a secure meeting room at my institute. To ensure the anonymity and confidentiality of personal identities and information and quotations from the interviews, I performed a protection procedure using anonymisation with pseudonyms or codes in data collection, analysis and reporting. MT# and CT# referred to medical trainee and clinical teacher participants, respectively. The electronic form of the research data and the backup were stored on a different personal computer's hard drives under password protection. Only my thesis supervisors and I could view the research data for the reasons of supervision and validation. The personal data were to be securely stored for at least five years under the Data Protection Act of the University of Liverpool.

### **3.5.3 Conflict of interest**

To avoid a conflict of interest, departmental administrative staff helped me to contact and invite potential participants to participate in this study. Participants were encouraged to present their viewpoints independently in a naturalistic and non-intrusive way in the interviews. I engaged participants in a more informal atmosphere. Furthermore, participants had the right to skip specific questions during the interviews if they felt uncomfortable answering them. However, I must honestly acknowledge that participants may have some

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

potential concerns surrounding the high power distance and hierarchical imbalance in the Taiwanese cultural context. For this issue, I reassured that I was a student researcher conducting a Doctor of Education thesis, rather than a teacher or supervisor. I stated that participants were invited based on the criteria of being either team leaders for trainees or departmental coordinators for teachers and that their contribution would provide valuable input for the quality improvement of the CLE.

Each participant was expected to receive a book voucher worth 200 NT dollars (equivalent to approximately 5.23 GBP or 6.3 US dollars) for their time and the inconvenience of attending the interview process. Expressing appreciation by giving a small gift is acceptable and reasonable in Taiwanese social culture.

### **3.6 Summary**

This chapter highlighted the crucial issues and essential steps with regard to the qualitative research carried out for this thesis: (1) Addressing the features of different philosophical worldviews and how the researcher's professional roles and research experience may shape their worldview. (2) Elaborating on the personal stance of social constructivism guided the choice of qualitative research design, the research issues and questions, and the rationale behind applying the AI model in this thesis. (3) Describing the criteria and process of participant recruitment for medical trainees and clinical teachers. (4) Describing the procedures of qualitative data collection using individual interviews. (5) Illustrating the theoretical basis and practical steps of thematic analysis and establishing the trustworthiness and quality of the qualitative research. (6) Discussing the ethical considerations to ensure autonomy and the protection of personal information in participant recruitment, the interview process, and data management and reporting.

## Chapter 4. Findings

This chapter presents the findings of individual interview data from the viewpoints of medical trainees and clinical teachers on the quality of the CLE. The qualitative data analysis was conducted using thematic analysis through the coding process. “Codes” were generated from the raw transcript data based on the relevance to the research issues on the quality of CLE. The names of codes were labelled based on underlying meanings, and their definitions are described as “coding legends”. Next, the codes with similar features and shared concepts were grouped as the “themes”. The extracted codes and themes are supported by the quotations using participants’ voices.

For presenting participants’ responses in the quotations (*italic text*), medical trainees (MT) referred to medical clerks/interns and residents under clinical training. Clinical teachers (CT) mostly referred to the attending physicians and senior residents, who were often considered junior teachers by medical students. The pseudonyms of medical trainees and clinical teachers in the quotations were labelled as MT # and CT #.

Through thematic analysis, five main themes are identified below.

- 1 Setting a learning community
- 2 Fostering learning goals and medical competencies
- 3 Learning facilitation with supervision and autonomy, assessment and feedback
- 4 Role modelling and professional development
- 5 Organisational culture, systemic regulation, and educational resources

### 4.1 Theme 1: Setting a learning community

Theme 1 referred that CLE provided a friendly learning climate and set a learning community of practice. This approach invited trainees to join the medical teams and provided opportunities for participating in patient care that enabled trainees to become the core team

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

members. This theme consisted of the crucial components, “community building, participatory practice and shared experiences and resources”, as shown in **Table 4.1**.

**Table 4.1 Setting a learning community**

Codes	Coding legends
1.1 Community building	Inclusiveness and a sense of belonging
1.2 Participatory practice	Participating in patient care by active involvement and hands-on practice
1.3 Shared experiences and resources	Sharing collective experiences (stories and historical events) and resources

Every rotation training course (every two weeks for medical students and every month for residents) is a unique encounter and a challenging learning or teaching experience in the current clinical training system. Thus, both trainees and teachers considered “setting a learning community” as a crucial element for constructing the quality of CLE in the foundation stage of clinical learning and training.

“Community building” factor indicated inclusiveness and a sense of belonging. This factor is meaningful for junior trainees. In Taiwan, medical clerks usually teased themselves like “roadblocks” in the hospital. The main reason is that clerks have little chance to contribute to patient care initially and may perceive themselves as outsiders or bystanders in the medical teams. With the foundation of community building, trainees could transform their mindset that they were not just outsiders or “roadblocks”. Thus, trainees could play an active role in contributing to patient care through the “participatory practice”, moving from the periphery into the centre to become core team members.

*During the training course as clerkship and internship, we might feel like outsiders*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*if we did not have guidance from senior peers or clinical teachers. A pleasant learning climate means that you encounter friendly and approachable senior peers. They will not give you a hard time. (MT 9)*

*When I was initially a medical clerk, I felt very uncomfortable in the clinical department ward, like a roadblock [a joke term for medical clerks]. If I could offer some help in patient care, medical teams consider you a real member of the team, a sense of belonging. You become one of the team members who could also contribute to teams, not just a learner. (MT 8)*

*I convince the clerks that they need to change their mindset of “roadblocks” in the hospital. I provide opportunities for participating in the surgical procedure. I let every clerk experience hands-on practice, such as cutting stitches and suturing, even just one stitch. Then clerks own a sense of participation. (CT 4)*

Another crucial factor for setting a learning community was “sharing collective experiences (stories and historical events) and resources” by which trainees could learn the practical knowledge and skills from teachers, and medical team members. Furthermore, the “peer learning model” could enhance the effectiveness of social learning by teaching others and learning from each other. Senior trainees could play as junior peers’ co-teachers and learning partners.

*I would like to share real events and stories with trainees (clerks/interns) in clinical encounters. This way could attract trainees’ interests and further enable them to understand my thoughts more about the working conditions in clinical practice, or the process of communicating with patients, or our ethical decisions. (CT 5)*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*In addition to clinical teachers, medical teams could also include nursing staff, case managers, nursing special practitioners, and pharmacists. Not every kind of knowledge or skill is always obtained from attending physicians only. For example, I learn from pharmacists about clinical pharmacy knowledge or from case managers about patient care experiences relating to social and economic aspects.*

*(MT 7)*

*You will grow by changing your role from a trainee to a teacher. When you teach junior peers [medical students], you could better clarify the points that you may feel puzzled. It enhances the learning effectiveness by teaching others. You should know your weaknesses. At the same time, you and peer trainees can learn from each other.* *(MT 8)*

In summary, theme 1, “setting a learning community”, represents several critical points. First, creating a friendly and respectful learning climate enabled trainees to create a sense of belonging and inclusiveness and reduce their panic when encountering a new training course. Second, participatory practice in patient care with instructive orientations could enhance their confidence and independence. Third, trainees obtained practical knowledge and capabilities by sharing collective experiences and mutual engagement through a social learning process and peer learning model. The above approaches transformed the trainees from novice learners to active core team members.

### **4.2 Theme 2: Fostering learning goals and medical competencies**

Theme 2, “Fostering learning goals and medical competencies” (Table 4.2), stressed the importance of setting clear learning goals and fostering medical competencies in patient-

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

centred care, clinical management, and interprofessional learning and practice.

**Table 4.2 Fostering learning goals and medical competencies**

Codes	Coding legends
2.1 Learning goals and approaches	Setting clear learning goals and active learning approaches
2.2 Patient-centred care	Rapport and good communication with patients and family
2.3 Clinical management	Capabilities in clinical skills, reasoning, and decision-making
2.4 Interprofessional learning and practice	Learning from and working with interprofessional teams for collaborative patient care

When trainees felt puzzled and uncertain in the complex CLE, they expected to have clear learning goals on “what needs to learn, how to learn, and expectation” from teachers’ guidance.

*We [clerks] did not know what we needed to learn or where to start. If clinical teachers could provide the topics and discuss them with us, we would have clear goals and directions about how to investigate and prepare the topics (cases). (MT 1)*

*In the first week of the training course, my teacher told me his expectations and gave me directions. He guided me on how to learn and what he hoped to see [my*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*learning outcomes]. (MT 3)*

On the other hand, teachers expected that trainees should build more active learning approaches. Teachers have observed the different learning approaches between domestic and international medical learners, such as the USA and Singapore. This discrepancy might be caused by various educational systems and cultural values among the different countries.

*I hope that clerks could be more active, not too shy, and gradually build up self-confidence. They need to have their ideas, that is, to think of possible differential diagnoses, and try not to be afraid of making mistakes. The way of expressing ideas could be related to our educational environment since childhood and our culture. Our cultural norm is that we should be modest and behave in a low-key manner. This culture is quite different from American culture. In American culture, you need to express your ability and ask questions voluntarily. It is vital to express your ideas actively. (CT 11)*

*I am very impressed by one exchange clerk from Singapore. This exchange clerk has a similar geographic and cultural background with our medical clerks in the Asian context. However, this Singaporean clerk has a strong desire (motivation) to learn. In contrast, our clerks tend to be passive, often tease themselves like “roadblocks” in the hospital. I could see the vast difference in the active learning attitude between this Singaporean clerk and our clerks. (CT 7)*

Furthermore, both trainees and teachers highlighted the common learning goals in fostering essential medical competencies in patient-centred care, clinical management, and interprofessional learning and practice.

For patient-centred care competence, teachers demonstrated for trainees in building



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

rapport relationships and communication skills with patients. Its significance is to care about the patients as a whole person, not just as a “disease”, and value “patient care” as a precious learning opportunity and privilege.

*They (trainees) should see the patient as a whole person and concern about their family. We, teachers, could help trainees set up learning goals of patient-centred care and help them accomplish these goals in a more structured way. The authentic patient care experience could push clerks to cross the gap, learn how to approach the patients, and dialogue with families. (CT 9)*

*When one clerk witnessed that I treated one anxious brain tumour patient as a friend and responded to his tough questions, this clerk portrayed this consultation event as if I was suddenly shedding the lights on everyone in the clinic. She felt that the whole clinic became a different scene, not just an icy cold place. (CT 9)*

*It is a privilege of learning from patients. They [clerks] need to value this learning opportunity and privilege. (CT 7)*

Another crucial medical competence, “clinical management”, acted as integrated capabilities of clinical skills, reasoning, and decision-making to ensure safe patient care. However, teachers raised the gap between medical knowledge in papers and real application to patients in clinical practice. Medical trainees need to cross this gap by more rigorous training.

