Pandemic-Related Instructor Talk: How New Instructors Supported Students at the Onset of the COVID-19 Pandemic

Yee Mey Seah, Ana M. Chang, Smritee Dabee, Brittney Davidge, Jami R. Erickson, Ayokunle O. Olanrewaju, and Rebecca M. Price

At the same time that COVID-19 cases in the United States first began to increase, fellows in a mentored teaching apprenticeship for postdoctoral scientists began to teach undergraduate seminars. The fellows suddenly needed to support students emotionally and switch to online instruction. They decided to acknowledge and address the pandemic during each class. In this case study, we examined the language fellows used in response to this encouragement, hypothesizing that they would engage in a variety of pandemic-related instructor talk, i.e., language that instructors use in the classroom that is not directly tied to educational content. We analyzed transcripts from 17 2-h undergraduate biology seminar courses and found 167 instances of pandemic-related instructor talk. We used grounded theory to identify categories that emerged from these quotations: Positive coping mechanisms and self-care; Adjusting to online learning; Compassionate instruction; Personal impacts; COVID-19 and society; Dreaming; and Biology of COVID-19. Talk in these categories may help build relationships among instructors and students. The category about quickly Adjusting to online learning is unique, in that it is unlikely that there will be another time that will require simultaneous and rapid national movement to online instruction. In addition, four of the seven categories are direct consequences of COVID-19 specifically and thus are unique to this study. Analyzing pandemic-related instructor talk has shed light on how new instructors navigated the trials of the time.

INTRODUCTION

The University of Washington (UW) operates on an academic quarter system. 2 weeks before winter quarter ended, King County (where the Seattle and Bothell campuses are located) reported its first death due to COVID-19 (https://www.kingcounty.gov/depts/health/news/2020/February/29-covid19.aspx). Within the week, the UW moved classes online for the remainder of the quarter. On March 18, 2020, just under 2 weeks before the spring quarter began, the Office of the President decided to also move classes online. Instructors were told that the first week of the 10-week quarter would be dedicated to adjusting to the new teaching and learning environment, with no graded assessments (https://www.washington.edu/coronavirus/2020/03/18/information-for-instructors-regarding-teaching-remotely-spring-quarter/).

Against the backdrop of these events, novice instructors in the Science Teaching Experience Program—Working in Science Education (STEP-WISE), a mentored apprenticeship for postdoctoral scientists (http://depts.washington.edu/stepuw/home/step-wise/; R. M. Price et al., submitted for publication), were preparing their seminars. As STEP-WISE fellows, postdoctoral scientists are trained in evidence-based teaching methods and work in teams of three to develop and teach undergraduate seminar courses. Prior to their teaching quarter, they studied pedagogical strategies proven to promote student interaction and encourage inclusivity, such as the jigsaw (1) and gallery walk (2). STEP-WISE fellows work closely with a mentor who supports the design of their seminars and attends each class meeting. However, the onset of COVID-19 rapidly shifted the course structure from in-person to online. These novice instructors were suddenly required to deliver these newly acquired pedagogies remotely.

The community of the classroom, and the broader
communities to which students belong, all impact learning (3). An instructor structures class meetings and homework activities to orchestrate a process of learning (4, 5) within these broader communities (3). These structures affect the ease with which students establish relationships with each other and their instructors in the classroom. Positive relationships promote deeper learning (5–7). In spring 2020, all communities, from global to local scales, were affected by the COVID-19 pandemic, and the needed to build a community that could still foster learning. Consequently, the STEP-WISE fellows’ mentor (author RMP) suggested that they begin class sessions during this time of crisis with a wellness check, a discussion prompt through which instructors and students shared ideas on various topics and reactions to the pandemic, in acknowledgment of the trauma students might feel (8). The purpose of these checks was to offer a form of instructor talk that would begin class with a sense of ease and comradery (9).

Seidel et al. (6) used the phrase “instructor talk” to describe what instructors say to their students that is not tied to the educational content they are delivering. Instructor talk is used to establish the classroom environment; if used well, it can support student learning (4). As Garrison (5) observes, instructor talk can build relationships within a classroom community, for example by calling out what students have done to succeed in the course. Because perceptions of professor care can correlate with persistence within STEM (7, 10), instructors who are teaching in a pandemic may use language that creates healthy classroom relationships to support student success, especially during this period of immense instability. This possibility led us to investigate the influence of COVID-19 on STEP-WISE fellows’ instructor talk.

