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Creativity in the Virtual Classroom: Engaging Online Special Education Teacher Candidates in Their Own Learning

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ABSTRACT

According to the National Center for Education Statistics (2022), the number of college students enrolled in at least one online course was approximately 11 million during the 2021-2022 school year. Knowing that institutes of higher education (IHEs) are responsible for teaching students who are primarily online learners, special education teacher preparation programs at IHEs need to change their focus on how to meet these online learners' needs. There is plentiful research on what faculty should include in their online classes, but finding specific strategies and activities that engage students in their own learning can be challenging. This article provides teacher educators with activities and strategies used in classes to engage online students in their learning, aiming for quick and easy implementation into future online special education teacher preparation courses.

KEYWORDS

college teaching, learner engagement, online learning, special education, teacher preparation

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One additional click of the laptop mouse introduces another opportunity for a student to get lost. Thankfully, remote and online learning at the post-secondary level has a long history that some universities were able to leverage when forced to push all classes to online learning through the COVID pandemic. Over the last three years, education has quickly adapted to the needs of online learners out of necessity and persists now due to learner choice. But traditional online experiences might not be enough to engage and prepare today's preservice special education teachers in the online learning environment.

Recently, the ideas of connected learning have been used to frame changes to online

learning that promote student success (Prestridge et al., 2021). Prestridge and colleagues describe connected learning as an experience where students co-create and share artifacts that are meaningful, accessible to all, and share a common purpose. The artifacts of learning are used to create social networks of learning in students that transcend traditional learning contexts in other formal and informal settings. These ideas now form a framework for making meaningful experiences that connect students with content, people, and resources beyond the virtual classroom. Within the framework of connected learning students are guided to seek out social and informational support for their learning (Ito et al., 2013). This represents a significant departure from the online learning methods prevalent two decades ago.

The Case for Connected Learning in the Online Classroom

Twenty years ago, remote classes in the United States were often shipped as a packet of recorded lectures and handouts. Discussion boards where students posted multiple-paragraph answers to questions posed by the instructor were how students primarily communicated with each other. Fast forward twenty years and online learning management systems (LMS) like Blackboard and Canvas are used by instructors to create a platform in which learning guidance from instructors can be housed and assessments can be submitted by students. Zoom and other conferencing platforms have replaced recorded or in-person lectures and text messages or communication applications have replaced a call to the professor's office phone during specific hours. Students also may be accessing their schoolwork from a variety of places instead of sitting at a desktop computer. These changes signal the change in what learners need to be successful in today's online classroom.

The scope of higher education has been transitioning more and more to the online learning environment. In 2016, only 11% of undergraduate students took classes completely online (National Center for Education Statistics; NCES, 2020). Six years later, in 2022, almost 30% of undergraduate students are completely remote learners (NCES, 2021). Even as the world opened up to more in-person interactions after emergency remote teaching due to COVID, the trend of students being served in online courses persisted.

Access to internet capable devices is a part of the college experience now. Prokes and Housel's (2021) results from surveying over 300 students attending community college found that the overwhelming majority of respondents said they had access to a computer (i.e., 91%) and a smartphone (i.e., 86%) which they used to access coursework. Further, participants reported that a reduced workload with flexible deadlines were positive results of the switch from in-person to remote learning. Prokes and Housel also noted that having a structured schedule with single weekly deadlines for all work was a positive change that was implemented in the switch. The precedence of allowing for flexibility in the virtual classroom has been established and persists in many ways today.

While the flexibility of remote learning has been reported by students as positive, students might be missing more traditional interactions found in an in-person setting. Sher (2009) reported that self-reported student perceptions of student-student interaction and student-teacher interaction in online university classes were significant contributors to student learning and student satisfaction. Aydin (2021) also noted that positive perceptions of instructor-student and student-student interactions were connected to student perceptions of satisfaction with online courses. Additionally, Tian and Lu (2022) reported concerns with online/remote learning using traditional methods of lecture and student feedback for second language students. The authors found that online class participants reported dissatisfaction with (a) learner-learner and learner-instructor

interaction, (b) ineffective facilitated cooperative online learning, and (c) inadequate didactic lecturing. Further, the students reported lower scores on emotional engagement (i.e., being excited to learn). These concerns point to the need for online instructors to develop high-quality experiences that support student interaction with peers and the instructor as well as develop engaging cooperative learning environments that promote engagement for all learners.

Sun and Chen (2016) summarized effective online instruction as dependent on three critical components: (a) well-designed course content, (b) creation of a sense of online learning community, and (c) rapid advancement of technology. Recently, the social experience of learners within the learning community is attracting more attention. As noted by Tian and Lu (2022), students want meaningful interaction between the instructor and other students. The social experience of online learning might be a shift for both students and faculty accustomed to in-person classes. Carillo and Assunção Flores (2020) described the idea of the social presence of the learners interacting with the cognitive and teaching presence as critical to enact positive outcomes for students. Carillo and Assunção Flores noted that creating a meaningful and connected experience for remote preservice teacher (PST) learners involves (a) evidence-based approaches, (b) pedagogical approaches that rely heavily on social and collaborative components of learning, and (c) equipping teachers on online classes with competencies in the socioaffective realm. Further, Carillo and Assuncao Flores framed the experiences of students in the context of Garrison et al's (2000) ideas of giving the students a concrete experience, allowing them to make sense of the event, and resolving through developing personal teaching practices. Positive relationships through student-student and instructor-student interaction, the creation of a learning community through genuine collaborative experiences, and contextualized learning presented here all point to the need for online instructors to develop their competencies in connected learning.

