

# CHALLENGES OF REMOTE ASSESSMENT IN HIGHER EDUCATION IN THE CONTEXT OF COVID-19: A CASE STUDY OF YERSIN UNIVERSITY

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## TÓM TẮT

Các cơ sở giáo dục đại học đã gặp nhiều trở ngại trong hoạt động dạy-học do sự kiện COVID-19 bất thường. Do thiếu sự chuẩn bị, kết hợp với những hạn chế cố hữu của đánh giá từ xa, việc thực hiện đánh giá từ xa trong giai đoạn dịch bệnh COVID-19 đã gây ra những trở ngại chưa từng có cho các cơ sở giáo dục đại học. Nghiên cứu đã xem xét các vấn đề về đánh giá từ xa trong các cơ sở giáo dục đại học trong sự kiện COVID-19, sử dụng trường Đại học Yersin như một nghiên cứu điển hình. Thông qua các bảng câu hỏi và dữ liệu được thu thập từ 6 ngành học, nghiên cứu đã xem xét những khó khăn của việc đánh giá từ xa nói chung, cũng như sự thiếu trung thực trong học tập nói riêng. Những thách thức chính được xác định trong đánh giá từ xa là: không trung thực trong học tập, thiếu hụt về cơ sở hạ tầng, mức độ đạt được mục tiêu học tập của học sinh khi nộp bài đánh giá. Để giảm thiểu sự thiếu trung thực trong học tập, việc chuẩn bị các bộ câu hỏi khác nhau cho từng học sinh được coi là cách tiếp cận tốt nhất. Thuyết trình trực tuyến cũng được coi là một lựa chọn tốt để kiểm soát tính trung thực trong học tập. Việc kết hợp các phương pháp đánh giá khác nhau, ví dụ như nộp báo cáo với trình bày trực tuyến, giúp giảm thiểu sự thiếu trung thực trong học tập vì giám khảo sẽ có cơ hội xác nhận xem bài làm có thực sự là của sinh viên đó hay không.

**Title:** Những khó khăn của hoạt động kiểm tra đánh giá ở bậc đại học trong bối cảnh đại dịch COVID-19: Một nghiên cứu tình huống tại trường Đại học Yersin Đà Lạt

**Từ khóa:** COVID-19, đánh giá từ xa, thiếu trung thực trong học tập

**Keywords:** COVID-19, remote assessment, academic dishonesty

## Lịch sử bài báo

Ngày nhận bài: 13/4/2022

Ngày nhận kết quả bình duyệt: 27/4/2022

Ngày chấp nhận đăng bài: 16/6/2022

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## ABSTRACT

As a result of the unprecedented COVID-19 event, higher education institutions have experienced a number of challenges in their teaching-learning operations. Performing assessments remotely during COVID-19 has posed significant challenges for higher education institutions due to a lack of preparation and the inherent limits of remote assessment. During the COVID-19 event, the current study looked at difficulties of remote assessment in higher education institutions, utilizing Yersin University as a case study. For the project, questionnaires were designed, and data from four faculties were gathered and analyzed. The study looked into the challenges of remote evaluation in general and academic dishonesty in specific. The primary difficulties raised in remote assessment were academic dishonesty, infrastructure, coverage of learning goals, and student commitment to deliver assessments. The most effective technique for preventing academic dishonesty was judged to be creating unique questions for each student. It was also observed that employing an online presentation to control academic integrity violations was a good idea. Combining diverse assessment procedures, such as report submission with online presentation, helps to prevent academic dishonesty by allowing the examiner to verify if the submitted material is indeed the student's work.

## I. Introduction

Almost all sectors of the global economy have been influenced by the COVID-19 pandemic. Because performing face-to-face class requires physical contacts, universities are the areas in which most of their activities are impacted. The universities are obligated to cease face-to-face classes whenever it is announced that the virus will be spread by direct contact with surfaces in the immediate area with infected patients or things used by infected patients. For that reason, most universities and colleges have hurried to implement online programs and distance teaching. But this leads significant obstacles in learning to utilize the technology, and then gaining the access to essential facilities, such as laboratories.

