ATHLETIC TRAINING EDUCATION JOURNAL

www.natajournals.org
ISSN: 1947-380X
DOI: 10.4085/1947-380X-20-71

EDUCATIONAL TECHNIQUE

Developing a Virtual Learning Environment for Clinical Education Amidst a Pandemic

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Context: Because of the coronavirus disease 2019 (COVID-19) pandemic, many athletic training programs (ATPs) moved to mandatory virtual learning environments (VLEs) as access to clinical education sites was restricted for nonessential personnel, such as athletic training students (ATSs).

Objective: To describe the development of a program for delivering clinical education for all ATSs through a VLE model.

Background: Athletic training programs were faced with the task of delivering clinical education for all students through a virtual learning model. Further complicating the situation was that no blueprint for a VLE existed for athletic training.

Description: The ATP developed clear, definitive objectives for a 6-week VLE, but afforded each clinical site the autonomy to determine how it could best implement the objectives of the VLE based upon its individual strengths and limitations.

Advantage(s): Students reported increased self-motivation, improved communication skills and self-confidence, an improved ability to adapt to new situations, increased independence, personal and professional growth, the ability to stay positive and focused in the face of unexpected challenges, increased appreciation and application of evidence-based practice, and a more in-depth understanding and confidence related to organization and administration topics.

Conclusion(s): Virtual learning environments offer an alternative for accomplishing the clinical education of ATSs when they cannot be physically present because of extenuating circumstances, such as a pandemic. Additionally, the objectives and implementation strategies of the VLE can be integrated into the face-to-face clinical education plan to create an improved comprehensive approach to clinical education.

Key Words: Coronavirus, COVID-19, online, remote learning, evidence-based practice, athletic training program

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Full Citation:
Greicar M, Post E, Coliflores J, Ahlstrom C, Ater N, Chavez M, McDonald A, Paul S, Rodgers D, Green R. Developing a virtual learning environment for clinical education amidst a pandemic. *Athl Train Educ J.* 2021;16(2):132–141.

Developing a Virtual Learning Environment for Clinical Education Amidst a Pandemic

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KEY POINTS

- Faculty, students, and preceptors need clear, written learning objectives to provide a consistent delivery of a comprehensive and valuable virtual learning environment.
- Preceptors benefit from collaboration with one another and the athletic training program faculty by sharing various learning platforms to instruct and assess learning objectives and outcomes.
- The objectives and implementation strategies of the virtual learning environment can be integrated to create an improved comprehensive approach to clinical education.
- Athletic training students are exposed to more diverse learning opportunities when an athletic training program uses elements of a virtual learning environment in conjunction with the traditional clinical learning environment such as increased interprofessional education and improved application of evidence-based practice.

INTRODUCTION

The traditional educational system came to an abrupt halt in March 2020 amidst a global pandemic because of coronavirus disease 2019 (COVID-19),[1] a respiratory illness that can spread from person to person through respiratory droplets produced when an infected person coughs or sneezes or by touching a surface or object that has the virus on it and then touching one's own mouth, nose, or eyes.[1] Although the halt in the educational system posed an unprecedented challenge at all educational levels and for every academic discipline, health care programs were impacted because of the necessary clinical component of such programs. Athletic training was among those health care programs whose on-site clinical education experiences for its students were immediately suspended. Many institutions of higher education moved to mandatory remote learning, and access to clinical education sites was restricted for nonessential personnel, such as athletic training students (ATSs).[2] Athletic training programs (ATPs) were faced with the task of delivering clinical education for all students through a virtual learning environment (VLE) model. Further complicating the situation was that no blueprint for a VLE existed for athletic training clinical education. A VLE is defined as a platform of integrated teaching and learning tools designed to enhance a student's learning experience.[3] The platform typically integrates synchronous and asynchronous class sessions, videos, PowerPoint slides (Microsoft Corp), HTML files, and other public domain data into structured multimedia learning material and optimizes learning by presenting learning materials through various means.[3] Additionally, a VLE provides the student a flexible learning environment and improves collaboration among all participants.[3]

Leading the way for all ATPs was the accrediting body for ATPs, the Commission on Accreditation of Athletic Training Education (CAATE). The CAATE released its first public update[1] regarding clinical education on March 11, 2020, encouraging ATPs to be innovative in their response to support student learning with regards to the potential impact of COVID-19 on clinical education. Each ATP was allowed to modify its own clinical education policies as long as they were consistent with its institution's COVID-19 response plan. Through a public update on April 1, 2020, the CAATE stated its approval of the use of telehealth/telemedicine in the teaching and assessment of psychomotor skills.[4] However, not all in-person/face-to-face clinical learning and psychomotor skills assessment can be supplemented via virtual learning/technology solitions.[4] The CAATE was mindful to protect the autonomy of each institution in its delivery of a VLE. The purpose of this paper is to describe the development and implementation process undertaken by ATP administrators, faculty, and preceptors for a VLE.

