



## AN EXPLORATORY INQUIRY OF HEALTHCARE STUDENTS' PRACTICUM EXPERIENCE WITH A DIGITAL CRITICAL REFLECTION TOOL\*

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### ABSTRACT

*This pilot qualitative research aims at exploring the effects of an App designed by Birmingham City University on healthcare students' critical reflection levels. Ten healthcare students from Nguyen Tat Thanh University took pictures and videos using the App and critically reflected on them in comparison with their classroom experience. The results show that the App promotes the subjects' critical evaluation of their experience.*

**Keywords:** Vietnamese high education contexts, critical reflection, employability, student centered learning.

### TÓM TẮT

***Nghiên cứu tìm hiểu về trải nghiệm phản chiếu tích cực sử dụng ứng dụng kỹ thuật số trong quá trình thực tập của sinh viên khối ngành sức khỏe***

*Nghiên cứu định tính thí điểm này nhằm mục đích khám phá ảnh hưởng của một ứng dụng do Đại học Birmingham thiết kế lên khả năng phản chiếu tích cực của sinh viên khối ngành sức khỏe. Mười sinh viên khối ngành sức khỏe Trường Đại học Nguyễn Tất Thành chụp ảnh và quay video bằng ứng dụng kể trên và phản chiếu tích cực những ảnh và video này so với bài học trên lớp. Kết quả cho thấy ứng dụng thúc đẩy quá trình phản chiếu tích cực của sinh viên.*

**Từ khóa:** giáo dục đại học tại Việt Nam, phản chiếu tích cực, khả năng tuyển dụng, phương pháp học lấy sinh viên làm trung tâm.

### 1. Introduction

The ultimate goal of education is to generate professionals who can transfer classroom knowledge into real-world practice. However, it is difficult for educators to complete this task as the real world's nature is rather complex and dynamic. Practitioners will have to face new, different problems frequently and as a result, are expected to come up with their own analysis of the situations for there are no ready-made solutions on which

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they can rely (Schon, 1987 cited in Wong et al., 1995, p. 48). Critical reflection has been noted in literature as an important attribute to help learners bridging this gap between theory and practice by improving their rationality and self-awareness (Fook and Gardner, 2007, p. 143). The need to provide students with critical reflective practice is of growing importance particularly to healthcare education whose practitioners should be prepared to deal with complex and changing patients, healthcare problems, technological advances and healthcare systems (Mann, Gordon and MacLeod, 2009, p. 596).

Critical reflection is a “metacognitive” process (Nuffer et al., 2013, p. 1) in which learners try to articulate and self-assess the value of their own experience in relation to past experience, existing knowledge and firmly held beliefs and assumptions (Mezirow, 1991 cited in Bernard et al., 2012, p. 978). It gives health professionals a way of “standing back” to look at clinical issues from different perspectives and build new theories from connecting knowledge from their own experience with knowledge from previous training (Fook and Gardner, 2007, p. 10). Integration of critical reflective practice into healthcare education is expected to enhance lifetime study skills such as critical thinking, problem solving, clinical reasoning and decision making, communication skills, and self-directed learning, all of which may improve practitioners’ abilities to deal with the problems that they may have to face in future clinical practice (Tsingos-Lucas et al., 2016, p. 1).

Students, however, cannot learn the skill themselves (Nuffer et al., 2013, p. 1). They will need sufficient mentoring and feedback from teachers to put it into practice. In spite of the critical attention critical reflection has received in literature and the introduction of several helpful models, few studies are available to guide educators about the difficulties, practicalities and methods of critical reflection (Finlay and Gough, 2003; Hsiung, 2008 cited in Smith, 2011, p. 212) or the challenges of teaching the theory and practice of critical reflection in academic contexts (Brockbank and McGill 1998; Larivee 2008, cited in Smith, 2011, p. 212), especially in relation to the Vietnamese education system. Under the influence of Confucianism, traditional Vietnamese education has long been considered very lecturer-dependent and textbook-based with knowledge being transmitted from the teachers rather than discovered by the students (Tran, 2013, p. 58). Vietnamese teachers often expect their students to believe in what they say and do what they ask them to do. Vietnamese students learn what is available in the class by heart because perfect re-creation of the knowledge often means high scores in exams. Such teaching and learning approaches make critical reflection become a very unfamiliar terminology with both Vietnamese teachers and students. At present, the situation is changing as the Ministry of Education and Training encourages changes in teaching approaches that can enhance students’ reflective abilities. However, lack of empirical research and guidance still pose as a big challenge for both teachers and students to get rid of what they are familiar with and try something that has been described as a “risk” (Fook and Gardner, 2007, p. 5).