Because most universities lacked clear guidelines and policies on distance teaching, several questions arose, including how to teach, what to teach, what the student and teacher's roles should be, the teaching environment, the teacher's workload, and the implications for equity, among others. Others problems of distance teaching are infrastructure, students' and instructors' experience with the online instruction, and the working hours due to COVID-19 pandemic for part-time students, or the difficulty when working from home. The combination of inherent and existing distance teaching issues, as well as unprecedented and present issues, such as a lack of guidelines, regulations, enough infrastructure, student and teachers' experience, make the endeavor more difficult. Kebritchi looked at the concerns and obstacles that come with online teaching and came up with three key

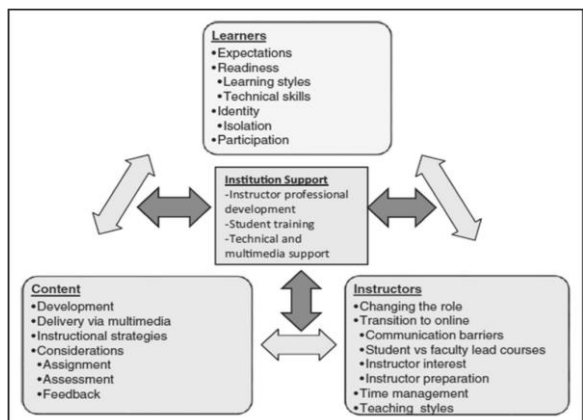
categories of issues: instructors, learners, and content production.

The research looked at the difficulties of distant evaluation in general, as well as academic dishonesty in particular. Academic dishonesty, infrastructure, coverage of learning goals, and student commitment to provide assessments were the key issues highlighted in remote assessment. Preparing distinct questions for each student was determined to be the most effective method for reducing academic dishonesty. It was also discovered that using an online presentation to regulate academic integrity infractions was a beneficial alternative. Combining different assessment techniques, such as report submission with online presentation, helps to reduce academic dishonesty by allowing the examiner to validate if the submitted work is the student's work.

## II. Literature Review

### 1. Challenges of online education

The concerns and challenges of online education are depicted in Figure 1. (Kebritchi, 2016).



**Fig. 1** Three primary components and challenges in an online learning environment (Kebritchi, 2016)

The other concern with COVID-19 is that it requires students to be evaluated remotely. In higher education, assessment provides three primary purposes: (1) to assist learning, (2) to establish accountability, and (3) to provide certification, transfer, and progress. Summative and formative assessments, as well as appropriate feedback mechanisms, are used in universities to aid learning. This comprises identifying gaps, competency, and progress utilizing assessment data in a diagnostic way, allowing teachers and students to change their learning strategies as well as teaching tactics accordingly. The appraisal of accountability is a function of responsibility. The majority of this is done by displaying that learning is encouraged. As a measure of accountability, national and international benchmarking and comparison would be established to achieve credibility. Assessment can also be used to provide recommendations.

Modules in university programs have unique learning goals. Assessment objectives are tied to accomplishment of learning outcomes (both in quantifying the degree of learning and aiding the learning process).

Enrollment in online courses has increased at a faster rate than enrollment in universities in recent years. The assessment of student learning is an important aspect of online courses that demands specific attention. This involves how teachers create and use formative exams and summative exams to assess students' learning and progress, as well as how they provide appropriate feedback (Kearns, 2012). Online evaluations have their own set of drawbacks and intrinsic benefits. The study examines many online

assessment options accessible in universities. The study also looked at the issues that university encountered during the COVID-19 lockdown period, using Yersin University as a case study. A research is carried out to prioritize and identify the suitable type of assessment for specific courses in order to address dishonesty in online assessment.

## **2. Types of online assessment**

Many universities have adopted distance learning in recent years, and assessing students online is difficult. Teachers must design a plan for using a suitable online assessment approach. To assess students' online learning, a number of distance examinations are offered. There were two categories: (1) timed proctored examinations and (2) open-ended examinations.

### **a. Proctored examinations**

They are timed and proctored exams that are often used in classrooms. Examinations may also be proctored online with the use of learning management systems like Sakai and Canvas. Additionally, Proctortrack software may be used for online assessment through webcams to monitor activity of students during test and alert the teachers if the students engage in suspicious behavior (Rutgers, 2020).

Proctored remote examinations, on the other hand, have a number of disadvantages, the most significant of which are listed as following:

- Online proctored examinations are frequently more stressful (for students) than in-person exams, thereby impacting the performance of students.

- On both the student and teacher sides, a remote proctored exams needs

good infrastructure, hardware, and software, and hardware. Furthermore, application like ProctorTrack has the potential to generate "false positive" indicators that mislead teacher.

- In a online proctored examinations, internet connection, hardware, or software failure might occur. As a result, a contingency plan should be created before the exam begins.

- Students may unwilling to remain under video surveillance for cultural or personal reasons.

- If students have technical problems with the system during an exam, it will be impossible to assist the students and resolve the issue remotely (Rutgers, 2020).

#### ***b. Alternatives to online proctored exams***

When considering alternate evaluations, learning goals seem to be a great place to start. The primary variables in determining the assessment styles are the expectations of students after they complete the course and the manner in which they must demonstrate their learnings.

Because the assessment goals are to evaluate the performance of students against LO (learning outcomes) and to promote learning activities, some assessment methods would be less difficult and more appropriate to use in remote assessing. As a result, depending on the course and questions, the following evaluations can be used.

