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Practical Article

Assessing online learning during the COVID-19 pandemic: Reflections from pharmacy communication classes

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Many universities, including the author's pharmacy school in Japan, were not prepared to make the automatic change to online learning during the "stay at home" advisories and quarantines of the COVID-19 pandemic, revealing flaws in the educational system and provoking social and academic disruptions in the learning process. Instructors provided students with online lectures based on the textbooks and assumed that students would study independently to complete the courses. The result of this teacher-based online lecture style was that many students grew unmotivated and neglected their studies, leading to gaps in their learning and an imbalance in the educational process. In the pharmacy school's first and fourth-year communication classes, the author gave weekly online assignments and mini-tests through various platforms and apps and responded to each of them with scores and individual comments to promote communication and information exchange. The students emailed the teacher about their questions and concerns and gave feedback through online surveys about the classes. Almost all fourth-year students and about half of the first-year students completed the written and spoken tasks and passed their courses. The employed formative and summative assessment strategies maintained a teaching/learning balance in the educational process and improved student participation to complete and pass the classes despite the changes in learning style.

Key words: online learning, summative and formative assessment, communication, COVID-19 pandemic

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Introduction

The novel coronavirus COVID-19 pandemic brought a radical change to all levels of education worldwide and ushered in a renewed era of online learning, particularly with the government-led actions such as "stay at home" and "social distancing"[1,2]. The emergency situation produced "pandemic pedagogy", which was seen by some as a unique type of education forced into effect by public health policies and political agendas[2]. The computer industry responded to the substantial educational issues by creating a plethora of new online platforms, programs, and applications (apps). Every educational institution focused on getting its course of study online as quickly as possible within the limits of the available technology and online infrastructure. Students and faculty learned to cope with the physical and emotional restrictions of digital learning, slowly settling into a new routine and pattern of learning. The continuing spread of the virus and a lack of authorized treatment and vaccine delayed a return to the classroom, and schools had to develop long term plans for digital learning to maintain social distancing. At this unprecedented time, university instructors were forced to make hard decisions about the direction of their classes and adjust their expectations while reflecting on the positive and negative experiences of remote learning and the "new normal"[1–4].

The author's university lockdown began in March at the end of the last school year, so textbooks and workbooks were mailed directly to the students' residences at the beginning of the new term in April. Synchronous and asynchronous lecture videos were streamed to the students through various digital platforms. Supplemental materials were provided virtually in the school's server as document files, audio or visual files, and PowerPoint[5] slides where links to related websites were inserted. The school's server called iPo provided a platform for passing information one-way to students and became the prime method of communication between the school and the students during this time of crisis. The iPo folders held all school-related information, notifications, and instructions regarding health and studies, as well as all the neces-

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sary class materials for online studies. The students had access to the iPo server through their school email addresses.

The problem with the one-way flow of information from the school and teachers to the students was the absence of feedback regarding completion of student work, comprehension, and confirmation that the materials had arrived in the designated inboxes. Instructors were left wondering if the students were studying and learning from their lecture videos and the materials provided in iPo. The streaming links gave some indirect feedback, such as which students had logged in and when, but did not ensure that they were actually watching and paying attention. Some instructors added extra online apps and activities that could be tracked online, but again, learning and comprehension could not be verified. The addition of assessment activities became the only viable option to motivate the students to respond and exchange information. It was a vital ingredient in creating an interactive learning environment despite the distance of online learning.

Assessment is an integral part of the learning process[4]. Not only does it balance the input and output of information, but it provides benchmarks to judge the students' progress with feedback between the teacher and students[6]. There are two kinds of assessment regularly employed for grading. Summative assessment is a more structured way to assess students' knowledge of a subject with tests and quizzes to determine a pass or fail grade[4,6]. It is often considered a teacher-based form of assessment, as it does not allow students to interact with the knowledge except to remember it for a test[7]. In the author's first-year classes, for example, weekly online mini-tests were used to confirm the completion of a unit of study. Formative assessment, on the other hand, is viewed as student-based and often includes a rubric that allows the students to self-assess[6,7]. It is commonly used in performance settings to integrate all the learning and knowledge into a cumulative activity. The author used it to monitor communication skill development through role-playing between pharmacists and patients via video presentations. It was believed that the combination of these assessment strategies would boost student motivation and promote self-reflection and independence[7,8].