The purpose of this pilot study is to explore the impacts of an App developed by Birmingham University on healthcare education's undergraduates' reflective abilities at Nguyen Tat Thanh University's faculty of Pharmacy and Nursing.

## **2. Literature Review**

The literature on critical reflection has witnessed the introduction of multiple definitions of critical reflection since the term was first introduced by Dewey (1910), from reflective thought, to tacit dimension, reflection-in-action and reflection-on-action, experiential learning, and finally transformative learning. Despite the differences in terminology and definition, there has been an agreement among scholars that experience plays an important role in the reflection process. However, experience alone is not the key to critical reflection. It is the ideas and activities learners have in relation to that experience that decides whether critical reflection happens or not.

Dewey (1933, p. 9) described reflective thought as the “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that supports it and the further conclusions to which it tends”. Reflective thinking, according to Dewey (1910, p. 8), is an inquiry following a state of doubt, hesitation or mental difficulty to find a way to clarify the doubt. Polanyi (1967, p. 4) added that “we know more than we can tell”, i.e. the skills, ideas and experiences in our minds that are difficult to be verbalized (i.e. tacit knowledge) can sometimes become explicit under the influence of reflection and be used to construct new knowledge. Schon (1983) distinguished reflection-in-action from reflection-on-action as two distinctive forms of reflective thinking by stating that the former occurs during an experience to improvise and reflect on the practitioner's behavior as it happens (p. 68) whereas the latter happens after the experience finishes to review, analyze and evaluate what happened and come up with what should be done next time (p. 26). Kolb (1984, p.9 cited in Sharlanova, 2004, p. 36) further emphasized the role of experience by stating that “learning is a process, in which knowledge is created through transformation of experience”. According to Kolb (cited in Sharlanova, 2004, p. 37), reflection is an experiential learning cycle which begins with a concrete experience, followed by the learner's conscious reflection on that experience. In the next stage the learner try to conceptualize a new theory of what he has observed. Then at the final step he plans how to experiment his new theories, which in return will give him more chances to reflect on that event. Boud, Keogh and Walker (2013, p. 37) assumed that emotions play a role in the reflection process by affecting how practitioners respond at the initial stage of the process. Mezirow (1990) went one step further by discriminating critical reflection from reflective action and non-reflective action. Non-reflective actions are defined as “thoughtful actions without reflection” while reflective actions are the ones that aim at answering the question “What am I doing wrong?” – short pauses in the decision-making process (p. 2), which seems to share some characteristics with the notion of reflection-in-action. Critical reflection is assumed to be at a higher level than reflection as

it includes validating one's presuppositions (p. 2). Ménard and Ratnapalan, (2013, p. 106) listed three types of guided questions that can trigger reflection. Noticing questions, i.e. questions useful for observation, includes *What just happened? What were you thinking when...? Did you notice that...? What surprised us in that case? How does it make you feel?*. Processing questions, which triggers 'reflection-on-action', consists of *Are we doing this the right way? Are there alternatives? Is this applicable in our setting? What does this mean? Why does it make you feel this way? What are the consequences of you feeling like this? Are we the right people to address this?* Future action questions, which can be used for future planning to help move reflection beyond discussions, includes the following: *What do we need (e.g., resources, knowledge, skills) to resolve this problem? What will we do differently next time? What are the barriers to.... ? What can facilitate...?*

The practice of critical reflection on experience has become more and more widespread in healthcare education including nursing, medical and pharmacy education (Wallman et al., 2008, p. 2). However, some researchers have criticized the shortages of empirical evidence to prove critical reflection's efficiency as well as the lack of a consistent rubric to measure how effective it is in improving personal values and performance quality (Stein, 2000, p. 3). Other difficulties include the skill's abstraction which makes it impossible for direct assessment, no preset learning outcomes and the need for constant process (Wallman et al., 2008, p. 2).