In this paper, we adopt Seidel et al.’s (6) approach to identify the emergent categories of instructor talk, specifically of how support, often in the form of a wellness check, was expressed during courses taught during the onset of the COVID-19 pandemic. In this particular case study, we apply Garrison’s theory of community instruction (4, 5), which argues that the social support built by what instructors say fosters what students learn, to analyze instructor talk specific to the pandemic, reflecting the dramatic events of spring 2020.

METHODS

STEP-WISE

The authors make up the two teams of STEP-WISE fellows (three fellows/team, six fellows total) who taught the two courses analyzed here, along with their mentor (RMP). STEP-WISE is a competitive program for postdoctoral scholars in 100% research appointments who want to learn about evidence-based and inclusive teaching strategies (11, McCullough et al., submitted; https://depts.washington.edu/stepuw/). The fellows applied to STEP-WISE in fall 2019 and were accepted fully expecting to teach on-the-ground courses. While one of the fellows had taught seven courses, the others had not taught any.

The fellows attended three training sessions prior to their teaching quarter. In the first, they were introduced to their teaching team (co-instructors and mentor) and collaboratively identified the course topic. In the second meeting, STEP-WISE fellows experienced different active learning strategies including gallery walk (2), jigsaw (1, 12, 13), and think-pair-share (14). In the third meeting, teaching teams met with their mentor to plan their class. Subsequently, teaching teams usually met about once a week to review the learning goals and activities for class sessions and to discuss how the co-instructors could best support the lead instructor.

The three meetings supported fellows as they designed their seminar courses, and the apprenticeship continued while STEP-WISE fellows were teaching. Their courses met once a week for 2 h, and all of the instructors and the mentor attended each class meeting. The mentor took detailed notes about what happened during class, and then the team debriefed afterward to discuss what worked well and what could be improved (11, McCullough et al., submitted; https://depts.washington.edu/stepuw/).

In this study, both teams implemented their mentor’s suggestion to begin class sessions with a wellness check of questions deliberately posed to the class to promote wellbeing, e.g., “What are some ways you have treated yourself in the past week?” These questions were typically asked before class started when the video conference first began, so that students could join in the discussion as they entered the virtual classroom. These conversations continued into the first few minutes of class, and most of our quotations come from them. Students were encouraged to participate orally or by chat.

Ethics statement

All instructors gave consent to have their course transcripts used in this study, and the UW Human Subjects Division of the Institutional Review Board found this research exempt from regulation (STUDY00006790).

Courses taught

Each team taught a two-credit-hour live (synchronous) virtual seminar course at UW during spring quarter (March 30 to June 5, 2020; a standard course is five credit-hours). The Diseases, Diagnostics, and Treatments course was a lower division course for multiple majors that counted as a science credit for university distribution or, for biology majors, a required course in biology and society. It explored the biology and public health aspect of human immunodeficiency virus (HIV), chlamydia, and oral squamous cell carcinoma, reflecting the three instructors’ areas of expertise. This course was taught through UW Bothell. The other course was an upper division course for senior biology majors called Microbial Contributions to Human Health. It explored the derivation of CRISPR/Cas9, the diversity of the skin virome, and homeostasis and dysbiosis within the oral
Obtaining transcripts

Instruction was delivered live and recorded through Zoom (https://zoom.us). Recordings included whole class discussions, but not small group discussions that occurred within Zoom breakout rooms. Recordings began before the start of class, and some of the instructor talk occurred as students joined the video conference. The last class of each 10-week quarter was designed to be student-led, rather than instructor-led, and so these two classes were omitted from analysis. One class meeting was held asynchronously, because it fell on Memorial Day. Altogether, there were 17 2-h class meetings.

Transcripts were automatically generated through Zoom. These initial drafts of transcripts were divided and assigned to an author who was not a part of that teaching team (Fig. 1), to minimize the bias of someone’s memory of the conversation. Therefore, one teaching team analyzed the transcripts for the other, and vice versa. Each of us corrected the transcripts to which we were assigned while watching the video recordings of the classes. Because this study focuses on instructor talk, student conversations were omitted.

Identifying and coding quotations

We followed the criteria that Seidel et al. (6) and Harrison et al. (15) used to identify instructor talk: statements said by the instructors (including the mentor) aloud to the whole class that were not about course content or logistics. We also imposed an additional criterion: this content was present because of the COVID-19 pandemic. Each quotation was considered to begin and end when a new topic was introduced; consequently, the length of time varies per quotation. Even though topics were narrowly defined (Fig. 1), each quotation could still potentially fall into multiple categories of talk. Most quotations were spoken by a single person, although some include instructors who were agreeing with each other, without introducing a new topic.