San Diego State University's (SDSU's) ATP celebrated its 51st anniversary in 2019, making it one of the longest and oldest ATPs in the United States.[5] At the time of transition to remote learning, the SDSU ATP demographics consisted of 68 undergraduate ATP students, 51 preceptors, and 11 clinical sites including public and private National Collegiate Athletic Associated–affiliated institutions Like all ATPs across the nation, SDSU was pressed to develop and implement a virtual learning program to ensure the continuation of a quality clinical education for all students. The university mandated a pause of spring semester classes for 1 week with the sole intent to allow program administrators and faculty to convert to online learning. This 1-week pause allowed the ATP administrators to develop a strategic plan and collaborate with the ATP's preceptors to develop a VLE for the remainder of the semester. Three areas of focus areas drove the development of the plan. The first focus was to ensure the continuation of high-quality clinical education for all students. The second was to honor each clinical site's autonomy in its delivery of clinical education, respective to its unique setting and resources. Just as the CAATE was respectful of each institution's autonomy to modify its respective ATPs, the SDSU ATP was considerate of each site's unique clinical education delivery potential. The third focus was to safeguard continued compliance with the CAATE Standards.

DEVELOPING A VLE PROGRAM

Development of this bridge program for clinical education was driven by the faculty and preceptors' commitment to securing a valuable learning opportunity for the ATSs despite the extenuating circumstances of the COVID-19 pandemic. Because of the high number of students and preceptors, the diversity of clinical sites, and the various resources available at each site, a VLE that was short-sighted and lacked flexibility would not provide an equitable educational experience for all students. The ATP developed clear, definitive objectives for

Table 1. San Diego State University Athletic Training Program Virtual Learning Environment Program Objectives

Objective	Intended Purpose	Criteria
1. Weekly contacts (check-ins) among preceptors, students, and peers.	Promote teaching, learning, and mentoring among preceptors, students, and peers.	A minimum of 3 and a maximum of 5 per week.
2. ATSs reevaluate and update semester clinical education goals.	Align goals to the new clinical learning environment.	New goals completed within the first week of the VLE.
3. Completion of injury assessment scenarios.	Continued growth in clinical and psychosocial skills.	Complete remaining assigned scenarios for the semester.
4. Completion of clinical competencies.	Continued growth in clinical and psychosocial skills.	Complete remaining assigned clinical competencies for the semester.
5. Preceptors provide virtual learning opportunities to replicate the physical clinical setting.	Promote teaching and mentoring between preceptors and ATSs for continued professional development.	A minimum of 2 learning opportunities each week.
6. The universal project.	A cumulating analysis of what a safe return to the clinical setting will encompass for ATs, ATSs, and patients.	A final project submitted by an assigned date at the end of the semester.

Abbreviations: AT, athletic trainer; ATS, athletic training student; VLE, virtual learning environment.

the VLE, but afforded each site the autonomy to determine how it could best implement the objectives of the VLE based upon its individual strengths and limitations.

Initial VLE Development

The initial plan was purposely tentative in design. The clinical coordinator collaborated with her coinstructor for the ATP's practicum courses to design and outline an initial VLE that aligned with the current ATP objectives. The goal was to establish a primitive plan to drive the conversation when they presented the draft to the preceptors. The following initial objectives were established. The objectives and examples of activities are provided in Table 1.

The first objective involved transitioning away from the minimum/maximum semester clinical hour requirement and weekly hour requirements towards individual contacts or "check-ins" for the remainder of the semester. A minimum of 3 and a maximum of 5 contacts between Monday and Friday each week were required. The ATS was required to complete a minimum of 2 contacts with his or her assigned preceptor each week and to complete 1 contact per week with a peer at a different academic level (eg, a student in the class above or below). The goals of the weekly contacts were to promote peer teaching, learning, and mentoring similar to what an ATS experiences in the clinical setting and to facilitate a collaborative team effort, which is a critical element within the sports medicine umbrella.