Nevertheless, researchers have come up with several rubrics to measure the depth and levels of individual critical reflection skill. One of the most popular models was introduced by Boud et al. (2013, pp. 26–37) who identified seven elements of the reflective process: (1) Returning to the experience, (2) Attending to feelings, (3) Association (Relating new knowledge with previous knowledge), (4) Integration, (5) Validation (Self-assessing beliefs, approaches, assumptions), (6) Appropriation (making knowledge one's own through own knowledge and experience) and (7) Outcomes and Actions. Kember et al. (2000, pp. 381) designed a questionnaire elaborating on Mezirow's (1990) theory of transformative learning which measure the reflective ability of a student based on a 4-level scale: habitual action, understanding, reflection and critical reflection, the former two of which are considered non-reflective whereas the remaining two are considered reflective. Students express their level of agreement on a Likert scale to a series of statements. Boud et al.'s (2013) taxonomy is appropriate for assessing reflective writing tasks while Kember et al.'s (2000) model is more suitable for pretest/posttest contexts (Tsingos et al., 2015, p. 5).

Believing that critical reflection can be taught and enhanced, educators have also employed a variety of tools to guide students to practise the skill in classrooms. Reflective writing tools include statements, essays, diaries, logbooks, portfolios, journals and extended technologically-oriented online versions such as e-portfolios, e-journals, and blogs (Tsingos-Lucas et al., 2016, p.2). Reflective capacity can also be improved through

dialogues in the form of seminar instruction, critical-thinking dyads, peer collaborations, and structured verbal guidance (Yost, Sentner and Forlenza-Bailey, 2000, p. 43).

Various studies have been conducted to test the usefulness and effectiveness of these rubrics and tools. To develop and test coding systems for written reflective journals constructed from the model of reflective thinking of Boud et al. (2013) and Mezirow (1990), Wong et al. (1995) conducted a study analyzing the content of forty five journals at two levels. Regarding Boud's taxonomies, the features of attending to feelings was most commonly found besides association and integration. In terms of Mezirow's categorization, reflectors' work demonstrated characteristics of Boud's first three elements, but no change in critical perspective. Critical reflectors, in comparison, did show a change in their critical perspective. Wong et al. concluded that students' writing can be used as proof for the presence or absence of reflective thinking and Mezirow's model is reliable while more complex ones would cause more troubles and reliability reduction.

From the writing of Mezirow (1990), Kember et al. (2000) designed a four-scale 16-item questionnaire assessing four constructs: habitual action, understanding, reflection and critical reflection. The instrument was used to test the reflective abilities of 303 students from eight classes of a health sciences faculty. Comparison of mean scores between the eight classes showed predicted significant differences on each of the four scales between undergraduate and postgraduate students.

Pee et al. (2002) assessed reflection in 26 dentistry students participating in a structured activity called "A learning experience" (ALE). Worksheets completed by the subjects were examined based on three sets of criteria: Johns' (1994) 18 questions, Hatton and Smith's (1995) rubrics of reflection, and peer judges. Students' opinions towards the usefulness and effectiveness of the activity were collected using a 5-point Likert Scale. Results from all three approaches suggested that students completing the activity exhibited reflective thinking. Students' opinions towards ALE were mostly positive, but it was unclear to which extent ALE could facilitate reflection.

Another tool of critical reflection that has been used and tested is photography, especially in the field of education. According to Grady (2008, cited in Stingu, Ulrich Hygum and Vrasmas, 2015, p. 1209), by immediately capturing the moment as it happens, photography is regarded as the most direct data collection means of actual events compared to other tools. Moran and Tegano (2005) emphasizes three primary functions of photography: representation, meditation and epistemology. The first function refers to different levels of meaning photographs contain that can trigger various interpretation (p.6). Photographs can also function as a link between the photographers' intention and the outside world, as they are the records of what they want to be recorded (p.10). Above all, photographs can be used epistemologically as the source of new knowledge after being studied, reflected and analyzed (p.13). Photographs can trigger "inquiry into our own practice... self-awareness, self-monitoring, reflective and reflexive practice" (Lemon,

2007, p. 183). Stingu, Ulrich Hygum and Vrasmas (2015) conducted a three-year action research to investigate the use of reflective practice to enhance professional development of one early education professional team through the use of spoken, written and visual materials. Findings from their study revealed that among the three data collection tools taking and analyzing photographs in group discussions is the most meaningful tool to produce reflection (p.1213). However, there has been little empirical data on the efficacy and utility of photography in enhancing healthcare students' critical reflection ability.

