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From Emergency Remote Teaching (ERT) to Sustained Remote Teaching (SRT): A Comparative Semester Analysis of Exchange Students' Experiences and Perceptions of Learning Online During Covid-19

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From Emergency Remote Teaching (ERT) to Sustained Remote Teaching (SRT): A Comparative Semester Analysis of Exchange Students' Experiences and Perceptions of Learning Online During COVID-19

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Abstract
The COVID-19 pandemic caused universities worldwide to close campuses, forcing millions of teachers and students to resort to Emergency Remote Teaching (ERT) and learning. Though necessary, the sudden move to remote delivery marked a significant departure from the standards and norms in distance education. In Korea, the pandemic coincided with the start of the 2020 academic year. Though ERT was new and unplanned during the first semester of the year, it became Sustained Remote Teaching (SRT) in the second. Through the lens of performance improvement theory, we sought to determine if students' experiences and perceptions with learning remotely via SRT would change over time as a result of institutional preparedness and faculty support/experience. In total, 140 (Spring) and 93 (Fall) exchange students rated their perceptions of *Teaching and Learning Processes*, *Student Support*, and *Course Structure* with their ERT/SRT learning experiences via an electronic survey. An independent-samples one-way ANOVA indicated several statistically significant benchmarks, though results are interpreted as minor real world improvement. Implications for ERT/SRT policy and future research in the context of specific student groups are discussed.

Keywords: Emergency Remote Teaching (ERT), exchange students, online learning, distance education, international education, remote learning

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The COVID-19 pandemic forced educational institutions worldwide to suddenly transition courses to a remote or online learning format (Hodges et al., 2020). The Republic of Korea (hereafter Korea) was no exception; more than 10,000 cases had occurred by March of 2020 (Ministry of Health and Welfare, n.d.). Universities throughout Korea delayed the start of their semesters for two weeks to formulate an emergency plan which resulted in delivering courses online as a health and safety measure. However, unlike conventional online courses, the courses students began taking were improvisational (Hodges et al., 2020). Further, most faculty had no prior training in teaching at a distance, and most universities were unable to support faculty the way universities with traditional online programs often do—with dedicated support staff, proper hardware and software resources, and distance learning expertise (Means et al., 2014). Given this, researchers have come to use several terms to differentiate these courses as a distinct subset of distance education: Emergency Remote Teaching (ERT) (Hodges et al., 2020), Emergency Remote Education (ERE) (Williamson et al., 2020), Emergency Remote Learning (ERL) (Doornbos, 2020), or Emergency Remote Teaching Environment (ERTE) (Whittle et al., 2020). Regardless of the term, courses delivered in this manner are meant to be a temporary solution to an emergency rather than a long-term replacement for face-to-face courses (throughout this paper, the term ERT will be used for consistency).

In Korea, the successful early management of the pandemic by the government led to a dramatic reduction in cases. Moreover, this also allowed national borders to remain open and international students to enter the country, as well as for short-term mobility programs to continue operating. By mid-May, there were only a few new COVID-19 cases reported daily (Yonhap, 2020a). With cases subsiding over summer, schools and students began preparing to return to campus; it seemed that ERT would no longer be necessary. A few weeks prior to the start of the semester in August, however, a COVID-19 outbreak in Seoul led to a second wave of COVID-19 cases which was more severe than the first one in March (Kim, 2020). Rather than return to “normal”, ERT continued to be needed. It also became apparent that ERT would not be short-lived. In fact, ERT was likely to be in place for the entire 2021 academic year due to future and even more severe COVID-19 waves beginning in late fall (see Yonhap, 2020b). Since educational institutions, instructors, and students now possessed experience with remote teaching and learning, we set out to investigate how international exchange students’ experiences and perceptions of ERT changed as the practice became sustained at one university in Korea since mobility programs continued to operate in Korea unlike elsewhere in the world. We present the results of a comparative semester study grounded in performance improvement theory and discuss implications and areas of future research and practice.

Literature Review

Distance education is not new; it dates to postal correspondence courses in the early 1800s in Europe (Bower & Hardy, 2008). Technological developments (i.e., radio, television, satellites, the internet) have since expanded the practice worldwide (Moore & Kearsley, 2012; Saba, 2011). Prior to COVID-19 in the United States alone, over a third of students took at least one internet-based course in a given year (Seamen et al., 2018). In other words, formal internet-based distance education is a common, modern activity (Stewart, 2019). ERT, like distance education, is also not new but it is relatively uncommon, appearing only in response to crises such as natural disasters (e.g., earthquakes) or military conflicts (see Davies & Bentrovato, 2011). Nevertheless, the global scale and health-related circumstances of the COVID-19 pandemic have made the relatively obscure practice a common household experience. Because of the rapid exposure to remote learning, many students and instructors may be tempted to conflate ERT with traditional online courses despite rather significant differences existing between the two (Hodges et al., 2020; Williamson et al., 2020). Yet, for better or worse, these ERT-based experiences are likely to influence current and future perceptions of formal distance education (Stewart & Lowenthal, 2022) despite the two practices being distinct. Moreover, experiences have varied immensely for numerous reasons (Stewart, 2021). Nevertheless, much ERT research to date has primarily sampled regular degree/local students, glossing over vulnerable student populations such as international students (Bond et al., 2021).

Compound ERT and Distancing Learning Issues among International Students

In general, when international students engage in distance learning, many are predisposed to certain hardships related to language proficiency and different socio-cultural norms (Zhang & Kenny, 2010). Moreover, international students often find themselves studying virtually alongside peers from all over the world in heterogeneous learning environments that are likely to affect student experiences in different and unexpected ways (Harrison et al., 2018). While these experiences can be positive (Gemmell et al., 2015), negative ones are also possible (Lee, 2011). For example, international students can have a more difficult time navigating and interacting with virtual learning environments than their non-international peers (Habib et al., 2014). Further, given the asynchronous nature of many online learning environments, international students are also prone to more isolation and loneliness than their non-international and face-to-face counterparts (Erichsen & Bolliger, 2011). In the context of ERT, these known issues have been compounded by pandemic-related stress, social distancing, and the emergence of residential distance education on otherwise closed campuses (Stewart & Lowenthal, 2022). These experiences and perceptions from specific student groups is poorly understood as an emerging research topic in ERT research. Student experiences with ERT, in general, have been reported as heterogeneous due to the many different ways that ERT has manifested (Stewart, 2021).