In order to positively impact students' experiences in the online class, we propose that online instructors should (a) build relationships with students, (b) offer quality feedback to learners, (c) develop creative responses to student needs, (d) offer choice-based assignments, (e) and offer purposeful externally credentialed work to create a classroom that promotes the ideas of connected learning presented by Prestridge et al. (2021) and Ito et al. (2013) for preservice special education teachers.

Connected Learning in Preservice Teacher Preparation

Connected learning requires creativity in student thinking and problem-solving. Harris (1998) described creativity as a combination of ability, attitude, and process: the ability to imagine or invent; accept change; and work hard to continually improve ideas. Boothe et al. (2020) found that students valued the ability to be creative in their products within an online class, but not all students are primed for creative endeavors in the online classroom. The push for creativity also needs to be balanced with the need for structure to promote success for some students. Rosar and Weidlich (2022) found that students who appreciated creativity within an online classroom were more motivated to learn and felt successful in unstructured environments, while other students less interested in creativity were more motivated to learn and succeed in highly-structured learning environments. In an attempt to support all learners, instructors in online classes need to balance the needs of students who value creativity with those who value structure and clarity in order to enhance the experiences of all learners. A balance needs to be negotiated by online instructors of PSTs to develop the potential creativity in learners.

Exploring how learning connects to teaching practices might help PSTs ground their learning in the present, but pushing special education PSTs to creatively navigate information and tools to continue learning beyond the classroom is also important for their professional growth. Experiences in the online college class need to develop within the students an understanding of how to explore new resources and learn through the vast resources available on the internet.

Connected learning traces its origins to the recent theory of connectivism as proposed by Siemens (2005). Connectivism has been emerging as a theory for self-explored learning using the internet platform as the classroom**.** Connectivism theory highlights the importance of learners reading, collecting, creating, and sharing connected ideas and new understandings (Kop et al., 2011). Learning in the connectivist classroom is more about navigating information collaboratively and developing new ideas within the connections built by learners than the ability to pass a summative assessment.

Instructors can use a design-thinking approach to create a virtual exchange for PST's to engage with teachers from other countries (Gleason & Jaramillo Cherrez, 2021). In order to engage in a global conversation, the participants used synchronous (e.g., zoom conferences, live chats) and asynchronous digital tools (e.g., text chat and email). Gleason and Jaramillo Cherrez (2021) noted that the ability of PSTs to search, navigate and engage with emerging technologies is just as important as allowing students to navigate existing and familiar tools that promote learning.

Instructors Should Build Relationships Through Interactions to Promote Connected Learning

Learning at all levels is about relationships between teachers and students, as well as between learners and other learners. Meyers (2009) noted that fostering connectedness through engaging with students before and after class helps students feel cared for within higher education. Further, the author noted that impressions of others and inferences about personalities can come from minimal interactions. Students who feel connected to the university, which can be a result of relationships with faculty and peers, have (a) a higher likelihood of persisting in the program and completing their degree (Wilcox et al., 2005), (b) more engagement in learning (Zepke & Leach, 2010), and (c) increased learning of course content (Pascarella & Terenzini, 2005). In addition to the impact on students, Hagenauer & Volet (2014) note that relationships with students can also have positive impacts on faculty. It is clear that relationship-building is a critical aspect of teaching.

Although relationship-building is important, it can be challenging to achieve in the online classroom. Some faculty report that building community in online courses is more difficult than doing so in traditional face-to-face courses (Andrei & Buckley-Marudas, 2019). With this in mind, teacher educators must be intentional in designing interactions with their students and providing avenues for students to interact with one another in meaningful ways (Lowenthal & Trespalacios, 2022). Connected learning relies heavily on developing and leveraging relationships between learner colleagues and the instructor as a guide to promote developing new relationships for future learning. Figure 1 offers some suggestions we have used for relationship-building in online special education teacher preparation courses.