*One crucial factor for an ideal CLE is to let us [trainees] participate, try, or practice essential clinical skills, like history taking and body examination of patients. Performing and mastering these clinical skills is very crucial to our*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*clerkship stage. (MT 2)*

*The problem is that medical clerks/interns are still not well-prepared in physical examination clinical skills, so they could not do well in clinical practice. There is a gap between medical knowledge and future application to clinical practice. This gap is a blind spot for current medical education, where students have gained high grades in paper examinations. However, they still need more rigorous training in the physical examination and patient history interview. (CT 10)*

Furthermore, collaborative team patient care needs to involve multiple disciplines of health professionals. Both trainees and teachers recognised the need for fostering the competence of “interprofessional learning and practice”. By which trainees learned from and worked with interprofessional teams to achieve the goal of collaborative care. However, trainees pointed out the insufficiencies of current medical curriculum to equip them for the interprofessional learning and practice in the clinical workplace.

*There is one thing that is still insufficient in the current medical education. We lack the capabilities on how to interact with the different medical teams, like nurses, dieticians, case managers, social workers, and even respiratory therapists. If we did not learn how to coordinate with interprofessional teams, we might encounter conflicts in clinical work. Indeed, they (interprofessional teams) are our closest and most reliable partners. (MT 11)*

*We should provide help for newcomer trainees on how to interact with the whole medical team. For example, what nurses and social workers could offer support or introduce resources to trainees. (CT 1)*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

In sum, trainees expected that teachers could clarify clear learning goals and directions while teachers expected trainees to take the initiatives in building more active learning approaches and attitudes. It requires more communications between trainees and teachers to understand mutual expectations and explore the underlying causes of discrepancies in learning goals and approaches. To prepare trainees for better medical practice, they need to attain the medical competencies of patient-centred care, clinical management, interprofessional learning and practice. Specifically, this theme pointed the gap between current medical curriculum and trainees' preparation for "interprofessional learning and practice" crucial for collaborative team patient care. Still, trainees need to bridge the gaps between medical knowledge and patient care practice through active involvement in clinical training and collaborative care with interprofessional medical teams.

### **4.3 Theme 3: Learning facilitation with supervision and autonomy, assessment and feedback**

Theme 3 comprised two sub-themes. Sub-theme 3.1, "learning facilitation and balance between supervision and autonomy", touched upon the pedagogic strategies of "contextual learning, personalised and peer learning, proactive supervision with support, and autonomy with and independence" (Table 4.3.1). Sub-theme 3.2, "assessment and feedback", highlighted the practice-based assessment coupled with timely constructive feedback (Table 4.3.2). These two sub-themes were interdependent and needed to be undertaken in seamless ways.

**Table 4.3.1 Learning facilitation and balance between supervision and autonomy**

Codes	Coding legends
-------	----------------

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

- |     |                                      |  |
|-----|--------------------------------------|--|
| 3.1 | Contextual and personalised learning | Facilitating learning by contextual relevance and meeting learners' personal needs         |
| 3.2 | Proactive supervision with support   | Proactive supervision with support for trainees in needs or difficulties                   |
| 3.3 | Autonomy with independence           | Developing trainees' autonomy with increasing independence and confidence for patient care |
- 

The first factor of this sub-theme 3.1 indicated that clinical teachers facilitated clinical learning by the pedagogical approaches of contextual relevance and personalised learning model. Teachers demonstrated the contextual relevance by using the concrete case examples hands-on practical skills, not just imparting medical knowledge in a vacuum. This approach facilitated trainees to learn and grasp concrete concepts and practical knowledge in a holistic way.

*My clinical teaching will start from the basic pathogenic mechanism of diseases. Then I demonstrated specific patterns of clinical presentation in linking with the anatomic structure, such as neural branches of skin. If they could tell the differences in clinical presentation and understand their reasons, they could grasp this critical concept forever. (CT 2)*

*In the first step, I ask clerks to look up detailed anatomy of the abdomen from the reference book. Next, I teach the clerks how to operate the abdominal ultrasound simulator. Clerks respond that this teaching model helps them a lot. Now they know what they need to learn, where they could start to learn, and catch the main points.*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*This learning approach is more effective than many hours of medical image lectures in the classroom before. (CT 4)*

Moreover, teachers employed the personalised learning model by providing the proper teaching materials and training sessions to meet the individual needs of various levels of trainees.

*For the individual learning needs of different levels of trainees, I will arrange various teaching sessions and topics. All teaching approaches are distinct for each level of clerks, interns, and residents. (CT1)*

*If we cannot provide appropriate teaching materials in matching students' abilities, they will feel very fragmented after the classes. It is critical to select the proper teaching materials to match the levels of junior clerks or interns. (CT 8)*

The third factor of this sub-theme 3.1 suggested that proactive supervision and support were crucial for trainees in difficulties when they encountered new challenges across the transition points from the preclinical to clinical stage and from the undergraduate to postgraduate clinical learning and training stages. Trainees need help on-site when dealing with complicated procedures and complex patient's conditions. Besides, systemic support was equally important to help trainees adapt to complex challenges across the transitions.

*I felt panicked when I took the general internal medicine course in the first month of postgraduate resident training. I am not familiar with the information system or practice in patient care. One senior resident was on standby to help us to solve these problems and provide instant feedback. (MT 9)*

*There are many things to learn when we initially enter the clinical training course*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*more than medical knowledge. We need help in adapting to all new systems when moving on to a more advanced clinical stage. We do not know even how to find out where the systems are and how these systems operate. (MT 12)*

*When residents encounter difficulties in clinical work, the senior peers and teachers could help them by sharing the loading or encouraging them. They need support from teams in facing difficulties and problems during clinical work. (CT 8)*

In terms of proactive supervision with support, it is crucial to meet the dual goals of learning opportunities for patient care and patient safety. An ideal CLE should provide safe learning and workplace to allow trainees to foster medical competencies under teachers' proactive supervision to ensure patient safety. The degrees of proactive supervision might depend on different levels of trainees' competencies, the severity of patients, and teachers' empowerment toward trainees.

*It is difficult for me as junior trainees to catch the main points about the anatomical location and structure of the surgery. My clinical teacher demonstrated how to avoid causing injuries to the patient's [organ] structures and potential complications from the surgery. As a junior resident, I am not so confident, especially in performing the consultation for the patient or family. My clinical teacher discusses each case with me and guides me on how to perform clinical procedures. It helps me to establish confidence in patient care for my future medical career. (MT 7)*

*My first concern is patient safety. Thus, I need to select suitable patients to allow trainees to learn from practice; for example, it is inappropriate to select*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*complicated and elderly patients. We cannot allow any chance of making mistakes.*

*(CT 10)*

On the other hand, this study identified the fourth factor of “autonomy with independence”. This factor indicated that medical trainees wish to have more autonomy and opportunities for practising clinical tasks under guidance. In this way, trainees aspired to master their medical competencies and become competent health professionals with increasing confidence and independence for patient care.

*As a clerk, I hope I could have more opportunities to practice in patient care. Then I could gradually prepare myself to learn how to work and perform the clinical tasks as senior interns do, such as prescribing drugs or proceeding with medical orders. We cannot just sit and watch; we need to ask the senior peers to guide us in trying some clinical procedures, like changing a wound dressing or providing nasopharyngeal tubing for patients. (MT 2)*

*We expected senior peers or clinical teachers to guide us and discuss the cases during the clerkship or internship course. In this way, we gained more confidence [courage] to do hands-on patient care independently. Clerks may feel like outsiders if nobody guides them. The guidance helps them be free from panic. Most importantly, clerks need encouragement and directions to understand better how to manage a patient's illness. (MT 9)*

Sub-theme 3.2 represented two crucial factors of practice-based assessment and constructive feedback. These two factors could act as the harness of clinical learning and training. The practice-based assessment evaluated trainees whether they have met the desired standards of medical competencies. Assessment needed to link to patient care and levels of trainees' competencies. On the other hand, constructive feedback should focus on trainees'

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

performance in aligning with trainees' needs to advance trainees' competencies through continuous improvement.

**Table 4.3.2 Assessment and feedback**

	<b>Codes</b>	<b>Coding legends</b>
3.5	Practice-based assessment	Workplace-based assessment in linking to patient care and competence
3.6	Constructive feedback	Constructive and timely feedback with explanations and suggestions for improving competencies,

Medical trainees and clinical teachers stressed that a rational workplace-based assessment should link to patient care and be coupled with constructive feedback to evaluate and improve medical competencies. It is better to employ the assessment and feedback together during, not at the end of, training course. This way could monitor the trainees' progress, assess the overall clinical performance of patient care, and provide feedback on the areas for improvement.

*It is difficult to demonstrate the accuracy of an assessment in the written form of an exit examination, as we did at the end of the course. If you want to evaluate the exact level of medical competence, you need to focus on one specific topic or a comprehensive case report. An assessment of learning outcomes will be more reliable using a case presentation or a consultation interview with real patients.*

(MT 3)



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*We need to assess the trainees and observe how they care about the patients, perform the physical examination, and ask the medical histories.*

*We could perform this assessment twice for each course. The first time is when trainees just come to the course, while the second time is near the end of the course. In this way, we could observe how they made progress during these two weeks. Thus, we could give trainees positive feedback about their strengths and the areas for improvement. (CT 11)*

Moreover, trainees also stressed the importance of the objectivity and fairness of the assessment.

*We often think our grading system is very objective. However, we need to incorporate something fundamental (observable) into our assessment system, such as performing better wound care after surgery. If we include positive learning behaviours as a critical part of the assessment, I [as a clerk] would be more willing to do my best for learning. (MT 11)*

For the “constructive and timely feedback” factor, both trainees and teachers emphasised the importance of the appropriate content, form, and time for feedback. First, the feedback should be specific and based on the trainees’ performance in patient care. Teachers strived to provide positive and timely feedback with explanations and specific comments to motivate trainees. This way helped trainees to identify their strengths and blind spots to improve medical competencies. However, trainees might be sensitive to negative criticism that may demotivate their learning.

*For the feedback, I will not just say that you are excellent. I will point out the specific good points. For example, the wound is very clean without discharge or bleeding; the suture lines are aligned straight with equal distance between suture points. We (teachers) need to inquire and observe the trainees on how they do the*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*physical examination and inquire about patient history. We could give them comments (feedback) on whether they are in the right direction by observing how they approach and interview patients. (CT 11)*

*If clerks did an excellent job in the case report, I would give them positive feedback to encourage them by pointing out which areas are excellent. If clerks do not perform well, I try not to give negative feedback; instead, I point out what areas they could do better. Do not use negative language; otherwise, they may lose interest in learning. (CT 2)*

Regarding the setting of feedback, trainees preferred receiving the feedback individually to fit their personal needs. However, most teachers often gave feedback to a whole group of trainees that may embarrass the trainees' feelings. Moreover, positive feedback to trainees could bring positive feedback towards teachers and further motivate teachers' teaching passion.

*If the clinical teacher [mentor] could give me individual feedback, rather than to the whole group of clerks and interns, I would be more willing to share my thoughts. In this way, the teacher [mentor] would better know my current personal needs. (MT 9)*

*I make time to discuss with trainees, answer their questions, and not point out their mistakes on the spot. They are encouraged and impressed by the specific feedback on what they have worked on the patient. Meanwhile, positive feedback from trainees also gives me great encouragement. It is strong encouragement if they specify what they have benefited from in clinical learning. (CT 9)*

In sum, the rational practice-based assessment mechanism is crucial to monitor

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

trainees' performance, determine whether trainees have reached the desired levels of medical competencies, and identify the gap for improvement. Furthermore, assessment should be coupled with constructive and timely feedback with explanations and suggestions, rather than negative criticism. There was a positive mutual influence of constructive feedback on trainees' learning motivation and teachers' teaching passion.