A contact consisted of any of the following: a project, a journal review, staff meetings via the various remote videoconferencing streaming devices, and telehealth/telemedicine sessions in which the ATS participated. Each clinical site selected its own preferred telehealth/telemedicine format and both the preceptors and ATSs were trained accordingly before implementation. Contacts were recorded through ATrack (ATrack and Eternal Interactive, Inc) using the same process ATSs used to record their clinical hours. However, in the "All Activity Types" category, the ATS selected either Virtual Clinical Education with Preceptor (preceptors approved these contacts) or Virtual Clinical Education Peer Mentoring (practicum course instructor approved these contacts). The ATS also selected the athletic training domain from the "All Events" category (Tables 2–5) that best reflected the learning opportunity (eg, health care administration and professional responsibility).

To provide structure for the ATS, a rubric was developed to better enable ATSs to understand the total number of contacts required to facilitate positive progress in their clinical education. With only 5 weeks remaining in the spring semester, the accumulation of 17 to 19 contacts by the end of the spring semester was considered exceptional, acquiring 15 to 16 contacts met the standard, and acquiring fewer than 14 contacts did not meet the standard. Contacts were determined based on the average amount of days, not hours, an ATS would participate in a face-to-face clinical learning experience during the final 5 weeks remaining in the spring semester. The number of contacts required to meet the standard exemplified in the rubric was agreed upon by the ATP faculty and preceptors, taking into consideration the clinical educational needs of the ATSs and the professional demands of the preceptors.

The second objective of the VLE required every ATS to reevaluate and update his or her semester goals in conjunction with his or her assigned preceptor. Given the abrupt change in the delivery of clinical education, it was important for students to align their goals to their new VLE with consideration of different opportunities and limitations.

The third objective was to continue ATSs' growth in their psychomotor and psychosocial skills via various remote videoconferencing streaming devices. Each ATS completed the assessment and evaluation injury scenarios with the assigned preceptor via videoconferencing. The preceptor would introduce and/or review a skill set with the ATS. The ATS would practice the skill set under the guidance of the preceptor and would also be assessed via videoconferencing.

The fourth objective entailed allowing ATSs to complete their remaining clinical competencies via various remote videoconferencing streaming devices, where applicable. Alternative methods were provided for competencies requiring special

Table 2. SDSU Athletic Training Program (ATP) Clinical Site: San Diego State University Virtual Learning Opportunities

Type of Learning Opportunity	Domain	Example Learning Opportunities
Clinical weekly assignment	I: Injury prevention II: Clinical evaluation III: Immediate care IV: Therapeutic intervention V: Administration/professional responsibility	Complete weekly assignment individually to drive a full-site virtual discussion on Fridays (eg, create a 3-week home exercise program for an assigned injury).
Anatomy, physiology, kinesiology weekly assignment	II: Clinical evaluation	Research a specific assigned body part individually each week to discuss in your peer-to-peer match-up group.
Cumulative universal project	I: Injury prevention III: Immediate care V: Administration/professional responsibility	Develop a weekly slide presentation in small group to present and discuss during full site virtual meeting on Fridays (eg, create EAPs for a suspected COVID-19 case for 5 different sites used at San Diego State University).
Rehab session	IV: Therapeutic intervention	ATS assists preceptor to create rehab plan and conduct virtual rehab session (eg, soccer, cheer, track, rowing, water polo, football).
ATP requirements	I: Injury prevention II: Clinical evaluation III: Immediate care IV: Therapeutic intervention V: Administration/professional responsibility	Competencies (eg, discuss and demonstrate proper fitting of prophylactic bracing using at-home resources) and scenarios (eg, conduct a timed evaluation and assessment for the ankle using at-home resources) completed virtually with assigned preceptor.
Preceptor interviews about professional journey	I: Injury prevention II: Clinical evaluation III: Immediate care IV: Therapeutic intervention V: Administration/professional responsibility	Preceptor-to-ATS 1:1 meeting.
Resume/cover letter review	V: Administration/professional responsibility	Preceptor-to-ATS 1:1 meeting.
ATS-led review session	I: Injury prevention II: Clinical evaluation III: Immediate care IV: Therapeutic intervention V: Administration/professional responsibility	Peer-to-peer meeting.