Figure 1. **Recommendations for Relationship-Building**

Faculty-Student Interactions	Student-Student Interactions
Host regularly scheduled office hours (Boothe et al., 2018; Lohmann et al., 2018; Marks et al., 2016; Rao et al., 2014) ● Zoom or similar video-based platforms are ideal for office hours ● Select times that are appropriate for the student population (e.g., students who are working parents may prefer office hours to be held in later evening hours) ● Explain the purpose of office hours to students ● Remind students through course announcements about office hours Offer multiple ways for students to connect with the instructor (Boothe et al., 2018; Habibi et al., 2018; Lohmann et al., 2018; Rao et al., 2014; Smith et al., 2018) ● Provide students with faculty email address ● Give students a phone number to call for contacting faculty ● Engage with students via social media, such as Twitter or Facebook ● Use tools designed to enhance faculty-student communication and interaction (e.g., *Learning Express-Ways*) Phone calls to each student (Lohmann et al., 2018) ● Call each student during the first week of the course to introduce yourself and answer questions ● Call students who have missed assignment deadlines or are not meeting course expectations ● Call each student at the midpoint of the course to check in and answer questions	Begin each course with an introduction discussion board (Lowenthal & Trespalacios, 2022) ● Have each student introduce themself ● Encourage students to share photos of their families, pets, hobbies, etc. ● Encourage students to find common interests Include assignments that provide opportunities for cooperative learning (Boothe et al., 2018; Scott et al., 2015) ● Consider whether students should be assigned groups or select their own groups ● If possible, allow students the option to work alone or in a pair/small group Create Student Lounge discussion boards in courses ● These are ungraded and may not be monitored by faculty ● Students can share ideas about schoolwork or discuss personal situations ● Students may be encouraged to use this forum to share photos of pets or discuss experiences in the schools where they work

Instructors Should Provide Quality Feedback to Promote Connected Learning

Quality feedback is one area of opportunity for instructors to build connections with students in online learning. Leibold and Schwarz (2015) described best practices in online feedback as prompt, frequent, personalized, detailed, clear, specific, and balanced. The authors described specific practices that promoted a positive student experience that included addressing the learner by name; balance positive feedback with negative and cite specific sections of the student submission. All of this feedback should also be done with a positive tone as well as include questions to the learner to promote thinking. Further, the authors suggested that the instructor create a predictable schedule for student feedback that is timely and communicate that structure to students. Umbach and Wawrzynski (2005) noted that faculty-student interaction around learning positively impacted student engagement. Faculty-student engagement is arguably different in the online classroom than within a face-to-face setting. Every interaction within the LMS holds elevated importance to the instructor. As online instructors, we feel that there is an additional role of fostering connection between students and the instructor within the assessment of submitted work. In our experience, it is not enough to merely assess content knowledge and skill accuracy within an assignment as Leibold and Schwarz (2015) suggested in their guidance. Online instructors need to be deliberate in their actions to foster connection through *every* interaction, including feedback to learners on assignments.

Online LMS platforms allow for multiple types of feedback that might offer a chance for the instructor to connect with the learner. Traditionally written feedback has been important in evaluating the content of student submissions, but audio and video feedback files can be uploaded as an option when trying to personalize feedback for learners. Olesova et al. (2011) found that audio feedback combined with written feedback increased student engagement and understanding in online classes for students with English language learning needs. Dixon (2015) found that, in sum, the literature on audio feedback showed that students felt valued, cared for, and encouraged in their learning when instructors gave audio feedback. Recently, video feedback has also emerged as a means to promote the social presence of students. Borup et al. (2015) noted that online students valued video feedback within online classes to promote feelings of being supported, valued, and encouraged by instructors more than with traditional written feedback.

Additionally, Ryan (2021) offered three benefits for creating video feedback to promote positive social-emotional outcomes for students. First, video feedback should be used to give comments aimed to strengthen the relationship between instructors and students. Second, video feedback should be implemented early on in the class in order to promote feelings of connectedness and community. Finally, when the instructor gives critical feedback via video the overall message to the student might seem more personalized and supportive. The use of audio and video feedback directly promotes student feelings of support and connectedness that is essential in a connected learning classroom.

Irrespective of the type of feedback, it is important to personalize the feedback to learners in the online classroom. Early research in personalized feedback for online classes demonstrated an increase in student performance and student satisfaction with instructor interaction (Gallen, 2008). It can also push the learner with prompts and questions that connect to their learning as well as acknowledging other areas of interest. Instructors can use the feedback on an assessment to make deliberate connections to other content areas within the class, attest to personal examples of the topic, or make connections with the students' personal stories. For example, instructors in

classes describing the needs of exceptional learners can connect to the experiences of in-service teacher students with their own students and potentially their own children to foster engagement in the content with their learners. When instructors connect the feedback to the learners in the online classroom to the students' own experiences it promotes the connected learning principle of valuing student experiences outside the online classroom. Figure 2 offers a summary of feedback strategies to promote student social presence.