### **Theme 4: Role modelling and professional development**

Theme 4 consisted of three factors: (1) Clinical teachers exhibited the role models as humanistic medical experts, mentors, and educators. (2) Medical trainees developed professional identity formation and career development through immersive mentoring by clinical teachers and senior peers. (3) Mutual influence of the mentoring relationship between trainees and teachers.

**Table 4.4 Role modelling and professional development**

Codes	Coding legends
4.1 Role modelling of teachers	Role models of clinical teachers as humanistic medical experts, mentors, and educators
4.2 Professional development	Professional identity formation and career development through immersive and mutual mentoring relationships between trainees and teachers

For the “role modelling of teachers” factor, clinical teachers fulfilled multiple role models and embodied professional values and behaviours as devoted medical experts,

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

mentors, and medical educators.

As humanistic medical experts, clinical teachers committed themselves to patient-centred care, not just medical expertise, by caring about patients' needs and establishing good relationships with patients and families.

*My clinical teacher demonstrated a humanistic medical expert's role by caring for patients' illnesses and their families. This patient-centred holistic care concerns the comprehensive dimensions of body, psychology, social, and spirituality, not only patients' diseases. (MT 4)*

*One clerk commented that she was very impressed by how I communicated with this patient and family at the consultation. She considered it a beneficial learning experience. It made her transform the fixed role of the physician-patient relationship from a different angle. (CT 9)*

As a mentor, teachers acknowledged medical trainees' anxiety or difficulties and enhanced their well-being. Teachers accompanied the trainees and assisted them in overcoming the difficulties together. Sharing their stories in clinical encounters could act as a powerful way of mentoring.

*Our clinical teachers care about our well-being with their whole hearts. They ask us whether we have had sufficient rest during the heavy work of medical resident training. (MT 7)*

*I share with trainees about my real stories in clinical encounters, such as my observations on patients and families, specific clinical science subjects, or the issues relating to communication and ethics. Trainees are deeply inspired and touched by the stories I shared. They think these stories are helpful for them, no*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*matter what in future career planning or in understanding the clinical workplace situations. (CT 5)*

As medical educators, clinical teachers demonstrated commitment to clinical teaching and played as learning partners of trainees.

*My teachers are willing to spend much time teaching or guiding you. When I could not answer the questions correctly, they would explain to me step by step. It encourages us to put more efforts into pursuing knowledge and gives us a desire to learn more. (M 11)*

*It is worthwhile for us to learn and follow many role model teachers. These teachers deeply influence my teaching behaviours. I play as a learning partner for students, accompanying them to learn and grow together. I assist the students in overcoming the difficulties together. (CT 5)*

For the “professional development” factor, teachers shaped trainees’ professional values, role formation, and career development through immersive learning experiences, including informal dialogues and sharing stories beyond medical knowledge. The impact of professional development may enable the trainees to follow in the footsteps of exemplary teachers and senior peers. It represented a positive cycle of professional learning.

*Through interactions with these teachers, you could learn a lot about their thoughts and values regarding medicine. For example, you will learn more about how to avoid conflict with patients, better counselling skills, or why clinical teachers choose their careers. This informal dialogue or conversation influences me profoundly more than medical knowledge. (MT 3)*

*The exemplary clinical teachers exerted a significant influence on me. They*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*inspired me and made me consider seriously which medical speciality would suit me best. This influence strongly affected my goals and choices in my future career. I will follow in their footsteps. (MT 4)*

*The senior peers guided me in this way when I was a clerk and an intern. Now I have become a postgraduate resident, and I do the same thing (guiding) for junior trainees. It is a positive cycle [for learning and working]. (MT 11)*

Moreover, there existed a mutual influence of mentoring relationships on the professional values and patient-centred care between mentees (trainees) and mentors (teachers).

*We always remind and instruct trainees that we should concern or protect patient privacy. One episode impressed me a lot. When clerks observed me treating one young female patient with severe wounds after a traffic accident, one clerk unexpectedly asked me whether we should cover some private body parts to protect the young female patient's privacy. Trainees understand the importance of patients' privacy from our previous teaching. Now they give me feedback about what we have taught them or what we should do. This episode is a meaningful teaching and growth experience for both of us. (CT 5)*

### **4.5 Theme 5: Organisational culture, systemic regulation, and educational resources**

Theme 5 comprised two sub-themes at the organisational and systemic levels of the CLE. Sub-theme 5.1, “Organisational culture and policy of teacher evaluation and development”, refers to establishing a collaborative organisational culture and policy of teacher evaluation and career development” (Table 4.5.1). Sub-theme 5.2, “Systemic regulation and educational resources”, refers to systemic factors and operations relating to

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

clinical workload and duty-hour regulation, course coordination, and educational resources (Table 4.5.2).

**Table 4.5.1 Organisational culture and policy of teacher evaluation and development**

Codes	Coding legends
5.1 Collaborative culture	Collaborative and non-blaming organisational culture
5.2 Teaching evaluation system	Pros and cons of teaching evaluation system
5.3 Teaching track system	Development and barriers of teaching track system

Clinical learning and working require collective efforts and peer support, thus collaborative organisational culture is crucial for medical teams to build team spirit, shared responsibility and work out practical ideas for solving clinical problems and generating more effective learning outcomes. Collaborative organisational culture also created a fluid bidirectional communication channel between stakeholders and departments or institutes.

*Our learning environment should create an atmosphere [culture] that we can help each other. I can obtain assistance immediately if I do not know what to do. We call it a collaboration. We are willing to share the responsibility for patient care. The more we share, the more efficiency we can achieve in clinical learning. (MT 4)*

*We should create a team in which the members do not compete with or criticise each other. This atmosphere [culture] could exert a summative effect of one plus one greater than two. My peers make me feel that I am not helpless, even in facing*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*worrisome clinical conditions. Many people help me to work out ideas and find solutions for these clinical problems. This kind of learning environment generates a powerful team effect. (M 11)*

*My department chief gets along with young residents, cares about them, and is more willing to listen to their voices. We need to make sure there is no barrier to the communication channel. (CT 4)*

Moreover, clinical working may be at the risk of making medical errors. The current medical society has advocated the “non-blaming culture” to encourage medical teams to disclose potentially harmful clinical incidents. This non-blaming culture makes medical teams, especially the trainees, feel safe to express their voices and acknowledge the reality of clinical learning and training as a process of trial and error.

*One key element for an ideal CLE is to create an encouraging culture, and then trainees dare to try without fear of making mistakes. Even though they have made mistakes, we should not give them a scolding, negative punishment, or criticism. Although it does not fit our social and cultural traditions, I think we could still improve this culture. A more helpful culture encourages trainees to learn more actively and change the whole atmosphere [culture]. (CT 5)*

*We, as clerks, need a channel to express our opinions. We could communicate and give feedback about how to improve the operations of the hospital [in clinical learning and working]. If the hospital does not provide this kind of channel, we cannot discuss and give suggestions when we have problems. (MT 9)*

Next, regarding the teaching evaluation system, the pros could encourage good



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

teachers and make the whole educational system progress toward positive development. In contrast, the cons might exert the potential subjectivity and bias if the evidence of teacher evaluation mainly relied on the single source of students (trainees) ratings. This potential bias may distort teaching values and make teachers tend to please the students.

*A rational system for evaluating good teachers could exert a significant impact on the whole (clinical) education system. The students' ratings could improve teachers' performance and encourage teachers. The link between evaluation and performance for teachers will make the whole educational system progress toward positive development. (CT 10)*

*Before, students always respected teachers, but now, students judge teachers. I think the current teacher evaluation has distorted many (professional) values. For example, students should take their learning responsibilities. If students expect teachers to teach more, then they should make more efforts in learning. Now, students often rate teachers based on whether teachers are well-received or not. This way may make teachers try to please the students. (CT 7)*

Furthermore, participants proposed developing a full-time teaching track system to recognise and cultivate passionate teachers as medical educators and further promote excellent teaching practice across departments of the whole hospital. However, there existed challenges for the current teaching tract system in recruitment and career development of faculty promotion.

*Our hospital should establish a teaching track system of clinical teachers. These clinical teachers could take full charge of coordinating the department teaching program or educational objectives. This teaching track system enables trainees to*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*learn more effectively. However, there exist challenges to achieving this goal. It is not easy to recruit suitable candidates. Besides, it may increase the budget. (CT 4)*

*Our hospital needs to implement the programme to promote the teaching performance for the teaching track of clinical teachers. This teaching track of teachers should have a better opportunity for career development in academic positions. We need to create specific standards for their promotion. (CT 1)*

**Table 4.5.2 Systemic regulation and educational resources**

Codes	Coding legends
5.4 Clinical workload and duty-hour regulation	Clinical workload and duty-hour regulation impacting the quality of learning, teaching, and patient care
5.5 Course coordination	Well planning and coordination of courses regarding arrangement and teaching styles
5.6 Educational resources	User-friendly educational resources

Sub-theme 5.2 highlighted several crucial systemic factors that may affect the overall quality of clinical learning, teaching, and patient care. These included clinical workload, duty-hour regulation, course coordination, and educational resources.

CLE has faced the challenges of heavy clinical workload derived from all coverage policy of the national healthcare insurance system and an increasing population of elderly and complicated patients in Taiwan. In contrast, the workforce of residents, especially in medicine and surgery specialities, was still insufficient to meet the higher demand for patient care.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Moreover, the new policy of duty-hour regulation (80 hours per week) would cause insufficient workforce of residents worse and shrink the time for resident training in Taiwan. The practical action was to arrange the protected time and flexible schedules to ensure its continuity without interruption.

*If the clinical workload is too much, clinical learning becomes the reflex response in your brain, quite like the fixed routine. It is difficult for us to reduce the workloads under the current regulations of Taiwan's national health insurance system. (MT 5)*

*One troublesome issue is that residents' clinical learning became interrupted by the duty-hour regulation (80 hours per week). This regulation will shrink the clinical training time to educate the residents. (CT 3)*

*A flexible working schedule is necessary for caring for new patients during on-duty hours. This system (patient care plan) should be well-designed to ensure our right to have protected time for continual learning. (MT 5)*

Our CLE encountered the chaos of clinical training courses concerning the course coordination, especially in facing the curriculum reform from the old seven-year and new six-year medical curriculum system. Medical trainees and teachers faced uncertainties in the planning and delivery of clinical training courses and teaching styles.

