



**REFLECTIVE WRITING SKILLS IN MEDICAL
STUDENTS IN UNIVERSITI SAINS MALAYSIA
AND ITS ASSOCIATIONS**

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AND ITS ASSOCIATIONS**

by

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“A journey of a thousand miles begins with a single step”

Lao Tzu

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TABLE OF CONTENT

	Page
ACKNOWLEDGEMENT.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
LIST OF ABBREVIATIONS.....	ix
LIST OF APPENDICES.....	x
ABSTRAK.....	xi
ABSTRACT.....	xiii
 CHAPTER 1 INTRODUCTION.....	 1
1.1 Title of study.....	1
1.2 Background of study.....	1
1.3 Problem statement	2
1.4 Justification of study	3
1.5 Benefit of study.....	4
1.6 Research questions.....	4
1.7 Research objectives.....	5
1.7.1 General objective.....	5
1.7.2 Specific objectives.....	5
1.8 Research hypotheses.....	6
1.9 Operational definition.....	6
1.10 Thesis structure.....	7

CHAPTER 2	LITERATURE REVIEW	8
2.1	Definition of reflection	8
2.2	Theoretical framework on reflection	10
2.3	Reflection: Is it an innate skill or an acquired skill?.....	13
2.4	Reflective writing.....	15
	2.4.1 Reflective writing in medical training.....	16
	2.4.2 Ways to nurture reflective writing.....	17
	2.4.3 Reflective writing assessment.....	20
2.5	REFLECT Rubric.....	21
2.6	Reflective writing and its associations	24
2.7	Reflective writing impact	25
	2.7.1 Personal and professional development.....	25
	2.7.2 Academic and clinical performance.....	25
2.8	Operational definition	27
CHAPTER 3	METHODOLOGY	29
	.	
3.1	Study design.....	29
3.2	Study area.....	29
3.3	Study population.....	30
3.4	Sampling pool.....	30
3.5	Sample size estimation.....	30
3.6	Sampling design	32
	3.6.1 Sampling method.....	32
	3.6.2 Sampling frame.....	32
3.7	Subject criteria	33
3.8	Subject recruitment.....	33
3.9	Research tool.....	34
3.10	Data collection.....	36

3.11	Ethical issue.....	38
3.12	Data analysis	39
3.13	Flow chart of the study.....	40
CHAPTER 4 RESULTS.....		41
4.1	Introduction.....	41
4.2	Demographic data.....	41
4.3	Objective 1.....	43
4.4	Objective 2.....	44
	4.4.1.Age.....	44
	4.4.2 Sex.....	45
	4.4.3 Pre-university education.....	47
	4.4.4 Mini Multiple Interview (MMI) score.....	48
	4.4.5 CGPA first year (2 nd semester)	49
4.5	Objective 3.....	50
	4.5.1 CGPA third year (6 th semester)....	50
	4.5.2 Objective Structured Clinical Examination (OSCE).....	51
4.6	Significant finding.....	52
CHAPTER 5 DISCUSSION.....		53
5.1	Demographic Data.....	53
5.2	Objective 1	53
5.3	Objective 2.....	55
	5.3.1 Age.....	55
	5.3.2 Sex.....	56
	5.3.3 Pre-university education.....	58
	5.3.4 Mini Multiple Interview (MMI) score.....	59
	5.3.5 CGPA first year.....	60

5.4	Objective 3.....	61
5.4.1	CGPA Third year.....	61
5.4.2	Objective Structured Clinical Examination (OSCE).....	62
 CHAPTER 6 IMPLICATION, STRENGTH, LIMITATIONS RECOMMENDATION AND CONCLUSION.....		 64
6.1	Implication of the study.....	64
6.2	Strength of study.....	65
6.3	Limitation of study.....	66
6.4	Recommendation for future research	67
6.5	Conclusion.....	68
 REFERENCES.....		 69

LIST OF TABLES

	Page
Table 2.1	Possible Intervention based on the Johari window..... 19
Table 2.2	REFLECT rubric and its descriptors..... 23
Table 3.1	Sources of secondary data..... 29
Table 3.2	Research tool: REFLECT rubric..... 36
Table 3.3	Statistical analysis based on each study's objectives..... 39
Table 4.1	Demographic profile of the reflective writing documents (categorical variables)..... 41
Table 4.2	Demographic profile of the reflective writing documents (continuous variables)..... 42
Table 4.3	Mean reflective writing score for first-year medical students at USM 43
Table 4.4	Spearman correlations between age and reflective writing skills mean scores..... 44
Table 4.5	The comparison of the mean scores of reflective writing skills with sex using the independent t-test..... 45
Table 4.6	The comparison of the mean scores of reflective writing skills with different pre-university education backgrounds using a one-way ANOVA test..... 47
Table 4.7	Pearson correlations between MMI score and reflective writing scores 48
Table 4.8	Pearson correlations between CGPA 2 nd semester and reflective writing skill scores..... 49
Table 4.9	Pearson correlations between CGPA 6 th semester and reflective writing skill scores..... 50
Table 4.10	Pearson correlations between average OSCE scores of third-year medical students and reflective writing scores..... 51

LIST OF FIGURES

		Page
Figure 2.1	Kolb Learning Cycle	12
Figure 2.2	Conceptual Framework	28
Figure 3.1	Sampling method.....	32
Figure 3.2	Study flowchart.....	40
Figure 4.1	Distribution of students' reflective writing scores for first-year medical students in USM.....	44

LIST OF ABBREVIATIONS

USM	Universiti Sains Malaysia
CGPA	Cumulative Grade Point Average
MMI	Multiple Mini-Interview
OSCE	Objective Structured Clinical Examination
BEGAN	Brown Educational Guide to the Analysis of Narrative
REFLECT	Reflection Evaluation for Learners' Enhanced Competencies Tool
RGT	Reflection Guiding Tool
95% CI	95% Confidence Interval