Figure 2. Recommendations for Feedback to Promote Social Presence

Feedback Action	Research Support	Social Presence Outcome
Video Feedback	Ryan (2021) - Start video feedback early in the course (i.e., within the first few weeks)	Promotes a sense of belonging
Video Feedback	Borup et al. (2015) - Attend to body language (i.e., nonverbal communication) within the video feedback	Positive body language, expression, and tone of voice promote student sense of caring and concern
Timely Feedback	Borup et al. (2015) - Personalized and supportive feedback for students who have performed poorly on an assignment	Promotes students' senses of value and support
Personalized Feedback	Gallen (2008) - Make deliberate connections with other parts of class, student personal areas of interest, students' personal stories	Increases feelings of psychological connection in learners. Promotes student satisfaction and student performance on assessments

Instructors Should Develop Creative Responses to Student Needs to Promote Connected Learning

According to Lindecker & Cramer (2021), a significant majority of online faculty (96%) report that students have reported personal challenges, needs, or traumas that impact their learning in their courses. In addition to personal needs, teacher candidates have learning requirements that faculty must address. While it has always been vital for teachers at all levels to be responsive to

the demands of students, this became even more apparent and urgent over the past few years due to COVID-19 and its impacts on learning. In the online classroom, there are a variety of ways that professors can respond to student needs; Figure 3 provides a few examples of how university faculty were able to creatively meet student needs during the COVID-19 pandemic.

Figure 3. Online Faculty Responses to Student Needs During COVID

Student Need	Faculty Response
Graduate students, who were full-time in-service teachers, benefited from encouragement to persist during the challenges of emergency remote teaching in their own classrooms	We created online videos which were sent to students twice per week. The videos provided students with an encouraging message and a reminder that they were not alone. (Lohmann, 2020)
Teacher candidates need multiple opportunities to practice the teaching skills needed for effective instruction. They need to practice in a variety of situations and with various student needs and responses.	The authors recommend the use of virtual simulations to ensure that teacher candidates have opportunities to practice effective instructional skills. They recommend that special education teacher educators use virtual simulations during times of crisis as well as part of typical teacher preparation. (Walters et al., 2021)
Teacher candidates require opportunities to observe high quality instruction.	The author used video-based observations to show teacher candidates effective instructional techniques. Teacher candidates were provided observation forms and class discussions that focused on the effective teaching practices seen in the videos. (Grissom, 2020)
Preservice teacher candidates and in-service teachers, as well as teacher education faculty, quickly learned skills to support online teaching.	The author planned and facilitated a-la-carte professional development trainings that offered instruction on specific skills to support faculty and students in learning how to effectively provide, and participate in, online learning. These trainings were optional. (Greene, 2020)
Teacher candidates sought a sense of community and explored opportunities to enhance their collaboration skills	The authors used GroupMe and Padlet to provide opportunities for communication. Students were required to use these tools for some course assignments and also encouraged to use the tools to communicate with classmates on their own. (Gronseth et al., 2020)

In addition to these recommendations that supported student needs for groups of students during COVID, we also recommend that faculty are responsive to individual student needs in the online classroom. Special education teacher educators may use responses such as: (a) providing extensions on course assignments, (b) one-on-one phone or Zoom conversations with students to discuss their needs and help develop an individualized plan, (c) sending notes or emails of encouragement to students, or (d) connecting students with university or community-based resources. These deliberate actions help promote the ability of students to navigate the social supports necessary to be successful in a connected learning classroom. While the ways in which faculty respond to students' needs will differ based on the faculty member and the students, it is vital that special education teacher educators are responsive to both individual and classwide student needs.

Instructors Should Develop Choice-Based Assignments to Promote Connected Learning

Experience tells instructors that students do not learn as much or as well if they are not actively engaged with the curriculum. Research shows that providing students with choice in assignments can help keep students engaged with the course and increase their learning, especially when the student feels the choices are relevant to them currently (Evans & Boucher, 2015). By allowing students to choose the projects that best align with their learning preferences and their current school/work roles, students find they are more excited to complete the project and they are more likely to incorporate choice into their own classrooms (Boothe et al. 2020). Furthermore, as special educators it is important to model what instructors want pre-service teachers to do in their own classrooms. Research supports the use of Universal Design for Learning (UDL) in the K-12 setting to meet the diverse needs of students (Coyne et al., 2017; Josephson et al., 2018), and can easily be implemented into online educator preparation programs. By offering choice to students we are able to meet the UDL guidelines, which allows the student to use all parts of their brain to enhance their learning.

An example of using UDL in the online classroom is by offering students a choice board. For each module or topic covered in the course, the instructor can provide a choice board (Figure 4) in which students choose three activities in a row, diagonally, horizontally, or vertically (similar to a tic tac toe board). The directions state that they can choose to create their project over the specific content of the module or create a project they would use in their own classroom that is focused on the specific topic to be learned. If students choose to use the project in the classroom they must include a one to two-paragraph narrative on how the activity helped them gain a better understanding of the module topic**.** The directions can easily be manipulated to best fit the needs of the students and the instructor. An instructor could also change the directions to include all activities created to use in their classroom. One could also choose the choice board assignment as a culminating activity over the entire course. Student choice in the connected learning online classroom helps promote what Ito et al. (2013) described as interest powered learning.