- **Series of quizzes:** Quizzes are a low-stakes way for pupils to demonstrate their understanding of subjects. It also works as a sort of development feedback by providing continuous feedback on pupils' comprehension. To make cheating more

difficult, various application technologies like as Canvas and Sakai may be used to randomize questions on quizzes.

- **Take-home, open-book assessments:** These tests are utilized in the traditional teaching-learning. When a proctored test is not possible, a take-home examination can be used as the main assessment technique to get the learning outcomes. Online oral questions and presentations might be incorporated to ensure that the evaluation is completed by the student. Preparing conceptual questions which cannot be accessed quickly and immediately in many different sources, such as the textbooks the internet, is problem of the take-home exam.

- **Professional presentations or demonstrations:** These exams may be done in any online conferencing system, such as MS Teams, ZOOM, or Google Classroom, can be used to deliver the presentation.

- **Annotated bibliography:** An annotated bibliography is a summary of key concepts from a document, thesis, research paper, or other source that explains how they connect to your own thesis or ideas. Evaluative annotations provide your thoughts on the quality of author's ideas. Students' higher-order ability to analyze materials, compare diverse views, and provide rationales for their choices are assessed through an annotated bibliography assignment.

- **Fact sheet:** Fact sheet provides readers with the information in a straightforward and simple manner. A fact sheet is a piece of paper or a digital document that provides information on a company, organization, product, service, campaign, event, or other issue. A fact sheet should generally focus on no more than one

page long but just single problem, with a clear, easy-to-read style. As a result, students may construct a single-page information sheet about a variety of themes, corporations or works. The lecturer may assign a topic or students may choose their own one.

– **E-portfolio:** E-portfolios are used for both learning and evaluation. Students gather their most representative or finest work from the semester, writing a brief introduction to each item or a critical portfolio introduction. The accomplishment of students can be assessed collectively in order to enhance a module. That may also be used to evaluate, sample, and organize, what the pupils learned. Faculty may use e-portfolios to see not just what students can accomplish, but also how they learn by looking at their reflections. (Rutgers, 2020).

### ***c. Precautions in preparing open-book assessments for quantitative courses***

In open-book and take-home examinations, academic dishonesty is a danger. Academic dishonesty not only disadvantages the cheater in the long run, but it can also make other students feel unappreciated for their efforts. Even the perception of cheating, which is more likely with take-home exams, would have a negative impact on student morale. As a result, several research show that frequent in-class assessments are better for learning retention than take-home examinations (Haynie III, 2003). If the assessment is taken from books or other sources, students can use the internet to search for solutions by looking up the assessment's terms or keywords. As a result, greater vigilance is required while producing an

openbook review. The followings should be considered during evaluation preparation:

- Ask conceptual questions that students can't answer by finding information from a lot of sources. For example, ask them questions such as "Explain why the existing system efficiency is lower than industry efficiency," "Explain the problem with the current method," or "Suggest an appropriate way to handle the given problem."

- Avoid using fill-in and multiple-choice questions. Instead, encourage students to exhibit the concepts, techniques, and strategy employed in their work, as well as explain why they picked the manner they did.

- If you're using problems from a textbook, change not just the numbers but also the names (e.g., Peter to Daisy, Trang to Phuong) and the circumstances (e.g., pulling a boat into letting a kite string out). Use variables and letters instead of specific numbers. This is due to the fact that many of the issues in popular textbooks have already been addressed elsewhere online.

- Don't merely randomize numbers while creating the exam. Also, make distinct elements of the task random. For example, in one version, the teacher may include a problem such as "maximize the volume of the box given its surface area," whereas another version may have "minimize the surface area of a box given its volume." But keep the same numbers for the two versions.

- Avoid questions that only need simple computations. Instead of "compute the input power," for example, give them an application in which they must also describe how to increase the input power. "Explain how the output power changes

if..." and "Discuss the effect of ambient temperature on the efficiency of..." are both good options.

- Questions that simply need simple computations should be avoided. Instead of "compute the input power," for example, give them an application in which they must also describe how to increase the input power. "Explain how the output power varies if..." and "Discuss the influence of ambient temperature on the efficiency of..." are both appropriate options.

- Clearly state the rules for the take-home test (including possible sources and collaboration methods) and explain why you picked them.

- Remind students of their college's academic integrity policies. Long-term success necessitates the traits of honesty and loyalty, which students should be reminded of.

#### ***d. Quality criteria of assessment***

Certain quality criteria should be used when selecting assessment types to guarantee that the objectives of assessment are satisfied. In this case, the following factors would be taken into account while selecting an evaluation.

- ***Validity:*** Because the major goal of assessment is to evaluate the learning of students based on a certain learning result, the technique should be acceptable for evaluating LO achievement.