LIST OF APPENDICES

Appendix A	List of “Stat Trek” Random Generator
Appendix B	Permission Letter from Dean of School of Medical Science, USM
Appendix C	Ethical Committee approval letter (Universiti Sains Malaysia)
Appendix D	Permission Tool from Dr. Wald, the owner of REFLECT Rubric

**KEMAHIRAN MENULIS REFLEKTIF DI KALANGAN PELAJAR
PERUBATAN DI UNIVERSITI SAINS MALAYSIA (USM) DAN
PERHUBUNGANNYA**

ABSTRAK

Semakin banyak kajian mencadangkan peranan amalan reflektif dalam latihan dan amalan perubatan. Salah satu cara untuk memupuk amalan reflektif ialah melalui kemahiran menulis reflektif. Walaupun bukti anekdot telah mencadangkan hubungan antara kemahiran menulis reflektif dan prestasi akademik serta klinikal pelajar perubatan, terdapat kekurangan bukti dalam bidang ini. Justeru, kajian ini bertujuan untuk menentukan tahap kemahiran menulis reflektif dalam kalangan pelajar perubatan di Universiti Sains Malaysia (USM) dan perkaitannya dengan faktor demografi, dan prestasi akademik serta klinikal.

Sebanyak 420 dokumen penulisan reflektif pelajar perubatan tahun satu USM dari sidang akademik 2020/21, 2021/22, dan 2022/23 telah dikumpul, dan sebanyak 350 (83.3%) dokumen telah dipilih melalui persampelan rawak mudah. Dokumen ini telah disemak oleh sekumpulan penilai dengan menggunakan *Reflection Evaluation for Learners' Enhanced Competencies Tool* (REFLECT), sebuah rubrik analitik yang dibangunkan untuk menilai kemahiran menulis reflektif pelajar. Skor tersebut kemudiannya dianalisis bersama data demografi yang relevan iaitu umur, jantina, pendidikan pra-universiti, markah *Mini Multiple Interview* (MMI), dan Purata Nilai Gred Kumulatif (CGPA) semester kedua dan keenam serta markah Peperiksaan Klinikal Berstruktur Objektif (OSCE). Analisis telah dijalankan menggunakan

independent t-test, korelasi *Pearson* atau *Spearman*, dan *one-way ANOVA* menggunakan SPSS versi 27.0.

Purata jumlah skor penulisan reflektif untuk pelajar perubatan tahun satu ialah 15.21 daripada 20 (SD = 2.18). Pelajar perempuan juga mendapat skor penulisan reflektif yang jauh lebih tinggi dalam memberi perhatian kepada emosi (M = 3.22, SD = 0.59) berbanding pelajar lelaki (M = 2.81, SD = 0.68); $t(-5.67)$ df (348), $p < 0.001$. Keputusan menunjukkan korelasi positif yang lemah tetapi signifikan di antara PNGK tahun pertama (semester kedua) dan beberapa domain refleksi, termasuk spektrum penulisan ($r(348) = 0.18$, $p = .029$), penceritaan konflik ($r(348) = 0.18$, $p < .001$), dan memberi perhatian kepada emosi ($r(348) = 0.14$, $p = .006$), analisa dan penciptaan makna ($r(348) = 0.24$, $p < .001$), serta skor keseluruhan penulisan reflektif ($r(348) = 0.21$, $p < .001$). Tidak terdapat perkaitan yang signifikan antara umur, pendidikan pra-universiti, markah MMI, CGPA semester enam dan markah OSCE dengan kemahiran menulis reflektif.

Kesimpulannya, dapatan kajian menunjukkan bahawa kemahiran menulis reflektif dalam kalangan pelajar perubatan di USM dipengaruhi oleh jantina, dan mempunyai kaitan yang signifikan dengan prestasi akademik. Walaupun ia tidak meramalkan prestasi klinikal, memupuk kemahiran menulis reflektif harus diutamakan kerana ia menyumbang secara positif kepada kejayaan akademik pelajar dan berpotensi untuk meningkatkan pertumbuhan mereka sebagai pengamal reflektif dalam bidang perubatan.

Kata kunci: refleksi, penulisan reflektif, pelajar perubatan

REFLECTIVE WRITING SKILLS IN MEDICAL STUDENTS IN UNIVERSITI SAINS MALAYSIA AND ITS ASSOCIATIONS

ABSTRACT

Reflective writing skills among medical students across many countries still showed limited competency in this area. However, cultivating these skills during medical training is crucial for developing good reflective practices among physicians. Previous studies have shown that reflective writing skills impact medical students' academic and clinical performance. This study aims to determine the level of reflective writing skills among medical students at Universiti Sains Malaysia (USM) and its associations with demographic factors, and academic and clinical performance.

A total of 420 reflective writing documents were analysed using SPSS version 27.0, with 350 (83.3%) of the documents being randomly chosen for the study. The selected documents were sourced from first-year medical students in the batches of 2020/21, 2021/22, and 2022/23. These documents were graded by raters using the REFLECT rubric tool, designed to address the challenge of assessing these written reflections. The REFLECT rubric provides a systematic framework for the assessment of reflective writing skills, facilitating a comprehensive evaluation of this competency among medical students in USM.

The demographic data collected included age, sex, pre-university education, Mini Multiple Interview (MMI) scores, and Cumulative Grade Point Average (CGPA) of the second and sixth semesters as well as Objective Structured Clinical Examination (OSCE) scores. The main outcome measured was the reflective writing score, which underwent descriptive statistical analysis to ascertain the correlation between each

variable and reflective writing skills. Age was analysed using Spearman's correlation, sex was analysed using an independent t-test, and pre-university education was analysed using one-way ANOVA. MMI scores, second and sixth-semester CGPAs, and OSCE were analysed using Pearson's correlation.