Abbreviations: ATS, athletic training student; COVID-19, coronavirus disease 2019; EAP, emergency action plan.

equipment. A common approach involved the ATS watching an educational/instructional video and/or reading a research article. Once the assignment was completed, the assigned preceptor conducted a debriefing with the ATS discussing the material while he or she demonstrated competency via oral discussion and/or demonstrating a clinical skill on another individual. Based on the discussion and/or live demonstration, the preceptor would then determine if the ATS was competent in that specific skill. For the equipment-based competencies, final assessment with the appropriate equipment will be conducted once the institution returns to face-to-face instruction.

The fifth objective focused on the preceptors creating positive virtual learning opportunities that replicated the physical clinical setting. These included, but were not limited to, engaging the ATS in telehealth/telemedicine appointments with his or her assigned preceptor and a patient, the ATS assisting his or her assigned preceptor with health care administration projects such as updating emergency action plans or policy and procedure manuals and developing treatment and/or rehabilitation simulations, and the preceptor using video and alternative resources (eg, evidence-based practice [EBP], National Athletic Trainers' Association Position Statements) to teach and assess clinical skills.

Preceptor Engagement

After the initial draft of the VLE was developed, 49 of the 51 preceptors met virtually with the ATP's program director, clinical coordinator, and practicum course instructor on March 24, 2020. The meeting was a healthy and robust discussion that, most notably, resulted in the addition of a cumulating universal project that became the sixth objective of the VLE (Table 1). All ATSs were required to complete the universal project in collaboration with their preceptor. The universal project was developed based upon the singular

Table 3. San Diego State University Athletic Training Program (ATP) Clinical Site: University of San Diego Virtual Learning Opportunities

Type of Learning Opportunity	All Events: Athletic Training Domain	Example Learning Opportunities
Telemedicine	I: Injury prevention II: Clinical evaluation IV: Therapeutic intervention	Create treatment plan and progression, documentation, individualized maintenance programs.
Sport assignment	V: Administration/professional responsibility	EMR documentation, virtual team meetings.
EAP/policy creation	I: Injury prevention V: Administration/professional responsibility	EBP research, process map creation, knowledge of existing university resources/limitations.
Social media/sports medicine promotion	I: Injury prevention V: Administration/professional responsibility	Promoting areas of sports medicine (eg, mental health, peer recognition, sleep hygiene, nutrition).
Webinars	V: Administration/professional responsibility	Research/involvement in greater sports medicine/athletic training community.
COVID-19 brain trust (cumulating in universal project)	I: Injury prevention V: Administration/professional responsibility	Planning/research, looking at the most up-to-date information from CDC/NCAA/NATA.
Doctors clinic telehealth	II: Clinical evaluation III: Immediate care	Participation in weekly telehealth clinic check-ins.
ATP requirements	II: Clinical evaluation IV: Therapeutic intervention V: Administration/professional responsibility	Scenarios/competencies/goals/performance evaluations completed virtually with assigned preceptor.

Abbreviations: CDC, Centers for Disease Control and Prevention; EAP, emergency action plan; EBP, evidence-based practice; EMR, electronic medical record; NATA, National Athletic Trainers' Association; NCAA, National Collegiate Athletic Association

question: "What will it look like when we return to the athletic training setting post–COVID-19?" (Table 6).

It was the result of the collaboration between the program faculty and the preceptors that ultimately finalized the 6 objectives of the VLE and its formal adoption by the ATP. All clinical sites committed to the same learning objectives and outcomes of the VLE. An all-program virtual meeting was held on March 27 to introduce and explain the new virtual clinical education plan to the students and address any questions or concerns. The following week was SDSU's spring break, which again provided a pause for the clinical sites to develop their site-specific learning opportunities in compliance with the ATP's VLE objectives. When classes resumed on April 6, 2020, the clinical sites developed unique and individualized learning opportunities that aligned with the

Table 4. San Diego State University Athletic Training Program (ATP) Clinical Site: University of California, San Diego Virtual Learning Opportunities

Type of Learning Opportunity	All Events: Athletic Training Domain	Example Learning Opportunities
Telemedicine	I: Injury prevention II: Clinical evaluation IV: Therapeutic intervention V: Administration	Injury evaluation and rehabilitations completed virtually. Scribing during weekly primary care physicians' clinics.
ATP requirements	II: Clinical evaluation IV: Therapeutic intervention V: Administration/professional responsibility	Scenarios, competencies, sport assignment team meetings, and COVID-19 universal response project.
Weekly check-ins with preceptor, peers, and large-group discussion	I: Injury prevention V: Administration/professional responsibility	Research and collaborate on various administrative projects, BOC exam preparation, lectures on various domains.
Journal article discussion	I: Injury prevention II: Clinical evaluation V: Administration/professional responsibility	Biweekly discussion about articles from various scientific journals.
Policies and procedure creation	I: Injury prevention V: Administration/professional responsibility	Research, edit, and collaborate on various policy updates, Big West Conference head AT meetings, creation of summer education packet for incoming ATSs.

