CONTROLLING THE QUALITY OF FOOD PROCESSING TECHNOLOGY LAB WORKS PERFORMED DURING THE COVID-19

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Abstract

During the COVID-19 pandemic, food processing technology lab works performed by the students of Universitas Terbuka adhered to government and university-sanctioned policies. To accommodate the pandemic situation, lab work is performed online so students can fulfil the competency targets. Being a novel system, the quality of online-based lab work should be continually evaluated and improved. In this study, we focus on the performance of the online-based food technology lab work in the Universitas Terbuka. By inspecting the archived data in the Food Processing Sub-department in the Universitas Terbuka, we found that their lab works have been appropriately planned. Resources to assist the online-based lab works are online textbooks, lab work designs and units, online guidelines, video tutorials, forum group discussions with the instructors, and online lab work supervision. Software provided by the Universitas Terbuka to manage the online lab work takes care of the registration, learning, lab work, and scoring processes. The whole resources and software are managed by staff distributed at 39 regions across Indonesia. Despite all the effort exerted for the online-based lab work, we observe that the failure rate is as high as 11.16% nationally during the 2020-2021 academic year. The cause of the >10% failure rate for our online-based lab work system has not been diagnosed.

Keywords: web system lab work, the quality of online-based lab work, resources to assist the online-based lab works.

1 INTRODUCTION

Food processing technology practicum is a practical course at Food Technology Study Program, Science and Technology Faculty, Universitas Terbuka. This practicum activity was performed in the laboratory before the occurring of covid-19 pandemic. The laboratory used for this practicum activity is in partnership universities. The occurrence of covid-19 pandemic caused several laboratories of the partnership university closed or applying health protocol limitation in the semester of 2020.1. That condition means a lot of students couldn't finish their Food processing technology practicum activity.

Other than the closing of the laboratory and the application of health protocol limitation, in that semester there is also another regulation letter from General Director of Higher Education, Ministry of Education and Culture of Indonesia Number 302/E.E2/KR/2020 applicable since 31st March 2022 first statement announce that the longest study period for students which should end in the even semester of 2019/2020, can be extended by 1 semester, and the arrangements are submitted to the Higher Education Leaders according to local conditions and situations.

The Food Technology Study Program creates solution to overcome limitations and fulfill the conditions of the Ministry of Education and Culture of Republic of Indonesia regulation in

semester 2020.1 by making an online practicum activity for food processing technology course. Consideration of the implementation of online practicum is the opinion of Dy et al., (2001) which states that E-learning, online learning, online collaborative learning, virtual learning, web-based learning and technology-mediated learning are terms used instead of distance learning. Distance learning shows that this learning model can replace or complement traditional ways of teaching and learning.

This practicum is provided to all students enrolled in the Food Processing Technology practicum course in all Regional Offices (RO) in Indonesia. The distribution of students includes 39 RO. Considering that this is a new experience in the field of practical implementation in the Food Technology Study Program, it is necessary do quality control assessment in the implementation of Food Processing Technology practicum during the Covid 19 pandemic.

The purpose of this research is to find out:

The procedures of implementing an online practicum using website in the Food Processing Technology practicum course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Quality control at each process of the implementation of practicum in Food Processing Technology course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Students' practicum score performance in Food Processing Technology practicum course, Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

2   METHODOLOGY

In this research, observations were made on documents collected in the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka. The process of observation is as follows.

a.   Observation at the process of practicum activity implementation.

b.   Observation at the quality control of practicum activity implementation.

c.   Observation at the score performance of students who participated in the practicum activity.

Observations related to the implementation of the practicum are carried out on files collected in the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka for the registration period 2020.1-2021.2.

Observation of achievement scores is carried out on the data files of registered practicum participants for the registration period 2020.1-2021.2 obtained from the Universitas Terbuka Examination Center.

The observation time was carried out in March-July 2023. An observation sheet was used to record all observations. Data analysis was carried out descriptively.

3 FINDINGS AND DISCUSSION

The results of research observations in this research showed that the process of practicum implementation had been carried out through the following stages.

3.1 The implementation process of the Food Processing Technology course practicum

3.1.1 Practicum preparation stage

Practicum preparation is carried out by determining food processing methods that can represent the competencies that must be achieved by students participating in the practicum. There are 4 selected food processing methods, namely food processing at high temperatures, food processing at low temperatures, food processing by fermentation, and food processing methods with the addition of chemicals (acids).