The average total reflective writing score for first-year medical students was 15.21 (SD = 2.18). Female students reported significantly higher total reflective writing scores (M = 15.42, SD = 2.19) and "attending to emotion" scores (M = 3.22, SD = 0.59) compared to male students (M = 14.71, SD = 2.09, and M = 2.81, SD = 0.68, respectively). The results revealed significant correlations between the first-year CGPA and several domains of reflection, including writing spectrum, description of conflict, and attending to emotion, analysis, and meaning-making, as well as overall reflective writing score

The study found that reflective writing skills among medical students at Universiti Sains Malaysia were normally distributed. While age, pre-university education, and MMI scores were not significantly associated with reflective writing abilities, sex, and first-year CGPA emerged as significant factors. Female students demonstrated significantly higher reflective writing scores, particularly in the "attending to emotion" domain, compared to their male peers. Furthermore, the results revealed positive correlations between reflective writing scores and academic performance, as measured by first-year CGPA, with higher CGPAs linked to better reflective writing skills.

In conclusion, the findings suggest that reflective writing skills among medical students at USM are influenced by sex, and these skills have a significant role in academic performance. Since reflective writing is a crucial skill for future doctors, measures should be taken to address potential sex-based differences in the

development and execution of reflective writing courses. Moreover, fostering reflective writing skills should be prioritized as it contributes positively to students' academic success and has the potential to enhance their growth as reflective practitioners in the medical field.

Keywords: reflection, reflective writing, medical students

CHAPTER 1

INTRODUCTION

1.1 Title

Reflective Writing Skills in Medical Students in Universiti Sains Malaysia (USM) and Its Associations.

1.2 Background of study

Reflection acts as a model for deep learning and fosters the development of lifelong learning (M. H. Ahmed, 2018). The skill to reflect on one's performance is crucial as it is an essential component of the professional development of medical students and practitioners worldwide (Koshy et al., 2017). The most effective method for promoting reflection is through reflective writing (Farrah et al., 2012). It is about writing experiences, intending to develop learning and growth through reflection. It involves a detailed process of reconsidering an experience, which is then analysed in various components (Arumugam et al., 2017). It should be a skill that is developed over the course of training as students need exposure to various levels of reflection before they can appreciate the value of reflective practice (Veine et al., 2020).

Reflection practice in medicine undoubtedly offers numerous benefits (Lim et al., 2023). Therefore, there has been a call to incorporate reflection early on (Ottenberg et al., 2016). In the Universiti Sains Malaysia (USM) undergraduate medical curriculum, first-year medical students are required to submit reflective writing as part of their continuous assessment in the “Medical Professionalism” course to encourage the early adoption of this practice (Gishen et al., 2022). Hence, underpinning Kolb's

experiential cycle of reflection, this study aimed to determine the reflective writing skills in first-year medical students and its association with sociodemographic factors (Raghavan et al., 2013; Fassett et al., 2022), academic and clinical skills performance (Akturan et al., 2023; Radović et al., 2023). This evaluation will provide an early insight into the development of evidence-based reflective practice training and how can it support students' performance in their clinical years (Aziz et al., 2020).

1.3 Problem statement

Reflective writing is considered a valuable tool that helps to enhance reflective skills for the application of reflective practice. Engaging in reflective writing acts as a documentation of meaningful learning experiences, potentially leading to transformation for the reader (Liu et al., 2021). However, there is a limited understanding of the unique aspects of reflective writing and how to effectively educate and engage students in this practice, which may be due to the lack of emphasis on developing reflective writing skills at the beginning of medical training programs (Ottenberg et al., 2016). The insufficient correlation data between reflective writing skills and important demographic variables may lead to a lack of personalized or appropriate reflection practices (Geok et al., 2019).

Despite the numerous benefits of reflective writing in medical training, there exists a relatively unexplored relationship between reflection, as demonstrated by reflective writing, and academic and clinical performance in the course of medical training (Griggs et al., 2018; Wolkenstein, 2015). Understanding the distinct features of reflective writing remains limited, as well as how educators can effectively guide and engage students in this practice (Radović et al., 2023). In summary, although the

significance of reflective writing in medical training is recognized, there is a lack of comprehensive understanding, empirical evidence, and established associations to guide the successful integration and implementation of reflective writing practices within medical curricula (Akturan et al., 2023).

1.4 Justification of study

Despite the significance of reflective writing in their future practice, medical students still showed limited competency in this area. For example, Hastami et al., (2018) observed a normal distribution of reflective writing skills abilities among undergraduate medical students. To inculcate reflective practice from the early stages of medical training, it is necessary to adopt formal instructions. Hence, a study to ascertain students' reflective writing skills is desirable to identify areas of focus to guide faculty members (Aronson et al., 2011).

Demographic factors have been associated with reflective writing skills and these findings could help educators tailor their instruction methods when teaching reflection more effectively to different groups of students (Fassett et al., 2022). Some scholars suggest that carefully examining and understanding the associations between demographics and reflective capabilities can improve educational practices and research in this area (Farrah, 2012). Besides, reflective writing is associated with academic and clinical achievement, suggesting that enhancing these skills can improve future performance (Akturan et al., 2023). A study conducted by Holder et al., (2019) demonstrated how the reflective learning technique helped underperforming medical students comprehend and address their academic failures. Therefore, the study to

investigate the link between reflection writing skills and performance is needed to inform medical schools about possible interventions in supporting weak students.

1.5 Benefit of study

Cultivation of reflective writing skills is crucial in preparing medical students to become reflective physicians once they enter the workforce (Akturan et al., 2023). As this study aims to determine the reflective writing skills among first-year medical students at USM, it will inform the medical school on areas of intervention for its future reflective writing module in medical training.