*Medical clerks skipped one-year internship and graduated as postgraduate residents directly when the medical programme changed from seven to six years of the curriculum. The operation and guidance for clerkship training should be different. However, most teachers or senior residents are still unclear about this*

QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*new six-year medical curriculum, and they do not know what the better ways will be in helping or instructing our medical clerks. (MT 8)*

*We still encountered chaos when facing the change of the new (six-year) medical curriculum system. There were several issues of administrative coordination between the medical school and affiliated teaching hospital, such as signing contracts and tracking the progress of the exchange clerkship programme. (CT 1)*

*If you were under the supervision of two teachers with different styles of working tempos or thoughts, you would feel a little mixed up or confused. This situation makes me feel disconnected from the whole medical team and less team spirit. (MT 8)*

Regarding “educational resources”, both medical trainees and teachers raised the need for user-friendly educational resources and advanced educational technology for effective clinical learning and working. The proposed priorities included information technology facilities, simulation medicine system, and E-learning platform.

*When we work in the hospital, the operating system of medical recording, computer speed, and a smooth connection are urgent needs. From the cloud connection, we could access the hospital system. This system enables us to check what happens to patients and further manage the patients' present conditions. (MT 5)*

*We have employed the simulation medicine system, like the 'Siman' simulator. These clinical simulation scenarios enable trainees to practice patient examination and monitor body signals. Clerks' feedback also raised the need for more*

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

*simulation training courses. (CT 3)*

*I hope we could provide several teaching materials for self-learning, such as an E-learning platform. If trainees did not have a chance to see the real cases, we could enable trainees to study the clinical images or photographs of cases from the E-learning materials. (CT 2)*

In sum, this theme 5 highlighted the enabling factors of collaborative, non-blaming organisational culture and educational resources for constructing an ideal CLE. This theme also pointed out the challenges of clinical workload and teaching track system, as well as double sides of duty-hour regulation and teacher evaluation system. The uncertainties of new curriculum reform and course arrangement required more well-planned coordination and delivery in fitting stakeholders' needs and institutional contextual factors.

### 4.6 Summary

As a reflexive researcher, I aimed to conduct a thematic analysis of interview data from the medical trainees and clinical teachers under the principles of trustworthiness criteria described in the methodology chapter. I have identified the five relevant themes and sub-themes, as shown in Table 4.6. The cited quotations represent the participants' voices and support the meanings of each theme. These themes as key elements construct the quality of the CLE will act as the foundations to link with the research questions and elaborate the implications in the Chapter 5 Discussion.

### **Table 4.6 Summary of five themes and related sub-themes**

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Themes (as key elements)	Sub-themes
1	Setting a learning community
2	Fostering learning goals and medical competencies
3	Learning facilitation with supervision and autonomy, assessment and feedback
	Learning facilitation, supervision, and autonomy
	Assessment and feedback
4	Role modelling and professional development
5	Organisational culture, systemic regulation, and educational resources
	5.1 Organisational culture and policy of teacher evaluation and development
	5.2 Systemic regulation and educational resources

1. **Setting a learning community:** Creating a sense of belonging and shared experiences through the participatory practice and mutual engagement of trainees with medical teams.
2. **Fostering learning goals and medical competence:** Setting the clear learning goals and active learning approaches. The scopes of medical competencies focused on patient-centred care, clinical management, and interprofessional learning and practice.
3. **Learning facilitation with supervision and autonomy, assessment and feedback:** Learning facilitation required pedagogic approaches of contextual learning, personalised and peer learning. The proactive supervision and support for trainees may nurture trainees to build responsibility with independence for patient care. Practice-based workplace assessment and constructive feedback were crucial to evaluate and advance trainees' medical competencies.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

4. **Role modelling and professional development:** Clinical teachers fulfilled the professional roles and exerted the immersion effects on professional and career development for trainees. This approach created a positive loop of mutual mentoring relationships.
5. **Organisational culture, systemic regulation, and educational resources:** This theme highlighted the systemic and contextual factors that may enable or hinder the quality of CLE. The main factors included collaborative organisational culture, rational policy of teacher evaluation and teaching track system for better teaching practice and development of medical educators. The effective systemic regulation of clinical workload, duty-hour regulation, course coordination, and user-friendly educational resources are crucial for ensuring the quality of clinical learning, teaching and patient care.

## Chapter 5. Discussion

This chapter will analyse the main themes within the findings as key elements that would construct the quality of the clinical learning environment (CLE). The research questions will serve as the roadmap with which to guide the discussion. I will address the implications of these key elements in response to the crucial research issues and challenges for the CLE in the Taiwanese sociocultural context. Finally, I will propose action plans that could potentially improve the quality of the CLE in the local institute and inform better educational practice in Taiwanese medical society.

### **5.1 Key findings and implications in responding to *RQ1*: “What are the key elements that would construct a quality CLE from the viewpoints of both medical trainees and clinical teachers?”**

The thematic analysis of the interview data from trainees and teachers identified five main themes: (1) Setting a learning community; (2) Fostering learning goals and medical competencies; (3) Facilitating learning with supervision and autonomy, assessment, and feedback; (4) Role modelling and professional development; (5) Organisational culture, systemic regulation, and educational resources. These five themes represent key elements that would construct the quality of the CLE from medical trainees’ and clinical teachers’ viewpoints that they perceive to be the truth. These key elements exhibit interdependent relationships and crucial significance for the CLE in the Taiwanese sociocultural context.

#### **5.1.1 Key element 1: “Setting a learning community”**

This key element consists of “community building, participatory practice, and shared experiences and resources”, corresponding to the “relationship dimension” (Schönrock-Adema et al., 2012) and “social component” (Gruppen et al., 2018) in shaping the quality of the CLE. “Setting a learning community” reinforces the feature of the clinical learning and



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

working context as the “learning community of practice” (L. C. Li et al., 2009; Wenger, 1999, 2000). Clinical learning and working experiences act as a social learning process for trainees (from legitimate peripheral participation to full and active engagement in patient care) (Billett, 2016). Setting a learning community is meaningful for junior clerks entering new clinical placements in which they feel like outsiders or bystanders, who describe themselves as being “roadblocks” in the hospital, as quoted in section 4.1 and another paper in Taiwan (Y. D. Chang, 2017). Our CLE creates a sense of belonging, opportunities for participatory practice through mutual engagement, and shared experiences and resources. Trainees feel welcomed and connected with team members and become part of a learning community. In this way, junior trainees could transform their passive roles from outsiders or bystanders into active helpers and become part of teams.

“Mutuality” of engagement and interactions was a critical factor in building learners’ social capital in the social learning system (Wenger, 2000). To address the “mutuality” factor in the CLE, I raise the following questions: *“How do trainees set goals and clarify the meanings of clinical learning and participating in patient care tasks?”* and *“How do trainees develop mutual trust and define their roles and capabilities through negotiated expectations, commitments, and standards within the CLE?”* These questions will be discussed in key element 2.

### **5.1.2 Key element 2: “Fostering learning goals and medical competencies”**

“Fostering learning goals and medical competencies” corresponds to the dimensions of “personal development/goal orientation” (Schönrock-Adema et al., 2012) and “personal goal direction and professional growth” (Gruppen et al., 2018) in constructing the quality of the CLE. It should be noted that trainees and teachers have different expectations in “setting learning goals and attitudes”. On the one hand, trainees expect to have clear goals and direction from teachers’ guidance. On the other hand, teachers expect trainees to develop a

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

more active learning approaches and responsibility with regard to their clinical learning and working. The different expectations might be explained by the potential conflicts of educational values and approaches between different generations (Johnson & Romanello, 2005). It indicates that learning goals, mutual expectations, and shared responsibilities should be fully communicated in the orientation stage of training courses.

This key element also asserts that an ideal CLE should facilitate trainees in fostering medical competencies in the areas of “patient-centred care, clinical management, and interprofessional learning and practice”. Competence in “patient-centred care” enables trainees to comprehend patients’ needs and provide humanistic care. Competence in “clinical management” enables trainees to master clinical skills and the clinical reasoning ability for decision making to accomplish more demanding clinical tasks in dealing with complex patient conditions.

Moreover, competence in “interprofessional learning and practice” fosters trainees’ awareness and coordination skills with interprofessional teams (including nursing, pharmaceutical, and other health professionals) required to deliver collaborative team care. Such competence aligns with the Clinical Learning Environment Review guideline (Accreditation Council for Graduate Medical Education (ACGME), 2020) that an optimal CLE needs to promote interprofessional learning and team practice in which trainees collaborate with multidisciplinary team members to achieve the common goals of both safe and efficient patient care.

### **5.1.3 Key element 3: “Learning facilitation with supervision and autonomy, assessment, and feedback”**

With regard to “learning facilitation and balance between supervision and autonomy”, the findings identify “contextual learning and personalised and peer learning” as crucial pedagogical approaches in the CLE. There are several implications. Firstly, clinical teachers

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

need to provide “concrete experiences” in connecting with authentic clinical contexts and proper teaching content and sessions fitting for different trainees’ personalised learning needs and levels. Secondly, the “peer learning model” pedagogy enables medical students to learn from and work with senior resident peers as learning partners and co-teachers. This pedagogy reinforces “peer collaboration” as a crucial factor in the CLE (Boor et al., 2011) and embodies the principle of “residents as teachers” in advancing residents’ professional role from that of learners to that of teachers (Ramani, Mann, Taylor, & Thampy, 2016).

This thesis study highlights the crucial dual goals for teachers and trainees in establishing a balance between teachers’ role of supervision and support and trainees’ aspiration for autonomy, independence, and fostering medical competence in the clinical learning and working context. To my knowledge, this finding has not been reported in previous studies in Taiwan. This finding could be interpreted and supported by the psychological need for autonomy and competence based on “self-determination theory” (Ryan & Deci, 2000; Ten Cate, Kusurkar, & Williams, 2011).

From teachers' perspective, “proactive supervision with support” could ensure patient safety and support trainees’ professional development (Kilminster et al., 2007). From the standpoint of trainees, “autonomy with independence” indicates trainees’ motivation and aspiration to have more autonomy and more opportunities for patient care to foster medical competencies and become independent physicians (Kusurkar, Croiset, & Ten Cate, 2011; Ten Cate et al., 2011). A previous study showed that an imbalance between supervision and autonomy caused tension for trainees and that an unsafe CLE also made them become passive learners, and vice versa (Olmos-Vega, Dolmans, Vargas-Castro, & Stalmeijer, 2017). Thus, the “balance between supervision with support and autonomy with independence” is critical for an ideal CLE and requires more investigation to understand enabling and hindering factors in the Taiwanese context.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Concerning “assessment and feedback”, the findings demonstrate that “practice-based assessment” should be coupled with constructive feedback and should be given regularly, better during, not just at the end of training courses. Both assessment and feedback are crucial for trainees to identify their strengths and blind spots and improve their competencies and learning attitudes. Participants posit that assessment should achieve objectivity and fairness based on trainees’ performance in patient care (instead of paper-based knowledge) and align with trainees’ levels of competence. This finding accords with the central concepts of workplace assessment in the CLE, meeting the dual formative and summative purposes, and focusing on its correctness and fairness (Norcini et al., 2018). Moreover, trainees state that a sound assessment system would motivate them to learn more actively. It indicates that assessment could not only function to evaluate learning outcomes (assessment of learning) but also drive trainees’ learning motivation (assessment for learning) (Schuwirth & Van der Vleuten, 2011).

