RESEARCH ARTICLE

Reflective Writing Skills of Undergraduate Medical Students

Yunia Hastami[1*], Mora Claramita[2], E. Suryadi[2]

[1]Department of Anatomy and Embriology, Faculty of Medicine, Universitas Sebelas Maret, Surakarta, Indonesia
[2]Department of Medical Education, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta, Indonesia

**Corresponding author: yuniahastami.yh@gmail.com*
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Abstract

Reflective writing skills is linked to lifelong learning. There are still few studies about reflective writing skills of undergraduate medical students in Indonesia, so it is necessary to investigate the reflective writing skills of undergraduate medical students. A qualitative design using content analysis method was conducted at Faculty of Medicine, Gadjah Mada University on June-August 2016. Written reflections (156) were taken from 54 third year medical students in Jogjakarta, Indonesia using random sampling technique. Every group of student encountered different problems in community as the trigger to write reflective tasks about their experiences when interacting with community. Every student has to write a reflection in three occasions, at the beginning of the program, after the first meeting with the mentor, and at the end of the program. Students' reflective writing were analyzed by three coders using a REFLECT criteria to investigate the level of reflection. 33.3% of students at 1st level (habitual action), 48.2% reached 2nd level (thoughtful action), and 18.5% reached 3rd level (reflection). The ability of undergraduate medical student in reflective writing skills were in the range of 1st to 3rd level, of 4 levels. It is concluded that undergraduate medical students require more training in writing a critical reflection.
Keywords*: reflection; reflective writing; problem-based learning; community-based education.*

Kemampuan Menulis Refleksi Mahasiswa Kedokteran

Abstrak

Keterampilan menulis reflektif dikaitkan dengan pembelajaran seumur hidup. Terdapat sedikit studi terkait analisis kemampuan menulis reflektif mahasiswa kedokteran tahap sarjana di Indonesia, sehingga perlu diketahui kemampuan menulis reflektif mahasiswa kedokteran pada tahap sarjana. Penelitian ini menggunakan desain kualitatif dengan metode analisis isi dan dilakukan di Fakultas Kedokteran Universitas Gadjah Mada pada bulan Juni-Agustus 2016. Sebanyak 156 refleksi tertulis diambil dari 54 buku catatan mahasiswa dengan teknik random sampling. Setiap kelompok mahasiswa menghadapi berbagai masalah di masyarakat sebagai pemicu untuk menulis tugas refleksi tentang kemampuan komunikasi mereka. Mahasiswa harus menulis refleksi dalam tiga kesempatan, pada awal program, setelah bertemu dengan mentor pertama, dan pada akhir program. Tulisan reflektif mahasiswa dianalisis dengan tiga pengkode menggunakan kriteria REFLECT untuk mengetahui kemampuan mahasiswa dalam menulis refleksi. Sebanyak 33,3% mahasiswa tingkat 1 (habitual action), 48,2% mencapai tingkat 2 (thoughtful action), dan 18,5% mencapai tingkat 3 (refleksi). Kemampuan mahasiswa kedokteran dalam keterampilan menulis reflektif berada pada kisaran tingkat 1 sampai 3, dari 4 tingkat. Disimpulkan mahasiswa kedokteran S1 masih membutuhkan pelatihan untuk mencapai tingkat refleksi kritis.
Kata kunci: *refleksi; penulisan reflektif; pembelajaran berbasis masalah; pendidikan berbasis masyarakat.*

Introduction

Reflection skills are associated with lifelong learning abilities and become one of the competencies that must be mastered by prospective doctors.[1] The ability to reflect needs to be mastered by the students in order to become professional doctors and fulfill the needs of the community.[2-4] These skills can be improved through real experiences, for example through community-based education program as a stimulus.[5] Medical students, who are capable and accustomed to reflect, are expected to be spared from the unconscious bad habits when they have become doctors and leads to improved service and patient-safety.[6]

Various techniques of reflection have been applied in various studies, one that is often used is reflective writing.[7] Studies analyzing the reflection paper mostly search for the themes reflected, both at the undergraduate and postgraduate level.[8-11] The benefits of reflection for the students relate to professionalism,[4] empathy,[12] communication skills,[13] and achievement of learning objectives.[14]