Abbreviations: AT, athletic trainer; ATS, athletic training student; BOC, Board of Certification; COVID-19, coronavirus disease 2019.

Table 5. San Diego State University Athletic Training Program (ATP) Clinical Sites: Community Colleges and High Schools Virtual Learning Opportunities

Type of Learning Opportunity	All Events: Athletic Training Domain	Example Learning Opportunities
Telemedicine	I: Injury prevention II: Clinical evaluation IV: Therapeutic intervention V: Administration	Injury evaluation and rehabilitations completed virtually.
ATP requirements	II: Clinical evaluation IV: Therapeutic intervention V: Administration	Successful completion of assigned scenarios and competencies, COVID-19 universal project.
Weekly contacts with preceptor, peers, and small group discussion	I: Injury prevention V: Administration	Research for various administrative projects, BOC exam preparation, lectures on various domains.
Journal article discussion	I: Injury prevention II: Clinical evaluation V: Administration/professional responsibility	Weekly discussions regarding EBP.
Policies and procedure creation	I: Injury prevention V: Administration/professional responsibility	Research and edit existing documentation.

Abbreviations: BOC, Board of Certification; COVID-19, coronavirus disease 2019; EBP, evidence-based practice.

objectives of the VLE (Tables 2–5). Just as students received different clinical experiences from site to site because of the unique demands, size, and patient population when they were physically present at the site, students received that same diversity of experience within the VLE.

STUDENT REFLECTION

At the end of the semester, students were required to complete a reflection paper about their experience with the VLE as a final practicum course assignment. Reflection has been identified as an important component of the learning process in clinical education.[6,7] Reflection after a clinical experience encourages the synthesis and integration of new knowledge and skills with previous experiences.[6,7] Additionally, this reflection assignment provided valuable qualitative feedback regarding the VLE to faculty and preceptors. The ATSs were made aware that their qualitative statements would be share in an anonymous manner with the ATP administration and preceptors for the purpose of clinical education development and growth. The authors used an inductive conventional content analysis to analyze the data, with 2 authors reading all reflection assignments. The 2 authors were full-time members of the ATP faculty. Once all assignments were read, these 2 authors coded responses, which involved identifying key passages that highlighted key themes related to the students' experience with the VLE. Next, the 2 authors created labels for emergent themes and met to identify and compare themes and specific student comments. The 2 authors then shared their preliminary results with the other authors for peer review before finalizing themes and student comments. According to the institution where the SDSU ATP completed the educational technique, this project did not need research ethics approval in accordance with the 2019 requirements of the Common Rule and the federal definition of research.[8]

Themes and specific comments provided by students in the reflection assignments are provided in Table 7. Overall, feedback regarding the VLE was overwhelmingly positive. Students reported increased self-motivation as a result of the

Table 6. San Diego State University Athletic Training Program Virtual Learning Environment Program Universal Project

Component	Proposed Policies and Procedures
1. Reintegration process	Screening and referral processes.
2. EAPs	Updated to reflect strategies for a pandemic.
3. Staffing issues/concerns	Budget implications (eg, cost of PPE), personal health and safety, essential versus nonessential personnel, insured versus noninsured athletes, and mental health care.
4. Educational adjustments: clinical and didactic	FERPA, HIPAA, academic honesty, and clinical implications of the athletic training domains.
5. What will "normal" look like post–COVID-19?	Daily clinical implications for treatment and travel; updated CDC, CAATE, NATA, NCAA, and other applicable agencies' guidelines; and return-to-play criteria.

Abbreviations: CAATE, Commission on Accreditation of Athletic Training Education; CDC, Centers for Disease Control and Prevention; COVID-19, coronavirus disease 2019; EAP, emergency action plan; FERPA, Family Educational Rights and Privacy Act; HIPAA, Health Insurance Portability and Accountability Act; NATA, National Athletic Trainers' Association; NCAA, National Collegiate Athletic Association; PPE, personal protective equipment.