In face-to-face classes, verbal communication, together with body language and facial expression, is gauged regularly and automatically. Students can ask questions and receive answers immediately from the teacher or classmates. Feedback from teachers can be given verbally or written on tests and assignments with comments and scores. However, it became difficult to understand the students' responses and the teacher's expectations with online learning. Teachers struggled to monitor the students' learning and connect with the students without face-to-face contact. Since it was essential for both the teacher and students to receive feedback from each other, summative and formative assessments were employed to allow for information exchange and communication. Student surveys were also used to provide an important communication channel to the teacher about the online lessons and activities[6]. This paper reviews the strategies applied to complete the teaching-learning process during the first term of online learning in a pharmacy school's communication classes.

Method

Asynchronous lectures were recorded weekly using a large TV monitor to display the PowerPoint slides and supplemental videos alongside the instructor. The instructor spoke directly to the students through the videos as if in-class, maintaining eye contact with the camera and showing a friendly persona. Audio recordings that supported the textbook were used during the lecture video and were also uploaded to the iPo shared files for student access in their self-study. The lectures were based on the course syllabi and the textbooks. They were modified to shorten the time spent online, and all group or partner activities were eliminated. Pre-study and self-study readings and worksheets were provided in both PDF[9] and Word[10] files on the iPo so that they could be accessed from any device, as smartphones and tablets require PDF for ease of reading. Class marks were based on the online mini-tests and assignments given throughout the term without a final exam.

The communication training classes required a two-way response system, so a closed video response app called Flipgrid[11] was utilized in all the classes as a means to check learning and skill development. The students responded to the speaking-focused tasks introduced in the lecture videos by recording themselves on a short video clip (15 seconds to two minutes in length), which they uploaded into their class file on the app. The instructor watched the video and sent back personal feedback on their presentations via the student's school email address. The video clips were used for both summative and formative assessment. While both the first- and fourth-year students submitted video clips, the senior pharmacy students were expected to research specific medicines online and then explain them through pharmacist-patient role play. The scenario was set in a pharmacy, and they were to communicate the essential drug information to a patient professionally. This cumulative task integrated the research and communication skills learned in the lectures.

Weekly mini-tests and worksheets in Google forms[12] were used as a summative assessment to check for understanding of the lectures and textbook content and participation in the activities. Links to the forms were in the iPo and could be accessed from any device with an email address. The mini-tests included a combination of multiple-choice and short writing questions. Students could use their textbooks and repeat the forms as many times as they wanted. They were given a week between lectures to complete the assessments. The instructor wrote comments to the students within the forms during marking and explained or retaught any problems in

Table 1 Results of Informal Online Class Survey — Spring 2020

Year of Study/ Class	No. of Registered Students	No. of Online Students	No. of Survey Responses	Watched all video lectures (%)	Want paper tests (%)	Want face-to-face classes (%)	Liked video tasks* (%)	Liked online mini-tests* (%)
4/A	50	49	32	91	47	75	6	59
4/B	78	77	39	100	15	51	18	72
1/Y	68	37	30	100	37	83	23	47
1/E	82	45	32	97	34	91	50	81

* Answered 4/5 on Likert. Permission received from students to report survey results. Includes student participants from April to July 2020.

the following lectures. These forms were closed after the set deadlines but could be reopened later, if necessary.

The school's student survey was given at the end of the course, but the informal class survey created by the instructor was open for a week three-quarters of the way through the term. Both of the online surveys included multiple-choice responses and a comment section. The informal survey inquired beyond the presentation of the lectures to include questions about the devices the students used and employed a 5-point Likert scale for questions about the students' feelings towards the new way of learning and online activities. The responses were used for improving future online lessons and activities.