Secondly, in terms of the form, content and setting of feedback, both trainees and teachers present that constructive feedback should be specific with explanations and suggestions based on trainees’ performance, rather than criticism or negative comments. Teachers provide feedback as an instructional approach to guiding and encouraging trainees. Furthermore, teachers’ constructive feedback could further direct trainees’ positive feedback towards teachers and generate meaningful encouragement for teachers. This finding indicates that constructive feedback exerts a reciprocal positive effect on motivating trainees’ learning attitudes and teachers’ passion and guidance. However, trainees state that they prefer receiving feedback individually than in a whole group setting. This way encourages trainees to share their thoughts and help teachers to acknowledge trainees’ personal needs. Thus, “saving face” is a critical factor in Asian culture when delivering effective feedback (Ramani, Konings, Mann, Pisarski, & van der Vleuten, 2018).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Notably, it is not easy to perform workplace assessment and individual feedback to fully meet trainees' expectations and fit their personal needs. In the real practice of competency-based medical education and assessment, teachers assess trainees' performance and provide feedback in rotation training courses through universal methods and standards (Frank et al., 2010). However, current workplace assessment and feedback systems have some pitfalls as reported in the literature (Touchie & Ten Cate, 2016). It was criticised that assessment was conducted under uniform evaluation standards at a fixed time phase, rather than considering the differences in trainees' competencies and patients' complexities, and flexibility of assessment schedule.

Overall, key element 3, i.e. "learning facilitation with supervision and autonomy, assessment, and feedback", is essential in enhancing trainees' capabilities and learning outcomes by accomplishing clinical tasks. Still, the different expectations for the supervision and autonomy should be openly communicated between trainees and teachers to achieve the desired common goals of fostering medical competencies and ensuring patient safety in the chaotic clinical settings.

### **5.1.4 Key element 4: "Role modelling and professional development"**

This element highlights clinical teachers' "role modelling" in the form of humanistic medical experts, mentors, and educators and their immersive influence on trainees' "professional development". Clinical teachers demonstrate patient-centred holistic care by caring about patients' bio-psycho-social needs. One pedagogical strategy is advocated that humanism could be incorporated into bedside teaching in Taiwan (C. W. Lai, 2020). This pedagogical strategy could enhance trainees' sensitivity to patients' suffering and develop their empathy and competence in medical professionalism through a hidden process in daily clinical activities beyond lecturing in the classroom (Hilton & Slotnick, 2005).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Moreover, this key element 4 indicates that teachers care about trainees' their well-being, guide their career choices, and further promote their professional identity formation. These findings accord with previous reports that positive role modelling could facilitate medical trainees to develop medical professionalism, form their professional identity, and shape career choices (Passi & Johnson, 2016; Passi et al., 2013). One novel finding should be noted that teachers (mentors) and trainees (mentees) co-created a bonding mentoring relationship and exhibited a positive loop of mutual influence on self-reflection, professional values, and commitment to patient-centred care. This bi-directional mentoring relationships represent a catalyst in creating a supportive CLE and a collaborative organisational culture.

### **5.1.5 Key element 5: “Organisational culture, systemic regulation, and educational resources”**

This key element presents the enabling and hindering factors in “organisational culture, systemic regulation, and educational resources”. The findings support that a “collaborative and non-blaming organisational culture” enables trainees to gain support and a feeling of belonging and makes them learn from and work with interprofessional teams to deliver better holistic patient care. Such a non-blaming culture encourages trainees and teachers to reflect on authentic clinical learning experiences and acknowledge the reality of trial and error as a necessity for the clinical learning process. This “collaborative and non-blaming culture” corresponds to the need for “psychological safety” in the CLE, which is essential for healthcare and educational organisations (Edmondson, Higgins, Singer, & Weiner, 2016). “Psychological safety” refers to the belief that people view an organisation to be a supportive environment that encourages members to speak up or ask for help without the risk of punishment or humiliation (Edmondson & Lei, 2014). A “collaborative and non-blaming culture” could offer the psychological need for trainees to learn new competencies and overcome the workplace's defensive barriers in the clinical education setting

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

(Edmondson et al., 2016). This key element of “collaborative and non-blaming organisational culture” reinforced a culture of safety in the healthcare system: open communication under trust, a non-punitive approach to disclosing adverse events, and organisational learning through teamwork and shared beliefs (Halligan & Zecevic, 2011).

Another important finding shows that the “full-time teaching track system” is expected to encourage passionate teachers to choose medical educators and scholars as promising career choices. However, several barriers were identified in my institute for implementing this teaching track system, including financial concerns surrounding recruitment, specific academic promotion systems, and tailored faculty development programmes. These barriers may make our teachers hesitate to choose this teaching track or drop out of these career choices. Previous literature has also pointed out several organisational factors impeding the professional career development for clinical teachers: a lack of incentives, poor planning of the pedagogical platform, job insecurity, a lack of academic career opportunities, and a lack of management support (Stenfors-Hayes et al., 2010). Strong educational leadership is required for my institute to establish policy and a tailored faculty development programme to promote the professional development of teaching track teachers.

Clinical workload has been reported as one of the primary reasons for trainees’ job stress and burnout (Dyrbye et al., 2014; Lue et al., 2010). This thesis finding demonstrates that clinical workload could impede the operation and overall quality of clinical learning, teaching, and patient care. Clinical workload has been attributed to clinical care for excessive and complicated patients. Especially, increasing the ageing population swarmed into tertiary teaching hospitals under the current all-coverage policy of the National Health Insurance system in Taiwan (Ministry of Health and Welfare (Taiwan), 2019b; H. H. Wang & Tsay, 2012). Moreover, an insufficient workforce and the maldistribution of physicians, especially

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

in medicine and surgery, make the workload more difficult in meeting the higher demand for patient care (Yang, Huang, & Hsueh, 2013).

The Taiwanese government adopted the ACGME's guidelines in relation to working hours (Accreditation Council for Graduate Medical Education, 2011), having implemented the regulation of 80–88 duty-hours per week for our residents since 2017. This duty-hour regulation could significantly reduce trainees' workload and job stress, specifically in the four major specialities of internal medicine, paediatrics, and gynaecology/obstetrics. However, the finding points out that duty-hour regulation in Taiwan might act as a double-edged sword for the quality of the CLE. Our teachers support this duty-hour regulation for ensuring residents' well-being. Nevertheless, our teachers commend that this duty-hour regulation would decrease the time for clinical training and cause the teaching schedule to be fragmented. They are concerned that it might affect the effectiveness of residency training. It is still under debate as to its overall impacts on patient care outcomes and the effectiveness of clinical training (Bolster & Rourke, 2015; Thorp, Dattalo, Ghanem, & Christmas, 2016).

Concerning the “educational resources” element, this study identifies the importance of the simulation-based medical system in meeting the needs of competency-based medical education, assessment, and patient safety, as highlighted in the literature (Ziv, Small, & Wolpe, 2000). However, there were controversies in applying simulation-based medical education (Krishnan, Keloth, & Ubedulla, 2017). The advantage of simulation-based medicine was that it allowed trainees to rehearse and practise skills in a safe and high-fidelity environment, ensure patient safety, assess trainees' competencies, and enhance team communication skills. The potential disadvantages included that simulation-based medicine might lead to the defects of ignoring patients' real feelings, higher costs, and logistical difficulties (Krishnan et al., 2017).



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

As a whole, these five key elements would construct the quality of the CLE and further shape learning and teaching experiences in the local CLE. The following section on RQ2 will address why these key elements are crucial for the CLE in the Taiwanese context.

### **5.2 Research issues in connecting with RQ2: “Why are these identified elements considered crucial in forming a quality CLE in the Taiwanese sociocultural context?”**

As described in the literature review, several crucial research issues would impact the quality of the CLE in Taiwan. It is relevant to discuss the relationships of these research issues with RQ2. The next section will address how these identified key elements could respond to these research issues and why they are crucial in the Taiwanese sociocultural context.

#### **5.2.1 “Setting a learning community” in response to the negative-mindset professional culture in medicine**

Taiwanese medical society also holds a negative-mindset professional culture prevalent in the medical discipline (Haizlip et al., 2012). This thesis points out that junior trainees (clerks) consider themselves outsiders or bystanders, like “roadblocks” in the hospital, if they perceived the CLE to be holding an unfriendly learning climate and negative-mindset professional culture. As a result, junior trainees become passive learners in clinical learning and working settings because they fear making mistakes. Another report from Taiwan also reported that junior clerk trainees described themselves as “roadblocks” in the hospital because they feared that they might cause trouble during patient care (Y. D. Chang, 2017).

This thesis employs a positive-mindset-based AI model as a primary approach to designing the interview questions by asking the participants about positive clinical learning (teaching for teachers) experiences or exemplary teachers in the CLE, instead of emphasising

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

the problems in the CLE. This questioning approach might enable participants to focus on the strengths of the CLE quality and further co-create the opportunities and action plans for driving organisational changes.

This study highlights that the first and foremost element in creating a supportive CLE is “setting a learning community”. This element provides insights for Taiwanese medical society that teachers should acknowledge trainees’ fears and uncertainties and invite them to join a new clinical placement. A welcoming, respectful and inclusive CLE could make trainees feel that they belong to a team. It could transform trainees’ mindset and role from passive learners and outsiders into active learners and helpers in medical teams. Such a supportive CLE enables trainees to actively engage with teams (L. C. Li et al., 2009) and meet the psychological need for relatedness based on self-determination theory (Ryan & Deci, 2000; Ten Cate et al., 2011).

### **5.2.2 Fostering medial competencies in meeting the needs of competency-based medical education and collaborative team patient care.**

Traditionally, the majority of clinical teachers in Taiwan conducted teaching using the “see one, do one, teach one” clinical teaching model, but this clinical teaching model was insufficient in meeting the recent trend and requirement of educating competent physicians (Irby, 2011; Mason & Strike, 2003; Rodriguez-Paz et al., 2009). Recently, Taiwanese medical society adopted and implemented the Accreditation Council for General Medical Education (ACGME) six core competencies (Swing, 2007) as a universal framework for clinical education and assessment in the undergraduate medical curriculum and in postgraduate training as a reform with which to foster general medicine competencies in meeting healthcare needs (Y. Y. Chen et al., 2013; Chu et al., 2009; Taiwan Medical Accreditation Council (TMAC), 2020a).

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

This study highlights the key elements of “setting clear learning goals and active learning approaches” and “fostering medical competencies”, embodying the principles and practices of the competency-based medical education training model (Frank et al., 2010) in the Taiwanese context. In practice, setting clear learning goals provides the roadmap for trainees to acquire the desired essential competencies in “patient-centred care, clinical management, and interprofessional learning and practice”.