Figure 4. **Choice Board Example**

Board/Computer Game Create a board game or a computer game in which you cover all aspects of UDL you have learned OR create a board/computer game you would *use* with your students.	**Lesson Plan Unit** Using the Lesson Plan template provided, complete a 2-3 lesson plan unit on any subject and grade level, but it must include information and activities that demonstrate you know how to implement the UDL framework**.**	**Professional Development Presentation** Create a professional development presentation and record you presenting the information.
Article Synopsis Locate a peer-reviewed article from the library - do not use any that I provided in Bb. Review your article and complete the Article Synopsis template provided.	**Free Space** This is your chance to be creative and do what you enjoy. You may choose to complete any type of project you would like to complete and why.	**Digital Resource Notebook** Create a resource notebook that can be used in the classroom and/or at your school that demonstrates you are being culturally responsive.
Book Report Choose a book over Universal Design for Learning and complete a book review. This needs to be a professional development style book. This cannot be a book that you would use in your classroom for your students.	**Children's Book** Write a children's book about what you learned about cultural diversity and/or being a culturally responsive teacher. Be sure to include illustrations.	**How-To Booklet** Create a How-To Book for teachers on how they can create safe and inclusive classrooms. You will want to include illustrations/pictures, charts, figures, graphs.

Instructors Should Leverage Microcredential Resources to Promote Connected Learning Informal learning is at the core of continued teacher education and development.

Currently, many universities are opening training systems to the public that offer certifications through 10-15-hour modules that hold external currency in the business world and offer potential for college credit. The State University of New York (SUNY, 2022) and Oregon State University (OSU, 2022), among others, have business-focused microcredential systems where individuals can sign up as non-degree students and access online module-based learning that results in a digital certificate which is stackable (i.e., can be supplemented with further certifications) and portable (i.e., have credibility and value beyond the original context like a college transcript).

Microcredentials have recently emerged as a resource for educators as well who are looking to explore pedagogical content and skills in an informal setting. Universities, state departments of education, and teaching organizations have started to develop guided learning and credentialing to support emerging and in-service educators. In particular, Vanderbilt University and the National

Figure 5. **Microcredential Resources**

Source	Description
Center for Effective Reading Instruction (2022) https://effectivereading.org/	Nine self-paced free access modules on reading/writing instruction that offer a certificate of completion
University of Florida CEEDAR Center (2022) https://ceedar.education.ufl.edu/	Modules for instructors/professional development leaders to develop curriculum for teachers of exceptional learners
Center on the Social Emotional Foundations for Early Learning (2022) http://csefel.vanderbilt.edu/	English and Spanish language modules for early childhood educators. PowerPoint slides, handouts, and assignments to guide learners through social/emotional competence
Educators Rising (2022) https://educatorsrising.org/	Free to explore curriculum of microcredentials. Fee to submit for assessment and credentialing in anti-bias instruction; classroom culture; collaboration; formative assessment; learner engagement
IRIS Center (Vanderbilt Peabody College, 2022) https://iris.peabody.vanderbilt.edu/	Free resource and assessments for curriculum and professional development encompassing many topics within special education
National Education Association (2022) https://www.nea.org/	Free (for members) online learning and credential assessment. Pay-per credential system for non-members. PDF summaries show components of each microcredential encompassing over 20 topics for general and special education

Education Association (NEA) have open-source resources for pre-service and in-service teachers to explore. At the IRIS center (Vanderbilt Peabody College, 2022) website, in-service teachers can sign up for professional development tracking, resulting in credentialed certificates and pre-service teachers can access the open-source information as part of exploratory learning necessary for supporting students with disabilities. At the NEA microcredential library (NEA, 2022), both preservice teachers and in-service teachers can create their own professional development pathways with a variety of microcredentials, which range from safe workplace practices to universal design. Courses are free for members, and pay-per-certification for non-members. These resources can form the foundations of the curriculum in a teacher preparatory university class. In either of these microcredential systems the instructor can tailor learning based on practical standards in a college program. Other microcredential sites offer pay-based microcredential resources in the areas of autism (Autism Focused Interventions Resources and Modules, 2022; OCALI Autism Center, 2022).

Menu-based microcredential systems could enhance online learning by offering a structured approach to navigate persistent learning opportunities beyond university guidance.

These systems, utilizing an expanding catalogue of digital tools, also make informal learning within teaching more accessible to all. Exploring new resources and tools might offer students the experiences necessary to promote future informal learning much like what is at the heart of the framework laid down through connected learning. Figure 5 offers microcredential resources for instructors and students to explore.

Summary

Undergraduate enrollment in education degrees is declining across the United States. The U.S. Department of Education, National Center for Education Statistics shows a 19% decrease in undergraduate education degrees conferred by IHEs comparing 2020 to 2001 (Schaeffer, 2022). The reason for a decreased interest in teacher preparation is not simple. Kraft et al. (2020) suggested that increased accountability through evaluation systems might be pushing students away from undergraduate education degrees. Peyton et al. (2021) reported that trends in special education teacher vacancies might be connected to per pupil expenditures and teacher salaries. In a recent report by the American Association of Colleges for Teacher Education participation in high needs specialties like special education and science and mathematics have shown a significant decrease (American Association of Colleges for Teacher Education [AACTE], 2022). Further, the report highlights some factors that might affect enrollment in teacher preparation programs that include low pay, concerns about working conditions, and lasting enrollment effects of the COVID pandemic. While these are large-scale issues that might be affecting the overall teacher job outlook, we owe it to special education pre-service teachers to provide the best experience that we can offer them to promote connectedness and purpose for their future careers.