- ***Reliability:*** Maintaining academic honesty is the most difficult component of remote assessment. To guarantee that the evaluation is free of cheating and fraud, preventive measures should be included in the assessment design. During the review process, as well as after submission, preventive procedures should be

implemented, as well as the identification of YU hanisms (Hsiao & Watering, 2020).

- ***Clarity:*** Because there will be no face-to-face interaction throughout the assessment time, and students may not be able to ask questions, the assessment should be clear to students. When students are unfamiliar with the new evaluation technique, it is vital to thoroughly explain the procedures and objectives, as well as provide relevant examples. This is true even if the questions are asked at a higher level than usual. Before distributing the evaluation, make a list of sample questions and, if possible, go over them with the students online (Hsiao & Watering, 2020).

- ***Avoid susceptibility for technical problem:*** Typically, the teacher will not be able to fix the student's difficulty during remote exams. The issue might emerge as a consequence of hardware or software failures, or as a result of the student's lack of understanding of the supporting materials. It is critical to plan ahead of time on how to cope with such issues (Hsiao & Watering, 2020).

### **III. Methodology**

#### ***1. Online assessment during COVID-19 lockdown at Yersin University***

Yersin University (YU) is a university in Dalat city of Vietnam. About 3000 students from many places in the country study science - technology, engineering, business - management, foreign languages at the institution.

YU has stopped face-to-face classes for the second week of the spring 2020 semester due to the unprecedented COVID-19 situation. The institution was planned to establish an alternate option to continue the teaching-learning process online after

the COVID-19 event and before the class suspension was determined, forecasting the government's suspension of face-to-face sessions. The institution has offered some trainings to the staff. The online Google Classroom technology was the main choice and the focus of the training. As a result, on the first day after the suspension of face-to-face classes, several professors used Google Classroom to effectively conduct an online class. But on the second day, when several faculties were transitioning to online instruction and attempting to use Google Classroom, the faculties ran into a connectivity difficulty. As a result, the university has chosen to switch to MS Teams, and the appropriate preparations have been made in terms of connecting the platform to the college system and giving staff training.

## 2. YU assessment strategy

It was declared on March of 2020 that other universities and colleges in Dalat will be closed for some months beginning March 30, 2020. Families are encouraged to keep their children at home during this time. Except for those personnel whose presence is required in the best interests of the job, the Ministry of Education declared that teaching and administrative staff will be suspended. Following the suspension of the face-to-face session, the university focused on continuing the lesson via MS Teams, an open-source online conferencing technology. The university began offering online programs without making a decision on evaluations since classes were expected to resume within this time. On the other hand, it was announced that the lockdown would be extended until further notice.

As a result, the institution has begun looking at various assessment techniques

for the semester, and two guidelines have been created. "Supportive Measures and Evaluation Approach," the first guideline document, explains the main concepts and measures used by the university to improve the assessment in this semester.

The assessment approach and supportive measure is based on the Ministry of Education's guidelines; the university's teaching and learning strategy; COVID-19 approaches taken by universities around the world; QAA's guidance documents; and consultations with students and staff. The following key concepts underpin the alternative assessment approach.

1. The primary focus is the health and well-being of the whole YU community.
2. Provide chances for students' growth, graduation, and employment to be taken into account.
3. The current stressful situation should have no bearing on the graduation classification.
4. Maintaining general academic standards, as well as ensuring that learning results at the module level are not harmed.
5. Assessment modes must take into account the capabilities of students working from home to achieve learning goals, as well as how staff members can evaluate these decisions.
6. Assessment modes should allow students to submit their work online.

### Questionnaires and analysis

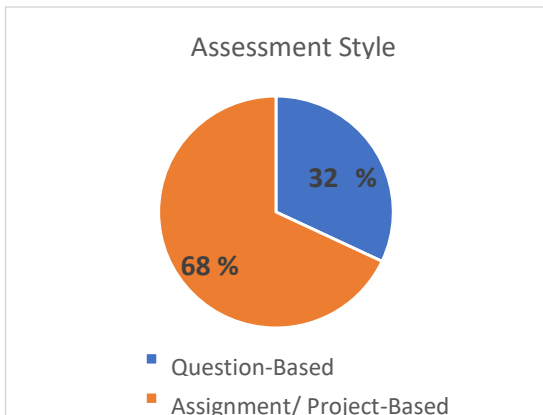
A questionnaire was constructed and circulated to all faculties via Google Forms to study the remote assessment issues experienced by all faculties, and 50 answers were gathered. The questionnaires were divided into sections as a survey to collect

ideas of the staff about assessment technique and remote assessment problems.

