

# Exploring Online Pedagogical Practices for Enhancing Transfer of Learning in Higher Education

Tamara Galoyan

Kristen Betts

*Drexel University, USA*

Brian Delaney

*Auburn University, USA*

Mariette Fourie

*North-West University Potchefstroom, South Africa*

## Abstract

Institutions of higher education play a critical role in bridging academia and workforce, yet college students find it challenging to transfer their learning across and beyond instructional formats, including online, hybrid, and face-to-face. The goals of this exploratory, sequential, mixed-methods study were to (1) explore graduate students' conceptualizations of transfer, and (2) examine online pedagogical practices for enhancing transfer. Participants included students enrolled in a full-time online graduate degree program in education at a private university in the Mid-Atlantic USA. Findings from the qualitative phase with seven semi-structured interviews were used to design a survey study with 68 graduate students to explore their perceptions of effective online pedagogical practices for enhancing transfer. This study is significant since its findings revealed a number of online practices that instructional designers and faculty can use to optimize learning and transfer in higher education.

*Keywords:* Transfer of learning, online learning, higher education, pedagogical practices

Galoyan, T., Betts, K., Delaney, B., Fourie, M. (2021). Exploring online pedagogical practices for enhancing transfer of learning in higher education. *Online Learning*, 25(1), 178-197.

DOI: 10.24059/olj.v25i4.2887

Education institutions worldwide face numerous social, economic, and environmental challenges. To face these challenges, education leaders must implement radical curricular reforms, according to *The Future of Education and Skills: Education 2030* by the Organization for Economic Cooperation and Development (OECD, 2018). The OECD report lists “transferability” as one of the essential design principles that can orient curricula to proactively address these challenges. The report also notes that “Higher priority should be given to knowledge, skills, attitudes and values that can be learned in one context and transferred to others” (p. 7). Broadly defined, transfer is “a term that describes a situation where information learned at one point in time influences performance on information encountered at a later point in time” (Royer, Mestre, & Dufresne, 2005, p. vii).

In March 2020, in response to the Coronavirus pandemic (COVID-19), institutions of higher education (IHE) in the United States and worldwide had to rapidly shift from in-person to emergency remote teaching. According to the *CHLOE 6: Online Learning Leaders Adapt for a Post-Pandemic World* report by Quality Matters and Eduventures Research (2021), more than 4,000 public and private institutions in the US with about 20 million postsecondary students were challenged to pivot to online and remote modalities. To meet the needs of a changing higher education landscape, it is critical for educators to explore and apply effective online pedagogical practices that support learning and transfer. Within this study, we define effective online pedagogical practices as instructional techniques, strategies, and/or methodologies used in an online learning environment to meet the desired learning goals. As noted by Steele and colleagues (2019), best practices vary depending on context such as disciplinary content, type of curriculum, and educational level. Specifically, to meet the needs of undergraduate and graduate student populations, it is important to foster the application of learned knowledge and skills across a variety of contexts, including delivery formats, courses, employment, and other aspects of their lives. The OECD (2018) report declared that students need to apply their knowledge, skills, and attitudes to unknown and changing situations to face the challenges of this rapidly changing world and to meet the demands of the future workforce. Fauth and González-Martínez (2021) defined learning transfer as:

... the degree to which one learns in an online teacher training program and how one can thus effectively and continuously apply what they learned in a work context, especially considering the aspects referring to the design of this training, student characteristics, and their work context (p. 10).

Online learning environments should incorporate strategies for enhancing transfer of learning to encourage application across situations since it helps learners to contextualize information, build personal relevance, be creative and extend their skills beyond the online learning environment (Ally, 2004). Based on a comparative study involving online and traditional course delivery methods, online students outperformed traditional students when it came to applied learning, thus illustrating the usefulness of online environments in terms of enhancing transfer of learning (Hansen, 2008).

Although IHEs play an important role in bridging academia and the workforce, research indicates that many college students find it challenging to transfer knowledge, skills, and experiences from academia to work environments (Selingo, 2018; Wyman, 2018; Hora, 2017; Galoyan & Betts, 2021). Research shows that some of the challenges related to transfer include (1) its complex nature; (b) a variety of conceptualizations; and (c) lack of knowledge about

pedagogical practices for enhancing transfer in higher education (Galoyan & Betts, 2021). As noted by Royer and colleagues (2005), understanding and facilitating transfer through appropriate instruction is “a vitally important educational issue” (p. viii).

The purpose of this exploratory, sequential, mixed-methods study was twofold: (1) to explore how online graduate students conceptualize transfer, and (2) to examine effective online pedagogical practices for enhancing transfer. This study is significant since within online learning, understanding which pedagogical practices potentially enhance transfer can help instructional designers and faculty optimize their skills, resources, and tools within a Learning Management System and educational applications so that students are able to demonstrate transfer of learning across contexts.

This study was guided by the following research questions:

1. How do online graduate students conceptualize transfer of learning in higher education?
2. Which online pedagogical practices enhance transfer of learning in higher education?

## Conceptual Framework

Our conceptual framework was shaped by the transfer literature, including views of transfer, as well as traditional and contemporary models and taxonomies of transfer. Specifically, we focused on a recent comprehensive Integrative Transfer of Learning (ITL) model by Galoyan and Betts (2021) which reflects the contemporary views of transfer and guided the overall conceptualization of this study and interpretation of results.