### 3. Research Design

This is a qualitative study using data collected via forms of photos and videos taken by healthcare students using an App developed by Birmingham University during their clinical rotation in healthcare settings and laboratory at NTT University. The collected data was then processed by the authors and divided into 5 different themes: learners – learning, observer – observation, teacher – teaching, and environment – learning spaces.

#### 3.1. Data collection

Before data was collected, the students were gathered for an induction session. During this section, the students were given the ethical considerations, instructions on what kind of data needs to be collected, and things such as the people, places, clinical site need to be considered during this study. The students were asked to collect data in the duration of two weeks as that is how long each rotation lasts. For this study, the students were asked to collect digital files from June 19<sup>th</sup> to July 2<sup>nd</sup>, 2017. Data was collected with the help of two other staff members in the wards and in the pharmaceutical manufacture or drug store. They were trained adequately to ensure that the data is unified and collection methods are the most accurate and objective manner.

After obtaining consent, researcher conducts training for the participants to collect data about the target of the study as well as guidance for participants to complete self-filled questionnaires that will be discussed once their rotation is over.

The process of data collection is described as specific sequence:

**Step 1:** before the study began, researcher will present the purpose of the study for each participant in the induction session

**Step 2:** after agreeing to participate in the study, subjects will be instructed to take photos/ videos that will be used in the study.

**Step 3:** The students are supposed to make comments for each photo or video that they took. Upon completion of the rotation, the students were asked to gather for the discussion and debriefing session.

### 3.2. *Data Analysis*

In this session, the students and their clinical instructor sat down to share their opinions and experience of the captured activity. Also, the discussion and debriefing were based on the guided questions. These questions include:

*What happened in this photo/ video?*

*What were you thinking when you capture this moment?*

*Did you notice that something is different that you expect?*

*What surprised you in that case? How does it make you feel?*

*Are we doing this the right way? Is there anything you would expect to be different?*

*Is this applicable in our setting?*

*Why does it make you feel this way?*

*What are the consequences of you feeling like this?*

*What do we need (e.g., resources, knowledge, skills) to resolve this problem?*

*What will we do differently next time? What are the barriers to solve the problem?*

*What can facilitate change?*

Besides, these questions, the students are allowed to share any other thoughts, problems, or concerns that they would like to address. The discussion was not recorded.

### 3.3. *Ethics*

The study was based on voluntary participants. Before joining this study, the researchers had clearly explained the objectives and benefits of the research to the participants. Questions that participants feel too personal can be skipped. The information provided by participants was kept confidential and only used for research purpose. The students are well explained that if they do not wish to participate in the research, their grades will not be affected. Research permission was obtained from NTTU. There were no vulnerable subjects in the study as all participants were adults. The result in this study at the concerned university was not compared with any other university at any phase of the study.

## 4. **Results and Findings**

Based on the collected data, most of the students have a positive experience with their clinical and laboratory practicum. The collected data was divided into 5 different categories for the purpose of exploring the effects of using the pre-developed app.

### 4.1. *Teachers - teaching*

The nursing students all agree that their mentor at their clinical site was very helpful and enthusiastic with their career. The provided teaching was thorough and easy to follow for the students. To be specific, the students were reviewed on steps of how to take vital

signs, how to perform dressing changes, and effective wound care. The teachers were always beside the students when they performed the skills on patients. Students from the department of Pharmacy also expressed positive opinions about their teachers' instructions in the laboratory. According to the students, before each laboratory session the teachers drew a diagram illustrating the following procedures on the board. Most of the students mentioned this as a good way to give them some ideas of what they were going to do next. However, some students wished to see a much more visual diagram with pictures or photographs (perhaps from previous experiments) demonstrating what would actually happen with the chemicals and reactions. On the other hand, some students thought it made students rely too much on the teachers and possibly become confused when there wasn't any diagram available. In addition, most of the students highly appreciated the teacher-student interactions as they were allowed to ask questions during teachers' demonstration and received immediate help from the teachers as soon as anything went wrong while conducting experiments.