Furthermore, understanding in association of reflection writing skills with demographic factors, and academic and clinical performance may inform medical curriculum in customization and enhancement of educational experience. The findings will also open more possibilities for future research to examine how students who struggle in academic and clinical may benefit from elements of reflective writing such as self-awareness and evaluation of actions.

1.6 Research questions

1. What is the level and skills of reflective elements in first-year medical students' writing assignments using the REFLECT rubric?
2. Is there any relationship between reflective writing skills scores with age, sex, pre-university education, multiple mini-interview (MMI) scores, and cumulative grade point average (CGPA) in first-year medical students in USM?

3. Is there any significant association between first-year reflective writing skills scores and third-year CGPA and clinical skills performance (OSCE marks) for first-year medical students in USM in the academic year 2020/2021?

1.7 Research Objectives

1.7.1 General

To evaluate the reflective writing skills of first-year medical students and their associations with demographic factors, pre-university education, and academic performance indicators at Universiti Sains Malaysia (USM).

1.7.2 Specific

- **Objective 1:** To assess the level and skills of reflective elements in first-year medical students' writing assignments using the REFLECT rubric.
- **Objective 2:** To investigate the relationship between reflective writing skills score with age, sex, pre-university education, multiple mini-interview (MMI) scores, and cumulative grade point average (CGPA) in first-year medical students in USM.
- **Objective 3:** To identify the association between first-year reflective writing skills score and third-year CGPA and clinical skills performance (OSCE marks) for first-year medical students in USM in the academic year 2020/2021.

1.8 Hypothesis

1. The reflective writing skills among first-year medical students in USM are normally distributed (Hastami et al., 2018).
2. There is a relationship between reflective writing skills scores with age, sex, pre-university education, MMI scores, and CGPA in first-year medical students in USM (Raghavan et al., 2013; Farrah et al., 2012).
3. There is a significant association between first-year reflective writing skills score and third-year CGPA and clinical skills performance (OSCE score) for first-year medical students in USM in the academic year 2020/2021 (Akturan et al., 2023).

1.9 Operational definition

- (a) Reflection:** A careful examination and bringing together of ideas to create new insight through ongoing cycles of expression and re-evaluation (Marshall et al., 2019).
- (b) Reflective writing:** Writing in which the writer thinks about a personal experience to learn more about themselves and/or grow professionally (Kathpalia et al., 2008).
- (c) Reflective writing skills:** Skills of analysing their own experience to improve the way they learn. It is more than just writing information or describing an event; a full description of the dilemma and conflict of an issue of concern that

involves the presence and emotional component to reach a better clarification and comprehensive meaning-making (Wald et al., 2012).

(d) Cumulative Grade Point Average (CGPA): CGPA is one of the measurements of overall student achievement in the entire course duration. A CGPA is normally a single-digit representation and can range from 0 to 4.0 in USM. Its calculation takes into account grade points and credit hours. CGPA in USM is divided into CGPA of overall courses (including language, ethnic, and entrepreneurship courses) and CGPA of medical courses. This study uses CGPA of medical courses to better reflect their academic achievement in medical training.

(e) Objective Structured Clinical Examination (OSCE)

OSCE is one of the clinical assessment tools and is commonly used to assess students in an examination setting. OSCE utilizes several stations, allowing assessment of various competencies and reflecting more reliable student clinical performance in comparison to short and long cases. It employs standardized patients to provide realistic clinical encounters, allowing for the assessment of history taking, physical examination, communication skills, and clinical reasoning. Each station is typically brief, lasting around 5-15 minutes, with clear instructions and predefined assessment criteria to ensure consistency and objectivity in the evaluation (Harden et al., 2015).

(f) Multiple Mini Interview (MMI)

The multiple mini-interview (MMI) is a structured assessment method consisting numerous brief stations designed to evaluate a wide range of cognitive and non-cognitive skills. The MMI's primary advantage lies in its

ability to reduce the effects of chance and interviewer bias through the use of multiple, independent assessments. Unlike traditional interview formats, the MMI ensures that ratings for diverse discussion points are assigned autonomously, as interviewers engage applicants in separate rooms. This format allows for a comprehensive and objective evaluation of candidates across multiple competencies, providing a more holistic assessment of their suitability for the intended program or position (Eva et al., 2004).

1.10 Thesis structure

This thesis comprises six chapters in total. Begin with an Introduction, followed by a Literature Review, Methodology, Data Analysis, Discussion, and Conclusion. It ends with references and relevant appendices.

CHAPTER2

LITERATURE REVIEW

2.1 Definition of reflection

Reflection, derived from the Latin word, embodies the concept of "turning back" and serves as a metacognitive process for self-awareness to foresee future consequences (Mann et al., 2009). Throughout our lives, individuals encounter numerous situations that are ambiguous, perplexing, intricate, and unstable, resulting in unpredictable outcomes and conflicting objectives. Hence, engaging in a simple act of reflection helps people to become cognizant of underlying assumptions. It involves actively participating in an event, reflecting on what occurred, and extracting valuable insights from the encounter (Wain, 2017).

Before the 20th century, scholars defined reflection as a careful consideration to explore one's personal experience, interpret it, and give meaning to the experience. Boud, (1985) proposed a conceptual framework that encompasses seven stages to evaluate the reflective process in journals and blogs. Boud's seven stages of reflection include: engaging in an experience, recalling and describing the experience, recognizing and managing associated emotions, analysing the experience's significance, drawing conclusions, applying new insights to modify future behavior, and testing new approaches in practice (Fuks et al., 2009).