Connected learning techniques described in this article offer a template for instructors in special education teacher preparation, but some of these strategies make sense in the K-12 online classroom. Teacher educators reading this article might see potential in these techniques and strategies to promote the connected learning frameworks Ito et al. (2013) described as "sustained social networks, relationships, institutional linkages, shared activities, and communication infrastructures that connect their social, academic, and interest-driven learning" (p. 47). Ito and colleagues framed these ideas for K-12 students specifically, and we see value in bridging the experiences of teacher candidates in special education teacher preparation programs with the experiences of their future students. By using these ideas of connectivism in the classroom, teacher educators can develop experiences for IHE students that not only engage them, but prepare them for the future of supporting their K-12 students.

References

American Association of Colleges for Teacher Education (2022). Colleges of Education: A national portrait (2nd Ed). https://higherlogicdownload.s3-external-1.amazonaws.com/AACTE/52366256-1497-ccc3-0e6c-86fd081db5a2_file.pdf?AWSAccessKeyId=AKIAVRDO7IEREB57R7MT&Expires=1683919832&Signature=WrFCz7LPfKNF02slhsovV1s7ro0%3D .

Andrei, E., & Buckley-Marudas, M. F. (2019). It does not need to be perfect!: Two teacher educators' quest to enhance online instruction with videos. *Networks: An Online Journal for Teacher Action Research, 21*(2), Article 2. https://doi.org/10.4148/2470-6353.1298

Autism Focused Interventions Resources and Modules (2022, December 15). *AFFIRM modules.* https://afirm.fpg.unc.edu/afirm-modules

Aydin, B. (2021). Determining the effect of student-content interaction, instructor-student interaction and student-student interaction on online education satisfaction level. In W. B. James, C. Cobanoglu, & M. Cavusoglu (Eds.), *Advances in global education and research* (Vol. 4, pp. 1–9). USF M3 Publishing. https://www.doi.org/10.5038/9781955833042

Boothe, K. A., Lohmann, M. J., Donnell, K., & Hall, D. D. (2018). Applying the principles of Universal Design for Learning in the college classroom. *Journal of Special Education Apprenticeship*, ***7***(3), Article 2.

Boothe, K. A., Lohmann, M. J., & Owiny, R. (2020). Enhancing student learning in the online instructional environment through the use of Universal Design for Learning. *Networks: An Online Journal for Teacher Research, 22*(1), Article 3. https://doi.org/10.4148/2470-6353.1310

Borup, J., West, R. E., & Thomas, R. (2015). The impact of text versus video communication on instructor feedback in blended courses. *Educational Technology Research and Development, 63*(2), 161-184. https://doi.org/10.1007/s11423-015-9367-8.

Carillo, C. & Assunção Flores, M. (2020). COVID-19 and teacher education: A literature review of online teaching and learning practices. *European Journal of Teacher Education, 43*(4), 466-487. https://doi.org/10.1080/02619768.2020.1821184

Center for Effective Reading Instruction (2022, December 15). *What every teacher should know reading 101: A guide to teaching reading and writing.* https://www.readingrockets.org/teaching/reading101-course/modules/course-modules

Center on the Social and Emotional Foundations for Early Learning. (2022, December 15). *Resources: Training modules.* http://csefel.vanderbilt.edu/resources/training_modules.html

Coyne, P., Evans, M., & Karger J. (2017). Use of a UDL literacy environment by middle school students with intellectual and developmental disabilities. *Intellectual and Developmental Disabilities, **55**(1)*, 4-14. https://doi.org/10.1352/1934-9556-55.1.4

Dixon, S. (2015). The pastoral potential of audio feedback: A review of the literature. *Pastoral Care in Education, 33*(2), 96-104. https://doi.org/10.1080/02643944.2015.1035317

Educators Rising. (2022, December 15). *Beginning to teach: Micro-credentials.* https://prod.mpxfiles.com/Uploads/Files/live_2/pdk/38bd45a2-49d5-4d65-8527-77f8ce918dbe.pdf?v=637033822323930000

Evans, M., & Boucher, A. R. (2015). Optimizing the power of choice: Supporting student autonomy to foster motivation and engagement in learning. *Mind, Brain, and Education, 9*(2), 87-91. https://doi.org/10.1111/mbe.12073

Gallen, T. (2008). Personalized versus collective instructor feedback in the online courseroom: Does type of feedback affect student satisfaction, academic performance and perceived connectedness with the instructor. *International Journal on E-Learning, 73*(3), 463-476.