#### **4.2. *Learners - learning***

This section points out both the positive and negative of learning from the learners. In most of the skills, the students agreed that what they have learnt in class is similar to what they see in their clinical settings. However, the students also point out things that are different from the theory taught in classroom. The reasons for these differences were identified as overload of work, not enough staff, too many patients, and not having enough time spent for everyone. For example, instead of counting the clock for setting the rate of the infusion via gravity, the students have to estimate because "we do not have enough time". In addition, when performing intramuscular injection on patients, the students were taught wearing gloves to protect the patients and healthcare staff, the students said "in clinical settings, it is easy to see that the staff will not wear gloves when giving intramuscular injection because they do not have enough supply". Moreover, when performing wound care and dressing change for the patients, it is critical not to touch the patient's wound. However, in real practice, it is very difficult not to touch the surrounding of the wound because some wound has a lot of drainages. It is noticeable that there was almost no information collected from students of department of Pharmacy regarding this category.

#### **4.3. *Environment – learning spaces***

The students all agree that their clinical site promotes a good learning environment. The facilities and equipment are adequate to ensure learning and teaching occurs smoothly. The spaces are good enough for the students and preceptor standing, learning – teaching as well as caring for the patients. Some students mentioned that the teachers as well as teaching assistants are wonderful and the learning environment is excellent. They are always there for the students. In the classroom, the discussion between students and teachers may become overheated but it is always based on making things better. This helps

the students gain confidence in communicating with their teachers as in Vietnam, the relationship between teachers – students is usually just one way. On the other hand, the number of students in classroom and laboratory is too great. Sometimes the students don't have enough time to practise individually. Most of the students from the department of Pharmacy gave positive feedback on the lighting inside the laboratory (which according to them was a very helpful for conducting experiments) while criticizing the large number of students (about 50 students per class). They stated that it was difficult for them to move as there was very little space for each student and it increased the risk of accidents. They also agreed that the big class size made it difficult for the teachers to manage the class and sometimes they couldn't provide immediate help when needed. Students produced many positive comments on the emergency faucet system that helped students get rid of chemical spills immediately when accidents happened. Many students were complementary on the real samples that were available for observation, touching and taking pictures while emphasizing the limited number of samples compared to the class size which reduced the interaction time. Some students complained about the tall shelves that sometimes blocked the sight-lines but approved of the way students could move around the laboratory to observe other groups as it gave them opportunities to learn from the others and reduced the stress.

#### **4.4. Equipment**

A great deal of data was collected regarding equipment, especially from students of department of Pharmacy, possibly because they practised in the laboratory very frequently and employed a large number of equipment of many different types in their practices. Most of the students agreed that laboratory equipment met the requirement of teaching and learning but expressed dissatisfaction with the limited number of equipment which made them wait a long time for their turns to use the equipment. All of the devices was modern, hence the laboratory environment resembled the real settings and hence prepared students for future placement and work. Students also liked the medical cabinets equipped in the laboratory but expressed their concerns about lack of first aid equipment for serious accidents.

#### **4.5. Observers – observation**

The students said that they have observed many skills from obtaining vital signs such as measuring blood pressure, respiratory rate, SpO<sub>2</sub>, to sterile technique. All mentioned skills were performed correctly in line with how the students learn in their classroom.

Through these themes, it is appropriate to see that the app was helpful in capturing key moments that could be used for critical reflective purpose. When the traditional approach was in place, it is often that the students forget what they would like to share with the instructors at the university because their rotations go on one after another. Then things

are just let go. With this app, the students can post on the internet right away or save them in their phone or camera for a suitable moment that they can discuss with their instructors.