Results

Table 1 shows that almost all of the fourth-year registered students participated in the online learning, whereas the compulsory and optional first-year classes had only 54% and 55% participation, respectively. There was a total of 128 students enrolled in the compulsory fourth-year clinical pharmacy communication classes, and 127 students passed the course. The classes were divided by order of student ID numbers into an A-Class and a B-Class to create smaller classes. The class averages for the summative assessments were 81% for the A-Class and 87% for the B-Class. Although all of the fourth-year students participated in the online lessons by completing the tasks and assignments, only half of the first-year students responded initially to the online classes (Table 1). The author's compulsory basic level English class (called Y for 薬学基礎英語) consisted of half of the total number of first-year students determined by order of their ID numbers. The optional conversation class (E for 英会話) consisted of two-thirds of the first-year students, with some of them also members of the author's compulsory class. At the end of the first term, 55 of 68 students of the basic level compulsory class and 61 of 82 conversation class students completed and passed the courses. The summative assessments produced class averages of 81% for the basic level compulsory class and 84% for the conversation class.

Some students communicated with the instructor through email and phone calls. Their questions mainly concerned course content or assigned tasks with some regarding their videos' privacy or inaccessibility to Wi-Fi or the apps. A review of email correspondence with the first-year students in April revealed questions about the content of an assignment, where the links were, or how to use the online apps. Later in the term, their correspondence focused mainly on confirmation of assignment receipt or the required content of the activities. Email correspondence with the fourth-year students was minimal (only about five messages in all) at the beginning of the term but increased later in the term regarding confirmation of assignment receipt or specifically about the usage of the apps. The content of the phone correspondence with the students was not recorded in detail, but the author recalled that some students phoned to request extra time for tasks if they could not complete them by the deadlines or for step-by-step instructions into an app.

The informal instructor-created online survey confirmed the number of students who participated and watched every lecture video (Table 1). Approximately 50 to 70 percent of the students admitted to viewing the lectures more than once. Five percent of the fourth-year students and around ten percent of the first-year students watched the lectures more than three times. They commented that the option to watch a section of the lecture repeatedly or listen to the audio at a slower speed was helpful to comprehension. Responses varied about the level of difficulty in the Google form mini-tests and assignments, but the majority of the students in both years preferred online testing over traditional paper tests. When asked about enjoying the video app activities, more first-year students, particularly the conversation students, responded positively to the video tasks than the fourth-year students. The latter commented that they did not like showing their faces and exposing their speaking ability to their classmates, despite knowing that it was a practice of communication skills. Some fourth-year students requested privacy and a "closed" video option. The first-year students did not complain about the privacy of their videos.

Other student comments from the author's informal survey revolved around the lecture videos and overall class presentation. For example, about one-third of the fourth-year students' comments (11 out of 31) mentioned the clarity of the teacher's voice,

the teacher's smile and facial expressions, and how it was uniquely different from the other class lectures. About a third of the first-year students' responses included the words "fun" (楽しかった) or "easy to understand" (分かりやすい). Three of the first-year students specifically mentioned their appreciation for the teacher's feedback to their posted videos. Half of the sixteen comments from the compulsory class concerned the all-English presentations and subject content with remarks about wanting more Japanese explanations or becoming accustomed to listening to English.

Discussion

While primary school education focuses on individual student learning styles, tertiary education often neglects to include diversity for learning due to the independent learning required at that level. For example, online teaching websites give school teachers specific instruction to diversify elementary online activities so that all students can succeed in learning regardless of their ability or skill. Some students do well with answering the structured multiple-choice or short-answer mini-tests, and others excel at the performance tasks that permit more freedom and open responses. While it is not usually possible for a university lecture to include visual, aural, or tactile learning options for student engagement, the combination of summative and formative assessment activities could improve student motivation and interest in the subject learning. In this study of online learning, it was observed that some students received high scores on the mini-tests and written assignments, while others did better at speaking and performing in the videos. Students could gauge their online learning progress from the assigned marks and the teacher's feedback, which is why both assessment styles were deemed necessary[6,8].