We used grounded theory (16) to identify categories of pandemic-related instructor talk (Fig. 1). This method is emergent in that categories are drawn from the data. Each author independently read all the quotations to identify recurrent themes. We then compared the themes we had identified, revising them collaboratively until we established a consensus. Then, we coded 20 of the quotations collaboratively, discussing each one until we agreed on the category(ies) to which it was assigned. By the end of this task, we quickly reached consensus when assigning quotations to the categories. Authors AMC and BD coded the rest of the quotations, working simultaneously to ensure consensus. Inter-rater reliability was not assessed because each quotation was coded until a consensus was reached, resulting in 100% agreement.

Quantitative analysis

We calculated the frequency of quotations in each
category. Because the number of times instructors spoke on topics related to each category may not correspond to the amount of time spent per category, we also determined the total time (in minutes) for each category of instructor talk about the pandemic.

RESULTS

We found 167 quotations of pandemic-related instructor talk (Table 1 and supplemental materials), averaging 10 quotations per class. We identified seven categories that collectively described all 167 quotations. Listed in order of most to least frequent, these are: Positive coping mechanisms and self-care, Adjusting to online learning, Compassionate instruction, Personal impacts, COVID-19 and society, Dreaming, and Biology of COVID-19 (Table 1, Fig. 2). The percentages of quotations in each category exceed 100% because a single quotation can fall into multiple categories (Table 1, Fig. 2, supplemental materials). The total time spent on pandemic-related instructor talk throughout the 17 2-h classes was 72 min.

Positive coping mechanisms and self-care occurred most frequently, accounting for 41.9% of pandemic-related instructor talk, totaling 17.3 min (Fig. 2). This category encompasses quotations that focus on the present, describing actions being actively taken to maintain physical, emotional, or mental health and wellness. Instructors initiated these conversations, e.g., “But if you could think of something pleasant that’s happened. And if you feel comfortable, you know, we can all share.” Examples include talking about playing games, engaging in hobbies, and exploring new activities (Table 1). Instructors and students also recommended sources of entertainment, as well as shared stories of pets, and instances of positive thinking (Table 1).

The most amount of time, however, was spent on conversations about Adjusting to online learning (29 min) (Fig. 2), the second-most frequently mentioned category of pandemic-related instructor talk (34.7%). This category is characterized by quotations that involve managing technical issues arising from the rapid, unexpected shift to online learning. Talk in this category addressed dealing with Zoom and organizing Zoom breakout rooms (a function used for smaller group discussions). This category also included instructors encouraging students to share ideas (Table 1). Security settings within Zoom changed frequently while the university adapted to this new environment, and this added confusion, for example, when chat was removed from the default settings. Conversations about adjusting to online learning also addressed Internet connectivity, software used for instruction, and technical challenges (Table 1). Furthermore, instructor talk addressed the use of online midterm course evaluations to gauge areas of success, as well as need for growth. Lastly, instructors apologized for aberrant household noises heard by the class (Table 1).

Compassionate instruction was the third-most frequent category (20.4%, 16.6 min) (Fig. 2), characterized by instructor talk that expressed understanding, appreciation, and empathy specifically on issues of student learning. This includes quotations acknowledging the reality and stresses brought upon by the pandemic, in addition to connecting to students through personal stories (Table 1). One instructor explained that, although most students were taking the class synchronously, there was an additional asynchronous option to accommodate students in other time zones or with unusually complicated schedules (Table 1). Approximately half of the quotations categorized as Compassionate instruction were also categorized as Adjusting to online learning (Table 1 and supplemental material), indicating that instructors empathized with the challenges in student learning that specifically resulted from the unexpected shift to remote instruction. Quotations that were solely categorized as Compassionate instruction acknowledged the difficulty in maintaining a prepandemic pace of life (Table 1).

The pandemic impacted people on both personal and societal levels; therefore, conversations related to changes in only an individual’s lifestyle and habits due to the pandemic were categorized under Personal impacts. This category is different from Positive coping mechanisms and self-care, because it is about events that happened outside of an individual’s control, e.g., “So gone are the days, you could just go to the grocery store without thinking,” instead of positive actions taken to manage wellness. Personal impacts of the pandemic encompassed 15.0% of all instructor talk and lasted 5.7 min (Fig. 2). This talk included stories about how the pandemic was impacting specific personal events, as well as daily routines (Table 1).