Characteristics of ERT

The most salient characteristic that distinguishes ERT in key ways from both traditional residential and distance education is that the practice is meant to be temporary. Because ERT courses are unplanned, they are under-developed, under-supported, rapidly delivered, and likely of lower "quality" (Doornbos, 2020; Hodges et al., 2020; Whittle et al., 2020; Williamson et al., 2020). Despite these shortcomings, ERT courses are creative solutions engineered in response to a complex problem in an unstable context. For example, ERT has been used to enable and

maintain girls' access to education in Afghanistan due to Taliban attacks on international and all-girl schools (Davies & Bentrovato, 2011); the remote delivery of materials (including postal, radio broadcasting, and internet delivery) served as a way to maintain educational continuity for certain students and faculty while physically avoiding the danger of Taliban assaults. In the case of COVID-19, ERT has been a form of social distancing, the primary strategy for mitigating the spread of the novel coronavirus.

Experiences with ERT

ERT literature started emerging in 2020 from all over the world with studies spanning numerous fields and virtually all levels of education (Bond et al., 2021; Stewart, 2021). Further, ERT has complicated student mobility and the immigration statuses of millions of international and exchange students (Dietrich, 2020) who have been forced to learn remotely in either their host or home countries. These circumstances have laid a relatively poor foundation for teaching and learning given these additional moderating factors. For example, under ideal conditions, the successful online student is one with strong emotional intelligence, self-awareness, self-regulation abilities, self-discipline, time management knowledge, organizational skills, interpersonal communication adeptness, technology fluency, and an internal locus of control (Colorado & Eberle, 2010; Dabbagh, 2007; Kauffman, 2015). Many real-world factors and conditions limit the applicability of this profile under the best of conditions (Means et al., 2014), yet as a consequence of the pandemic, engaging in remote learning has been involuntary for most. Moreover, experiences and perceptions of learning via ERT have varied significantly from institution to institution and student to student (Williamson et al, 2020). In fact, some students have historically struggled with formal online learning (Means et al., 2014; Xu & Jaggars, 2014), often because of socio-economic status (Stoessel et al., 2015). This challenge can be compounded for international students who often face additional cultural and linguistic obstacles (Erichsen & Bolliger, 2014) in addition to related mental health issues (e.g., loneliness and isolation) in their host country/institution (Forbes-Mewett, 2019). Thus, when viewed collectively, it comes as no surprise that the experiences that students have had with ERT are heterogeneous, which ultimately makes characterizing ERT monolithically impossible (Stewart, 2021).

Positive Experiences

The timing of ERT transitions often have had effects on the nature of the student and instructor experience (Petillion & McNeil, 2020). For example, students might have already been oriented to their courses and their instructors when they transitioned mid-semester in Europe and North America (Van Heuvelenn et al., 2020), whereas students in countries in Asia, due to different academic calendars, likely began the semester in an ERT format. However, many Asian countries have had more prior experience with large-scale health and safety adjustments due to prior experience with other epidemics (e.g., SARS, MERS, H1N1) (Sangster et al., 2020). In Pakistan, for example, Faize and Nawaz (2020) found an increase in student satisfaction as a result of changes to teaching practices during their initial ERT period, but they cautioned that this change could also simply be due to students and instructors having more experience teaching and learning remotely towards the end of the semester. In another study in Saudi Arabia, Abdulrahim and Mabrouk (2020) found that digital learning had actually improved student outcomes, due in part to a robust ICT infrastructure in place. The researchers noted, however,

that participants in their study predominantly came from majors in the humanities, suggesting the possibility that other departments or majors may not have performed as well. In the United Kingdom, students reported being flexible and understanding of curriculum and course changes in light of social distancing (Choi et al., 2020), and students in Indonesia found various digital tools and platforms to have positive effects on their learning (Amin & Sundari, 2020). While technology adoption and integration in education has been a long-known struggle (see Ertmer, 1999), teachers in Chile reported that ERT allowed them to experiment with technology-supported teaching in ways unlike before since there were no "risks" in doing so (Sepulveda-Escobar & Morrison, 2020). Even in Korea, some exchange students' experiences with ERT have been positive (e.g., flexibility of study schedule and location) (Stewart & Lowenthal, 2022). Nevertheless, the vast majority of ERT experiences around the world have been negative.

Negative Experiences

Regardless of the timing, ERT transitions are typically described as extreme disruptions (Osman, 2020). While the pandemic has made teaching and learning in novel ways unavoidable (Abel, 2020; Alqurshi, 2020), instructors' prior experiences teaching face-to-face often have not translated well to teaching at a distance (Gyampoh et al., 2020). For example, students have reported not knowing the requirements of assignments (Alqurshi, 2020), indicating how relatively simple course elements could be lost in translation. Instructors' strategies for conducting classes have also relied largely on mimicking face-to-face instructional practices (Bozkurt et al., 2020; Chatziralli et al., 2020; Van Heuvelen et al., 2020) which has often led to reduced or limited interaction with peers and instructors. This has then led to negative perceptions of online learning, and ultimately lower levels of course satisfaction (Alqurshi, 2020), creating a negative feedback loop. On top of all of this, many students suddenly found themselves sitting for six to eight hours a day at home on their computers whereas for many others, the only way to access their ERT courses was through mobile phones (Sundarasen et al., 2020). Further, makeshift at-home learning spaces have been described as uncomfortable and/or distraction prone (Sepulveda-Escobar & Morrison, 2020). These less-than-ideal learning environments have also coincided with first-time experiences of teaching and learning online (Chatziralli et al., 2020).