**Result and discussion**

**Assessment method**

Respondents are requested to choose which type of assessment is appropriate for their particular module when the assessment strategy is changed from the traditional assessment approach employed in the past to the current remote assessment method. There were two types of options accessible to me. The first is a question-based assessment that should be completed in a timely manner. The second type of evaluation is one that is based on a long-term task or project that must be finished and presented. According to Figure 2, 68 percent of respondents choose assignment and project-based evaluation for their module, while the remaining 32% prefer question-based evaluation. The assessment is expected to be finished in a short time because the degree of difficulty for question-based evaluation is lower than for assignment/project-based assessment, and proctoring might be considered during the assessment period if the infrastructure is available.



**Fig. 2** Assessment style

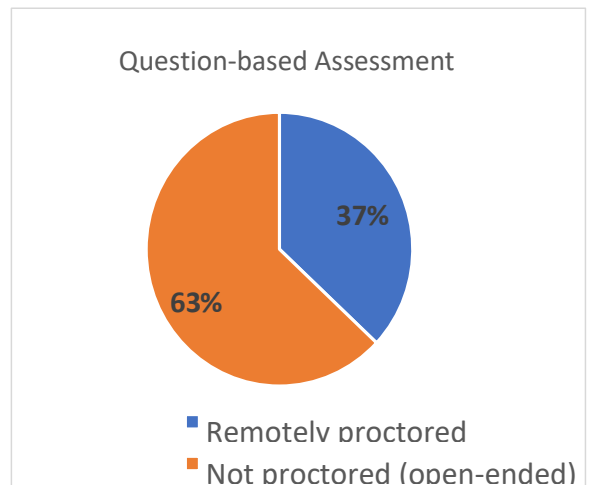
As a result, one question was included in the questionnaire for respondents to indicate whether they prefer proctoring students remotely or not. As indicated in Figure 3, 62.5 percent of respondents chose not to proctor students while they were

writing the assessment, whereas the remaining 37.5 percent favoured proctoring.

The fact that a large number of respondents opted not to proctor students while they were writing the exam might be related to their concerns about the infrastructure needed to do so.

Various sorts of projects or assignments might be produced and provided to students for assignment and project-based evaluation. Because the evaluation nature and evaluation technique may differ, projects/assignment-based assessment were also addressed independently. As a result, special questions were developed for this study in order to examine the evaluation techniques of project-based and assignment-based work independently. For assignment-based assessment, respondents were given a variety of evaluation and submission methods to prioritize based on their relevance to their respective modules.

- Report
- Open-book assignment
- Professional presentation
- Annotated bibliography
- Fact sheet
- E-portfolio

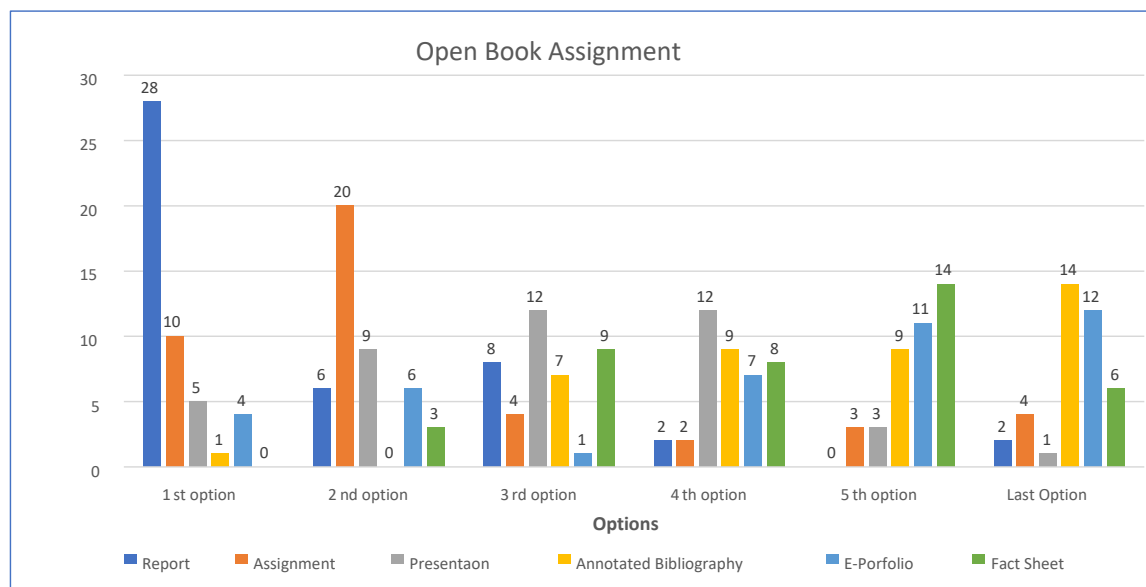


**Fig. 3** Proctoring the assessment



According to Figure 4, 28 out of 50 participants favor report submission for module assessment as their first choice. As their second choice, twenty respondents favor an open-book assignment, while ten respondents prefer it as the first option. Presentation was chosen as the third choice by 12 respondents, and it was also chosen as the fourth option by 12 respondents. 14

people chose annotated bibliography as the final choice. E-portfolio appears to be less popular as well; twelve respondents ranked it as their final alternative, while 11 ranked it as their fifth. According to the respondents' responses, fact sheets are likewise less liked; fourteen and six respondents ranked them fifth and sixth, respectively.