Societal-level impacts of the pandemic were categorized under COVID-19 and society and accounted for 10.8% of all pandemic-related instructor talk, lasting 5.3 min (Fig. 2). Instructor talk in this category included discussing celebrities affected by COVID-19, news stories, COVID-19-related scams, resource shortages, and social media posts (Table 1).

In addition, we identified quotations about reminiscing, daydreaming, or living in the future. This category, which we called Dreaming, includes quotations about things people are missing or looking forward to doing, as well as instances of nostalgia (Table 1). Dreaming was touched upon briefly, for 10.2% of the quotations and 2.4 min (Fig. 2). Although quotations in this category revolve around events outside of an individual’s control, they differ from Personal impacts because of the unique focus on emotional content and introspection. This category also differs from Positive coping mechanisms and self-care, because no concrete actions were taken to affect wellbeing, beyond abstract thinking. Quotations that involved thinking about the future, and included concrete actions, such as planning graduation, are therefore categorized as Positive coping mechanisms and self-care, not Dreaming.

The least frequent category of pandemic-related instructor talk was the Biology of COVID-19, representing 9.6% of the quotations, lasting 8 min (Fig. 2). These quotations addressed COVID-19 diagnostics, vaccine development,
TABLE I
Categories of pandemic-related instructor talk

| Category                                      | Description                                                                                                                                                   | Example quotations                                                                                                                                                        | Length of time discussed (mins) |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Positive coping mechanisms and self-care (41.9%) | Reality-based proactive solutions and/or recommendations to be taken for the promotion of general, physical, and/or mental wellbeing to combat stress and changes resulting from the COVID-19 pandemic. This category focuses on active engagement in the present, thus distinguishing it from the Dreaming category, which emphasizes introspection about past memories and hope (dreaming/fantasizing) for the future. Examples: play games, watch/recommend shows, care for pets, learn new activities, adopt positive outlook. | “...one good thing that happened to me was that I made French bread for the first time ever this wk, and it was not a complete failure. It was actually pretty good...that was definitely a highlight in my life. I can now make my own bread.”  
“I started learning Spanish. Like, I was looking for things to do. It’s not that bad for me because I grew up speaking French and it’s quite similar. It’s been helping.”  
“My friends and I have been looking for ways to spend time during the lockdown. So, the first time in my life I joined a Dungeons and Dragons campaign, and it was fantastic.”  
“I just started watching the series Fargo, and it’s based in Minnesota where I’m from...”  
“I think that it is a cool challenge to think about how to celebrate things like birthdays right now. It’s an opportunity to be really creative.” | 17.3                           |
| Adjusting to online learning (34.7%)          | Managing and troubleshooting technical issues resulting from the abrupt transition from in-person classroom teaching to remote Zoom instruction due to the COVID-19 pandemic. Examples: troubleshooting Zoom and other technological challenges, coordinating time zones, acquiring student feedback on shift to online learning, giving instructions on completing online activities. | “If you have questions, you can either unmute yourself or go into the chat and type any questions that you might have.”  
“Seems like everybody’s having bad Wi-Fi problems today.”  
“And as you’ll see, as you log on to Padlet, you’ll see that there are some questions at the top. So, we’re asking you to please tell us your name, preferred pronouns, what you study, a fun fact about yourself!”  
“Sorry if you heard crunching through my microphone. It was one of my dogs.”  
“(Asynchronous learning is) going to be an option for this class because, well, for example, we know that there are some people who could be taking the class in the middle of the night and it’s not fair to have them be coming to class or some people are working in hospitals or some people have childcare responsibilities and just, we know that life is very complicated right now. So we’re going to be holding the meetings like this every wk. But if you, for whatever reason, can’t make it to class, then you’ll be able to make up the materials outside of class.” | 29.0                           |
| Compassionate instruction (20.4%)             | Expressions of understanding, appreciation, and empathy on topics specifically related to student learning. Includes acknowledgment of, and accommodations for, novel pandemic-related student challenges Examples: acknowledge current events and the resulting stress, share personal stories, encourage efforts, offering flexibility in learning options to students, for example asynchronous learning options. | “We’ll try and keep it simple today, we realize these are unusual times”  
“(Asynchronous learning is) going to be an option for this class because, well, for example, we know that there are some people who are able to be taking the class in the middle of the night and it’s not fair to have them be coming to class or some people are working in hospitals or some people have childcare responsibilities and just, we know that life is very complicated right now. So we’re going to be holding the meetings like this every wk. But if you, for whatever reason, can’t make it to class, then you’ll be able to make up the materials outside of class.” | 16.6                           |
| Personal Impacts (15.0%)                      | Consequences on everyday life and routine activities as a result of COVID-19. Examples: changes in personal plans for travel, entertainment, impending graduation, etc. | “Well, I guess I’m done for work for today. But you know, it’s kind of like anticlimactic, because you don’t leave, you know, you’re just like still sitting here.”  
“It was a lot less expensive to see a new movie at home then pay for 4 kids at the theater.”  
“I know the grocery store down like that’s near nearest for my house you sign up online for like your time to shop.”  
“(...we usually have our neighbors across the street come over for dinner and board games, and we haven’t been able to do that. So I really miss that).” | 5.7                            |

Continued on next page
immune responses, and the general nature of pandemics (Table 1).