Then, Mezirow, (1991) proposed a three-level classification for assessing reflection; Non-Reflective, Reflective, and Critical Reflection level (Mezirow, 1991). At the basic level of non-reflective, individuals simply recount or describe an experience or task without any analysis, critique, or deeper examination. It is a surface-level narration of what occurred. Then, for the Reflective level, individuals move beyond mere description by consciously analysing and providing reasons, justifications, or elaborations on their experiences. They attempt to

explain or provide a rationale for their actions or the events that unfolded. Lastly, in the critical reflection level, which is the highest level, individuals critically question and examine their beliefs, assumptions, values, biases, and the validity of prior learning that shaped their understanding of the experience. It requires a deliberate evaluation of how they have interpreted and perceived the situation, often considering alternative viewpoints (Mezirow, 1991).

Subsequently, these two frameworks have later been combined to enhance the comprehension of the reflection construct (Mann et al., 2009). Several studies have employed a combination of the Mezirow model and the Boud frameworks and proposed that reflection can include seven steps. In the initial step, one does not attempt any reflection. In the second to fourth steps, individuals acquire new insights and a deeper comprehension. In the final three steps which represent critical reflection, one goes even deeper by identifying dilemmas that an individual has previously contemplated (Daryazadeh et al., 2020).

Afterward, the definition evolves with a broad application of reflective practice worldwide. It is a critical, deliberate process of engaging the experience that activates a person's cognitive and emotional capacities toward meaning-making to inform and improve practice (Sandars et al., 2009). In simpler words by Kolb, (2014), it is an internal transformation of experience (Morris et al., 2020). The recent definition proposed by Marshall et al., (2019) in their systematic review is a careful examination and bringing together of ideas to create new insight through ongoing cycles of expression and re-evaluation.

2.2 Theoretical framework on reflection

There are various reflection models and frameworks that explain reflective thinking (Varpio et al., 2020). These include Driscoll, (1990) introduced the three-stage model of reflection based on Borton, (1970) work "What?", "So what?", and "Now what?". The initial phase begins with a comprehensive depiction of the experience to gain a thorough understanding of the situation. This will present a clear understanding of "What" we are dealing with. Subsequently, there is a period of reflection, wherein we examine the experience and strive to derive knowledge from its outcomes. This involves asking further questions such as "So what? - what have we learned as a result of the experience? Finally, this leads to taking action, where we choose to either enhance or adhere to our previous beliefs and behaviors – "Now what?". This will result in changes being made or no change at all (Borton, 1970).

Gibb's reflective cycle is another commonly used framework that highlights the principle of learning by doing. It consists of six stages, starting with capturing and describing the experiences being reflected on (Li et al., 2020). It focuses on evaluating the experience, whether it is a good or bad feeling - analysing the situation and making sense of it. This analysis will result in a conclusion about what other action we could have taken to reach a different outcome. The final stage involves building an action plan of steps that one can take the next time when finds oneself in a similar situation. However, according to a study by Ryder & Downs, (2022) , the cycle is too descriptive in nature as it only emphasizes reflection and doesn't look beyond the scope of the event itself. In healthcare practice, it is argued that this framework is useful to prepare practitioners to encounter similar events that they have experienced before (Ezezika & Johnston, 2023).

On the other hand, Wijnen-Meijer et al., (2022) emphasize Kolb's experiential learning cycle as one of the most effective models for enhancing the learning experience of medical students. The learning cycle consists of four main phases, namely concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984; Morris et al., 2020). Kolb (1984) proposed that learning begins with a real experience where an individual actively engages in a situation or task (Concrete experience). Next, the individual should reflect on what had happened, consider their experience from various perspectives, and focus on the feelings elicited by the experience (Reflective observation). In the following phase (Abstract conceptualization), individuals make sense of their observations by analysing them and seek to understand the underlying principles, patterns, or theories that explain the experience. Finally, individuals apply what they have learned from their reflections and conceptualizations by experimenting with new approaches or behaviors (Active experimentation). They test out their ideas in practical situations, seeking to modify their behavior based on the insights gained from the learning cycle (Kolb, 1984).

In a small-scale study by Wijnen-Meijer et al., (2022) the integration of Kolb's experiential learning cycle in the Family Medicine clerkship was highly valued by the students. Students encountered real patients in practice, described the experience in a seminar, and linked the cases with theory, and applied the lesson in a simulation session.