Summative assessments as mini-tests were given weekly after each online lecture with various question styles, such as short answer, multiple-choice, or fill in the blank, to obtain concrete scores. The video tasks were also used as a first-year summative assessment to check reading fluency or acquire spoken responses. The instructor assigned a grade simply for the completion of these activities. The formative assessment focused on observable learning in performance on the videos with feedback through a rubric. Rubrics allow for student self-assessment of "acceptable to higher level performance, and a teacher's feedback that targets a student's individual learning need for that task"[7]. For example, the fourth-year students used the rubric to ensure that the required components of medicine explanation and keywords, which were based on the practice and instruction from the lectures and textbook, were included in the pharmacist-patient dialogues. The instructor gave individual feedback to affirm or further instruct the students' video clips with comments and scores based on the rubric standards. The combination of the two assessment strategies effectively met the various students' learning styles and needs, kept the students focused on the learning goals, and allowed both the teacher and the students to judge the learning process.

The switch from face-to-face classes to online learning required an adjustment for all students, and it was commonly reported on the TV and online news throughout the spring that students were struggling with motivation and effort to complete their online studies. This situation would explain the low participation rate of the first-year students during this term learning (by watching the lecture videos and completing the weekly assignments and mini-tests). The fourth-year students already knew their classmates and teachers, the expectations of university studies, and how to access the university's online system so that they could adjust from the classroom to online with greater ease. They seemed motivated from the start of the term, with nearly 100 percent of the students completing the course, showing that they could continue learning online independently with little disruption from the pandemic.

On the other hand, the first-year students had the challenge of adjusting to their new tertiary-level studies without the previous experiences that the fourth-year students had. Many of them mentioned in their videos and emails the psychological pressures from the "stay at home" situation, the lack of structure in learning at home, unresolved Internet issues, and the social isolation from friends and classmates. They shared their disappointment at not having an entrance ceremony, the chance to meet their classmates or teachers in person, and an unfamiliar style of university-level learning. Despite email reminders from the instructors to complete assignments and follow the schedules provided in the iPo, it was probably the shock of seeing their low term marks at the end of July that motivated many to take action and complete the online studies. They were given a second chance to complete all the online tasks during August with a late penalty. Students who failed to complete the term perhaps decided to delay their studies until next spring in the hope of a return to face-to-face classes and more learning support.

Table 1 revealed a higher percentage of the fourth-year A-Class students wanting paper tests over online tests than the B-Class students. As mentioned earlier, the division of the classes was based on the student ID numbers, but about twenty of the A-Class students were repeater students (those who had repeated all or any of the first three years of pharmacy study and had older ID numbers). In previous years, the author had observed that the higher the number of repeater students in a class, the lower the class average usually was, mainly from a lack of attendance and participation compared to the students who advanced naturally through the program. The repeater students often required individual attention and structured learning in order to pass the course successfully. Speculation about their response to wanting paper tests (at 47%) could be attributed to their discomfort with the changes in the learning environment and an unfamiliar, independent-style online-learning

program. In the same regard, the author assumed that the low percentages of students in the compulsory first-year English class who liked the online tests and video assignments (47% and 23%, respectively) stemmed from similar insecurity about the new style of learning English communication that focused more on self-expression with speaking and listening skills, rather than on grammatical writing and translation. The class average on the summative assessments was almost the same as that for the optional conversation class at over 80 percent, but the students' feelings and impressions of the basic level compulsory class were scored lower on the survey.