**DISCUSSION**

Instructor talk consists of the sentiments and ideas shared with a class to create learning environments but that are not directly related to course concepts or content (6). This language can be a framework for investigating and improving faculty teaching and student learning. We sought to identify categories of instructor talk that were used in a particular context—teaching by novice instructors at the onset of the COVID-19 pandemic—to provide a case study of what instructors might say to support students in this context. Despite differences in teaching experience and settings from the original study, we observed similarities within categories focused on building connections, but our categories are more specific than those reported elsewhere. We discuss these comparisons and then explain how pandemic-related instructor talk may impact student learning.

**Comparisons to other categories of instructor talk**

On the surface, some of our categories seem similar to the categories of positive instructor talk that Seidel et al. (6) found and that Harrison et al. (15) validated for a larger array of classes: (i) creating relationships between instructor and students, (ii) building community in the classroom, (iii) sharing personal stories, (iv) describing teaching and learning options, and (v) uncovering the nature and process of

**TABLE 1 (Continued)**

| Category | Description | Example quotations | Length of time discussed (mins) |
|----------|-------------|--------------------|--------------------------------|
| COVID-19 and Society (10.8%) | Consequences in the larger community as a result of COVID-19. Examples: news stories on current events, famous people who passed away, scams, shortage of staples, social media-related events. | “Well, I have been listening to a ton of John Prine, who’s one of the musicians who passed away from COVID.” “I was listening to the local NPR station today, and they were interviewing a UDUB [UW] student that’s in Peru and had an extended spring break.” “[I] also heard that there’s like a lot of scams where people are like selling fake antibody tests.” “How did you get flour?” “One of my friends was posting on Facebook, a picture, is in cap and gown from like all these different sites just taking a tour through ghost towns in cap and gown, that was kind of cute.” | 5.3 |
| Dreaming (10.2%) | Introspection about personal memories, future plans, and hopeful thoughts/emotions, fantasies used as a means of temporary escape from past COVID-19 events. Includes memories, as well as possible future events and dreams. This category differs from Positive coping mechanisms in its passive, rather than proactive characteristics, as well as in its fluidity in time and space (i.e., past, present, future, and fantasies). Examples: what people are looking forward to doing, what people are missing, celebrations. | “Oh my goodness. Yeah, yeah, I’m just I can’t wait to be visiting with friends. And I can’t wait for my kids to be visiting with their friends.” “Yeah. Well, going to the grocery stores is what I’m looking forward to once the quarantine is up.” “I have only done like, snorkeling, because I’m too afraid to actually dive, but it’s like, it would be really cool. I would love to do, like in theory, I would love it, but I feel like in practice it would be traumatizing.” “I want to go to grocery stores and get some apples, not have to think too much about it.” “I went to Egypt when I was still a kid, like, it was one of the most magical trips I’ve had; something I’ll never forget.” | 2.4 |
| Biology of COVID-19 (9.6%) | Discussions related to the scientific and biological perspectives of COVID-19 in research and the news. Examples: vaccine development, immune responses, diagnostics, nature of pandemic, testing. | “So we’ve been talking about vaccines which will be great COVID-19 as well. But while waiting for that to happen the focus stays on testing and treatment to keep no. low” “There’ve been a couple of articles about the accuracy of the antibody tests, and talking about prevalence, and talking about what the test actually means” “About what does accuracy mean for a test, like in different circumstances because a 90% or 95% accurate test and like, in school is awesome. For COVID it’s really bad because it means that five our of every hundred five to 10 out of every hundred are, are false negatives.” “How, how difficult would it be to like, use the same techniques for an HIV diagnostic tests to make a COVID one?” “And I’m sure by now with COVID-19 kicking our butts at the moment, that this is something that we’re all thinking about, testing and treatment.” | 8.0 |
science. (Harrison et al. [15] expanded this framework to include negative instructor talk; however, we did not find any negative instructor talk in our sample.) The purpose of the instructor talk in the wellness checks was to foster a sense of ease and connection among students and instructors, which, at first glance, seems similar to Seidel et al.’s category about creating relationships (6). However, their subdivisions of this category (6) do not include the kinds of sentiments we found. At normal times, Seidel et al. (6) found that this category encompasses respect and strategies for student success. In the pandemic, our instructors created relationships by talking about proactive self-care and focused on relating to students on an emotional level to acknowledge that external events and their impacts are even more likely than usual to affect student learning. These approaches are more akin to recommendations for trauma-informed teaching, in that they prioritize building connections that promote emotional wellbeing (8).