Garrison, R. T., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing higher education. *The Internet and Higher Education, 2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6

Gleason, B., & Jaramillo Cherrez, N. (2021). Design thinking approach to global collaboration and empowered learning: Virtual exchange as innovation in a teacher education course. *Tech Trends, 65*(2), 348-358. https://doi.org/10.1007/s11528-020-00573-6

Greene, K. (2020). A la carte and on-demand: Professional development for educator preparation. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Ed). T*eaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field* (pp.33-41). Association for the Advancement of Computing in Education (AACE).

Grissom, D. (2020). Experiential learning through video observations. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Ed). T*eaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field* (pp.97-112). Association for the Advancement of Computing in Education (AACE).

Gronseth, S. L., Fu, J., Hebert, W., Zhang, H., Ugwu, L., & Nguyen, P. (2020). Connecting learners through technology in COVID-19: Facilitating pre-service teacher collaboration during the pandemic. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Ed). T*eaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field* (pp. 179-185). Association for the Advancement of Computing in Education (AACE).

Hagenauer, G., & Volet, S. E. (2014). 'I don't think I could, you know, just teach without any emotion': Exploring the nature and origin of university teachers' emotions. *Research Papers in Education, 29*, 240–262. https://doi.org/10.1080/02671522.2012.754929

Habibi, A., Mukminin, A., Riyanto, Y., Prasojo, L.D., Sofwan, M., & Saudagar, F. (2018). Building an online community: Student teachers' perceptions on the advantages of using social networking services in a teacher education program. T*he Turkish Online Journal of Distance Education, 19*(1), 46-61. https://repository.unja.ac.id/id/eprint/6213

Harris, R. (1998, July 1). *Introduction to creative thinking.* http://virtualsalt.com/crebook1.htm

Josephson, J., Brawand, A., & Owiny, R. L. (2018). 5 ways to support secondary students with LD in the content areas. *Learning Disabilities Forum: A Publication of the Council for Learning Disabilities.*

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Salen, K., Schor, J., Sefton-Green, J., & Watkins, S. C. (2013). Connected learning: An agenda for research and design. Digital Media and Learning Research Hub, Irvine, CA http://eprints.lse.ac.uk/48114/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_Livingstone%2C%20S_Livingstone_Connected_learning_agenda_2010_Livingstone_Connected_learning_agenda_2013.pdf

Kop, R., Fournier, H., & Mak, J. S. F. (2011). A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses. *International Review of Research in Open and Distance Learning*, *12*(7 SPECIAL ISSUE), 74–93. https://doi.org/10.19173/irrodl.v12i7.1041

Kraft, M. A., Brunner, E. J., Dougherty, S. M., & Schwegman, D. J. (2020). Teacher accountability reforms and the supply and quality of new teachers. *Journal of Public Economics, 188,* 104212 https://doi.org/10.1016/j.jpubeco.2020.104212

Leibold, N. & Schwarz, L. M. (2015). The art of giving online feedback. *The Journal of Effective Teaching, 15*(1), 34-46.

Lindecker, C. A., & Cramer, J. D. (2021). Student self-disclosure and faculty compassion in online classrooms. *Online Learning, 25*(3), Article 10. https://doi.org/10.24059/olj.v25i3.2347

Lohmann, M. J., Boothe, K. A., Hathcote, A. R., & Turpin, A. (2018). Engaging graduate

students in the online learning environment: A Universal Design for Learning (UDL) approach to teacher preparation. *Networks: An Online Journal for Teacher Research, 20*(2), Article 5. https://doi.org/10.4148/2470-6353.1264

Lohmann, M. J. (2020). Using motivational videos to support student engagement. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Ed). T*eaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field* (pp.687-690). Association for the Advancement of Computing in Education (AACE).

Lowenthal, P. R. & Trespalacios, J. (2022). Classroom community and time: Comparing student perceptions in traditional vs. accelerated online courses. *Online Learning, 26*(4), Article 4. https://doi.org/10.24059/olj.v26i4.3498

Marks, M.B., Huag, J.C., & Huckabee, W.A. (2016). Understanding the factors that influence student satisfaction with the undergraduate business major. *Journal of Education for Business, 91*(5), 1-9. https://doi.org/10.1080/08832323.2016.1188757

Meyers, S. A. (2009). Do your students care whether you care about them? *College Teaching, 57*(4), 205-210. https://doi/org/10.1080/87567550903218620

National Center for Educational Statistics (2020). *Number and percentage of undergraduate students enrolled in distance education or online classes and degree programs, by selected characteristics: Selected years, 2003-04 through 2015-16.* (No. 311.22) https://nces.ed.gov/programs/digest/d20/tables/dt20_311.22.asp

National Center for Education Statistics (2021). *Number and percentage of students enrolled in degree-granting postsecondary institutions, by distance education participation, location of student, level of enrollment, and control and level of institution: Fall 2019 and fall 2020.* (No. 311.15). https://nces.ed.gov/programs/digest/d21/tables/dt21_311.15.asp

National Center for Education Statistics (2022). *The Integrated Postsecondary Education Data System - Institutional Characteristics component Fall 2021 and Spring 2022 (provisional data).* https://nces.ed.gov/ipeds/search/ViewTable?tableId=29450.