## **5. Discussion**

The findings indicate that the App does provide healthcare students with opportunities to critically reflect on clinical experience. Most of the participants were able to relate their clinical experience to previous knowledge, thus showed evidence of up to the “processing” level. Only a few of the students could come up with future actions and solutions for their concerns. Specifically, in the category of Teachers and Teaching the students in general showed approval of the ways their teachers supported them during their rotations but didn’t either describe in details, i.e. give some specific examples of how the teachers could be more helpful. This could be explained by the effects of Confucianism on Vietnamese students which directs them to always show respects to their teachers and avoiding causing their teachers to lose faces (Tran, 2013, p. 58). In addition, the results collected from the Learners and Learning category demonstrate students’ abilities to tell the differences between what they learned in class and what might happen in real-life situations as well as explain why these differences occurred; however, few of the students reflected on their own mistakes (or success) and suggested possible solutions to improve their performance the next time. In other words, it seems that they preferred focusing on what was going on in the classroom rather than what they were doing when the moment was captured. This can be explained by the abstract nature of critical reflection which makes it difficult for students to fully understand the term and the lack of specific examples for orientation. Furthermore, there is little information regarding the environment and learning spaces. The reason might be due to fear of violating ethical guidelines as taking photos in clinical setting may infringe on patients’ confidentiality.

In general, students’ opinions shared during the follow-up discussions indicated positive attitudes towards the use of the App. They stated that the App is an effective tool to capture significant moments as they happen and to create opportunities for students to look back at their experience from different angles as well as discover what they hadn’t seen before. Students also praised the App for helping them identify and stay focused on problems they are likely to encounter in real settings. The photos from the App also made the discussions more flourishing and interactive as students were able to view one another’s captured activities and learn from their friends’ experience. These positive results supported the findings of Lemon (2007) and Stingu, Ulrich Hygum and Vrasmas (2015) of the stimulation impacts of photography on the critical reflection process. On the other hand, students also commented on the necessity of the introductory sessions about critical reflection and how to use the App before their rotations, which gave them orientations on how to use the App and reflect on the photos effectively. This proved that teachers’ guidance plays a very important role in stimulating and improving students’ critical reflection as students would know nothing to do without proper mentoring (Nuffer et al.,

2013, p. 1). Photographs themselves do not preserve any meaning; they are just mediation for us to reflect and learn from our own experience (Lemon, 2007, pp. 179).

## **6. Conclusion and recommendation**

This pilot study shows that students competing the activities using the App were reflecting. The App is worth considering by teachers who wants to create opportunities for students' critical reflection. There are a few suggestions for future research and use of the App:

First of all, even though students showed some evidence of critical reflection through the captured activities, it wasn't clear to what extent the App could facilitate students' critical reflection. Does the App enhance or do nothing to students' reflective abilities? Perhaps a pre-study and detailed criteria to assess students' reflection may answer the question.

Secondly, more attention and practice should be paid to students' use of the App to reflect on their clinical experience. As indicated by the results, teachers should help students overcome the barriers of ethical guidelines and the fear of disappointing their teachers. Teachers should also emphasize the importance of coming up with future actions as these are critical for students' profession in the future. Students should also be encouraged to reflect on their successful experiences as well as it also provides them with opportunities to look back at their experience from a different perspective, analyze the reasons for success and apply them to the next performance. Some specific examples on how to reflect on an experience can be provided for better orientation and minimizing chances of misunderstandings the term. Teachers need to find a way to emphasize that students have to reflect on what they did and their possible alternative actions for better performance as well instead of focusing only on what the others were doing.

Thirdly, it may be a good idea to create a forum for both students and teachers to share and comment on one another photos. This will provide students with more prospect to reflect, not only from their own perspectives but also from their friends' points of view. An online forum to share will also trigger discussions not only between students and students but also between students and teachers, and gives teachers more opportunities to assess and mentor their students' critical reflection directly. Learning will become more interesting, familiar and interactive as it is similar to what students often do on facebook.

In conclusion, even though the findings from this research are positive, it stills require a lot of effort from both the teachers and the students in Vietnamese higher education classroom if they want to apply critical reflection in the teaching curricular. Critical reflection is still a very new and absolutely challenging concept to Vietnamese students as it opposes the tradition teaching and learning method in Vietnam which has dominated Vietnamese classroom for centuries. For better training of critical reflection, it is necessary that the teachers make themselves competent enough in both theories and practices of the field, are willing to adapt and make changes.

❖ **Conflict of Interest:** Authors have no conflict of interest to declare.

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