Other categories that we found are distinct from Seidel et al.’s (6) because they are specific to spring 2020. Four of the categories are direct consequences of this particular moment in time: the personal impacts we experienced from the shutdown, the impact of COVID-19 on society at large, dreaming about what we could do once shutdown ended, and details about the biology of disease itself (Table 1, Fig. 2). Times of crisis can generate instructor talk that is specific to particular circumstances. Analyzing this instructor talk sheds light on how instructors are quickly navigating the trials of the time.

Our category about Adjusting to online learning (Table 1, Fig. 2) is also unique. We anticipate that in the future, all students and instructors will have some familiarity with online instruction, and so the rapid and intense learning by both instructors and students will probably not occur again. The UW was the first institution to close its campus and transfer its courses online in response to COVID-19; by June nearly 98% of undergraduates nationwide switched to virtual learning (https://educationdata.org/online-education-statistics, accessed Jan. 7, 2021). Online learning is not new, but the unprecedented and rapid pace of transition into the virtual classroom in spring 2020 was. A 2018 survey assessing the effectiveness of online courses in college found that only 15% of students found it less effective than an in-person course; however, in June 2020, 63% of students reported that online instruction was less effective than on-the-ground instruction (https://educationdata.org/online-education-statistics, accessed Jan. 7, 2021). The challenges associated with online teaching and learning are reflected by the amount of time spent on managing technical issues (Adjusting to online learning). One potential explanation for this outcome is that the STEP-WISE fellows were not prepared to teach online, and the need to solve technical problems on the fly led to an inordinate amount of time spent on this category; perhaps online instruction in this context is more accurately termed “emergency response teaching” (17). Another explanation, which also addresses the frequent overlap with Compassionate instruction, is that by demonstrating their own struggles with online instruction, albeit technical difficulties, instructors are indirectly expressing empathy with other difficulties that students may have with the online classroom format. Seidel et al. (6) hypothesized that instructor talk that shares personal experiences and respects students can promote learning by increasing instructor immediacy, students’ perception of a connection with the instructor. While instructor talk has yet to be directly linked with either instructor immediacy or student learning, Rainey et al. (10) demonstrated that compassionate instruction helps students feel that instructors care, and that this feeling of care, in turn, increases persistence in STEM majors.

Ironically, even though both courses’ topics were relevant to Biology of COVID-19 (diseases and microbiology), this was the least common category of pandemic-related instructor talk. This may be the result of intentionally focusing on wellbeing, or an unintended consequence of managing fully online classrooms for the first time, thus reducing the potential for discussing COVID-19 biology. Instances of instructor talk within Biology of COVID-19 were on disease diagnostics and treatments, topics which require more in-depth and fact-based discussions in comparison with other categories that were more opinion or emotion-based. This may explain and account for the 8 min spent within Biology of COVID-19, which is longer than other more frequent instances of instructor talk specific to this crisis. These data suggest that course content and current events can influence instructor talk.

**Stresses beyond COVID-19**

Although this study investigates the impact of the COVID-19 pandemic specifically, we acknowledge that additional social events may have influenced instructor talk, though they were not directly reflected within the quotations. The social environment plays important roles in creating safe, equitable, and effective learning environments (18). The year 2020 was filled with extreme and unusual social stressors as a result of, and in addition to the pandemic, such
as racial violence, mandatory quarantines, and economic shutdowns. In an attempt to alleviate these stressors, instructors used wellness checks to foster connections among peers and provide opportunities to share resources for self-care. Perhaps the emergence of instructor talk about Positive coping mechanisms and self-care, in addition to Dreaming and COVID-19 and society, reflect a human desire for both connection and escape. This explanation is supported by the fact that instructor talk most frequently revolved around Positive coping mechanisms and self-care (Fig. 2).