National Education Association (2022, December 14). *NEA's certification bank.* National education association. https://nea.certificationbank.com/

OCALI Autism Center (2022, December 15). *Autism internet modules.* https://autisminternetmodules.org/

Olesova, L. A., Richardson, J. C., Weasenforth, D., & Meloni, C. (2011). Using asynchronous instructional audio feedback in online environments: A mixed methods study. *MERLOT Journal of Online Learning and Teaching, 7*(1), 30-42.

Oregon State University. (2022, December 14). *Microcredentials - online.* https://www.suny.edu/microcredentials/

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (2nd ed.). Jossey-Bass.

Peyton, D. J., Acosta, K., Harvey, A., Pua, D. J., Sindelar, P. T., Mason-Williams, L. Dewey, J., Fisher, T. L., & Crews, E. (2021). Special education teacher shortage: Differences between high and low shortage states. *Teacher Education and Special Education, 44*(1), 5-23. https://doi.org/10.1177/0888406420906618

Prestridge, S., Jacobsen, M., Mulla, S., Gudiño Paredes, S., & Charania, A. (2021) New alignments for the digital age: Insights into connected learning. *Education Tech Research Dev* 69, 2171–2186. https://doi.org/10.1007/s11423-021-09968-5

Prokes, C., & Housel, J. (2021) Community college student perceptions of remote learning shifts due to COVID-19. *Tech Trends, 65*(4), 576-588. https://doi.org/10.1007/s11528-021-00587-8

Rao, K., Edelen-Smith, P., & Wailehua, C. (2014). Universal design for online courses: Applying principles to pedagogy. *Open Learning, 30*(1), 35-52. http://dx.doi.org/10.1080/02680513.2014.991300

Rosar, M. &, Weidlich, J. (2022). Creative students in self-paced online learning environments: an experimental exploration of the interaction of visual design and creativity. *Research and Practice in Technology enhanced learning, 17*(8). https://doi.org/10.1186/s41039-022-00183-1

Ryan, T. (2021). Designing video feedback to support the socioemotional aspects of online learning. *Educational Technology Research and Development, 69,*137-140. https://doi.org/10.1007/s11423-020-09918-7

Schaefer, K. (2022, Sept 27). *A dwindling number of new U.S. college graduates have a degree in education.* https://www.pewresearch.org/short-reads/2022/09/27/a-dwindling-number-of-new-u-s-college-graduates-have-a-degree-in-education/

Scott, L. A., Temple, P., & Marshall, D. (2015). UDL in online college coursework: Insights and infusion and educator preparedness. *Online Learning, 19*(5), 99-119. https://doi.org/10.24059/olj.v19i5.623

Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in Web-based Online Learning Environment. *Journal of Interactive Online Learning, 8*(2), 102-120. http://www.ncolr.org/jiol/issues/pdf/8.2.1.pdf

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning, 2*(1), 3-10. http://www.itdl.org/Journal/Jan_05/article01.htm

Smith, H. H., Sanchez, A., Peterson-Ahmad, M., Woodbury, C., & Mitchell, B. B. (2018). Using Learning Express-Ways in special education teacher preparation: Developing student-faculty relationships as a path to partnership. *Journal of Special Education Apprenticeship, 7*(3), Article 5. https://scholarworks.lib.csusb.edu/josea/vol7/iss3/5

State University of New York. (2022, December 14). *Microcredentials.* https://www.suny.edu/microcredentials/

Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education: Research, 15*, 157-190. https://doi.org/10.28945/3502

Tian, M. & Lu, G. (2022). Online learning satisfaction and its associated factors among international students in China. *Frontiers in psychology, 13*, 916449. https://doi.org/10.3389/fpsyg.2022.916449

Umbach P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*(2), 153-184.

University of Florida CEEDAR Center. (2022, December 15). *Course enhancement modules.* University of Florida https://ceedar.education.ufl.edu/cems/

Vanderbilt Peabody College. (2022, December 14). *IRIS center.* Vanderbilt University. https://iris.peabody.vanderbilt.edu/

Walters, S. M., Hirsch, S. E., McKown, G., Carlson, A., & Allen, A. A. (2021). Mixed-reality simulation with preservice teacher candidates: A conceptual replication. *Teacher*

Education and Special Education, 44(4), 340-355. https://doi.org/10.1177/08884064211001453

Wilcox, P., Winn, S., & Fyvie-Gauld, M. (2005). 'It was nothing to do with the university, it was just the people': The role of social support in the first-year experience of higher education. *Studies in Higher Education, 30*(6), 707–722. https://doi.org/10.1080/03075070500340036

Zepke, N., & Leach, L. (2010). Beyond hard outcomes: 'Soft' outcomes and engagement as student success. *Teaching in Higher Education, 15*(6), 661–673. https://doi.org/10.1080/13562517.2010.522084