Making practicum guides for students and human resources that support the practicum activity. The resources who support this online practicum process via website consist of practicum instructors, host, and inspector. Instructors were recruited from outside the Food Technology Study Program, Faculty of Science and Technology, Universitas Terbuka.

Making academic instruments supporting the practicum process consists of Practicum Program Plans. In the Practicum Program Plan there are Practicum Program Units, Determination of Pretest, Post Test, Practicum Events to be implemented, Competency achievements expected of practicum participating students, Criteria for Competency Performance Assessment of practicum participating students, and learning media used or required in the practicum process. In this practicum the learning media used is a video that has been uploaded on YouTube, students are given the link, so students can access according to their needs. The preparation of this academic instrument is made by the Food Technology Study Program.

Making operational instruments consists of preparing applications to access practicum files, uploading student practicum scores, uploading report and entering student scores. This online practicum operational support is assisted by the Terbuka University Study Assistance Unit.

Online practicum support services via website are implemented by the Distance Learning Assistance Unit which was determined by the Vice Chancellor for Information Systems and Student Affairs at Universitas Terbuka. Support services consist of making practicum classes, instructor data entry, and data administration maintained by officers at the Distance Learning Assistance Unit. Each practicum class includes a maximum of 15 students and 1 instructor.

3.1.2   Practicum Implementation Stage

Perceptions understanding coordination is carried out by the Head of the Food Technology Study Program and the Person in Charge of the Practicum of the Faculty of Science and Technology Study Program, Universitas Terbuka with online practicum service supporters via website and the coordinator of Study Assistant and Teaching Material Services throughout the Universitas Terbuka Regional Offices whose students become practicum participants. This activity is also carried out for instructors and students participating in practicum. Perceptions understanding coordination in the implementation of practicum activity aimed to prepare the instructor to teach virtually. This is in accordance with the opinion of Keshavarz et al., (2022) which states that the professional development of online classroom management is necessary to prepare teachers to teach in a digital environment.

Information about schedule, material, and practicum video link delivered to the students, instructors, Study Assistance Unit officers through email and WhatsApp at least 2 weeks before practicum activity started. Thus, students are expected to be able to prepare a good and stable internet connection, study practicum material, prepare materials, and tools needed for practicum.
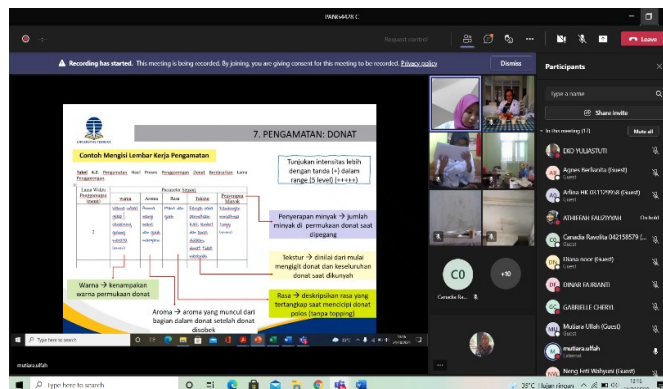

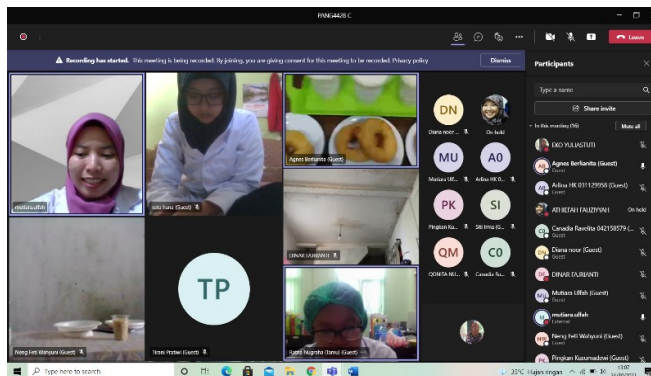*Figure 1. Food Processing Technology Practicum Introduction*

Figure 2. Implementation of Food Processing Technology Practicum

The practicum is carried out according to the schedule that has been announced. The instructor will give a pretest in the first session and followed by practicum activity according to the predetermined Practicum Program Unit. After the fourth session, students will be given a posttest. During the practicum, the instructor observes the student practicum through the camera via website to give students practicum score. Students will also be given an individual assignment. To complete the individual assignment, students have to record and send the report to the instructor via email. Individual assignments are one of the components in student assessment.