First-Time Teaching and Learning Online

Johnson et al. (2020) noted that teachers in their study were not particularly fond of ERT. Other researchers found that the lack of online teaching expertise (Sepulveda-Escobar & Morrison, 2020) and consequent lack of teaching presence in digital environments (Rahiem, 2020) often led to negative perceptions of teaching and learning online (Wilcox & Vignal, 2020). Stress from first-time ERT teaching and learning was coupled with stress intrinsic to the pandemic (MacIntyre et al., 2020). Empirical studies have further revealed mental health issues (Gao, 2020) ranging from decreased motivation (Petillion & McNeil, 2020), confusion and disorientation (Bal et al., 2020), stress (MacIntyre et al., 2020), fear of the unknown (Green et al., 2020), depression and anxiety (Kapasia et al., 2020), unhappiness (Gillis & Krull, 2020), and feelings of remoteness and isolation (Green et al., 2020). Another negative feedback loop was revealed through the use of maladaptive coping strategies (MacIntyre et al., 2020) which made the tasks of remote teaching and learning worse. Among teachers and students, fatigue and burnout were not uncommon (Sangster et al., 2020). Adding to these difficulties have been

technology obstacles and barriers, which do occur with online learning in general, but which have simply been amplified and/or exacerbated by both the pandemic and ERT.

Technology Obstacles and Barriers

While some studies have reported only a few or minor technology-related issues (e.g., Abdulrahim & Mabrouk, 2020; Choi et al., 2020; Crick et al., 2020; Knudson, 2020), comparatively smooth transitions to ERT have been uncommon (Jandrić et al., 2020). One of the biggest technological obstacles and barriers was internet access (i.e., poor bandwidth, limited availability); both instructors and students in interviews, surveys, and open-ended questions in communities all over the world talked about connection difficulties (Abel, 2020; Aboagye et al., 2020; Alqurshi, 2020; Gillis & Krull, 2020; Kapasia et al., 2020). While this is not necessarily surprising as such issues can occur under regular circumstances (Means et al., 2014), internet and computer access could be more problematic than had been initially anticipated (Gillis & Krull, 2020).

Student Engagement

Student engagement was often related (positively and negatively) to adjustments made to course expectations and evaluation policies (Petillion & McNeil, 2020) such as pass/fail grading policies (Perets et al., 2020) or workload reductions (Wilcox & Vignal, 2020). For example, Perets et al. (2020) reported that the implementation of pass/fail grading actually resulted in less student engagement, less attendance at synchronous lectures, and even less viewing of asynchronous lectures. By contrast, Gillis and Krull (2020) reported more favorable student reactions to pass/fail policies though less motivation to engage in remote courses was prevalent nonetheless. When it came to reducing student workloads to accommodate the additional time required for remote instruction, instructors did not necessarily perceive the change being successful, and students still felt ERT had a negative impact on their learning (Wilcox & Vignal, 2020).

Issues in Current Literature

Though ERT is meant to be temporary (Hodges et al., 2020), the pandemic has endured. Schools and universities are continuing to deliver instruction remotely which raises several issues. First, it is not clear how to conceptualize ERT when it is no longer technically an emergency or unplanned. Second, as an emerging research topic, there are no longitudinal studies to date on any number of questions regarding ERT (e.g., improved course engagement or student satisfaction when ERT is sustained). Third, student ERT experiences are heterogeneous with high degrees of contextual variation (Peters et al., 2020) and it is not known how certain student groups (e.g., undergraduates, graduates, international, exchange, etc.) have fared relative to others or what their unique perceptions and experiences are. Even among international students as a category or research analytic, there is a significant amount of typological heterogeneity (Madge et al., 2015) that is often homogenized (Stewart, 2019). Fourth, since now more than a billion students and millions of instructors have experience with remote teaching and learning (UNESCO, n.d.), it is not known if the initial institutional support-interventions to train faculty and assist emergency transitions ultimately improves student experiences and perceptions with remote teaching and learning when a crisis lasts longer than initially expected. Lastly, many students' first experiences with higher education have coincided with the onset of the pandemic

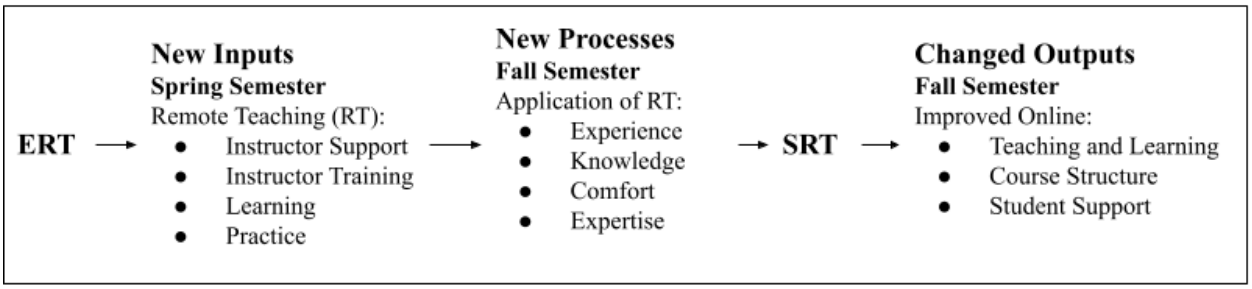
and ERT (i.e., first semester/year students). In other cases, ERT may be the only mode of operation for the entire length of shorter programs (e.g., master's programs, graduate certificates, exchange semesters, etc.) depending on course loads and scheduling. These experiences and perceptions, for better or worse, are likely to influence how students, instructors (and even family members) view learning online and formal distance education in particular. Research to date (e.g., Perets et al., 2020; Petillion & McNeil, 2020; Wilcox & Vignal, 2020) largely only documents changes in student behaviors and perceptions of ERT during the first semester of the pandemic, not when ERT has been sustained consecutive semesters. Moreover, most studies have largely sampled local/degree student populations, creating blind spots in the literature (Bond et al., 2021). In this paper, we investigate the question of changing experiences and perceptions of ERT/SRT among short-term exchange students through the lens of performance improvement theory.

Performance Improvement Theory

Performance very broadly refers to the manner in which something or someone functions, including groups of people as a unit of performance (Elger, 2007). Improved performance refers to this change in activity as a result of knowledge and skill acquisition (Vits & Gelders, 2002) where new knowledge is applied, resulting in measurable outcomes such as faster production of tasks, the use of more refined techniques or tools, the more efficient/effective use of resources, etc. Performance also occurs within a specific environment that is influenced by unique economic, political, and cultural factors, in addition to the particular affordances and constraints of a given setting (Swanson, 1999). Further, this dynamic interaction occurs across multiple knowledge/skill domains (e.g., psychomotor, cognitive, affective) (Elger, 2007) and what may successfully work in one setting may not in another. Under normal circumstances, interventions to improve performance are generally aligned with specific objectives (Burrow & Berardinelli, 2003), such as changing an instructional method, and related structural changes (e.g., new evaluation criteria) to modify behavior long-term (Morrison et al., 2011).