**Fig. 4** Open-book assignment

Faculty preferences for report and open-book assignments were often greater than for the other alternatives. The assessment aspect, which allows for controlling academic integrities and covering the learning goals of the courses through Turnitin submission, might be the key causes.

The project-based evaluation is essentially a research-based assessment that requires more time and attention to detail. This assessment would involve a wide range of submissions and presentations.

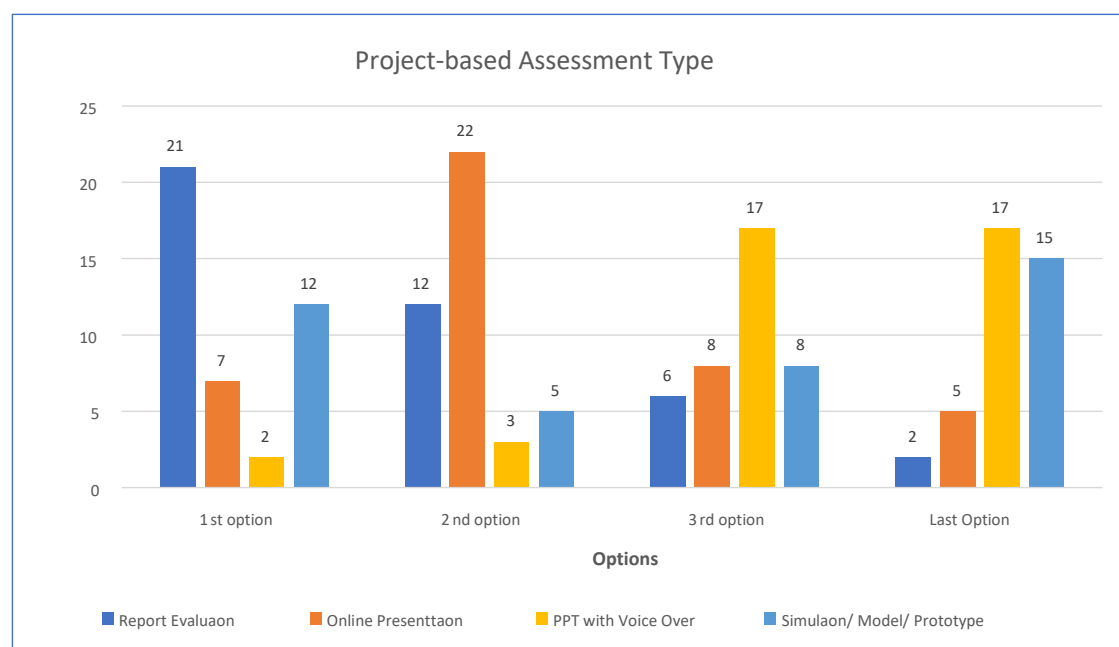
As a result, respondents were given the following four types of assessment and submission methods to prioritize depending on their module preferences.

- PPT with voice over evaluation
- Report evaluation
- Simulation/prototype/model evaluation
- Online presentation evaluation

Simulation/prototype/model evaluations and report evaluation were ranked first by 21 and 12 respondents, respectively, as shown in Fig. 5. With 22 and 12 respondents, respectively, report evaluation and online presentation received

the highest choice as a second alternative. For 34 responders, the third and fourth alternatives were PPT with voice over. Simulation/prototype/model evaluation was chosen as the last option by fifteen respondents. Because the modules are not all the same, the respondents' preferences were impacted by module type. The nature of their particular module may be one reason why a considerable proportion of respondents chose simulation/prototype/model as their first and last option.

Modules such as entrepreneurship, communication, and new venture creation, on the other hand, do not require simulation/prototype/model. The idea of adopting mixed evaluation methodologies for project-based assessment is another option that should be investigated. In addition to the provided materials, the evaluation of a project or simulation/prototype/model might include a PPT with voice over presentation or an online presentation.