Two or three of the fourth-year students commented through email that they struggled with studying alone because they could not ask the teacher or their classmates for help as they were accustomed to doing. In contrast to their seniors, the first-year students expressed a desire for face-to-face classes because they were lonely and wanted to meet their classmates and teachers for social interaction. Although there was no face-to-face contact, the videos provided some interaction between the instructor and students. There were many video apps available and some were even given exposure in the political news, but it was essential to find one that was educational and respected student privacy. In the end, the Flipgrid app was chosen because it was a medium that the younger students were familiar with on their devices already and adaptable to their learning. As suspected, the first-year students were more willing to use the videos and show their faces in the videos than the fourth-year students. The fourth-year students' email correspondence regarding the app increased throughout the term, whereas the first-year students quickly learned how to use it and no longer inquired about it after the first week or so of the term.

Another communication medium was through online surveys, which allowed students to evaluate the online activities and teaching and provide feedback to the instructor. In particular, the surveys gave feedback about the students' engagement during the online learning term. The university's official class survey at the end of the term for the students to assess the online learning was inadequately answered with only a few responses, making it difficult to obtain a substantial idea of the overall students' experiences. The author gave a separate informal online survey of the class structure and learning method and received 50 to 60 percent feedback (from 30 to 39 students per class) about the communication classes. The larger number of student responses to the author's survey provided relevant information about the students' struggles and adjustment to the new learning system.

For the next online term, greater attention will be spent helping students remain self-motivated and connected to their learning. The continuing spread of COVID-19, along with no vaccine or effective treatment available, means that the same online style and assessment strategies will be used for the fall term. A blended approach of in-class and online learning would be preferable in encouraging student engagement and interaction[13], but the university has chosen to continue with remote learning for the first-year students. Synchronous classes with online meeting platforms will not be utilized because of the number of students in each class and unreliable Wi-Fi access for some students. Since the Flipgrid video app has features to allow students to give each other feedback on their videos, students will have the option of sending a text message or a "like" sticker to their classmates to encourage peer interaction. Students who do not wish to have peer comments or respond to others will be permitted to remain hidden from their classmates and continue with the same closed format used in the spring term. The continuing effects of the online learning and assessment strategies will be monitored and adjusted accordingly, based on the student responses throughout the term.

Conclusion

Summative and formative assessment activities were implemented for a pharmacy school's communication classes to improve the online learning process during the COVID-19 pandemic. The teacher streamed weekly lectures to pass on subject content and posted assignments and mini-tests online, while students responded in turn by completing the assessment activities through various media. The teacher gave feedback through individualized comments and scores, and students provided it through their survey responses. Through this online strategy, the exchange of information was balanced between the teacher and students, students were motivated to participate, and communication channels were opened and retained despite the distance during the pandemic.

Note: This report corresponds to an e-poster presentation from the 5th Annual JSPhE academic meeting held online by Teikyo University on September 12–13, 2020.

Conflict of interest

There is no conflict of interest to be disclosed in relation to the contents of this paper. The names of platforms and apps were not used to endorse any specific company or product.

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コロナ禍におけるオンライン学習評価
―薬学英語コミュニケーション授業の振り返り―

エップ　デニース

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著者の所属する薬科大学を含む国内の多くの大学では，コロナ禍で急遽実施されたオンライン講義の準備不足によりコミュニケーションや教育上の問題が発生した。教員は教科書に基づいた内容を一方的に視聴させる形式をとりがちになり，その結果多くの学生がやる気を失い，学習成果の乖離と教育/学習バランスの不均衡につながった。この状況の解決策は，教員と学生が頻繁にコミュニケーションを取り情報を交換するための定期的なオンライン評価の実施だと考える。著者が担当した英語コミュニケーションクラスでは，教員が様々なオンラインのプラットフォームやアプリを介して課題やミニテストを実施した。学生は入力のみでなく音声でも課題を提出し，評価は得点のみでなく個別のコメントでも行った。これらの形成的および総括的な評価戦略は，教育/学習のバランスを維持しながら，オンライン講義への学生の参加率を改善した。

キーワード：オンライン学習，形成的・総括的評価，コミュニケーション，新型コロナウイルス感染拡大