However, this thesis demonstrated that the current medical curriculum has not well-prepared trainees for interprofessional learning model in which they learn and work closely with medical teams for collaborative team patient care. Previous literature has also pointed out the barriers in implementing interprofessional learning and practice for collaborative team patient care (Brandt et al., 2018). Crucially, organisational culture in the medical discipline exhibited unfavourable features of hierarchical biases, stereotypical beliefs to other professions, and a lack of mutual understanding, respect, and collaboration readiness (Brandt et al., 2018). It is important to note that CLE might play a key role in determining the effectiveness of interprofessional learning and practice (Brandt et al., 2018; Uhlig et al., 2018). CLE with problem-focused and physician-dominated professional culture would cause hierarchical boundaries and bias to other disciplines of health professions. In contrast, CLE with psychological safety and inclusive culture could generate greater mutual appreciation, deeper understanding, and shared values to overcome the barriers of interprofessional learning and collaborative practice (Brandt et al., 2018; Uhlig et al., 2018). This notion reinforces the crucial roles of the appreciative inquiry model as a central approach and collaborative and non-blaming organisation culture in creating a supportive CLE in this thesis study.

In the Taiwanese sociocultural context, the medical discipline is a highly authoritative profession, and medical students are top-graded and talented among college learners in

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Taiwan (J. Y. Chou et al., 2012; Chu et al., 2009); therefore, this the medical profession's predominant culture would act as a barrier to exert a negative influence on the interprofessional learning and collaborative team care. For example, the Department of Surgery in my institute tends to have had a traditional authoritative culture and hierarchy system. This barrier could make junior trainees feel intimidated and potentially impede trainees' mutual engagement and relationships with teachers, senior colleagues, and medical teams. Another barrier is that it is challenging to incorporate integrated interprofessional learning courses into the already crowded medical curriculum. Curriculum design and implementation for interprofessional learning also require more logistical and administrative coordination with other colleges of nursing, pharmacy, and allied health professions. Medical educators need to redesign the structure of integrated curricula and the process of team-based care through a collaborative organisational culture and cross-discipline conversations (Brandt et al., 2018).

There are potential solutions to facilitate interprofessional learning and practice. Firstly, CLE needs to provide opportunities for medical students to interact with interprofessional students and staff within formal and informal educational settings. Medical educators need to redesign the structure of integrated curricula and the process of team-based care through a collaborative organisational culture and cross-discipline conversations (Brandt et al., 2018). For example, medical trainees need to participate in team-based patient care and joint departmental meetings with interprofessional teams. In this way, trainees could learn from and work with other health professionals in both hospital and community medicine settings. Secondly, the simulation-based medicine training, which forms a caring team of medical, nursing, pharmacy, and other allied health professionals, also provides a safe learning environment to facilitate teamwork and help deal with conflicts among medical teams.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

Furthermore, this study highlights the element of “practice-based assessment” to monitor the progress of trainees’ competencies under the competency-based medical education model. Participants suggest that “practice-based assessment” should link with trainees’ performance in patient care, rather than factual medical knowledge on paper, whereby meeting the summative purpose of assessment for competency-based medical education. Moreover, “constructive feedback” should be specific and accompanied by explanations and suggestions to improve trainees’ performance, rather than general comments or harsh criticism, in meeting their individual levels and needs, whereby meeting the formative purpose of assessment and motivating trainees.

Overall, the findings above support that fostering trainees’ competencies based on the ACGME framework is applicable in the Taiwanese medical context. However, the appropriateness and modification in applying the ACGME framework to the Taiwanese setting need to be considered due to the inherent differences in the CLE, the healthcare system, and sociocultural values (J. Chang et al., 2016).

In sum, this thesis finding asserts that medical institutes should establish learner-centred educational objectives and design a clinical curriculum and assessment system to advance trainees' competencies in meeting the need and change of trainees’ role responsibilities. It is imperative to implement the faculty development programme to enhance teachers’ teaching competence in practice-based assessment and constructive feedback, promote teachers’ professional development and achieve the effectiveness of the interprofessional learning model and team care practice.

### **5.2.3 Sociocultural factors and psychological needs in shaping the mutual engagement and relationships of trainees with teachers and teams**

The psychosocial dimension is a crucial element in constructing the quality of the CLE (Gruppen et al., 2019; Schönrock-Adema et al., 2012). Social interrelationships affect

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

mutual engagement and interactions between trainees and teachers and shape their values and professional identity in a learning community of practice (Wenger, 1999, 2000). Notably, this study points out several critical issues surrounding mutual relationships and engagement. These include (1) Different expectations of a balance between supervision and autonomy through empowerment and entrustment for patient care; (2) Discrepancies between ideals and practice in giving and receiving feedback; (3) Incongruence between teaching styles and learning models.

Firstly, regarding the issue of “different expectations of a balance between supervision and autonomy”, this study demonstrates that, on the one hand, our teachers and senior peers provide proactive supervision with support for trainees in need to ensure their well-being and patient safety. They will decide upon the degree of empowerment and autonomy based on patients’ complexities and trainees’ levels of competence, intrinsic motivation, and learning attitudes. On the other hand, our trainees wish to have more autonomy and more opportunities for learning from the direct practice of patient care to become more independent. They strive to seek more empowerment to meet the psychological need for autonomy and competence based on self-determination theory (Kusurkar, Ten Cate, van Asperen, & Croiset, 2011). This different expectation may cause tense relationships and barriers to mutual engagement between trainees and teachers. It needs to be explored how the quality of the CLE could be affected by cultural orientations towards autonomy, individualism and independence (Chirkov, Ryan, Kim, & Kaplan, 2003) in the Taiwanese context. A previous study also reported that tense relationships would arise when supervisors gave excessive or too-limited autonomy and practical opportunities for clinical tasks relating to trainees’ expectations (Olmos-Vega et al., 2017). In this situation, trainees may have become passive observers when they felt that the learning environment was not supportive and safe (Olmos-Vega et al., 2017). This thesis study stresses the critical point that an ideal

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

CLE should pursue an optimal balance between teachers' supportive supervision and trainees' responsible autonomy through personalised and contextual learning strategies.

Secondly, regarding the issue of "discrepancies between ideals and practice in giving and receiving feedback", the findings show that "constructive feedback" creates a reciprocal positive loop in enhancing trainees' motivation and learning outcomes and promoting teachers' passion and guidance effectiveness. However, this feedback style might have the potential problem that our teachers tend to give positive comments and hesitate to provide honest, critical comments required to improve trainees' competence. Possible explanations include: (1) Teachers might be concerned that honest feedback would lead to trainees' unfavourable ratings according to the current teacher evaluation system in my institute. (2) Teachers might be concerned that honest feedback would impair social relationships with trainees under Confucian cultural values (Ho et al., 2012) and exacerbate the issue of trainees saving face in the Asian sociocultural context (Hofstede et al., 2010). The literature also showed that the institutional culture of politeness, saving face, and the fear of breaking up relationships would cause teachers' reluctance in providing honest feedback and affect trainees' feedback-seeking and acceptance (Ramani et al., 2018).

Another report from Taiwan showed that most of the teachers (around 85%) provided complimentary feedback in a workplace assessment, only half of them (55%) provided suggestions for improvement, and one-third of them (30%) provided mutually agreed action plans for individual trainees (Y. C. Chang et al., 2017). Moreover, junior teachers spent more time giving feedback and gave more practical suggestions for improvement than senior teachers (Y. C. Chang et al., 2017).

Notably, the findings of this study demonstrate trainees' preference for receiving individual feedback privately, instead of group feedback in public. The traditional teacher-centred feedback style may make trainees reluctant to seek feedback. It suggests that teachers

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

need to change their assumption regarding cultural values from collectivism to more individualism in teaching younger generations of trainees (Hofstede et al., 2010). Feedback behaviours might depend on the mutual relationship and trust between trainees and teachers. Previous studies from Taiwan (Chaou et al., 2019; Chaou et al., 2017) also demonstrated that the mutual relationship between trainees and teachers significantly affected their behaviours of seeking and providing feedback. An unfamiliar relationship might make trainees reluctant to seek feedback on their performance voluntarily.

In contrast, a too-familiar relationship between trainees and teachers might impair teachers' objective judgement and hinder them from providing authentic feedback. However, these two studies have the limitation that the data were obtained from a single source, i.e. the emergency department, which could not cover the extensive evidence in measuring the quality of the CLE across the various clinical departments of medical institutes. This thesis study overcomes the weakness of previous studies (Chaou et al., 2019; Chaou et al., 2017) by obtaining data from both trainees and teachers across various clinical departments. This thesis further emphasises the importance of professional relationships, rather than personal social relationships, in building better mutual engagement between trainees and teachers.

Thirdly, this thesis study points out the critical issue of "incongruence between teaching styles and learning models". Both teachers and trainees might not acknowledge such incongruence that could contribute to barriers in the mutual relationships and engagement. On the one hand, trainees wish to have clear learning objectives and instructive guidance for clinical tasks. On the other hand, teachers expect trainees to hold a more active learning approaches, attitudes and responsibilities with regard to their learning, ask questions, and express ideas. Meanwhile, another concern is that teachers feel offended by trainees' judgemental comments in teacher evaluations and the decreasing respect towards teachers.



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

These diverse views on educational beliefs may represent an open culture in my institute that should be respected and valued for an ideal CLE.

In sum, this thesis study highlights the roles of sociocultural factors and psychological needs in shaping the mutual engagement and relationships between trainees and teachers in the Taiwanese context. More cross-talks and mutual trust are required to balance teachers' supervision and trainees' autonomy, deal with the incongruence between learning and teaching styles, and establish a better feedback model with respect to seeking and delivering feedback in aligning with the Taiwanese sociocultural context. These issues raise the need to establish longitudinal relationships and more opportunities for mutual engagement between trainees and teachers. I will describe the action plan of the "Longitudinal Integrated Clerkship" training model (Hirsh et al., 2007; Hudson, Poncelet, Weston, Bushnell, & E, 2017) in section 5.3 to achieve this goal.

### **5.2.4 Collaborative and non-blaming organisational culture in response to clinical workload and uncertainty**

This study highlights a "collaborative and non-blaming organisational culture" as one prominent institutional strength in forming a quality CLE. This "collaborative and non-blaming organisational culture" helps trainees obtain on-site help and collaborative support from team members when facing difficult situations. Moreover, teachers encourage trainees to be brave and try without the fear of making mistakes so that trainees can feel safe to learn and work towards patient care through a learning process of supported supervision in the high-stakes hospital environment. Thus, a "collaborative and non-blaming organisational culture" accords with the need for "psychological safety" (Edmondson et al., 2016), which is crucial for creating an ideal CLE.

Moreover, a "collaborative and non-blaming organisational culture" could be applied to solve stakeholders' uncertainty surrounding the new medical education and training model

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

in Taiwan. According to the international cultural dimensions survey (Hofstede et al., 2010), the uncertainty avoidance index is relatively higher in Taiwan than in Western countries. The higher uncertainty avoidance index may explain the uncertainty and adaptation difficulties faced by trainees and teachers with respect to new medical curricula and training models. Medical schools in countries with a high uncertainty avoidance index faced more challenges in adopting a new integrated medical curriculum (Jippes & Majoor, 2011). This thesis study indicates that a collaborative and non-blaming organisational culture generates psychological safety and encourages stakeholders as change agents to embrace systemic changes as opportunities for innovation and as driving forces in pursuing quality improvement of the CLE. The literature also reported that a supportive internal institutional culture, strong leadership, and visionary change agents were crucial in overcoming resistance to the new medical curriculum and encouraging innovation, collaboration and integration (Jippes & Majoor, 2011).