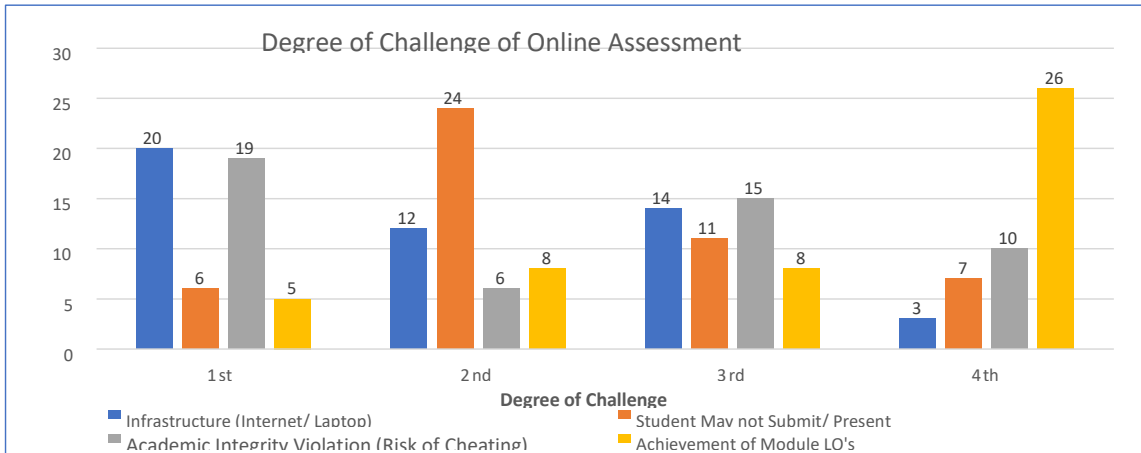


**Fig. 5** Project-based assessment

### Challenges of remote assessment

Respondents were given four sorts of problems to prioritize based on the severity of the issue during the online assessment. Figure 6 shows how respondents ranked the challenges from 1 to 4. The first-degree difficulty was chosen by 20 and 19 respondents, respectively, as an infrastructure problem and an academic integrity infraction.

The faith in students' commitment to submit the assessment using the Moodle platform was also cited as a second-degree obstacle by 24 respondents. The achievement of the module LO was viewed as another obstacle by respondents, with twenty-six putting it as a 4th degree challenge and only five seeing it as a 1st degree task.



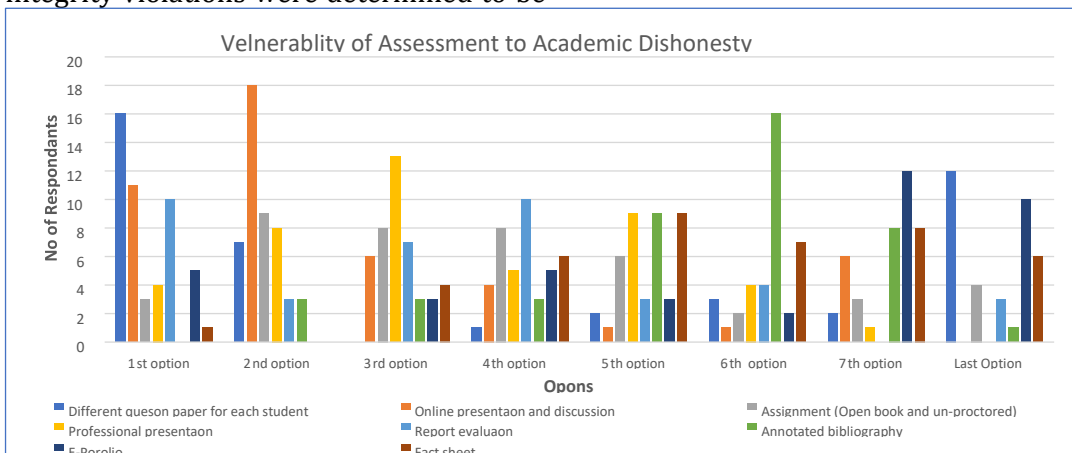
**Fig. 6** Degree of Challenge of Online Assessment

Because one of the key issues in online assessment is academic violations, respondents were given eight types of assessments to rank in descending order in terms of preventing academic violations, starting with the first choice and ending with the last option. The following were the evaluation kinds offered to respondents:

- Different question for each student
- Online discussion and presentation
- Annotated bibliography
- Assignment
- Report evaluation
- E-portfolio
- Professional presentations
- Fact sheet

As illustrated in Fig. 7, the top and second options for minimizing academic integrity violations were determined to be

preparing distinct questions for each student for 16 and 7 responders, respectively. Many respondents thought that using an online presentation to control academic integrity infractions was a good idea. Online presentation and discussion was chosen by 18 respondents as their second alternative, and by 11 respondents as their first choice. Professional presentation has also been highlighted as one of the assessment strategies that allows academic infractions to be controlled. Professional presentation was ranked third and second, respectively, by thirteen and eight respondents. To prevent academic dishonesty, 12 and 10 respondents chose e-portfolio as the 7th and last alternative, respectively.