In the context of ERT, a performance paradox exists where long-term changes to instruction (i.e., remote delivery) are not the intended goal (Hodges et al., 2020). Performance improvement theory suggests that the interventions used to help faculty transition to ERT, in addition to ongoing training and support, should produce a change in teaching behavior that is measurable. Such performance measures already occur in the form of end-of-course and/or faculty evaluations by students. We recognize, however, that pandemic teaching performance is difficult to measure meaningfully given the conditions and impossible demands placed on many instructors. Nevertheless, as the COVID-19 pandemic endures around the world, sustained ERT continues to be relied upon as the primary method of educational continuity, and students are still being required to learn online involuntarily. Thus, we sought to investigate how new inputs (i.e., instructor ERT support, new experience/knowledge) and the resulting processes (i.e., sustained ERT training) would change outputs (i.e., instructor performance), resulting in measurable outcomes (i.e., changed experiences and perceptions of ERT) as reported by students (Swanson, 1999). This model of performance is illustrated in Figure 1.

Figure 1
Model of ERT Performance Improvement



The Current Study

This study was undertaken at a large, private research institute in northern Seoul during the 2020 academic year (early March to late December) in Korea. The university has a student population of approximately 20,000 students, 3,300 of whom are international. Among the international student body, around 300-400 are exchange students per semester (i.e., around 800-1000 annually). The university, like all universities in Korea, conducted both its entire Spring and Fall semesters online as a health and safety measure against COVID-19. While ERT was new for everyone in the Spring, it became sustained through the Fall due to large COVID-19 cluster infections (see Kim, 2020).

Key Research Objectives

While virtually all students have been affected by campus closures and ERT (Stewart, 2021; UNESCO, n.d.), international (degree-seeking and exchange) students have also experienced additional hardships due to mobility issues and complicated immigration statuses, potentially increased isolation in their host country, as well as social, cultural, and linguistic barriers (Erichsen & Bolliger, 2014; Forbes-Mewett, 2019). Prior distance education research often homogenizes distinctly different student groups by using international as a generic research analytic (Madge et al., 2015; Rensimer, 2016; Stewart, 2019). Further, as a subpopulation of the general international student body, most current ERT research has not specifically looked at this particular student subtype (Bond et al., 2021). Exchange students' experiences can be further complicated due to their comparatively short educational sojourns (Stewart, 2020), providing students less time to learn and adjust to digital learning environments than their local degree-seeking counterparts. Moreover, exchange students at the university can enroll in courses across almost all colleges with only a few practical exceptions, exposing them to a much wider variety of instructional practices and ERT course formats. It was also expected that their views would be diverse due to their heterogeneous socio-cultural backgrounds. Additionally, such students have been some of the few students living on campus despite being required to take all of their courses online (Peters et al., 2020). While exchange students are primarily motivated by the desire to have new cross-cultural experiences and to interact with locals in a residential manner (Stewart, 2020), this experience has largely been absent as a consequence of the pandemic and ERT (Stewart & Lowenthal, 2022). Exchange students, who are engaged in short-term student mobility, are also likely less

familiar with their institution, classmates, instructors, departments, policies, etc. given the short lengths of their sojourns (typically 4-6 months) (Stewart, 2020). Since instructors at the university now possessed experience with ERT, this study, was guided by the following research questions:

1. Do exchange students' perceptions of, and experiences with, *Teaching and Learning Processes*, *Student Support*, and *Course Structure* change when ERT is sustained over consecutive semesters?
2. Does ERT improve when it becomes Sustained Remote Teaching (SRT)?

Methodology

Data was collected via an electronic survey around the middle to the end of both the first and second semesters of the academic year. After completing an informed consent form, students were asked basic demographic information, characteristics of their courses, as well as to rate their perceptions, using a five-point scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) of learning online on three dimensions from the Institute for Higher Education Policy (iHEP) benchmarks for success in internet-based distance education: *Teaching and Learning Processes*, *Student Support*, and *Course Structure* (Phipps & Merisotis, 2000). At the end of the survey, an optional open-ended question invited students to share their experiences with learning remotely in their own words. The survey remained open for five weeks and students were sent occasional reminders to participate. No incentives were offered for participation.

Participants

Participants came from the 2020 Spring (263) and Fall (167) exchange student body. In the Spring (Semester 1 of the academic calendar), there were 140 responses yielding a 53.23% response rate, while in the Fall there were 93 responses yielding a 56.02% response rate. Respondent demographics are presented in Table 1. Student's nationalities are representative of the population as a whole and are presented in Figure A in Appendix A for reference. Variations between population totals and survey respondents by nationality varied from 0-5% each semester.

Table 1
Respondent Demographics and Exchange Characteristics

Survey Item	Characteristic	Spring 2020 % (n=140)	Fall 2020 % (n=93)
Age (M=22.2/21.9%)	18-22	62.83%	65.6%
	23-30	37.17%	34.4%
Gender	Male	13.6%	16.1%
	Female	86.4%	83.9%

Primary Study Level	Undergraduate	72.2%	81.1%
	Graduate	16.4%	13.5%
	Certificate*	11.4%	5.4%
Exchange Length	4 months	47.1%	41.4%
	6 months	11.4%	7.2%
	10 months	32.1%	40.5%
	12 months	9.4%	10.8%
Campus	Seoul	90%	95.5%
	Satellite	10%	4.5%
Prior Online Course Experience	Yes	17%	82%
	No	83%	18%

Note: Total exchange student enrollment for was Spring 2020 = 263, Fall 2020 = 167.
*Certificate refers to an intensive Korean language program.

While participant characteristics across both semesters are relatively similar and consistent with the exchange program overall, we saw a slight increase in longer exchange periods to both 10 and 12 months. Many incoming students from Europe wanted to prolong returning to comparatively worse COVID-19 conditions in their home countries. Unsurprisingly in Semester 2, 82% of students now reported having prior online learning experience compared to just 17% the semester before.