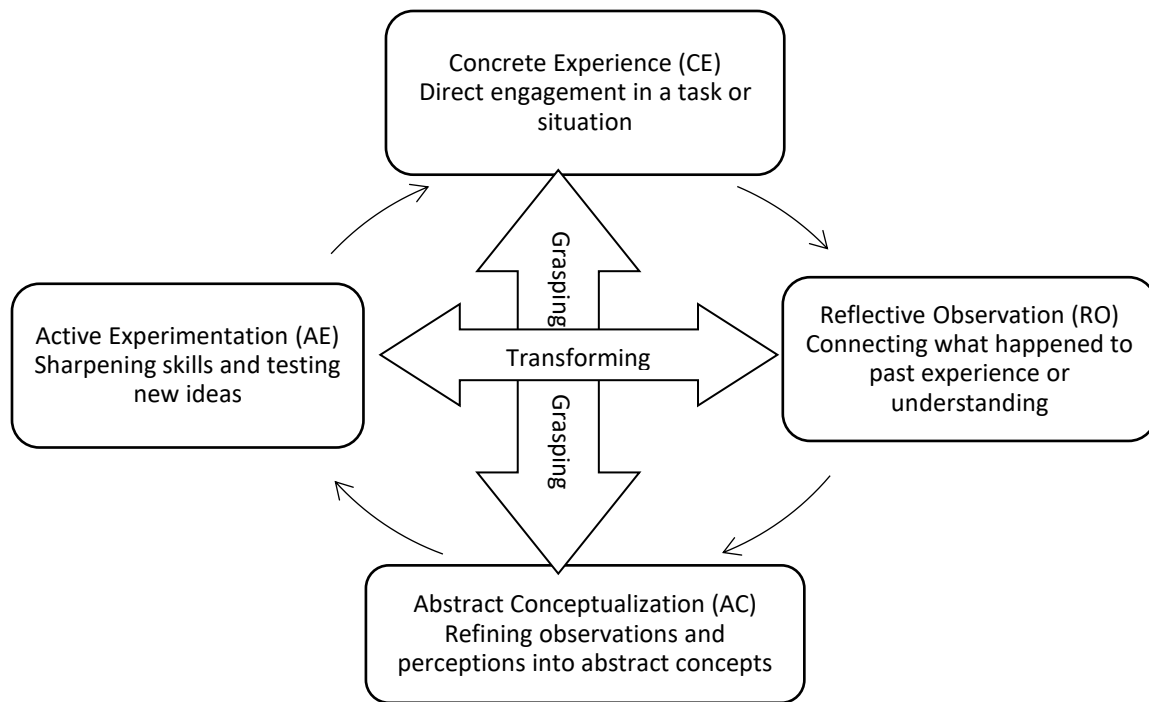


Figure 2.1: Kolb learning cycle

To date, Egan et al., (2023) proposed a framework that builds upon Kolb's experiential learning theory, emphasizing the continuous and lifelong nature of learning. Unlike Kolb's original cycle, which focused on a structured, time-bound approach, Egan's framework recognizes the significance of past and future learning phases that extend beyond formal learning environments (Egan et al., 2023).

While previous applications of the Kolb cycle focused on formal education, the Egan et al., (2023) framework gained relevance in helping professions like counseling and therapy. It aligns with the therapeutic relationship by prioritizing client-centeredness, goal orientation, and ongoing evaluation. The framework accounts for clients' past experiences and future growth trajectories, enabling a more personalized and holistic approach to support their learning journeys within the therapeutic context.

2.3 Reflection: Is it an innate skill or an acquired skill?

Despite the growing recognition of reflection's importance, the argument regarding whether it is an innate or an acquired skill is still a continuous debate. Kāposta (2015) proposed that reflection is not an innate skill, but an acquired skill that could be adopted through multiple training on various approaches to reflection. Stefl-Mabry et al., (2012) supported that reflection is a process of doubt, hesitation, and perplexity that undergoes an act of investigation to defend or disagree with certain assumptions. Ixer, (2016) on other hand, did not conclude whether reflection is an innate or acquired skill. Instead, they proposed a wider application usage of the concept of reflection itself. They proposed broadening the conceptualization of reflection beyond just a measurable skill. Instead, it should be viewed as an individually developed process linked to one's moral reasoning, values, and virtuous thinking. Rather than rigidly assessing reflective outputs, the focus should be on fostering students' ability for self-evaluation of their reflective processes as part of ethical critical thinking development. The wider application suggested is using reflection as a tool for enhancing reflective practice from a virtuous, moral reasoning standpoint, not merely a technical skill to be performed better (Ixer, 2016).

In addition, more studies proposed reflection skills can be acquired. For example, Veine et al., (2020) reported that at the early stage of reflective practice, most of the students are often superficial and merely descriptive in their reflections. Through the cycle of reflection and practice, the reflection skills can be cultivated and enhanced. This is supported by Kadam et al., (2020) who mentioned four levels of reflection: habitual action, introspection, reflection, and critical reflection (highest level). At the beginning of the initial reflection, 65% of the students comprehended the reflection. By the conclusion of the fourth reflection, each student had a clear understanding, reaching a higher level of reflection. Among them, 33% achieved the second level of reflection (introspection) and 11% reached the third level (reflection).

However, none of the students succeeded in attaining the highest level of critical reflection by the end of the fourth reflection. This suggests that reflection in students is a skill that needs to be acquired through formal training and guidance in composing reflections. It requires time to sensitize medical students and aid them in cultivating the art of reflective writing.

Moreover, in another study discussing the levels of reflection in residency training and medical students Wald & Reis, (2010) proposed that a low level of reflection does not necessarily mean that reflecting on one's thoughts and actions is an innate skill. They argued that education intervention is needed to improve this skill. Further suggestions include individualized faculty feedback, either through interview discussion or written form to improve the level and efficiency of reflections. Siraj, (2013) showed that analysing films and comparing reflective writing can improve the quality of reflective writing. On the other hand, Radović et al., (2023) used prompts focused on understanding reflection theory, applying it in practice, and following scientific reporting standards. This prompt intervention could enhance the complexity and quality of reflective writing, potentially leading to better academic results. Besides, a shift has been made from an intuitive-type approach to a more initiative that is based on theory and evidence. This change has been implemented by providing practical, structured, and written feedback on learners' reflective writing.

An extensive amount of research has been conducted on this matter, including The Brown Educational Guide to the Analysis of Narrative (BEGAN), which serves as a model for educators to offer valuable feedback aimed at enhancing reflective writing (Reis et al., 2010). BEGAN achieved this by incorporating thought-provoking inquiries that foster introspection, the sharing of personal and clinical experiences, and the examination of key takeaways from those experiences (Reis et al., 2010). These findings further supported that while reflection may be an innate skill, it is also a skill that can be nurtured through training and intervention.

2.4 Reflective writing

Reflective writing refers to the act of writing descriptively and analytically about one's experiences and interactions (Lim et al., 2023). It involves recollecting and appreciating past lessons to assist professionals in adapting to new circumstances. This process includes expressing personal reactions and interpretations, providing individuals with an opportunity to make sense of their accomplishments, mistakes, worries, and anxieties, which would otherwise appear disjointed and meaningless (Artioli et al., 2021).

