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Evaluation of Medical Student Satisfaction on the Implementation of Integrated Practicum in Indonesia Museum of Health and Medicine

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Notes

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ABSTRACT

Since 2019, Indonesia Museum of Health and Medicine (iMuseum) has been conducting the Integrated Practicum of Growth and Development Module for medical students. This practice combines basic medical science (Embryology) with clinical practice (Pediatrics) in the scope of human development, from conception to adulthood. In order to evaluate the program's effectiveness, a cross-sectional analysis was conducted using student satisfaction questionnaires from the 2020-2022. A total of 449 responses were analyzed, including FMUI internal students (n=308) and external students (n=141). Overall, the students expressed a high level of satisfaction (3.79; SD 0.36). External students reported higher satisfaction (3.87; SD 0.23) compared to internal students (3.78; SD 0.32); independent-t test: t=3,395 (t>1.96); p=0.001 (p<0.05). However, there was no significant correlation between satisfaction scores and post-test scores (the external student's group; Spearman's test p=0.412 [p>0.05]; rs=0.102). The average post-test score for all students was 86.08 (standard deviation: 7.77). In conclusion, the Integrated Practicum of Growth and Development Module has successfully provided medical students with a satisfactory learning experience.

Keywords: Museum; university museum; museum users

1. INTRODUCTION

Museum is a non-profit institution that is dedicated to serving the community by carrying out its tasks and function in research, preservation, conservation, interpretation, and exhibition

of collections, both tangible and intangible collections. Museum is designed to be open, easily accessible, and inclusive. It plays a crucial role in fostering diversity, sustainability, and providing recreational experiences while serving as spaces for reflection, information acquisition, knowledge exchange, and educational opportunities (ICOM, 2022). This commitment also extends to Indonesia Museum of Health and Medicine (iMuseum) as a part of Indonesian Medical Education and Research Institute (IMERI), Faculty of Medicine, Universitas Indonesia (FMUI) that is specialized in the field of health and medicine (Government Regulation Number 66 year 2015). iMuseum focuses on the preservation and conservation of various medical collections, including anatomical specimens, anatomical pathology specimens, and medical teaching tools from the Dutch East Indies era up to present, complemented with health and medical posters, animated videos, and other historical artifacts of medical education in Indonesia (Soemantri et al., 2022).

iMuseum strives to create an inclusive environment by actively supporting formal educational activities. The iMuseum collections are not merely preserved and exhibited; they are primarily utilized for medical education purposes and play a crucial role in facilitating lectures, practical sessions for preclinical and clinical stages, also for specialist medical education programs. Educational program is not only limited for the internal community of FMUI, but also accessible for the external FMUI institutions. This initiative aligns with the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia's program called Merdeka Belajar Kampus Merdeka (MBKM) or Freedom to Learn-Independent Campus. The MBKM program allows students to gain learning experiences outside the campus and enhance the quality and relevance of undergraduate education (Wulandari et al., 2021). One of the MBKM programs that can be undertaken at iMuseum is practicum utilizing the museum's collections, along with the educational materials such as displayed posters and videos. The utilization of university museums to support formal education is also has been widely implemented in foreign institutions as well, including the Anatomical Museum of Leiden University Medical Center in the Netherlands (lumc.nl), the Anatomy Museum of the Department of Anatomy, Yoo Loo Lin School of Medicine, National University of Singapore in Singapore (medicine.nus.edu.sg), and the Medical Museum of Kawasaki Medical School in Japan.

The Integrated Practicum of Growth and Development Module is a new practical activity developed by FMUI that has been regularly conducted at iMuseum since 2020. This practicum is conducted under the collaboration between the preclinical (Anatomy, especially Embryology) and the clinical (Pediatrics) disciplines of FMUI. The museum's collections, including posters, animated videos, medical models, and human embryology specimens, serve as valuable learning tools for this practicum. The utilization of the diverse iMuseum’s collections aims to provide students with immersive and real-life learning experiences by directly observing human embryology specimens and utilizing resources such as mannequins, posters, and 2D and 3D animated videos to gain comprehensive knowledge about human development from conception to adulthood.