**Structures of support**

The presence of COVID-19 created an awareness of, and sensitivity to, the unique stressors surrounding students that may have influenced novice instructors during their classroom interactions. Given that one of the main goals of STEP-WISE is to create more inclusive and equitable classrooms through active learning and evidence-based teaching, many of the pandemic-related instructor talk categories reflect our goal to build instructor-student relationships through compassion. Most of the quotations related to the pandemic came from the wellness check that instructors held at the beginning of class. Therefore, we suggest that the wellness check is a structure that enhances student learning by building connections with the classroom community (4, 5). The different categories of talk that emerged from our study gives readers ideas of the kinds of conversations they can have in their own classes.

The literature helps connect pandemic-related instructor talk (Table 1) to specific benefits for students. Students seek connections with their instructors in normal times (19), but especially when experiencing trauma (8). When students reflect on their college experience, they think simultaneously about the education they receive and the social interactions they have (19). Conversations with faculty members in particular increase students’ confidence in, enjoyment with (20), and motivation (21) in learning. Moreover, positive social connections promote persistence in college (10, 22).

When social interactions are restricted to remotely offered classes—for students who had been expecting in-person, on-the-ground classes—it may improve learning to incorporate social interactions unrelated to the context of the course into class time. In more straightforward times, many of these interactions occur outside of the classroom. However, just as incorporating research experiences into courses broadens participation in research (23), incorporating social interactions into remote courses might universally broaden the sense of confidence and enjoyment of learning (20) and persistence (22) during times of crisis.

**CONCLUSION**

We collected data from only two courses conducted over a single academic quarter, and in both classes, instructors worked with the same mentor. While we report how some novice instructors responded to the pandemic, our study cannot speak to the generalizability of these results. We also note that these instructors are not necessarily typical of novice teachers, in that they deliberately sought out teaching experience. Nevertheless, we predict that the categories emerging from other populations of instructors using pandemic-related talk would be similar; a prediction that could be tested with future research.

Another limitation in our study is that the transcripts that we analyzed did not include discussions that occurred within the breakout groups. The exclusion of instructor talk from smaller groups may potentially skew the reported frequency of each category, and the total number of conversations per category.

Finally, because of the way our IRB approval was worded, our data are constrained by looking at only the instructors’ side of the conversation, with no information on student reactions. While this does not change our conclusion that pandemic-related instructor talk categories are distinct from instructor talk at other times, future work might explore how students perceive and respond to this talk.

Despite these limitations, we have shown that, at the onset of the COVID-19 pandemic in the United States, a group of beginning instructors used categories of instructor talk that uniquely reflected that we were in a crisis. These instructors used language that promoted a caring, compassionate environment.

**SUPPLEMENTAL MATERIAL**

Appendix 1: Quotations about pandemic-related instructor talk and their categories

**ACKNOWLEDGMENTS**

We thank John T. Slattery, Robert Stacey, William M. Mahoney, and our students. STEP-WISE is funded by the UW School of Medicine, the UW College of Arts and Sciences, UW Biology Department, UW Bothell School of Interdisciplinary Arts and Sciences, and the UW Bothell School of Science, Technology, Engineering & Mathematics. No support exists for conducting this research. The authors have no conflicts of interest to declare.

**REFERENCES**

1. Aronson E, Bridgeman D. 1979. Jigsaw groups and the desegregated classroom: in pursuit of common goals. Pers Soc Psychol Bull 5:438–446. https://doi.org/10.1177/014616727900500405.
2. Francek M. 2006. Promoting discussion in the science classroom using gallery walks. J Coll Sci Teach 36:27–31.

3. National Research Council. 2000. How people learn: brain, mind, experience and school: expanded edition. National Academies Press, Washington, DC.

4. Garrison DR, Anderson T, Archer W. 1999. Critical inquiry in a text-based environment: computer conferencing in higher education. Internet High Educ 2:87–105. https://doi.org/10.1016/S1096-7516(00)00016-6.

5. Garrison DR. 2007. Online community of inquiry review: social, cognitive, and teaching presence issues. J Asynchronous Learn Networks 11:61–72.

6. Seidel SB, Reggi AL, Schinske JN, Burrus LW, Tanner KD. 2015. Beyond the biology: a systematic investigation of noncontent instructor talk in an introductory biology course. CBE Life Sci Educ 14:ar43. https://doi.org/10.1187/cbe.15-03-0049.

7. Estrada M, Young GR, Nagy J, Goldstein Ej, Ben-Zeev A, Márquez-Magaña L, Eroy-Reveles A. 2019. The influence of microaffirmations on undergraduate persistence in science career pathways. CBE Life Sci Educ 18:ar40. https://doi.org/10.1187/cbe.19-01-0012.