3.2 Quality control in every process of food processing technology practicum course activity

3.2.1 Quality control in achieving the expected student competency

Students participating in online practicum are distribute across various regions in Indonesia. Instructors in this practicum are recruited from various regions in Indonesia. In order to control the achievement of the student's competency in the practicum, an instrument for controlling the achievement of the competence of students participating in the practicum is needed as a quality controller for the practicum. The practicum achievement control process starts from the provisions of the instructor's educational background requirements, the practicum program design, the practicum implementation program unit. Food Technology study program, Faculty of Science and technology, Terbuka University develops a practicum program design to be used as a standard for practicum implementation and competency achievements for students participating in Food Processing Technology practicum. In the Practicum Events Unit, there are main activities that must be carried out by the instructor and provisions ranging from measuring student competency before participating in the practicum and after attending the practicum, practicum activity, material explanation that must be carried out during practicum by the instructor, practicum activity

that must be followed by students, and video links that students must access. These practicum materials can be accessed by instructors on the lms.ut.ac.id application. With this Practicum Program Design as a standard, it is hoped that the implementation of the practicum will produce the same competencies from the students participating in the practicum.

3.2.2   Quality control in implementation of online practicum via website

In the implementation of online practicum via website, quality control is carried out by the Food Technology Study Program with officers from lecturers supporting the Food Processing Technology course and the Universitas Terbuka Study Assistance Service unit. This activity is called "Practicum Monitoring". Monitoring instruments are used in this activity. Monitoring instrument use for evaluating the implementation of practicum activity. Practicum activity evaluation held by Study Program and Study Assistance Service unit. Evaluation results will be used to improve practicum activity in the next semester.

3.2.3   Quality control in the process of Assessing Student's Achievement Competency

Competency achievements of students participating in the Food Processing Technology practicum course include practical score and report score. In the implementation of the practicum the value of student skills in participating in the practicum is assessed by the instructor in each class with the assessment criteria determined by the Food Technology Study Program, Faculty of Science and Technology. Student report score is determined based on the evaluation of the report which is prepared individually from each practicum participant student. Student reports are uploaded on the practical.ut.ac.id application. The instructor assigned to do assessment is different from the practicum instructor in the student class. Student practicum reports assessment uses criteria that have been determined by the Food Technology Study Program, Faculty of Science and Technology. The result of the score evaluation will be documented in praktik.ut.ac.id application.

Practicum scores and student practicum report scores are then processed into components of the final practicum score at the Terbuka University Testing Center. Determination of grade based on combining value components is determined by the Food Technology Study Program with approval from the Vice Chancellor for Academic Affairs at the Terbuka University. Based on this regulation, the practicum value for the Food Technology course is consistent with predetermined standards. Competency achievements quality of students participating in the Food Processing Technology practicum course based on predetermined grades are expected to have the ability to be controlled from each class in each semester.

3.3 Student Achievement score in Food Processing Technology Practicum Course

Table 1. Student's score in Food Processing Technology Practicum Activity

Registration Period	Grade A (%)	Grade A- (%)	Grade B (%)	Grade B- (%)	Grade C (%)	Grade C- (%)	Grade D (%)	Grade E (%)
2020.1	100	0	0	0	0	0	0	0
2020.2	100	0	0	0	0	0	0	0
2021.1	78.38	1.35	2.70	0	0	0	0	17.57
2021.2	92.86	0	0	0	2.38	0	0	4.76

Table 1 shows the achievement scores (in the form of grades) from students participating in the Food Processing Technology practicum course in semester 2020.1 to 2021.2. In semesters 2020.1 and 2020.2 all students participating in practicums received grade A, this means that all the practical competencies were achieved. In semester 2021.1, only 78.38% of students who received grade A, meaning that not all students participating in the practicum could achieve all the competencies that were practiced, there were even students who could not achieve the specified competencies (17.57% received grade E). This also happened in semester 2021.2 (4.76% got grade E). The decrease in the competency achievement of the students participating in the Food Processing Technology practicum course is suspected to be in the condition of the practicum participants who are less conducive to participating in the practicum.

The stages carried out in this study have fulfilled the main steps in quality control, namely setting standards in the implementation of practicum (determination of practicum competency achievements for students), assessing the suitability of implementation with predetermined standards through implementation monitoring, and taking corrective actions for practicum implementation. This control is in accordance with the opinion of Muhandri et al. (2021) which states that the three main steps in quality control are (1) setting standards, (2) assessing conformity (measure and comparing with standards), and (3) taking corrective actions when necessary

4 CONCLUSION

The conclusion of this study is that at each stage of implementation, performance standards and good quality control have been determined. Research still needs to be done to find out the causes of student achievement that has not been optimal.

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