**Fig. 7** Vulnerability of Assessment to Academic Dishonesty

### 3. Conclusions

The current study used Yersin University (YU) as a case study to analyze the problems of remote assessment in higher education institutions during the COVID-19 lockdown period. The study looked at the many forms of online assessments, as well as the measures to consider during online assessment preparation and the quality standards for online assessments. A questionnaire was constructed and circulated to all YU faculties using Google Forms. 50 responses were collected to study the distant assessment issues experienced by the faculties of various programs.

Project report, professional presentation open-book assignment, E-portfolio, annotated bibliography, and factsheet were among the evaluation and submission forms offered to responders. 28 responders chose report submission as their first choice, while another 20 chose unproctored open-book assignment as their second.

Most faculties ranked infrastructure problems and academic dishonesty as the top two obstacles on the questionnaire supplied to assess the degree of difficulties during COVID19 lockdown time. The commitment of students to submit evaluations was also cited by 24 faculties as a source of worry, and was cited as the second problem. To address this problem, the institution has developed some follow-up procedures at the faculties and departments to encourage students to take online classes and submit assessments. The obstacles connected to infrastructure student commitment to attend online

classes and submit evaluations might be remedied in the future by the institutions, as both of these issues were developed unexpectedly as a result of COVID-19. However, the issue of academic dishonesty is not a speculative one. As a result, one preventive approach was identified as the assessment type utilized for unproctored assessments, then responders were asked to pick the relevant assessment method. As a consequence, 16 and 7 responders were assigned to prepare alternative questions for each student as their first and second choices respectively, to avoid academic dishonesty. The alternative option, online presenting, seemed to be effective in preventing academic dishonesty. Online presentations were favored by 18 responders as their second choice, and by 11 responders as their first choice. Using a variety of assessment approaches to target the module's learning goals while lowering the risk of academic dishonesty might be a better way to target the module's learning goals while decreasing the risk of academic dishonesty. Academic dishonesty has a deleterious influence on both the teaching-learning process and the uneven distribution of grades among students. Students who work hard in class and expect to be recognized for their efforts will become demotivated, and their learning will suffer as a result. Higher education institutions must improve student awareness of academic integrity problems and encourage students' ethics during the learning process by incorporating them into curriculum and cocurricular activities, in addition to the myriad control YU hanisms used throughout the assessment phase.

## REFERENCES

- Al-Shammari, Z. (2011). Assessment of student learning outcomes: Indicators of strengths and weaknesses. In ICERI2011 Proceedings (pp. 4228–4230).
- Archer, E. (2017). The assessment purpose triangle: Balancing the purposes of educational assessment. Paper presented at the Frontiers in Education.
- Capsim. (2020). The five levels of assessment in higher education. Retrieved from <https://www.capsim.com/blog/the-five-levels-of-assessment-in-higher-education/>
- Cooper, V., & Tschobotko, A. (2020). COVID-19 - higher education and student related challenges. Bevan Brittan LLP.
- Haynie III, W. J. (2003). Effects of take-home tests and study questions on retention learning in technology education. Volume 14 Issue 2 (spring 2003).
- Hsiao, Y. P., & Watering, G. A.v. d.. (2020). Guide for choosing a suitable method for remote assessment considerations and options: University of Twente.
- Kearns, L. R. (2012). Student assessment in online learning: Challenges and effective practices. *Journal of Online Learning and Teaching*, 8(3), 198.
- Kebritchi, M., Lipschuetz, A., & Santiago, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. *Journal of Educational Technology Systems*, 46(1), 4–29.
- McCabe, D., Butterfield, K., & Trevino, L. (2012). *Cheating in college: Why students do it and what 633 educators can do about it*. Baltimore: Johns Hopkins Press.
- YU. (2020a). Alternative/ revised assessment preparation guide for spring and summer 2020. Yersin University.
- YU. (2020b). Supportive measures and assessment approach for spring and summer 2020. Yersin University.
- Nair, V. (2020). Classes suspended at schools and all institutions for a month. *Oman daily Observer*. Retrieved from <https://www.omanobserver.om/classes-suspended-at-schools-and-all-institutions-for-a-month/>
- Observer, O. (2020). Muscat lockdown from Friday, schools suspended until further notice. In *Oman Observer* Retrieved from <https://www.omanobserver.om/muscat-supreme-committee/>.
- Organizing your social sciences research paper. (2020). Retrieved from <https://libguides.usc.edu/writingguide/annotatedbibliography>
- Rutgers. (2020). Remote exams and assessments. Retrieved from <https://sasoue.rutgers.edu/teaching-learning/remote-exams-assessment#special-advice-for-open-book-assessment-in-quantitative-courses>
- WHO. (2020). Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations. Retrieved from <https://www.who.int/news-room/commentaries/detail/modes-oftransmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>
- Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending classes without stopping learning: China's education emergency management policy in the COVID-19 outbreak: Multidisciplinary digital publishing institute.