Reflective writing prompts individuals to reflect and become self-aware, leading to skills enhancement, professional growth, and the ability to adapt to change (Olmos-Ochoa et al., 2021). It also fosters empathy and sensitivity towards one's own emotions and the emotions of others. Reflective writing has been utilized in various sectors such as business and management, engineering, and other departments. Recently, it has gained wider attention in the health and medical profession. Within a medical context, reflective writing refers to health professionals and students engaging in written reflection on their experiences, thoughts, and emotions to learn and develop (Artioli et al., 2021).

As the interest in reflective capacity grows among medical educationists and medical curriculum designers, various initiatives of reflective writing have been explored. Described initiatives on reflective writing aimed to improve communication skills, develop competencies in ethics, culture, and empathy, enhance patient-centered care, and refine clinical decision-making skills (Ament et al., 2020). A typical approach involves utilizing reflective journals, portfolios, logs, and online systems. Plack, (2005) explored the use of reflective journals in a Family Medicine clerkship at Wright State University. Students engaged in weekly reflections in journals regarding their patient interactions, challenges encountered, insights gained, and lessons learned (Cook et al., 2023).

Meanwhile, Bernard et al., (2012) utilized guided reflective logs during an Ambulatory Medicine rotation. Students responded to guided prompts in written logs regarding their emotional responses to clinical scenarios and observed professionalism lapses and diagnostic mistakes. These logs support reflection and were evaluated by faculty members. Aronson, (2011) introduced an online platform named "Reflection-in-Action" at the University of Michigan Medical School. Students shared written reflections on professionalism challenges faced during clerkships. These reflections are examined by faculty members who offer feedback to enhance students' reflections.

2.4.1 Reflective writing in medical training

Reflective writing acts as a documentation of significant, potentially transformative learning for the reader (Liu et al., 2021). The incorporation of reflective writing in the medical curriculum, such as through portfolios, video essays, and interactive reflective writing, has supported faculty in providing effective feedback to enhance learners' reflective skills development (Donohoe et al., 2022).

Reflective writing is increasingly recognized as a way to promote metacognitive awareness and learning transfer. In medical education, it is also proposed as an effective means to encourage self-reflection and self-directed learning (Olex et al., 2020). It is seen as a valuable tool that aids in the development of reflective skills and the application of reflective practice. However, there is still a limited understanding of the distinctive characteristics of reflective writing and how faculty members can effectively engage with students in reflective writing, especially in the provision of feedback (Griggs et al., 2018; Wolkenstein, 2015). Kadam et al., (2020) in their study observed that the provision of formal guidance and prompts for writing reflections over time could enhance medical students' awareness of the significance of reflective writing and contribute to the development of these skills.

The relationship between reflection and academic as well as clinical performance in medical training, although said to have benefits, has not been thoroughly investigated (Olex et al., 2020). However, studies on related constructs have suggested the role of reflective writing in academic performance. For example, Bansal et al., (2020) scrutinized the association between learning approaches and academic achievement in medical students and discovered that those students who had a lower level of academic achievement primarily relied on the surface approach to learning, which potentially impacted their academic success. Hamdy Nasr Abdelhalim et al., (2023) highlight the importance of adopting a deep learning approach, as it fosters the development of critical thinking and reflective thinking skills. Otherwise, a surface approach to learning was associated with a lack of reflective thinking and poorer academic performance.

Furthermore, the study by Takase & Yoshida (2021) found a significant negative correlation between a surface approach to learning and academic achievement. This finding suggests that students who primarily rely on surface-level memorization and reproduction of information tend to perform poorly academically compared to those who adopt a deep approach to learning (Takase & Yoshida, 2021). However, evidence on the relationship between reflective writing and cognitive and skills performance among medical students in clinical years is scarce and evidence is needed to guide faculty members on reflection teaching. Evidence proposed that engaging in reflective writing has the potential to encourage profound introspection and contemplation when faced with challenging situations (M. H. Ahmed, 2018).

2.4.2 Ways to nurture reflective writing

Various strategies can be implemented to foster reflection. At the individual level, learners must be encouraged to be proactive in seeking feedback (Ramani et al., 2017). However, the literature summarized more strategies at the institutional level. This may involve creating an environment that encourages reflective learning or offering specific courses to bridge the gap between theory and practice (Brand et al., 2016). Liu et al., (2021) recognized that the most effective method to facilitate reflection in medical practice is through reflective writing and they proposed the integration of reflective writing into the formal medical curriculum, especially during the initial years of training. Based on a grounded theory study with faculty members and residents, Ramani et al., (2017) have proposed a list of possible strategies based on the Johari window.

Table 2.1: Possible intervention based on the Johari window (Ramani et al., 2017)

Quadrant 1 - Behaviours known to learners and faculty members • Institution set clear expectations on reflective practice • Institution provides training on reflective practice • Faculty members facilitate reflection • Faculty members validate learners' reflection	Quadrant 2 - Behaviours unknown to learners but known to faculty members • The institution provides training to faculty members • Institution promotes feedback-seeking behaviour • Learning environment promotes learning goal orientation
Quadrant 3 - Behaviours known to learners but unknown to faculty members	Quadrant 4 - Behaviours unknown to learners and faculty members

• Faculty members affirm commitment to learners • Faculty members engage in goal-directed feedback • Institution promotes longitudinal relationship	• Learning environment promotes self-discovery • Multi-source feedback
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Research has also explored how reflective writing can be facilitated. For example, Donohoe et al., (2022) examined a pilot reflective writing program that was delivered during a four-week psychiatry clerkship. Students were provided with weekly writing prompts, and their reflective writing assignments were assessed using the Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT) rubric as devised by Wald et al., (2012). The findings reported that medical students who participated in this reflective writing course had a significant increase in their reflective writing scores. This study also suggested that a relatively short, four-week reflective writing program, can enhance reflective capacity in medical students as part of the Psychiatry clerkship.