Many theories about reflection model have been widely argued by experts so that the ways to interpret the assessment are also varied.[4,15,16] Other studies about reflection focused on developing instruments to assess the ability of reflection, both quantitatively and qualitatively.[17] Kember et al[18] made a criteria that was used to categorize the depth of written reflection which were grouped into four levels, namely habitual action, understanding, reflection, and critical reflection. Wallman et al[19] conducted research to test the reliability, feasibility, and the responsiveness of the Kember's scheme that was modified into 6 levels ($\kappa = 0.63$). Wald et al[20] adopted Kember criteria to develop a tool to assess reflective writing, namely REFLECT (Reflection Evaluation for Learners' Enhanced Competencies Tool). Carr et al[21] analyzed students' narrative writing and categorized the level of reflection into four levels: listing, describing, applying and integrating. However, they did not use standardized instruments in the categorization process. Morrow[7] divided reflection papers into four domains, namely personal, interpersonal, contextual and critical.

Studies that assess the ability of undergraduate medical students to write reflections are rare in Indonesia. However, the reflection capability is critical to the learning process throughout life.[1] Clinical Skills Laboratory of the Faculty of Medicine, Gadjah Mada University has given a task to third-year medical students to write reflections after attending community-based education, but a study to assess their ability to make critical reflective writing has yet to be done. Thus, it is necessary to investigate the ability of medical students' reflective writing skills, both in terms of the depth of reflection and the domains that were reflected.

Methods

This was a qualitative study using content analysis technique.[22,23] Research was conducted at Faculty of Medicine, Gadjah Mada University (UGM) on June-August 2016. The subject of this study was written reflection of third year medical students who have followed community-based education. The topic of the course was communication skills. Samples were taken by stratified random sampling from approximately 200 students who were divided into 27 groups. The authors took two logbooks from each group that contained reflective writing, thus there were 54 logbooks as samples.

The Faculty of Medicine organized communication skills training using community-based approach that was followed by third year medical students within 8 weeks of community-based education (block 3.3-3.4). In this program, each student had a responsibility to write reflections after each phase of communication training. The community-based activities are conducted in Medical Treatment Center for the Eradication of Lung Disease (Balai Pengobatan Pemberantasan Penyakit Paru/BP4) and Non Governmental Organization (NGO) which focused on public health, healthy lifestyles, and the communities surrounding Jogjakarta city.

$$\frac{n = 2\{(Z1\text{-}\alpha/2 + Z1\text{-}\beta)s\}^2}{(x1 - x2)^2}$$

The purposes of this program were to provide opportunities for students to learn communication skills in real life context in the community, as well as to practice sharing information and negotiating ability in making clinical decisions and in providing education and counseling to patients, either as individuals, families, and communities. The communication process is done in several stages, from first to fifth phase.[24]

$$\frac{[(n_1\text{-}1)S^2_1 + (n_2\text{-}1)\,S^2 2]}{(n_1\text{-}1) + (n_2\text{-}1)}$$

S_1^2: standar deviasi
S_2^2: standar deviasi

In Ask phase, students explore health issues in the community. In Assess phase, students make observations and determine the priority of the existing problems together with the community. In Advice phase, students together with the community, plan activities based on priority issues, provide feedback, conduct education and counseling, according to the agreement between students and the community. In Assist phase, student give guidance to the community in the implementation of mutually agreed activities; then in the Arrange follow-up phase, the students organize and monitor programs that have been conducted with the community.[24] At the end of the program, students must collect their reflective writing as a part of the requirements to follow the end examination.

The instrument used in this study consisted of the authors and other three coders (BK, SM, FT) who were postgraduate students in Medical Education and Clinical Medicine. The author (YH) developed the initial scheme of coding manual, and gave instructions to all coders. For the beginning, author (YH) set up logbooks contain reflections and then close the identity and replace it with the identity code number. Then, authors (YH & MC) explained the purpose of the study and the procedures on how to perform coding using REFLECT criteria from Wald et al[20] (Table 1) to the coders. Each coder work independently, read the entire text of the student reflection, examined and determined the level of student reflective writing. Each coder independently analyzed same 12 logbooks for initial coding to determine the agreement between coders and agreement of coding guidelines. Coders conducted meetings iteratively and reported the results of the coding process to each other. The authors calculated agreement between coders using percent agreement (0.75) and revised the coding guideline based on the suggestions from the coders. The process is repeated until an agreement is reached between all coders.