8. Imad M. 2020. Leveraging the neuroscience of now. Insid High Educ. https://www.insidehighered.com/advice/2020/06/03/seven-recommendations-helping-students-thrive-times-trauma. Accessed 13 January 2021.

9. McInerney JM, Roberts TS. 2004. Online learning: social interaction and the creation of presence issues. Educ Technol Soc 7:73–81.

10. Rainey K, Dancy M, Mickelson R, Stearns E, Moller S. 2019. A descriptive study of race and gender differences in how instructional style and perceived professor care influence decisions to major in STEM. Int J STEM Educ 6:6. https://doi.org/10.1187/s40594-019-0159-2.

11. McCullough EA, Ma EY, Al-Noori S, Price RM. 2020. STEP forward: combining formal and informal education to develop communication skills that augment postdoctoral training. J STEM Outreach 3. https://doi.org/10.15695/jstem/v3i11.12.

12. Clarke J. 1994. Pieces of the puzzle: the jigsaw method, p 34–50. In Sharan S (ed), Handbook of cooperative learning methods. Greenwood Press.

13. Theobald Ej, Eddy SL, Grunspan DZ, Wiggins BL, Crowe AJ. 2017. Student perception of group dynamics predicts individual performance: Comfort and equity matter. PLoS One 12:e0181336. https://doi.org/10.1371/journal.pone.0181336.

14. Tanner KD. 2013. Structure matters: twenty-one teaching strategies to promote student engagement and cultivate classroom equity. CBE Life Sci Educ 12:322–331. https://doi.org/10.1187/cbe.13-06-0115.

15. Harrison CD, Nguyen TA, Seidel SB, Escobedo AM, Hartman C, Lam K, Liang KS, Martens M, Acker GN, Akana SF, Balukjian B, Benton HP, Blair JR, Boaz SM, Boyer KE, Bram JB, Burrus LW, Byrd DT, Caporale N, Carpenter EJ, Chan Y-HM, Chen L, Chovnick A, Chu DS, Clarkston BK, Cooper SE, Creech CJ, de la Torre JR, Denetclaw WF, Duncan K, Edwards AS, Erickson K, Fuse M, Gorga J, Govindan B, Green LJ, Hankamp PZ, Harris HE, He Z-H, Ingalls SB, Ingmire PD, Jacobs JR, Kamakea M, Kimpo RR, Knight JD, Krause SK, Krueger LE, Light TL, Lund L, Márquez-Magaña LM, et al. 2019. Investigating instructor talk in novel contexts: widespread use, unexpected categories, and an emergent sampling strategy. LSE 18:ar47. https://doi.org/10.1187/lse.18-10-0215.

16. Patton MQ. 2014. Qualitative research and evaluation methods: integrating theory and practice, 4th ed SAGE Publications, Inc., Saint Paul, MN.

17. Hodges C, Moore S, Lockee B, Trust T, Bond A. 2020. The difference between emergency remote teaching and online learning. Educ Rev. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning. Accessed 13 January 2021.

18. Allmendinger K. 2010. Social presence in synchronous virtual learning situations: the role of nonverbal signals displayed by avatars. Educ Psychol Rev 22:41–56. https://doi.org/10.1007/s10648-010-9117-8.

19. Farrell LC, Jorgenson D, Fudge J, Pritchard A. 2018. College connectedness: the student perspective. JoSoTL 18:75–95. https://doi.org/10.14434/josotl.v18i1.22371.

20. Komarraju M, Musulkin S, Bhattacharya G. 2010. Role of student–faculty interactions in developing college students’ academic self-concept, motivation, and achievement. J Coll Stud Dev 51:332–342. https://doi.org/10.1007/s11162-008-9098-3.

21. Comadena ME, Hunt SK, Simonds CJ. 2007. The effects of teacher clarity, nonverbal immediacy, and caring on student motivation, affective and cognitive learning. Commun Res Rep 24:241–248. https://doi.org/10.1080/08824090701446617.

22. Allen J, Robbins SB, Casillas A, Oh I-S. 2008. Third-year college retention and transfer: effects of academic performance, motivation, and social connectedness. Res High Educ 49:647–664. https://doi.org/10.1007/s11162-008-9098-3.

23. Bangera G, Brownell SE. 2014. Course-based undergraduate research experiences can make scientific research more inclusive. CBE Life Sci Educ 13:602–606. https://doi.org/10.1187/cbe.14-06-0099.