A vital aspect in assessing the overall success of the practicum lies in evaluating student satisfaction questionnaires that gauge their perception of the implementation of the practicum. Satisfaction refers to a positive perception that arises from receiving services that meet or exceed expectations (Guilbault, 2016). Satisfaction measurement is the important process to gain valuable insights about the quality of the system (Fuad & Harisun, 2019). Therefore, the evaluation of student satisfaction holds significant importance as it helps in determining the effectiveness of the program and provides feedback for improvement in the future practicum

activities. Additionally, evaluation enables the assessment of program effectiveness and serves as a means to determine the need for any necessary changes (Haroon, 2010). The results obtained from the evaluation process also offer valuable input for institutions to develop policies that address student satisfaction. Several key aspects in the assessment of satisfaction of Integrated Practicum of Growth and Development Module are considered, including the completeness of materials, the competence of the resource person, and the availability of facilities and infrastructure. The evaluation involves analyzing data from satisfaction questionnaires, including both internal and external students of FKUI who take part in the module. The objective of this analysis is to determine the level of participant satisfaction and to identify potential differences in satisfaction levels between internal and external students of FMUI, also to explore any correlations that may exist between satisfaction levels and the post-test scores of the practicum.

2. METHODS

This study was a program evaluation using a cross-sectional research design. The participants of the study consisted of students from the internal program of FMUI, including the Regular Class (RC) and the International Class (IC), and external FMUI students from two FMUI affiliated medical institutions, including External 1 (E1) and External 2 (E2). These students participated in the Integrated Practicum of Growth and Development Module at iMuseum IMERI FKUI from 2020 to 2022. The analyzed data was a total sample of satisfaction questionnaire results obtained during the practicum and the students' evaluation scores (post-test). The research questionnaire consisting of 16 questions as a research instrument was tested for validity with the Pearson's correlation test and tested for reliability by looking at the value of Cronbach's Alpha. These tests aimed to establish the questionnaire's validity as a measurement tool and determine the extent to which it can be trusted and relied upon.

The satisfaction level obtained by descriptive analysis of satisfaction levels to provide an overview of the satisfaction experienced by both internal and external FMUI medical students. Furthermore, an independent t-test was conducted to assess any differences in satisfaction levels between the two groups of students. The processing of students' post-test scores and bivariate analysis using Spearman's correlation test were also performed to determine the correlations between satisfaction and post-test scores. The data processing and analysis were carried out using Statistical Program for Social Sciences (SPSS) software version 26.

3. RESULTS AND DISCUSSION

The instrument test confirmed that the satisfaction questionnaire, which consists of 16 questions, was valid, reliable, and trustworthy. The validity test was conducted by analyzing the respondents' answers to these questions using Pearson's correlation showed that overall, the calculated critical value (r) for each statement is higher than the tabulated value with N=30, which is 0.361 (calculated r> 0.361). Additionally, the probability value (p) was less than 0.05, further supporting the validity of the questionnaire items (Table 1). The reliability test was conducted using Cronbach's Alpha value, which is considered reliable if the calculated value is higher than 0.6. In this study, the resulting Cronbach's Alpha value was 0.927, confirming that the research instrument was reliable and can be trusted.

The data that was obtained and processed for this study involved 449 respondents from four student groups: internal FMUI groups (RC and IC) and external FMUI groups ((E1 and E2).

The purpose of the analysis was to evaluate the levels of student satisfaction with the implementation of the practicum. However, the post-test scores were only available for the E1 group. Among the respondents, the majority were 19 years old (57.6%), female (66.2%), and from the FMUI Regular Class (53.9%) (Table 2). The study revealed that overall satisfaction with the practicum implementation was rated as satisfactory or good, with the highest level of satisfaction observed among students from the E1 group (Table 3). The average satisfaction level was higher in the external FMUI students (3.87 [SD 0.23]) compared to internal FMUI students (3.78 [SD 0.32]) (independent t-test, t = 3.395, and p = 0.001) (Table 4). The post-test scores analysis of the E1 group (n=69) showed that all students got 60 score or above, majority within the range of 85-100 or A grade (59.7%), and the average score was 86.08 (SD 7.77). However, these scores did not indicate a significant correlation with the levels of student satisfaction (Spearman's correlation test, p = 0.412, rs = 0.102) (Table 5).

Table 1. Instrument validity test

No	Responses	Correlation coefficient (r)	p
1	Practical guide is useful for me	0,444	0,014*
2	The practicum checklist provides clear practicum objective directions	0,423	0,020*
3	Practicum post-test encouraged me to study	0,545	0,002*
4	The topics presented cover the entire learning material	0,606	0,000*
5	The topics presented helped me to achieve the expected competence	0,678	0,000*
6	Practical materials (presentation slides, photos, videos) are varied and complete	0,798	0,000*
7	Practical materials are displayed clearly	0,843	0,000*
8	The 1st speaker (Embryology session) presented practical materials clearly	0,761	0,000*
9	The 2nd speaker (Child Development session) presented practical materials clearly	0,619	0,000*
10	The 1st (Embryology session) mastered practicum material	0,652	0,000*
11	The 2nd speaker (Child Development session) mastered practicum material	0,652	0,000*
12	The objectives of practicum learning are clearly conveyed	0,852	0,000*
13	The practicum implementation time is enough for me to achieve the expected competence (learning objectives)	0,905	0,000*
14	Practical implementation is well prepared	0,870	0,000*
15	In general, I am satisfied with the implementation of the integration practicum	0,887	0,000*
16	The integration practicum spurred me to learn	0,852	0,000*