In another study, Dalal et al., (2012) examined 1,456 reflections submitted by 324 e-Portfolio users. The reflections varied significantly in depth. Nine raters utilized a rubric consisting of 6 levels to consistently evaluate the depth of reflection, showing a high intraclass correlation of 0.946. However, the mean maximum depth rating was just over 1 on a 0-5 scale, indicating students were not able to demonstrate deep reflection without specific guidance. The researchers concluded that, overall, the depth of reflection tended to be superficial unless prompted to engage in deeper reflection (Dalal et al., 2012).

2.4.3 Reflective writing assessment

Reflective writing assessment is a method used to evaluate the depth, quality, and level of reflection demonstrated in students' written reflections (Lim et al., 2023). Researchers have developed various approaches to assess the quality and depth of reflections in students' written logs, journals, and assignments across disciplines such as education, medicine, and business. Assessing the quality and depth of students' reflective writing has also been an area of focus for researchers across various disciplines (Olex et al., 2020). The approaches employed have evolved, with each study building upon the previous ones, contributing to a more comprehensive understanding of effective assessment methods.

One of the early approaches, as highlighted by Thorpe, (2004) involved using content analysis methods to evaluate the quality and depth of reflections in students' written logs and journals, particularly in teacher education programs (Alt D et al., 2022). This method provided a foundation for understanding the elements that constitute meaningful reflective writing. Building upon this, Plack, (2005) introduced the use of rubrics specifically designed to assess the depth of reflection exhibited in students' written journals. These rubrics provided a structured framework for evaluating the level of reflective thinking displayed in students' written work, enabling a more systematic and consistent assessment approach (Cook et al., 2023).

A significant milestone in this area was the modified reflective writing assessment framework introduced by Kember et al., (2000). This framework introduced four distinct levels of reflection: habitual action, understanding, reflection, and critical reflection. The habitual action level represents a superficial level of reflection, where students only describe experiences without analysis. The understanding level involves students comprehending concepts but not relating them broadly. The reflection level involves students relating their

experiences or concepts to their contexts, analysing the implications, and considering alternative perspectives. Finally, the critical reflection level represents the deepest level of reflective thinking, where students critically evaluate assumptions, biases, and broader contextual influences (Kember et al., 2000).

An important contribution in this field is the "REFLECT" rubric, an acronym for "Reflection Evaluation for Learners' Enhanced Competencies Tool," developed by Wald et al., (2012). The main objective of this rubric is to improve reflection process, self-directed learning, and self-assessment. It breaks down various aspects of the reflection process, such as writing spectrum, presence, description of conflict or disorienting dilemma, attending to emotion, and analysis or meaning-making. Each aspect is evaluated at a four-grade level for every student and can be graded by faculty members or students themselves.

The validity of the REFLECT rubric has been proposed through psychometric testing, confirming its reliability, validity, feasibility, and acceptability. It is applicable in both summative and formative assessment approaches, thereby enhancing feedback provision to learners. This rubric offers a systematic method for assessing the depth and quality of students' reflective writing, allowing educators to assess and boost students' reflective practice and self-assessment abilities across different disciplines (Wald et al., 2012).

2.5 REFLECT rubric

The process of applying the REFLECT rubric starts with reading the entire reflective narrative. Then, the evaluator closely examines specific phrases and sentences within the narrative to assess how well they meet each of the five main criteria or domains outlined in the rubric (Wald et al., 2012).

1. Writing spectrum
2. Presence
3. Description of conflict
4. Attending to emotions
5. Analysis and meaning-making

For each domain, there are four levels of reflection that the narrative can achieve, scoring from 1 to 4 marks (Table 2.2). The evaluator then carefully examines the narrative and assigns a score from 1 to 4 for each of the five domains (writing spectrum, presence, description of conflict, attending to emotions, and analysis and meaning-making). This level is determined by how well the specific details in the narrative align with the criteria described for that level within each domain. This process is repeated across all five domains, following the same level descriptions outlined in the rubric table.

A numerical score out of 20 can be assigned by summing the score across domains. However, the primary purpose of the REFLECT rubric is not to judge or rank the individual based on this total score. Rather, the goal is to provide a structured framework for nurturing and exploring the different facets of reflective thinking demonstrated in the narrative. The rubric serves as a tool to thoughtfully analyse the depth of reflection present, identify areas for growth, and ultimately support the development of stronger reflective capabilities over time. The scores themselves are less important than using the rubric to gain insights into enhancing one's reflective practice (Wald et al., 2012).

Table 2.2: REFLECT rubric and its descriptors

	Level			
Criterion	Habitual action (Nonreflective)	Thoughtful action or introspection	Reflection	Critical reflection
Writing spectrum	Superficial descriptive writing approach (fact reporting, vague impressions) without reflection or introspection	Elaborated descriptive writing approach and impressions without reflection	Movement beyond reporting or descriptive writing to reflecting (i.e., attempting to understand, question, or analyse the event)	Exploration and critique of assumptions, values, beliefs, and/or biases, and the consequences of action (present and future)
Presence	Sense of writer being partially present	Sense of writer being partially present	Sense of writer being largely or fully present	Sense of writer being fully present
Description of conflict or disorienting dilemma	No description of the disorienting dilemma, conflict, challenge, or issue of concern	Absent or weak description of the disorienting dilemma, conflict, challenge, or issue of concern	Description of the disorienting dilemma, conflict, challenge, or issue of concern	Full description of the disorienting dilemma, conflict, challenge, or issue of concern that includes multiple perspectives, exploring alternative explanations, and challenging assumptions
Attending to emotions	Little or no recognition or attention to emotions	Recognition but no exploration or attention to emotions	Recognition, exploration, and attention to emotions	Recognition, exploration, attention to emotions, and gain of emotional insight
Analysis and meaning-making	No analysis or meaning-making	Little or unclear analysis or meaning making	Some analysis and meaning making	Comprehensive analysis and meaning making