In sum, this thesis study identifies key elements crucial for the stakeholders of trainees and teachers in response to crucial issues and challenges for medical education and practice in the Taiwanese context. These findings further pose the urgent need to design and implement practical action plans (as presented in section 5.3) to improve the CLE quality and advance educational practice.

**5.3 Actions plans in response to RQ3: “*What are the emerging action plans that could be implemented to improve the quality of the CLE in the local institute and inform medical education practice?*”**

As a practitioner-researcher of the thesis study and in my institute, I am responsible for improving the CLE quality and informing better educational practice based on the research findings and personal reflections on the implications of the findings. Thus, I aim to

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

invite teachers and medical educators as partners to co-design and implement the potential future action plans for the quality improvement of CLE. These action plans should align with the stakeholders' needs, organisational goals, local sociocultural factors, and the medical education system.

### **5.3.1 Action plan #1: “Teacher Development Learning Community” for promoting teachers’ professional development**

This study highlighted the multiple roles of clinical teachers as instructors, facilitators, assessors, and role models in forming an ideal CLE. Clinical teachers were expected to provide the supervision, assess trainees' performance with constructive feedback, and demonstrate professional values and role modelling for trainees in clinical learning and working environment. Constructivism has also asserted that teachers should act as facilitators, coaches and mentors (beyond being information providers) to provide scaffolding (instead of imparting knowledge) (Amineh & Asl, 2015; Kauffman, 2018). Accordingly, a better teacher development programme will be a priority for teachers to foster learner-centred teaching beliefs and teaching competence in promoting their professional development.

I aim to design action plan #1, “Teacher Development Learning Community”, based on the concept of “community of practice” (Wenger, 2000; Wenger, McDermott, & Snyder, 2002). “Teacher development learning community” acts as the bottom-up and collaborative approach to promote teachers' professional development in comparison to the top-down and traditional model of teacher development by lectures and workshops (Steinert, 2010). This action plan #1 emphasises work-based teacher development through a social network in which teachers share common values, experiences and resources, develop teaching beliefs, and create opportunities for driving changes (Steinert, 2010).

The main goals of “Teacher development learning community” are to empower teachers to share responsibilities and experiences in teaching practice, but also provides a

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

platform to perform collaborative projects to improve the quality of the CLE in aligning with stakeholders' needs and organisational development goals (O'Sullivan & Irby, 2011).

### **5.3.2 Action plan #2: Longitudinal Integrated Clerkship (LIC) model for pursuing the continuity of clinical training**

The findings of this study recognised the desired dual goals: ensuring patient-centred care and safety and promoting trainees' professional competencies and development. These goals will be achieved via proactive supervision with support, autonomy with increasing independence and responsibility, and teachers' role modelling. However, the findings pointed out several barriers to these educational objectives. The traditional two-week rotation training model made clerks feel like outsiders or bystanders and caused the problems of fragmented course arrangements and discontinuity in clinical learning and patient care

To overcome these above barriers, I propose action plan #2, "Longitudinal integrated clerkship (LIC)", as a complementary training model in addition to traditional block rotation of clinical training. The LIC training model is based on the organisational principle of "continuity" in patient care, clinical education, and supervision from teachers (R. Ellaway et al., 2013; Hirsh et al., 2007; Hudson et al., 2017). Clerks are expected to take more responsibilities for chronic patient care under clinical teachers' continuous supervision and guidance. In this way, trainees could engage with teachers and patients to understand the holistic medical and psychosocial aspects of patients' illnesses. Still, several challenges for the LIC model need to be considered, such as requiring more time and effort for trainees and teachers, as well as more logistics and administrative resources for the institute.

### **5.3.3 Action plan #3: Empowerment and assessment system for ensuring patient safety and trainees' competencies**

The findings showed that fostering trainees' core competencies should be achieved via more authentic patient care practice amidst a balance between proactive supervision with

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

support and suitable autonomy with increasing independence and responsibility. Moreover, assessment should align with trainees' capabilities and performance to accomplish clinical tasks by integrating medical knowledge, clinical skills, and humanistic professional attitudes.

Thus, I plan to establish action plan #3, "Empowerment and assessment system", based on the principle and practice of "Entrustable Professional Activities", which encompasses comprehensive clinical task-based supervision and assessment (Chen, van den Broek, & ten Cate, 2015; Ten Cate et al., 2015). This action plan #3 aims to set the grading levels in supervision for empowerment and assessment system by which trainees could perform practical clinical tasks to ensure patient safety and rational assessment of trainees' competencies. The grading levels for empowerment and entrustment are shown in Table 5.1.

**Table 5.1 Grading levels of the empowerment and entrustment system for trainees in performing clinical tasks and assessing medical competencies.**

Level	Empowerment and entrustment for patient care	Trainees
1	Observation and simulation under direct supervision	Clerks
2	Under direct and indirect supervision	Junior residents
3	Indirect supervision and independence	Senior residents

Overall, this "empowerment and assessment system" is expected to provide appropriate supervision with support and rational degrees of autonomy in tailoring to the levels of trainees' competencies and the complexity of clinical tasks. This system should fit the current standards of patient safety and legal healthcare regulations in Taiwan.

#### **5.4 Summary**

This thesis has identified enabling factors that would construct the quality of the CLE in connecting with the research questions and responding to the research issues. These findings provide better understandings of the key elements crucial to the Taiwanese sociocultural context. However, this thesis also identified hindering factors that might threaten the quality of CLE. Mainly, the pros and cons of the teacher evaluation system, duty-hour regulation, and simulation medicine training model should be carefully evaluated and re-designed in meeting the stakeholders' needs and institutional development goals.

Based on the study findings and reflections on the related implications, I plan to design and implement the three potential action plans with a collaborative team to meet stakeholders' needs and institutional goals. These include: (1) Teacher Development Learning Community for promoting teachers' professional development; (2) Longitudinal Integrated Clerkship training model for fostering medical competencies in patient-centred care; (3) Empowerment and Assessment System for ensuring patient safety and rational supervision and autonomy. Through these action plans, I hope to generate positive changes towards the quality improvement of the CLE and the advancement of educational practice in my institute and Taiwanese medical society. Future in-depth research is needed to evaluate the long-term effectiveness and impacts of quality improvement of the CLE.

## Chapter 6. Conclusion

This chapter will highlight the significance of identified themes as the key elements in response to the crucial issues and research questions on the quality improvement of the CLE. Next, I reflect on the study limitations and my personal research journey. Finally, I raise the need for setting the directions of future research.

### 6.1 Significance of identified themes as the key elements in response to the crucial issues and research questions

This thesis study identified five key elements in response to the research questions. These interconnected key elements and their relevant significance are highlighted below.

**(1) “Setting a learning community”** creates a sense of belonging and opportunities for participatory practice for patient care through shared experiences and resources. This supportive learning community enables trainees to transform the mindsets and roles of outsiders and passive learners into core members, active learners, and helpers. This learning community practice acts as a foundation in supporting and connecting with other key elements in constructing the quality of the CLE.

**(2) Fostering learning goals and medical competencies:** Within a friendly and respectful learning climate, trainees and teachers communicate learning goals and understand mutual expectations in fostering essential competencies for future safe medical practice, significantly enhancing the capabilities of active learning approaches, patient-centred care, clinical management, and interprofessional learning and practice. However, several barriers to achieving the goals of interprofessional learning and practice have stemmed from the insufficiencies of current medical curriculum design and the inherent medicine-predominance professional culture. It raises the need to redesign the clinical training model to facilitate clinical learning and deliver collaborative team care through mutual respect and opportunities

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

for learning together and from other health professionals (Reeves, Xyrichis, & Zwarenstein, 2018).

**(3) Learning facilitation with supervision and autonomy, assessment and feedback:** The pedagogical strategies of contextual, personalised and peer learning could facilitate clinical learning. Trainees' psychological need for competence and autonomy should be considered and satisfied in achieving a balance between teachers' supervision (with support for patient safety) and trainees' aspiration for autonomy and independence in fostering medical competencies from patient care. The imbalance between supervision and autonomy might cause tense relationships and impede mutual engagement between trainees and teachers (Olmos-Vega et al., 2017). Therefore, teachers are expected to provide practice-based workplace assessment and constructive feedback to evaluate trainees' performance and offer suggestions and instructions to improve their competencies. The degree of supervision and autonomy should align with different levels of trainees' existing competencies. Furthermore, timely assessment and specific feedback need to fit with trainees' individual needs.

Underlying psycho-sociocultural factors, such as emphasising social relationships and saving face, will affect teachers' giving and trainees' receiving honest feedback (Ho et al., 2012; Ramani et al., 2018). Thus, mutual trust and good professional relationships are critical to enhancing the effectiveness of assessment and feedback (Ramani et al., 2019). These factors are closely connected with role modelling (as described in key element 4).

**(4) Role modelling and professional development:** This key element has asserted that clinical teachers are expected to fulfil the roles of facilitators, coaches and mentors beyond being knowledge providers—these teachers' roles accord with the teaching roles of sociocultural learning based on social constructivism theory (Amineh & Asl, 2015; Kauffman, 2018; Ramani et al., 2019). Pedagogies include the hidden curriculum of appreciative inquiry by sharing stories and immersive influence on trainees' professional



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

identity formation and career choices. Moreover, a bonding mentoring relationship will positively affect professional values, commitment to patient-centred care, and passion for teaching. However, the effectiveness of role modelling and professional development might depend on the intertwined influence of organisational culture and systemic regulation (as described in key element 5).

**(5) Organisational culture, systemic regulation, and educational resources:** The element of “a collaborative and non-blaming organisational culture” is crucial in providing psychological safety that might overcome the defensive barriers stemming from the negative mindset and problem-focused professional culture in medicine. This collaborative organisational culture creates psychological safety (Edmondson et al., 2016). This supportive learning environment enables trainees to acquire medical competencies and authentic learning experiences with potential trial and error, as well as helping trainees to adapt to the uncertainties and increasing demands of role responsibility throughout training transitions.

On the element of systemic regulation, duty-hour regulation could reduce the job stress of clinical workloads. However, it has exerted negative effects on training course arrangements and trainees’ learning outcomes. The application of simulation-based medical training might help to solve these deficiencies. This simulation-based medical system enables trainees to practise and master clinical skills in safe and high-fidelity settings. However, this simulation-based medical training could not replace authentic learning experiences for direct patient care to foster the ACGME core competence of interpersonal and communication skills (Swing, 2007).

Overall, this thesis has highlighted the enabling factors for creating a quality CLE. These enabling factors could facilitate undergraduate trainees acquiring essential conceptual, procedural and dispositional knowledge and skills (Billett, 2015). Thus, these positive key

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

elements pose significant implications for medical education, particularly for clinical training from undergraduate to postgraduate phases. Firstly, the key element of setting a learning community provides trainees with a sense of belonging and transform their mindsets and roles from passive observers to active team members for patient care through the community of practice, a social learning process. Secondly, the practical pedagogies facilitate trainees clinical fostering their medical competencies for collaborative team patient care through rational supervision, autonomy, assessment, and constructive feedback. Thirdly, clinical teachers play as facilitators, coaches, and mentors beyond medical experts to promote trainees' professional identity and development. Fourthly, a collaborative and non-blaming organisational culture provided trainees with psychological safety to accomplish the on-the-job training in facing the transition difficulties and higher demands of workload and role responsibility.