Table 7. Student Reflection Themes and Specific Comments

Theme	Specific Student Comments
Increased self-motivation	"I, like many others, had to adapt to online learning and while trying to stay motivated to continue my clinical education. My fellow classmates were a great support and without them it would have been hard to stay on track and focused. Even though this was extenuating circumstances, my confidence seemed to grow."
	"When I saw we had to transition to telehealth I felt extremely overwhelmed. Spring break could not have come at a better time. I really took that week to disconnect and try to adjust to this 'new normal.' When we came back from spring break, I felt refreshed and ready to work. My preceptor and I redid my semester goals to get back on track. I was excited to get back into the projects and writing home exercise programs."
Improved communication skills	"This semester has made me very cautious of what I say via e-mail or text since that is the only message coming across to the recipient. They no longer have my expression or body language to determine if I am being sarcastic or serious. Additionally, I have become more respectful of one's time. I always make sure if I contact someone that I do so during a reasonable time and preferably on the weekdays, so I do not interfere with their personal time with family or other plans they may have."
	"Even though I could not work in person with the athlete, I still am helping him with his rehab virtually. Every 2 weeks, I provide the athlete with new exercises to challenge himself. I talk to him about his progress and ask for feedback on the exercises."
	"I have also strengthened my communication skills, as this pandemic has required effective communication with our preceptor in order to complete assignments and projects as well as all our other responsibilities for class. Communication has been a vital necessity to complete this final semester, I feel as though I have never been better at it."
Improved self-confidence	"I think I gained a lot of confidence being on camera and talking into a screen from all the Zoom meetings and presentations."
	"I have been meeting with my preceptors to review special tests as well as manual muscle tests. I believe that I have seen some improvement in my confidence and knowledge of special tests and manual muscle tests."
	"Despite all the adversity we faced in the second half of our spring semester, I feel as though my confidence has grown even more, compared to my confidence last semester."
Adaptability	"My final takeaway this year was my ability to adapt. Adapt to uncomfortable situations to become more confident, adapt to think more critically, adapt to better my education is any situation. After all this is a key skill to have in this profession."
	"We have all been faced with adversity and were forced to adapt quickly with this new territory of online clinical experiences due to the outbreak of COVID-19."
	"Never did we think that we would be FaceTiming our preceptors to discuss our abilities as students. Nevertheless, these odd circumstances brought an opportunity to learn in a new way. Having to stay focused at home while learning and practicing clinical skills can be a tough task. Through the 2 months of practicing, I feel that I have adapted well."
Independence	"At first, I was not so calm and optimistic, and I definitely faced a lot of challenges but through communication, planning, and trust in my own ability, I developed a calm way to plan for and complete all of the tasks at hand and help others to do the same."
	"I also feel like I learned so many time management skills during quarantine, which is interesting because I did not have to go to clinicals, and I would have expected I would have learned more time management from that. I actually felt like I had time and needed to space my work out so I could adequately prepare for the end of the semester and not be way too overwhelmed."
	"I was given the opportunity by my preceptor to run the show for these meetings, and my preceptor will listen and add things in when necessary. This has strengthened my leadership skills and confidence."
Personal and professional growth	"We often feel so entitled to the things we have in life and forget about how much they really mean to us. COVID-19 showed me that we must always value the small things in life, and that is something I cannot stress enough. I always like to tell myself that every day is a new day, and that it's up to you to make the most of it."
	"Even with this setback, I experienced a lot of personal and clinical growth this semester that I did not fully expect. "
	"During this last month I have had to do a lot of personal growth. It is harder to study because now I cannot study with my peers who would push me to know more and be more precise. While this has been hard, I have been able to adjust and grow."

Table 7. Continued

Theme	Specific Student Comments
Ability to stay positive and focused in face of challenges	"The challenge of online school presented as scary; however, it ended up being a great way to learn sides of athletic training that we would not have discussed or critically thought as deeply about. I gained so much knowledge and experience from the entire semester, and I am so blessed and excited to see where the next years takes me." "I think I grew into learning how to stay calm in overwhelming situations, making a plan to complete all my tasks, and trusting in myself that everything would get done and that panic was unnecessary." "It's easy to reflect on the semester wishing for things to be different, but thanks to the efforts of the professors and preceptors in the program, we were able to make the most out of the situation we found ourselves in."
Disappointment and sadness	"It is hard to feel like you have a purpose when you aren't being productive in the field. However, despite the hardships and challenges, I think it has forced me to think critically about why I love this profession and how I can continue to improve without being in the ATR every day. In itself, this online portion of the semester has been a self-reflection period and I think I will look back on this time and be thankful that I stuck with it and continued to work hard through the struggles." "I am really heartbroken that my experience got cut short for my first year in the program, but it pushed me to virtually reach out when needed and gave me the challenge in how to accommodate to the change." "I feel like my semester was cut short, and even though I could say all these negative things and talk about how upsetting it is, I realized I need to try to focus on the positive aspects. Yes, it is frustrating to not finish my years in the program off with a semester just like the past 3 that I have endured. Yes, it is frustrating because I really enjoyed working with football. But this virtual clinical experience has also been an opportunity to grow and push myself in a way that I never could have guessed would happen."