Table 1. Coding Guidelines

Level		**Definition[20]**
Habitual Action	I	Descriptive writing superficial approach (reporting facts, the impression is less clear) without reflection or introspection.
Thoughtful action	II	Descriptive writing with explanations are clearly defined, but without any increase in the direction of reflection.
Reflection	III	There were increases in the direction of reflection that is trying to understand, question, or analyze the situation
Critical reflection	IV	Exploration and critique of assumptions, values, beliefs, and / or bias, and the consequences of actions (present and future)
Domain		**Definition[7]**
Personal		Article describes a reflection of the thinking, feeling, and the role of students themselves in the activities undertaken.
Interpersonal		Article describes a reflection about the interaction with others
Contextual		Article describes a reflection about the concept being studied, basic theory, as well as specific methods related to the context of learning experienced by students, either in the form of knowledge, skills, and attitudes
Critical/ Evaluation		Writing down reflections that highlight the limitations faced, expressing explicitly the social and ethical problems faced and their impact, or reflecting the problems faced related to the implementation of activities

After reaching agreement in the way of coding, each coder continued to code the remaining 42 log book; each coder worked on 14 logbooks independently.[25] After completing all samples, authors and coders met to report and cross-check the results of each coding together. Author (YH) recapitulated and interpreted the overall results. The final result was agreed by all authors.

This research is part of a larger study by Mora Claramita et al entitled Community-Based Education Model for the Strengthening of Professional Conduct and Communication Skills of Medical Students and has been cleared by the research ethics committee (number KE/FK/831/EC/2015).

Results

Reflective documents analyzed was 156, consisting of 54 articles from Ask phase, 54 articles from Assess phase, and 48 articles from Advice phase. Samples came from 22 male students and 32 female students. From the initial coding using 12 logbooks, inter-coder agreement was 0.75. Analysis of the depth of the students' reflective writing showed that most of them were at the second level (thoughtful action) and none of them reached the critical reflection level (4th level).

At the level of habitual action (1st level), the students reported their experiences in the form of reporting facts, with little or no description of emotions, no description of dilemma, conflict or problems that need attention, and without reflection nor introspection. For examples:

"I tried to ask communities, as to whether she smokes, whether second-hand or third-hand smokers, whether they already know the risks of smoking, complications / problems caused ..." (interpersonal interactions with the community) (5PK.a)

"Here, we apply science education and counseling include meals, educational work, educational stress, exercise." (Contextual-practice education) (9LK.c)

At the level of thoughtful action (2nd level), the students wrote down their experiences clearly and coherently but without reflection. There were descriptions of emotions, but lacking in descriptions of the conflicts, dilemmas, or problems that need attention, little analysis or clarity in grasping the meaning of the experiences. For example:

*"In this phase we visited elementary school "T" *. Visits conducted during school hours in order to meet the school board ..." (personal - student activities)*

".. To ask directly to the schools, the problem of what often happens in the school environment, particularly those related to health issues" (Interpersonal interactions with the community)

"There were no significant obstacles, yet far enough distance to primary school and the lack of time to re-assess the community around primary school ..." (critical- locations & time constraints)

"I have to deliver the material well and I'm looking for a lot of references on the Internet." (Personal-action plan) (7LK.b)

"I also did in-depth interviews with some transvestites and understood their problems. We mingled with the familiar drag queen and did not consider them as objects, so they could tell you openly. "(Interpersonal interactions with the community)

"Difficulty encountered is terms of the timing. Most of them had to come to work at around 00.00 so it's very limited for us to observe their activities in the field and only a few transvestites we encountered there. Some events by NGOs Kebaya were allowed to be joined by only a few people. The number of thugs to be observed were also restricted for security reasons. "(Critical-timing constraints / security)

"I will be planning activities that will be conducted more readily and effectively. In addition, in-depth interviews will be (?) more purposeful "(personal-action plan). (11LK.b)

While at the level of reflection, students try to understand and analyze the situation. There are clear descriptions of conflicts, challenges or problems that need attention, and also exploration of emotions. Thus students can grasp the meaning. For example:

"... At first we tried to get in and participate in their activities. After getting an overview of their activities, we could feel their position, empathize, and recently we saw the reality." (Personal-feeling empathy)

".. the prostitution is very close to them, hard to avoid. We also understand that the acceptance of advice from people who are new to their groups were not easy ..." (critical-social constraints)

"What I enjoyed from doing activities like this was because I could see a portrait of another life that I did not know before... (Personal feelings)

This kind of activity helped me into having a sense of empathy to a transvestite, does not discriminate and understand the background of the life of every human being is different and will affect the next life. "(Personal-feeling empathy)

"... It is also a medium of learning, is good for me to communicate, empathize and care about others". (Contextual-media learning)

"…difficulty in communicating with transgender. Sometimes we have to say things that are sensitive and should be careful in the choice of words ... (critical-communications constraints) (11LK.c)

"In this phase, we planned what programs will be provided. After discussion, we finally chose a topic: .... " (Interpersonal-peer discussion)

"…I was looking for videos about the dangers of smoking from Youtube.com ..." (personal-student activity)

"The students were interested in what I said. We're trying not to be rigid in bringing the matter. The students were also critical to express their views about their parents who still smoke... "

(Interpersonal interactions with community)

"When I delivered the material, I can deliver the material well ..." (personal self-evaluation / excess)

"There were no significant obstacles, but I was a little awkward when bringing the matter ..." (personal-feeling awkward)

"I also thought if I could deliver the material well and accepted by the students ... (personal-reflection)

"What we need to improve is our performance in the delivery of programs for which we gave education was elementary school children. So, we should make counseling to be more attractive and fun." (personal-action plan) (7LKc)

From a total of 54 students, 9 students show improvements in their level of reflection, while 24 of them show the decrease. Twenty students demonstrate constant level and 1 has fluctuated level of reflection (Table 2).

Table 2. The Depth of Student Reflective Writing (REFLECT's criterion)

Level Phase	Habitual Action	Thoughtful Action	Reflection	Critical Reflection
Overall	18	26	10	0
Ask (n=54)	25	23	6	0
Asses (n=54)	29	20	5	0
Advice (n=48)	28	16	4	0

Discussion

This study showed that the ability of third-year medical students in writing reflection is still at the low level. One basic theory that supports the theory of reflective learning is experiential learning.[26] Then, with the development of science, new models of reflection emerged such as ALACT,[15] Gibbs,[27] and models based on the theory of Kolb's experiential learning[26].

Lecturers in medical education needs to apply the method of reflective learning to prepare students to have the knowledge, attitudes, and skills appropriate for professional practice in community.[28] The process of analyzing and integrating knowledge through a process of reflection is a lifelong learning skill needed by all professionals including doctor.[29] Reflection skills are very important which need to be trained to the students from the beginning.

Analysis of the reflection scripts of 54 students showed that 26 students (48.2%) are in Thoughtful level (2nd level), 10 students (18.5%) achieved Reflection level (level 3), but none reached the level of Critical Reflection (4th level). This is in accordance with the opinion of Kember et al[18] and Gustafson et al[30] which states that critical reflection is rare to be achieved. However, Castleberry et al[31] had different results. From a qualitative analysis using the modified Kember criteria against a reflective essay of pharmaceutical faculty, 48% reached the level of critical reflection essay. This difference may be caused by differences in the level of experience of the participants. In research conducted by Castleberry et al,[31] reflections were written by lecturers who have experience in reflective learning. While in this study, the samples were written by third-year medical students inexperienced in writing reflection. The skills and experience of the learners is one of the factors that affect the depth of reflection.[30]

There was a decrease in the number of writing that reached higher level of reflection as the phases increased. This is according to research from Jensen et al[32] who studied 60 reflective journals of 20 nursing students who each wrote reflection three times, with a resulting decrease in the number of students who reach the level of high reflection of 80% to 60% and 50%. The decline is likely due to the absence of feedback received by students after writing the reflection between the first phase and the second, as well as with the next phase. The process to achieve the expected depth of reflection needs guidance, criticism and feedback, and also encouragement for the students, other than practicing writing a reflection.[28]