Therefore, this thesis has provided insights for stakeholders (trainees, teachers, medical educators) on what should value the strengths of current CLE and how to co-design the potential actions for creating a better workplace learning environment in aligning with the Taiwanese sociocultural context. Accordingly, a supportive CLE and collaborative organisational culture could help undergraduate trainees adapt to critical transitions from pre-clinical students to clinical clerks and to postgraduate junior doctors (Illing et al., 2013; Teunissen & Westerman, 2011; Van Hamel & Jenner, 2015).

## **6.2 Limitations of this study and reflections on the personal research journey**

### **6.2.1 Limitations of thesis study**

Several study limitations should be considered in the current thesis study. These limitations are derived from the specific features of the research context and inherent drawbacks of qualitative research design and methodology. The first limitation stemmed from being a single doctoral student researcher in conducting this thesis study. A single researcher

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

position might carry a blind spot, subjectivity or bias. Moreover, my previous limited qualitative research experience, assumptions, and hidden values may affect the trustworthiness of the qualitative research in the process of data collection, analysis, interpretation and reporting. I strived to follow the following strategies to ensure the trustworthiness of qualitative research on the issues of “credibility, transferability, dependability, confirmability, and reflexivity” (Korstjens & Moser, 2018; Lincoln & Guba, 1985).

To ensure the credibility of thesis research, I immersed myself in the interview data and understood the underlying meanings of the interview data and research context. I collected the data through the purposive sampling of participants and managed the data employing triangulation. As for transferability, I employed the thick description approach (Creswell, 2015; Patton, 2015) to reveal the participants’ meaningful experiences, underlying values, and interrelationship with clinical learning and working contexts.

Regarding dependability and confirmability, I complied with ethical standards and audited the interview data throughout the research process. My supervisors could also act as gatekeepers in monitoring my research process. Concerning reflexivity, I self-reflected on my worldview, assumptions, values, potential bias, and sociocultural factors that may affect the validity of data analysis, interpretation and reporting.

The second limitation was the unequal gender ratio in the study participants derived from a pre-existing higher proportion of male candidate participants in my institute. I acknowledge and accept the fact of unequal gender ratio in the participants' recruitment process because I should respect the autonomy of candidate participants among trainees and teachers to participate in this study. Under the circumstance of the unequal gender ratio of candidate participants, our study participants could still act as the representative informants and play more active roles in the quality assurance of the CLE. Our trainee participants were

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

team leaders, and teacher participants were departmental coordinators of clinical training. Thus, they were expected to understand more about the real world of the CLE to express the authentic voices and relevant inputs and further co-construct the workable action plans for improving the CLE quality.

Crucially, I should be aware that unequal gender ratios in participants might affect the trustworthiness of the results and interpretation of this thesis research. I strive to recruit an equal gender ratio of participants in the future study to ensure objectivity and avoid selection bias.

The third limitation was that interview data come from the relatively few research participants (12 trainees and 12 teachers) and from a single source (i.e. my local institute) in the Asian sociocultural context. Results of interviews depended on participants' personal life experience, presumptions, emotional status and mutual trust between the interviewer and interviewees. The results from our participants' viewpoints at the local institute might not be transferable to other medical institutes in Taiwan and the global context.

However, It should be noted that participants' perceptions could only be considered what they perceive to be facts, not direct evidence of facts (Patton, 2015). Participants' voices and values, which are neither right nor wrong, should be respected when participants tell stories that they believe to be true (Bloomberg & Volpe, 2018) (p. 150).

To enhance the effectiveness of conducting interviews, I designed and conducted the interview protocol based on the established guidelines as follows (McGrath, Palmgren, & Liljedahl, 2019): (1) Understanding the rationale and features of the interview method: An interview, as a data collection tool, aims to explore interviewees' perspectives on subjective experience and values, rather than being general opinion surveys of large groups of participants. I employed individual interviews to allow participants to express voices that might not be heard in the formal surveys. (2) Well-prepared interview protocol: I designed

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

semi-structured interview questions in linking them with the research questions. Then I probed the participants' hidden values ideas by encouraging the participants to express their concerns about the critical issues of current CLE. (3) Building a rapport with participants and considering the interviewees' cultural and power dimensions: I reminded myself to actively listen more and talk less and adjust myself in adapting to unexpected situations. I respected moments of silence and encouraged participants to express their thoughts without pressure.

I honestly address study limitations and the potential impacts of these limitations on the trustworthiness of this qualitative thesis research. Crucially, I need to pay more attention to the minorities of participants to achieve an equal gender ratio of candidate participants in the recruitment process. Furthermore, I am open-minded to choose other potential qualitative research approaches and methods for data collection. The ethnography approach, focus group interviews, and fieldwork observation should also be considered to cross-examine evidence and enhance the research validity. In my future study, I strive to overcome the study limitations. The advantages and disadvantages of various qualitative research approaches and methods should be carefully evaluated and applied to enhance the rigour of thesis research.

### **6.2.2 Reflections on the personal research journey**

Throughout the research journey of conducting this thesis study with a qualitative design, I have gained several insights and research experiences. Firstly, it is an evolutionary process of building my researcher stance, expanding from positivism to social constructivism (Creswell & Creswell, 2017). Such a social constructivism stance enables me to take a different approach to formulating the research questions to explore the social phenomena and interrelationships among the members (trainees and teachers) within the research context (CLE) through qualitative inquiry. This research experience makes me realise the “why” and “how” with regard to conducting qualitative research. It is challenging for me (as a beginner) to conduct qualitative research. Throughout this research journey, I have gradually gained the

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

key concepts and research skills in conducting qualitative research, including the specific features of qualitative research, designing and conducting the interview for collecting data, the thematic analysis steps, the evaluation of trustworthiness, and writing the qualitative report. Still, there is much room for continuous improvement.

Another reflection is the need to consider the strengths and weaknesses of using the Appreciative Inquiry (AI) model (Cockell & McArthur-Blair, 2020; Cooperrider & Whitney, 2005) in this study. My primary educational belief lies in employing the AI model to encourage the stakeholders (trainees and teachers) to express positive learning and teaching experiences and identify the key elements crucial to the CLE. This approach will empower medical educators and teachers to co-design workable action plans to drive quality improvement of the CLE. However, I also need to be aware of the criticism surrounding the AI model, e.g. its overemphasis on the bright side of situations, while ignoring hidden problems. These preconceptions may cause participants to express favourable perceptions (without critical comments) that omit crucial facts and lose the whole picture of truth with regard to the quality of the CLE. Thus, I need to seek an external review and feedback to obtain objective viewpoints.

To this end, I need to employ a critical evaluation approach in applying the AI model to my research context (Grant & Humphries, 2006). This critical AI incorporates critical theory (the concept of scepticism) into the AI model (the concept of inspiration) to generate “productive tension” and pursue balanced views of truth (Grant & Humphries, 2006). I should consider the pros and cons of applying the AI model in this thesis research and call for external critiques. In the interview, I encourage the participants to express their viewpoints in an open atmosphere. In this thesis, I have collected critical comments and suggestions on the real world of the CLE in my institute. I interpreted unexpected data with

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

an open mind and self-reflect upon critical comments as triggers for continuous quality improvement of the CLE.

### **6.3 Directions of future research**

Based on the limitations of this thesis study, I propose that future research enrich the understanding and help construct a better CLE. Firstly, I plan to design the mixed-methods research on the quality of the CLE employing quantitative and qualitative approaches. The mixed-methods approach might help to obtain and cross-examine comprehensive perceptions of the quality of the CLE. A recent study utilised mixed-methods research to explore the fundamental aspects of the CLE across the different health professions (Isba, Rousseva, Woolf, & Byrne-Davis, 2020). This mixed-methods study constructed items based on a literature review of existing quantitative survey tools and students' perceptions of positive and negative CLEs through web-based qualitative data collection and thematic analysis (Isba et al., 2020).

This thesis has obtained qualitative data on trainees' and teachers' perceptions of the current quality of the local CLE. This qualitative data could provide rich information on their diverse viewpoints regarding the quality of the CLE. It is relevant to design the mixed-methods study through the use of a quantitative survey and qualitative inquiry approach to identify specific features and expanded scopes of the CLE in aligning with the Asian sociocultural context; for example, bidirectional interactions and relationships could be specific under the influence of Asian sociocultural factors (Ho et al., 2012; Ho et al., 2011; Yeh et al., 2020). It is relevant to clarify the congruence of values, behaviours and expectations between trainees and teachers.

Moreover, this thesis study has employed the AI model (Cockell & McArthur-Blair, 2020; Cooperrider & Whitney, 2005) as an initial approach to designing the interview

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

questions. However, I have not completed the whole process of the 4-D cycle of the AI model and evaluated the long-term positive effects of the proposed action plans. Crucially, it remains unknown how the trainees and teachers might contribute new ideas and assume more active, agentic roles in shaping the quality of the CLE. Previous studies have proposed that trainees could involve active, agentic engagement with the CLE, linking their motivations and personal goals and values with actions for quality improvement of the CLE (Reeve, 2013; van der Goot, Cristancho, de Carvalho Filho, Jaarsma, & Helmich, 2020). It is worthwhile to accomplish the whole process of the 4-D cycle of the AI model as an action research approach (Cockell & McArthur-Blair, 2020; Coghlan & Brannick, 2014; Cooperrider & Whitney, 2005) to validate the feasibility and effectiveness of the AI model in researching the quality improvement of the CLE.

### **6.4 Summary**

This thesis study has identified five main key elements that would construct an ideal CLE. These key elements are crucial for trainees, teachers and my institute and specific to the Taiwanese sociocultural context. These key elements exhibit implications in response to the emerging crucial issues and challenges relating to the quality of the CLE in Taiwan. It provides significant insights for medical society to enrich understanding the enabling and hindering factors in shaping the quality of the CLE in Taiwan. This study further proposes workable action plans to improve the quality of the CLE and require in-depth investigations to evaluate the long-term effectiveness.

Furthermore, several limitations stemmed from the methodology, and personal research experience should be considered. It requires the researcher's self-reflection to pursue the trustworthiness of this qualitative thesis research. Based on the limitations and personal reflections, I suggest potential future research that might expand the understanding and



## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

generate new knowledge and workable action plans in achieving the goal of continuous quality improvement of the CLE.

In conclusion, this study reveals the enabling and hindering factors in shaping the quality of CLE and highlights psycho-sociocultural factors in mediating mutual engagement among medical teams and the local organisation. Collaborative action plans might provide the potentials to improve the quality of CLE in the local institute and advance better educational practice in Taiwan medical society.

## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

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## QUALITY IMPROVEMENT OF CLINICAL LEARNING ENVIRONMENT

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