Abbreviations: ATR, athletic training room; COVID-19, coronavirus disease 2019.

program, as well as improved communication skills (written and verbal) and self-confidence due to the frequent remote videoconferencing, telehealth/telemedicine appointments, and the increased need to communicate with preceptors and faculty via e-mail. Other major themes among students were an improved ability to adapt to new situations, increased independence, personal and professional growth, and the ability to stay positive and focused in the face of unexpected challenges. As a direct result of the site-specific strategies listed above, students reported increased appreciation and application of EBP and a more in-depth understanding and confidence related to organization and administration topics.

The most common challenge reported by the students during the transition to the VLE was disappointment that their face-to-face clinical education was interrupted and sadness from missing the day-to-day interactions with preceptors and patients. Another challenge reported by some students was difficulty staying motivated to complete the various aspects of the program. Students reported difficulty studying without normal peer groups and with the rapidly changing situation in their personal and professional lives. As a result of these challenges, students reported the need to develop intrinsic motivation and reported personal growth and an improved ability to adapt to new situations.

CLINICAL RELEVANCE

The immediate future and the potential new reality of the delivery of clinical education remain unpredictable as a result of COVID-19. Based upon the students' experience expressed in their final reflections and the response of the clinical sites, the following takeaways of the VLE were observed: (1) students learned and appreciated the administrative aspect of athletic training in a far greater capacity, (2) students appreciated the increased exposure and application of EBP in developing rehabilitation plans as well as new policies and procedures, (3) students were exposed to interprofessional education on a more consistent basis, (4) students improved significantly in both their professional written and verbal communication skills, (5) students demonstrated improved critical thinking skills, (6) students developed better time management skills and intrinsic motivation, (7) students learned to embrace change and demonstrate the ability to adapt to an ever-changing environment beyond their control, and (8) students developed enhanced psychosocial skills such as empathy because of the ability to identify and cope with the various stages of grief in themselves, their peers, preceptors, and patients.

With increased time to plan and collaborative efforts with fellow ATPs, VLEs can become a more robust and valuable learning experience for ATSs. Additionally, when ATPs are able to return to face-to-face clinical education, the objectives and implementation strategies of the VLE can be integrated to create an improved comprehensive approach to clinical education. The various multimedia learning platforms of the VLE provide preceptors a larger toolbox from which to instruct and assess learning objectives and outcomes. For example, the VLE can provide more opportunities to consistently incorporate EBP and administrative components into an ATS's clinical education. The use of the various remote videoconferencing streaming devices allows preceptors to be able to assess an ATS's psychomotor skills in real time and through repetitive views. This enhanced toolbox also affords ATSs a more diverse learning experience, which innately lends to greater retention and success.

Table 8. San Diego State University Athletic Training Program (ATP) Virtual Learning Environment Clinical Experience Plan Objectives Fall 2020

Objective	Intended Purpose	Criteria
1. Weekly hours/contacts among preceptors, students, and peers.	Promote teaching, learning, and mentoring among preceptors, students, and peers.	Minimum of 10 hours and maximum of 20 hours per week. Minimum/maximum semester policy: 150–300 hours.
2. ATS creates semester clinical education goals in collaboration with his or her assigned preceptor.	Align goals to his or her new clinical learning environment and with assigned preceptor.	New goals completed within the first 10 days at his or her clinical site. SMART goal workshop in ATP orientation.
3. Completion of assigned ENS 389 simulations.	Continued growth in clinical and psychosocial skills.	Complete assigned ENS 389 simulations for the semester.
4. Completion of clinical competencies.	Continued growth in clinical and psychosocial skills.	Complete assigned ENS 389 clinical competencies for the semester.
5. Preceptors provide F2F and virtual learning clinical education opportunities.	Promote teaching and mentoring between preceptors and ATSs for continued professional development.	Identify domain of learning opportunity.
6. The universal discussion competency. Fall 2020: COVID-19 contact tracing.	389 committee selects a relevant/ current topic.	A final discussion submitted on or by last day of class.
7. Psychosocial development "Coffee Talk"	Improve interpersonal skills and professional skills, empathy, active listening, and conflict resolution.	Interview skills, professional goal setting, advocating for athletic training, leadership development.
8. Completion of COVID-19 competencies	Continued education regarding COVID-19 and health care.	Complete the COVID-19 contact tracing course through Coursera by July 24. Complete the COVID-19 specific competencies (eg, temperature, S&Sx).