Results

Course Characteristics

ERT course characteristics did not change dramatically from semester to semester (see Table 2). One item of note, however, is the lighter course load. We speculate that students seemed to be adjusting their course loads based on experience from Semester 1 since we saw an increase in lighter course loads (1-2) from 26.42% to 35.48% with a simultaneous decrease in medium course loads (3-5) from 60.71% to 49.46%.

Table 2
Emergency Online Course Characteristics

Survey Item	Course Characteristics	Spring 2020 % (n=140)	Fall 2020 % (n=93)
Course Load (M=3.68/3.52)	1-2	26.42%	35.48%
	3-5	60.71%	49.46%
	6-9	12.84%	15.05%
Course Size	1-20	39.5%	36.6%
	21-40	44.3%	41.9%
	41-60	15.7%	17.2%
	61+	0.5%	4.3%

Course Type	Asynchronous	8.6%	9.7%
	Synchronous	28.6%	31.2%
	Both Types	62.9%	59.1%
Course Activities	Discussion Forums	10.7%	7.2%
	Small Group Projects	12.9%	16.6%
	Self-study Assignments	19.7%	18.9%
	Live Group (text) Chats	9.2%	7.2%
	Video Conferencing (Live Lectures)	27.9%	29.1%
	Pre-recorded Lectures	19.7%	21.1%
Location of Course Engagement	Dormitory	65.7%	62.5%
	Apartment	14.3%	26.9%
	Cafe	12.9%	7.6%
	Goshiwon*	4.3%	3.3%
	Study Room	2.1%	0%

Note: *Goshiwon is a common housing option available to students unique to Korea

iHEP Dimensions

The overall scores for the survey's three dimensions and scale reliability are presented in Table 3. Each dimension's Cronbach's alpha score is greater than 0.7 with the exception of *Course Structure* for Fall 2020, representing internal data consistency overall (we analyze *Course Structure*'s Fall reliability score in the discussion). All three dimensions can be characterized as neutral with the mean ratings falling between 3 (Neutral) and 4 (Agree). For *Teaching and Learning Processes* as well as *Course Structure*, there was an increase in the mean scores (+.166 and +.212 respectively) in the Fall. By contrast, there was a slight decrease in the mean score (-.03) for *Student Support*. The standard deviations for ratings in *Student Support* and *Course Structure* decreased (-.02 and -.131) while the deviation among ratings for *Teaching and Learning Processes* increased (+.20) slightly.

Table 3

iHEP Dimensions Scores by Semester

iHEP Dimensions	α		*M*		*SD*	
	Spring	***Fall***	***Spring***	***Fall***	***Spring***	***Fall***
Teaching and Learning Processes	.839	.877	3.294	3.46	.624	.644
Student Support	.728	.814	3.270	3.24	.841	.706
Course Structure	.746	.678	3.508	3.72	.656	.525

When it comes to perceptions of *Teaching and Learning Processes*, the difference between semester mean scores increased for all items, ranging from .01 to .79 (0.2%-15.8%). The average increase was .198 (3.96%) which was attributable to four items with relatively large

mean score increases (1. Courses are well organized into units and allow students to master objectives before moving on to the next unit [+.23]; 2. Class voice-mail, video conferencing, and/or e-mail systems are provided to encourage students to work with each other and their instructor[s] [+.15]; 3. Student interaction with other students is facilitated through a variety [e.g., 1:1, group activities, projects, discussions, etc.] of ways [+.79]; 4. Course materials [i.e., books, PowerPoints, videos, software, etc.] promote collaboration among students [+.48]). The difference between standard deviation scores each semester ranged from .02 to .173 (.4%-3.46%) with deviations decreasing across seven of the 10 benchmarks. For "Courses are well organized into units and allows students to master objectives before moving on to the next unit" and "The course units are of varying lengths determined by the complexity of the learning objectives," the decrease in deviation semester over semester was comparatively large at .112 and .173. The other three benchmarks had relatively minor increases in the standard deviations. The results are presented in Table 4.

Table 4
Perceptions of Teaching and Learning Processes

Benchmarks	**Semester**	**1**	**2**	**3**	**4**	**5**	***M***	***SD***
Faculty provide feedback on student assignments and answer questions in a timely manner.	Spring	3 (2.1%)	19 (13.6%)	27 (19.3%)	68 (48.6%)	23 (16.4%)	3.64	.983
	Fall	5 (5.4%)	5 (5.45)	27 (29.0%)	37 (39.8%)	19 (20.4%)	3.65	1.04
Feedback to students is provided in a manner that is constructive and helpful.	Spring	4 (2.9%)	13 (9.3%)	34 (24.3%)	68 (48.6%)	21 (15.0%)	3.64	.946
	Fall	3 (3.25)	6 (6.5%)	21 (22.6%)	50 (53.8%)	13 (14.0%)	3.69	.909
Courses are well organized into units and allows students to master objectives before moving on to the next unit.	Spring	4 (2.9%)	11 (7.9%)	39 (27.9%)	72 (51.4%)	14 (10.0%)	3.58	.882
	Fall	1 (1.1%)	4 (4.3%)	30 (32.3%)	45 (48.4%)	13 (14.0%)	3.81	.770
Student interaction with faculty is facilitated through a variety (e.g., chat, email, office hours, class postings, etc.) of ways.	Spring	2 (1.4%)	11 (7.9%)	45 (32.1%)	70 (50%)	12 (8.6%)	3.56	.815
	Fall	1 (1.1%)	3 (3.2%)	23 (24.7%)	52 (55.9%)	14 (15.1%)	3.61	.860
The course units are of varying lengths determined by the complexity of the learning objectives.	Spring	5 (3.6%)	13 (9.3%)	46 (32.9%)	63 (45%)	13 (9.3%)	3.47	.917
	Fall	1 (1.1%)	4 (4.3%)	37 (39.8%)	44 (47.3%)	7 (7.5%)	3.56	.744
Each unit requires students to	Spring	6	11	48	62	13		