Note: *) Valid with α=5%

Table 2. Characteristics of respondents

Characteristics	Ages	F	%
Age	17 years old	2	0,5%
	18 years old	87	22,8%
	19 years old	220	**57,6%**
	20 years old	58	15,2%
	21 years old	9	2,4%

	22 years old	5	1,3%
	23 years old	1	0,3%
Sex	Male	129	33,8%
	Female	252	**66,2%**
University	FKUI KKI	65	14,4%
	FKUI Regular	243	**53,9%**
	External 1	69	15,3%
	External 2	74	16,4%

Table 3. Student satisfaction with practicum implementation

Universitas	Min	Max	Average	Category
FKUI KKI	2,75	3,62	3,79	Enough Satisfied
FKUI Regular	2,80	3,82	3,77	Enough Satisfied
External 1	3,00	3,91	3,90	Satisfied
External 2	3,00	3,85	3,85	Satisfied

Table 4. Comparison of internal and external FKUI students' practicum satisfaction

Students	n	Minimum	Maximum	Average*	Standard Deviation	Category
Internal FKUI	308	2,75	3,82	3,78	0,32	Enough Satisfied
External FKUI	141	3,00	3,91	3,87	0,23	Satisfied

*) difference 0,09, t = 3,395, p = 0,001; significane with=5%

Table 5. Post-test assessment of students

Value	Score Range	F	%
A	85 - 100	40	**59,7%**
A-	80 - <85	15	22,4%
B+	75 - <80	6	9,0%
B	70 - <75	4	6,0%
B-	65 - <70	1	1,5%
C+	60 - <65	1	1,5%

C	55 - <60	0	0,0%
D	40 - <55	0	0,0%
E	00 - <40	0	0,0%

The implementation of the Integrated Practicum of Growth and Development Module at iMuseum exemplifies the utilization of iMuseum as a university museum. Both domestic and international museums have successfully utilized museums as educational spaces. According to Mareez & Willems (2014), conducting anatomy practicum in the museum offers several advantages, including facilitating independent or group learning, enhancing observation and visualization skills, and providing direct exposure to anatomical specimens for better understanding. Ruso (2014) highlighted that museums are ideal educational spaces as they engage students mentally, physically, emotionally, and socially, enabling them to practice and gain experiences simultaneously.

FMUI implemented the Growth and Development Module from 2020 to 2022, aligning it with the characteristics of first-year students who are typically around 19 to 23 years old. The Integrated Practicum of Growth and Development Module is a FMUI innovative program that is primarily attended by FMUI students, with the Regular Class being more dominant due to its larger quota compared to the International Class (IC). This study did not describe the correlation between student characteristics and satisfaction with the practicum. In line with our result, Ziaee et al. (2004) found that there was no correlation between student characteristics based on age and gender and satisfaction with educational services provided. However, Beatty and Feldman (2009) suggested that students' age group can influence their learning style, particularly in terms of motivation during practical sessions. Effective learning aligns with students' expectations, especially when they understand the subject's relevance to their desired career paths (Eagleton, 2015).

There was a notable satisfaction level difference between internal and external FMUI students regarding the implementation of the Integrated Practicum. The external FMUI group demonstrates higher satisfaction levels. Various factors can influence this difference in satisfaction. Although the factors influencing student satisfaction can be challenging to understand and measure (Prystowsky, 2001), in the context of this practicum, it can be identified that expectations and institutional reputation play a role in shaping the disparity in satisfaction level between internal and external FMUI students.

Expectation is a fundamental factor that significantly influences satisfaction with a service (Khan, 2021). Expectations can be a significant factor that contributes to differences in satisfaction level between internal and external FMUI students. It is likely that internal FMUI students, who have had the opportunity to visit iMuseum and engage with its collections during the "jumpa pahlawan" activity (the activity of respecting the cadaver or educational body) in the early stages of the Medical Education Program. In contrast, the Integrated Practicum of Growth and Development Module was the first experience for external FMUI students visiting the iMuseum. In addition, the students from the two external FMUI groups belong to newly established faculty of medicine that may not have fully developed educational facilities and infrastructure yet.