Abbreviations: ATS, athletic training student; COVID-19, coronavirus disease 2019; ENS, exercise and nutritional services; F2F, face to face; S&Sx, signs and symptoms; SMART, Specific, Measurable, Attainable, Realistic, Time-Bound.

FALL 2020 UPDATE TO VLE: LESSONS LEARNED FROM THE INITIAL OUTBREAK

With the continuation of the global pandemic, SDSU announced on May 12, 2020, that it would be moving forward with virtual instruction through SDSU Flex. Through SDSU Flex, the intention was to offer a flexible and connected community experience in fall 2020. Unique to SDSU and its regional context, and respecting county, state, and federal orders, the SDSU Flex model provided a collaborative learning, research, and community service environment with a blend of in-person, hybrid, and virtual offerings.

Although the ATP was not permitted to offer didactic and laboratory courses via face-to-face or hybrid delivery, it was permitted to allow ATSs to engage in face-to-face clinical experiences based upon availability at each clinical site and with his or her assigned preceptor. The ATP was prepared for another VLE experience for fall 2020, albeit with some modifications based upon lessons learned in the spring of 2020. Table 8 outlines the updated SDSU ATP VLE clinical experience plan objectives for the fall of 2020. Most notable among the modifications for the fall of 2020 are the following:

1. A return to the traditional model of clinical hours with a minimum/maximum semester hour policy and not weekly contacts as were used in the spring 2020 VLE.
2. The transition of clinical scenarios to clinical simulations to better align with the clinical integration proficiencies and ensure that a psychomotor as well as a psychosocial component is encapsulated within each clinical simulation.
3. Where appropriate, preceptors will provide face-to-face clinical education opportunities for ATSs. Many ATSs experienced a hybrid clinical experience.
4. The universal discussion competency (Table 9) was overwhelmingly valued by both ATSs and preceptors; thus, it was retained as an objective of the VLE. For the fall 2020 semester, ATSs and preceptors alike were required to complete a COVID-19 contact tracing course designated by the ATP. Completion of the course was required before each ATS's start date with his or her assigned preceptor.
5. The addition of "Coffee Talk," a psychosocial development objective for the ATS, was a new learning objective for fall 2020. On a weekly basis, the ATS and his or her assigned preceptor would engage in conversations about professional and personal experiences related to athletic training. The conversations were intended to replicate the conversations that take place in the clinical setting.

The learning objectives of the VLE were developed with the very intentional purpose that they could be achieved regardless of the delivery method—face-to-face, hybrid, or virtual. Thus, the learning objectives are ones that can be

Table 9. San Diego State University Athletic Training Program Virtual Learning Environment Clinical Experience Universal Competency Fall 2020

Component	Proposed Policies and Procedures
1. Reintegration process	Screening and referral processes.
2. EAPs	Updated to reflect strategies for a pandemic.
3. Staffing issues/concerns	Budget implications (eg, cost of PPE), personal health and safety, essential versus nonessential personnel, insured versus noninsured athletes, and mental health care.
4. Educational adjustments: clinical and didactic	FERPA, HIPAA, academic honesty, and clinical implications of the athletic training domains.
5. What will "normal" look like post–COVID-19?	Daily clinical implications for treatment and travel; updated CDC, CAATE, NATA, NCAA, and other applicable agencies' guidelines; and return to play criteria.
6. Contact tracing	Who and how?

Abbreviations: CAATE, Commission on Accreditation of Athletic Training Education; CDC, Centers for Disease Control and Prevention; COVID-19, coronavirus disease 2019; EAP, emergency action plan; FERPA, Family Educational Rights and Privacy Act; HIPAA, Health Insurance Portability and Accountability Act; NATA, National Athletic Trainers' Association; NCAA, National Collegiate Athletic Association; PPE, personal protective equipment.

continued when we return to the "new normal" clinical education experience.

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