There are various factors that may affect students' reflective writing, among others are the ability of students to convey their experiences in writing, and whether or not reflection is considered as a part of student assessment.[30] Each student has the ability to write differently, so further research is necessary to compare the reflection technique in writing or verbal, to confirm whether the results can be justified. Lack of observation time and the list of questions that guides reflection also affect the depth

of student reflections[30]. Table 3 is a comparison of the question in the logbook with Gibbs',[27] ALACT[15] and Kolb's[26] models. Examples of questions that adopt the model of Gibbs are as follow:

Reflect on your experience in narrative form by using the Gibbs reflection stage as follows:

1. Description: Report in detail the events you are experiencing with regard to the timing, chronological events, and roles you do, the people involved, and the goals you want to achieve.
2. Feelings: Explain how your feelings are related to the event, and why it arises! Explain how other people's reactions are involved, and explain how they are related.
3. Evaluation: Describe what is good and what is not good from the experience, and give reasons.
4. Analysis: Detailed analysis of your evaluation results based on the evidence you know to evaluate what is appropriate or not accurate from your experience, and explain how it should be done.
5. Conclusion: What conclusions and meanings can there be captured from the experience you are reflecting on? What things are still lacking in you, and need to be fixed?
6. Action plans: Explain what you will do when faced with similar things in the future and give the reasons.

Table 3. Comparison of Reflective Guiding Questions

Students' logbooks	Kolb's[26]	Gibbs[27]	ALACT model[15]
1. What I tried to accomplish …. 2. What I DID … 3. What I have learned … (a) What I think I enjoy much and I proud of my performance (b) What I think as constrains/ barriers/ dilemma during implementation (c) What I have to do better... and how I improve on these skills.	1. Concrete experience (The activity- What you did?) 2. Reflective Observation (Thinking about how you did it? How you felt? Evaluate your performance. What happened and why? How well did you do?) 4. Abstract conceptualization (Thinking about what you were taught in class, what you have read about how to do this stage? What the experts say? Consider your reaction then consider in what other ways you could have done the activity) 5. Active experimentation (thinking about what you learned from your reflection and conceptualization and planning how you might do it differently next time)	1. Description: What happened? 2. Feeling: What were your reactions and feelings? 3. Evaluation: What was good and bad about the experience? 4. Analysis: What sense can you make of the situation? (Bring in ideas from outside the experience to help you. What was really going on?) 5. Conclusion: What else could you have done?(What can be concluded, in a general sense, from these experiences? What can be concluded about your own specific, unique, personal situation or ways of working?) 6. Action plan : If it arose again, what would you do?	1. Action 2. Looking back on the action: What actually happened? (Choose some episodes from the experience What you did and what the other did; What you thought and felt; What you think other people thought and felt; and how these aspects influenced each other) 3. Awareness of essential aspect (Try to derive conclusions from this!) 4. Creating alternative methods of action (Formulate your intentions for the next lesson!) 5. Trial

Gustafson et al[30] suggested that one of the factors that influence the writing of reflection, among others, is the consequence of the task received by the students. Students motivation to write reflection should also be considered, given the task of writing a reflection in the current study was a condition for final exam but no scores added to their final exams.

Limitation of this study is the authors only use reflective writing as data source, without direct observation in the field. The authors have not been involved in setting up the program and guiding the reflection, but only analyzes written reflection of third year medical students. In addition, the authors realize that the results of this study are strongly

influenced by the ability of each coder to analyze, thus there may be differences in interpreting the data. Nevertheless, the result of inter-coder agreement is adequate. The advantages of this study are the use of a high number of sample and the analysis of reflection is conducted not only from one phase, but three phases of writing. Thus, the ability of students can be seen more objectively

Conclusions

Most reflective writing of third-year medical students is at thoughtful action level. Students are able to write a reflection in four domains, namely Personal, Interpersonal, Contextual and Critical/Evaluation with emphasis on the domain of Interpersonal and Personal, therefore undergraduate medical students require guidance to be able to create a good reflection.

Recommendations from this study is to develop training and guidelines for making reflective writing for students which is easy to implement, and provide specific feedback for the student's reflection, preferably in small groups. Future studies were needed to determine the effect of feedback on student reflection skills and factors that affecting students' motivation and resistances in writing reflection.

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