engage themselves in analysis, synthesis, and evaluation as part of their course assignments.		(4.3%)	(7.9%)	(34.3%)	(44.3%)	(9.3%)	3.46	.924
	Fall	1 (1.1%)	8 (8.6%)	29 (31.2%)	43 (46.2%)	12 (12.9%)	3.61	.860
Class voice-mail, video conferencing, and/or e-mail systems are provided to encourage students to work with each other and their instructor(s).	Spring	7 (5.0%)	32 (22.9%)	41 (29.3%)	53 (37.9%)	7 (5.0%)	3.15	.996
	Fall	5 (5.4%)	12 (12.9%)	33 (35.5%)	36 (38.7%)	7 (7.5%)	3.30	.976
Courses are designed to require students to work in groups utilizing problem-solving activities in order to develop an understanding of the topic.	Spring	11 (7.9%)	41 (29.3%)	34 (24.3%)	50 (35.7%)	4 (2.9%)	2.96	1.04
	Fall	6 (6.5%)	20 (21.5%)	38 (40.9%)	22 (23.7%)	7 (7.5%)	3.04	1.01
Student interaction with other students is facilitated through a variety (e.g., 1:1, group activities, projects, discussions, etc.) of ways.	Spring	21 (15.0%)	37 (26.4%)	37 (26.4%)	36 (25.7%)	9 (6.4%)	2.82	1.05
	Fall	7 (7.5%)	21 (22.6%)	26 (28.0%)	28 (30.1%)	11 (11.8%)	3.61	1.14
Course materials (i.e., books, PowerPoints, videos, software, etc.) promote collaboration among students.	Spring	20 (14.3%)	46 (32.9%)	39 (27.9%)	32 (22.9%)	3 (2.1%)	2.66	1.05
	Fall	5 (5.4%)	18 (19.4%)	35 (37.6%)	29 (31.2%)	6 (6.5%)	3.14	.985

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, M=Mean, SD=Standard Deviation

When examining perceptions of *Student Support*, mean scores decreased on four out of five items from Semester 1 to Semester 2, ranging between .01 to .08 (0.2%-1.6%). "Easily accessible technical support is available to students throughout the course" was the only benchmark with an increase in the mean score by .03. When considering the differences between standard deviation scores, three benchmarks had decreasing variances. The results are presented in Table 5.

Table 5
Student Perceptions of Student Support

Benchmark	**Semester**	**1**	**2**	**3**	**4**	**5**	***M***	***SD***
Information (e.g., syllabus, software guides, tutorials, etc.) is supplied to students about their courses.	Spring	2 (1.4%)	12 (8.6%)	29 (20.7%)	79 (56.4%)	18 (12.9%)	3.71	.852
	Fall	1 (1.1%)	4 (4.3%)	30 (32.3%)	45 (48.4%)	13 (14.0%)	3.70	.805

Students can obtain assistance to help them use the course software (e.g., E-Class, WebEx, Zoom, etc.).	Spring	4 (2.9%)	18 (12.9%)	42 (30.0%)	69 (49.3%)	7 (5.0%)	3.41	.881
	Fall	2 (2.2%)	14 (15.1%)	33 (35.5%)	37 (39.8%)	7 (7.5%)	3.35	.905
A system is in place to address student complaints or difficulties with the course.	Spring	5 (3.6%)	29 (20.7%)	48 (34.3%)	53 (37.9%)	5 (3.6%)	3.17	.921
	Fall	7 (7.5%)	14 (15.1%)	38 (40.9%)	28 (30.1%)	6 (6.5%)	3.13	1.00
Easily accessible technical support is available to students throughout the course.	Spring	6 (4.3%)	29 (20.7%)	59 (42.1%)	39 (27.9%)	7 (5.0%)	3.09	.925
	Fall	7 (7.5%)	10 (10.8%)	44 (47.3%)	29 (31.2%)	3 (3.2%)	3.12	.919
Students are provided with training or information to help them use course software, digital tools, apply, electronic databases, websites, etc.	Spring	14 (10.0%)	33 (23.6%)	40 (28.6%)	48 (34.3%)	5 (3.6%)	2.98	1.06
	Fall	9 (9.7%)	24 (25.8%)	28 (30.1%)	31 (33.3%)	1 (1.1%)	2.90	1.01

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, M=Mean, SD=Standard Deviation

When examining perceptions of *Course Structure*, the difference between semester mean scores increased for all five benchmarks ranging from .13 to .38 (2.6%-7.6%). The difference between the standard deviation scores also decreased for all benchmarks from -.037 to -.295. When compared with *Teaching and Learning Processes* and *Student Support*, this was the only dimension where all benchmarks saw an increase in mean scores while simultaneously having less deviation among responses (see Table 6).

Table 6
Student Perceptions of Course Structure

Benchmark	**Semester**	**1**	**2**	**3**	**4**	**5**	***M***	***SD***
Students are provided with basic course information that outlines course objectives, concepts, and ideas.	Spring	1 (0.7%)	3 (2.1%)	32 (22.9%)	82 (58.6%)	22 (15.7%)	3.86	.721
	Fall	0 (0%)	2 (2.2%)	16 (17.2%)	56 (60.2%)	19 (20.4%)	3.99	.684
Sufficient resources are made available to the students to complete class assignments, tasks, projects, etc.	Spring	5 (3.6%)	13 (9.3%)	37 (26.4%)	71 (50.7%)	14 (10.0%)	3.54	.924
	Fall	0 (0%)	10 (10.8%)	23 (24.7%)	48 (51.6%)	12 (12.9%)	3.67	.838
Specific expectations are set for students with	Spring	2 (1.4%)	25 (17.9%)	31 (22.1%)	70 (50%)	12 (8.6%)	3.46	.932

respect to a minimum amount of time per week for study and homework assignments.	Fall	1 (1.1%)	7 (7.5%)	27 (29.0%)	44 (47.3%)	14 (15.1%)	3.68	.862
Learning outcomes for each course are summarized in clearly written, straightforward statements.	Spring	5 (3.6%)	20 (14.3%)	46 (32.9%)	59 (42.1%)	10 (7.1%)	3.35	.936
	Fall	0 (0%)	10 (10.8%)	27 (29.0%)	50 (53.8%)	6 (6.5%)	3.56	.773
Faculty are required to grade and return all assignments within a certain time period.	Spring	9 (6.4%)	25 (17.9%)	35 (25.0%)	54 (38.6%)	17 (12.1%)	3.32	1.10
	Fall	0 (0%)	7 (7.5%)	27 (29.0%)	46 (49.5%)	13 (14.0%)	3.70	.805