Institutional reputation is another factor that impacts student satisfaction. A higher institution reputation tends to have a stronger influence on student satisfaction (Bakrie, 2019). It is known that FMUI is the top-ranked medical faculty in Indonesia according to the

Quacquarelli Symonds university ranking agency through the QS World University Rankings (QS WUR) (Savitri, 2023). The reputation of FMUI as the top faculty of medicine in Indonesia can contribute to the higher satisfaction among external FMUI students regarding the practicum. The strong perception and reputation that FMUI holds among the public can shape the expectations of external FMUI students. As a leading institution, there is a probability that external FMUI students may perceive the activities conducted at FMUI as the best compared to other institutions. Dehghan et al. (2014) suggested that institutions with an excellent reputation also provide quality services. Student satisfaction with the implementation of the Integrated Practicum of Growth and Development Module reflects this perception.

Generally, the satisfaction levels of both internal and external FMUI students fall within the categories moderate to good. The satisfaction assessed in this study covered various aspects, such as module completeness, lecturer competence, staff service, and iMuseum facilities. These results indicate that implementing the Integrated Practicum of Growth and Development Module has been relatively effective. According to Mareez & Willems (2014), several considerations are crucial for enhancing the effectiveness of integrated anatomy practicums, including utilization of technology, interactivity, the integration between basic knowledge and clinical applications, and the organization of small-group discussions. The implementation of the module has incorporated several of these factors, as iMuseum facilities utilize technology with videos and touched-screen media directories, integrate basic knowledge with clinical applications through the display of normal anatomical specimens as well as pathological specimens and congenital anomalies, also encourage interactivity through question-and-answer sessions and discussions.

Students' orientations toward learning, including practicum sessions, can be categorized as learning-oriented or grade-oriented. Learning-oriented students view classes as opportunities to explore ideas and important information, while grade-oriented students perceive classes as environments for assessment and qualification attainment. Younger students/traditional-age students (17-22 years old) typically are more grade-oriented, preferring short quizzes, graded assignments, and activities that contribute to their overall grades. On the other hand, adult students (23-67 years old) are less concerned about examination policies and final practicum grades (Beatty & Feldman, 2009).

The assessment of students' competencies after the Integrated Practicum of Growth and Development Module was conducted by evaluating the post-test scores from the External 1 student group. The majority of students achieved high scores, with 59.7% attaining an A grade. The average score was 86.08 (SD 7.77). These results can be influenced by the diverse orientations and learning styles of students. As the module participants belong to the younger age group, the use of multiple-choice or short-answer post-tests is appropriate. Additionally, the grade-oriented learning orientation of the students may contribute to the relatively high average scores, primarily in the form of A grades.

The evaluation results indicated that no correlation between satisfaction levels toward practicum with the post-test scores. A separate study conducted in the context of problem-based learning in midwifery education for the "Pregnancy and Childbirth" topic also found no correlation between student satisfaction and learning progress measured by pre-test and post-test scores (Sangestani & Khatiban, 2013). Similarly, another study examining the correlation between student satisfaction levels and scores in the National Competency Exam for Medical Students also revealed a negative relationship between these factors (Sari et al., 2016). These findings suggest that various factors beyond satisfaction levels can influence post-test scores,

highlighting the need for organizers of the practicum to identify and address each aspect separately that impact satisfaction and contribute to improvements in post-test scores.

4. CONCLUSION

As a university museum specialized in health and medical education, iMuseum IMERI FMUI has the responsibility to fulfill the Three Pillars of Higher Education (Tri Dharma Perguruan Tinggi). In line with this, efforts are made to continuously contribute to educational activities, including active involvement in FMUI module learning activities. The Integrated Practicum of Growth and Development Module represents an educational innovation by FMUI, aiming to integrate basic medical sciences (preclinical) with applied sciences (clinical) through the utilization of the museum's spaces and collection objects. Over three years, the integrated practicum has consistently provided satisfaction to both internal and external FMUI students. The satisfaction level among external FMUI students is higher than internal FMUI students, prompting the need to identify the factors contributing to this difference. The evaluation of post-test scores reveals that all students achieved scores above the passing grade threshold, with a majority even receiving an A grade. However, no significant correlation was found between post-test scores and satisfaction levels. Therefore, further study is needed to assess the utility of the museum in educational activities, as well as to make improvements in the evaluation system and feedback mechanisms for this practicum.

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