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree, M=Mean, SD=Standard Deviation

Inferential Analysis

Since the vast majority of exchange students only stay for a single semester (4-6 months) in addition to shortening or extending exchange periods for numerous reasons (Stewart, 2020), paired tests are not feasible. However, since we used Survey Monkey to survey the population both semesters, we were able to cross reference complete responses between the two groups and check for independence of observations; this check revealed seven students common to both groups. These responses were removed from the data set prior to inferential analysis, resulting in 133 (Spring) and 86 (Fall) students per group. Since the four assumptions of a Kruskwal-Wallis independent samples one-way ANOVA were met, we conducted the non-parametric test for each iHEP benchmark and overall dimension score using the statistics software Jamovi and recalculated the alpha, mean, and standard deviation values. Six statistically significant differences (two dimensions, four benchmarks) between the Spring and Fall semesters were revealed and are presented in Table 7. Since the mean ranks for each tested item in the Fall were larger than the Spring semester, the null hypothesis (no improvement) can be rejected, though in some instances the apparent improvement is less certain. The Cronbach's alpha was re-calculated based on the adjusted response totals and still indicate internal data consistency with values of .7 or greater. The one exception to this is *Course Structure* for the Fall semester.

Table 7
Independent-Samples Analysis of Differences Between Spring and Fall Semesters

iHEP Dimensions/ Benchmarks	Semester	α	M	SD	Mean Rank	χ^2	df	p
Teaching and Learning Processes	Spring	.847	3.27	.646	102.69	4.51900	1	0.034
	Fall	.884	3.47	.662	121.30			

Student interaction with other students is facilitated through a variety (e.g., 1:1, group activities, projects, discussions, etc.) of ways.	Spring Fall		2.81 3.16	1.156 1.146	102.84 121.07	4.58646	1	0.032
Course materials (i.e., books, PowerPoints, videos, software, etc.) promote collaboration among students.	Spring Fall		2.63 3.15	1.062 1.00	98.38 127.97	12.2323	1	< .001
Course Structure	Spring Fall	.754 .690	3.49 3.73	.754 .534	102.48 121.62	4.82568	1	0.028
Faculty are required to grade and return all assignments within a certain time period.	Spring Fall		3.34 3.69	1.10 .815	102.98 120.85	4.61844	1	0.032
Learning outcomes for each course are summarized in clearly written, straightforward statements.	Spring Fall		3.30 3.58	.977 .789	103.38 120.24	4.21368	1	0.040

Note: The adjusted semester response count for independent samples analysis are 133 (Spring) and 86 (Fall). CI = 95%.

Discussion

On the surface, the experiences and perceptions of exchange students learning online via ERT do generally show "improvement" in that the mean scores are often higher in the Fall than the Spring semester on individual benchmarks (see Tables, 3, 4, 6). In terms of performance improvement theory, it would seem that instructors acquired new knowledge and skills which were then applied in more effective ways (Vits & Gelders, 2002) as evidenced in students' perceptions. Nevertheless, the changes are particularly inconsequential in most cases. The independent samples analysis also supports this conclusion but limits the scope of positive change to only four individual benchmarks, presenting even more modest results. Only 20% of benchmarks in *Teaching and Learning Processes* showed statistically significant improvement which were related to the facilitation of student-student interaction directly and indirectly. The mean score for "Student interaction with other students is facilitated through a variety (e.g., 1:1, group activities, projects, discussions, etc.) of ways" increased by 4% ($p = .034$) whereas the mean score for "Course materials (i.e., books, PowerPoints, videos, software, etc.) promote collaboration among students" increased by 10.4% ($p < .001$) and was the strongest result among all the iHEP benchmarks.

Potential reasons for this change include the support and training that the university provided during the Spring semester, as well as student comments on faculty evaluations which may have informed instructors where and/or how they might adjust their teaching. Where more notable "improvement" seems to have occurred was in *Course Structure*, though this is ultimately less certain.

Course Structure saw improvement in the mean scores as well as smaller deviations across all of the dimension's benchmarks. While this might suggest that instructors were able to improve moving their face-to-face course structure into a more effective remote format, inferential analysis revealed limited gains. As noted in both Table 2 and Table 7, the Fall Semester alpha value for *Course Structure* can be considered unreliable as the values (.678 and .690) are less than 0.7. Further, if the benchmark "Faculty are required to grade and return all assignments within a certain time period", which had the mean score increase by 7% and which has a significant p value (.032) were dropped, the scale reliability would improve to an acceptable value (.737) but would lose a "significant" result. Thus, we must recognize that improvement on this item is questionable. In the Spring, a student shared that:

> Most of my teachers haven't been able to communicate to me about my grade while the online courses I take in my home university update the grade book every other week so I know and understand what I am doing right or wrong. Right now in most of my classes I feel like I am going in blind, not too sure if what I am doing is right or wrong.

Similar sentiments were shared in the Fall:

> I'm quite disappointed in the way that they make us submit a lot of assignments but never correct them or stop half way through correcting them. Especially now that mid-term exams are coming up it's quite annoying to not be able to study one's errors/mistakes in assignments.

By contrast, "Learning outcomes for each course are summarized in clearly written, straightforward statements" had a mean score increase of 5.6% and was statistically significant (p=.040). In the Spring, students were frustrated by not necessarily knowing what was expected of them as one respondent described: "Sometimes the syllabus is not updated, and some important information are [sic] not given clearly, which makes it hard to organize study times." For some iHEP quality indicators, performance improvement theory does seem to describe the results, at least partially. Admittedly, however, the improvements are relatively small and may have numerous other causes instead of being the result of skill acquisition and subsequent performance improvement. Further, given that exchange students and the instructors often come from different socio-cultural backgrounds (Lee, 2011), it is possible that any new skill acquisition and improved remote teaching performance may not have come across so clearly (Swanson, 1999) to the students in this study. Nevertheless, there are no longitudinal studies on ERT to date for greater comparison and/or contextualization.

In pragmatic terms, what kind of improvement (i.e., how many benchmarks) and to what degree (i.e., the amount of percentage change) can realistically be expected is not known and is an open area of research. At least one possible explanation for the "improvement" across *Teaching and Learning Processes* as well as *Course Structure* is that students, in general, now have more experience and familiarity learning online (see Table 1). Faize and Nawaz (2020) posited an analogous explanation for increased student satisfaction results in their study in Pakistan. Nevertheless, where we saw no real change was in *Student Support*.

In fact, 80% of the iHEP benchmarks in *Student Support* (Table 5) actually saw decreases in their mean scores in the Fall with the exception of one item (i.e., Easily accessible technical support is available to students throughout the course). We speculate that the apparent decrease in the dimension score (about 0.6%) is a function of student familiarity with the host institution and its practices/protocols, rather than an actual performance decrease from the Spring semester, which is supported by the lack of any statistically significant differences. Thus, while a simple view of performance improvement theory relies on instructors as the sole agents of change, it is important to recognize that students' perceptions of and experiences with instructors are, at least in part, limited by their familiarity as a function of their shorter educational sojourns (Stewart, 2020, 2021). Further, it is possible that students' expectations have increased alongside ERT improvements, evening out any positive change. We suggest, however, that in terms of performance improvement theory, there is a contextual variable that may explain the ambivalent/negative results in *Student Support*: new enrollment.

In the case of exchange students, the vast majority are newly enrolled each semester given the tendency to only conduct single semester sojourns of four to six months (Stewart, 2020). Moreover, new enrollment also coincides with the first semester at the institution (which can also be the case for degree-seeking students). Petillion and McNeil (2020) described how timing could affect perceptions of ERT positively or negatively, where students already oriented to their courses would have more favorable experiences. Similarly, Van Heuvelenn et al. (2020) documented how orientation to courses prior to ERT delivery had better outcomes through less disruption; students were already familiar with course activities, assignments, expectations, etc. However, since exchange students are often always new and have no prior orientation to how ERT courses had been conducted at the university in the Spring, increased *Student Support* scores for continually new students may be paradoxical. Traditionally this type of difficulty has been present when students start learning online (Hachey et al., 2012) and is potentially an analogous challenge in the life cycle of academic exchanges (see Abdullah et al., 2017; Perez-Encinas & Ammigan, 2016) which may complicate perceptions of ERT. Further, the university does not have a standard ERT course format (see Table 2), generally leaving format and method decisions up to individual instructors. The result is that students encounter multiple course formats, different CMS platforms, tools, etc. The lack of standardization in ERT practices also makes it much more difficult for faculty and administrators to provide support for other courses since each one is delivered and operated differently. And unlike local Korean degree students, there are additional sociocultural and linguistic obstacles that can impede how exchange students interact and engage with their courses (Erichsen & Bolliger, 2014; Forbes-Mewett, 2019; Lee, 2011).

Ultimately in this study, the results can be interpreted as insignificant in the real world given that only 20% of the benchmarks saw statistically significant improvement with mean score increases ranging from roughly 4-10%, and even less with actual statistical significance. While the first-semester results are understandable as a consequence of not knowing how ERT courses would manifest and the impossible demands placed on educators and institutions, we must be cognizant of whether similar results remain acceptable when spanning consecutive semesters. While the end goal of ERT/SRT is not to replace face-to-face courses with ones that are delivered remotely ad infinitum, the lack of improvement should give us pause due to the vast amounts of financial and human resources that have been invested in educational continuity from the onset of the pandemic. Moreover, pandemic-related learning losses as a result of ERT and the potential lack of improvement deserve attention, especially since ERT/SRT is involuntary for students and instructors. As ERT transitions into SRT, instructors would likely benefit from upgrading to specific distance education training versus emergency continuity. If this is not possible or feasible, we suggest that students' experiences and perceptions of remote teaching can be improved, at the very least, by implementing more standardized course practices. Standardization under emergency/crisis circumstances can ultimately act as a potential strategy to improve *Teaching and Learning Processes*, *Student Support*, and *Course Structure* for first-semester/short-term students. To prepare for future remote teaching scenarios, universities (and by extension, faculty) could benefit from ERT/SRT plans that include short-, mid-, and long-term contingencies so that balanced standards of remote learning can be achieved, as well as to provide support for the student groups most in need.

Conclusion

In the case of a prolonged global pandemic or crisis, the emergence of remote teaching will need to evolve beyond just ERT into what we suggest can be more accurately characterized as Sustained Remote Teaching (SRT). Over the span of several consecutive semesters, these remote courses likely need to share more characteristics with traditional online courses since planning and development are feasible. Given the sustained nature of remote teaching and performance improvement theory, it is not unreasonable to assume that "quality" should improve as a result of new skill acquisition through training, support, and experience. However, based on our data, this assumption is tenuous; performance may not improve across enough indicators to be considered "successful" and/or to all student groups equitably. This is important since pandemic-related learning losses will no doubt present numerous challenges for educators and institutions in both short-and long-term post-pandemic academic affairs. Nevertheless, the findings, implications, and conclusions in this paper are not without limitations. First, the sampling was limited to one specific type of student at one university and it is likely that other types of students (i.e., degree students, local Korean students, graduate students, etc.) would rate these aspects of ERT/SRT courses differently. Further the ERT/SRT experience at other institutions may also be different due to different institutional capacity and faculty know-how. In that same vein, the dynamics and context of the study are set in Korea with international exchange students during the pandemic; other locations and other host university-student dynamics may present different results.

Nevertheless, there are numerous avenues for future research. Different student groups can be compared over time not only in terms of their perceptions of ERT/SRT, but also in their academic performance throughout. Similarly, longer studies with repeated measures (i.e., two, three, four semesters) can be conducted for the duration of ERT/SRT course delivery where possible to better understand how course characteristics evolve or change over time. Further, ERT literature is emergent with a discussion yet to occur on how to conceptualize ERT when the remote delivery of courses is no longer unplanned yet not a replacement for face-to-face delivery. The development of a more refined ERT definition, taxonomy, or model of ERT/SRT characteristics that account for the duration of the practice would no doubt benefit the educational community at large. Such a blueprint could help address improvement in learning remotely when crisis conditions once again demand ERT in the short-term, and SRT in the long.

Declarations

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The author assert that approval was obtained from an ethics review board (IRB) at Boise State University, USA.

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Appendix A

Figure A

Comparison of Exchange Student Semester Populations vs Survey Response Percentages