### Views of Transfer

Literature on transfer of learning has been shaped by three major views, namely behaviorist, cognitivist, and situated. The behaviorist view conceptualizes learning and transfer in terms of observable and measurable relationship between the environmental triggers or stimuli and responses to those triggers (e.g., Thorndike, 1924; Thorndike & Woodworth, 1901; Scribner et al., 1981). According to this view, transfer occurs when the behaviors learned in one context are utilized in a highly similar context. By contrast, cognitivist view of transfer focuses on the acquisition of abstract mental representations of the information learned. Based on the cognitivist view, the learner is an active participant in the learning process, and transfer is a function of how knowledge and its uses are stored in memory (Battig, 1979; Ertmer & Newby, 2013; Schunk, 1996). The cognitivist view emphasized individual cognitive abilities and skills such as problem solving, reasoning, planning, and critical thinking, among others. Finally, the situated view characterized learning and transfer in terms of co-construction of knowledge as the result of engaging in a community of practice (Lave & Wenger, 1991). According to this view, transfer may be influenced by various sociocultural factors (Beach, 1999).

Behaviorist, cognitivist, and situated views of learning and transfer have been reflected in many traditional and contemporary transfer models and taxonomies. The traditional models and taxonomies of transfer reflect behaviorist and cognitivist views focused mainly on the obvious similarity shared between the learning and transfer contexts (Galoyan & Betts, 2021). Examples of traditional models and taxonomies of transfer include *common elements model* (Thorndike & Woodworth, 1901), *near vs far transfer* (Detterman & Sternberg, 1993), *high-vs-low-road transfer* (Perkins & Salomon, 2012), *positive vs negative transfer* (Leberman et al., 2006), and *vertical and lateral transfer* (Gagné, 1968). While traditional models and taxonomies

emphasized the importance of contextual and intrapersonal factors affecting transfer, contemporary models and taxonomies reflected the situated view of transfer and characterized it as a dynamic process affected by various social, cultural, and linguistic factors (Galoyan & Betts, 2021). Examples of contemporary models and taxonomies of transfer include *Preparation for Future Learning* (Bransford & Schwartz, 1999), *Actor-oriented Model of Transfer* (Lobato, 2003), *Successful Transfer of Learning Model* (Daffron & North, 2011), and a recent *Integrative Transfer of Learning Model* (Galoyan & Betts, 2021).

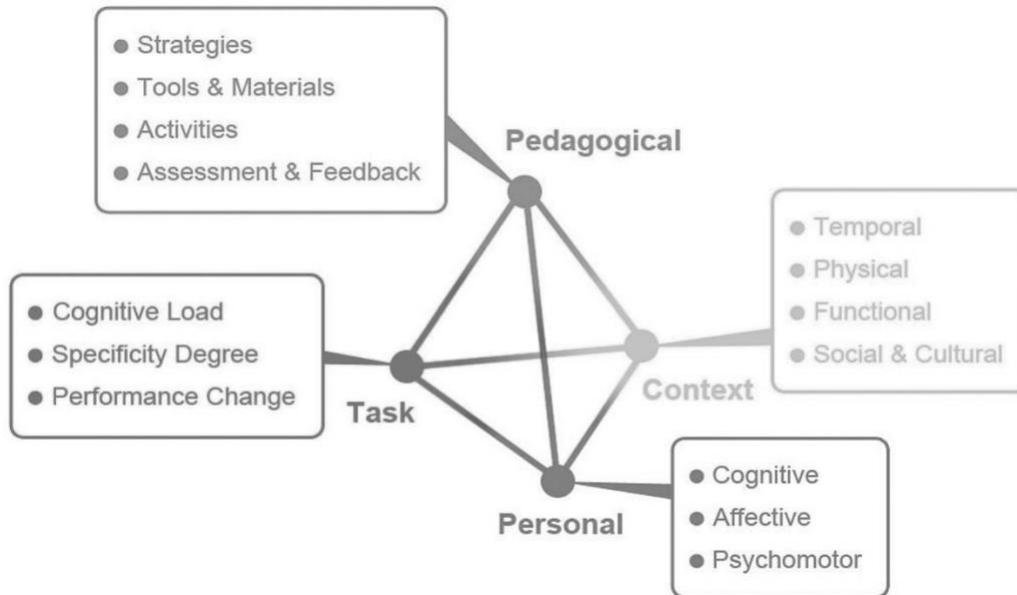
### **Integrative Transfer of Learning Model**

We used the ITL model, developed by Galoyan and Betts (2021), as an analytic lens for this study since it is one of the recent comprehensive models of transfer that considers various factors affecting transfer across online, blended, and onsite learning environments. The ITL model is a result of a comprehensive literature review on transfer and aggregates various factors affecting transfer of learning across four broad, overlapping, and interconnected dimensions, namely *Task*, *Personal*, *Context*, and *Pedagogical* (see figure 1). The *Task* dimension includes factors related to the specific features of a given task such as the cognitive load imposed on a learner, the specificity degree of the task, or the change in the task performance expected from a learner. The *Personal* dimension encompasses intrapersonal factors affecting transfer such as cognitive, affective, and psychomotor. The *Context* dimension includes various factors related to the contextual features of transfer such as temporal, physical, functional, and social and cultural. Finally, the *Pedagogical* dimension incorporates factors that relate to pedagogical aspects of transfer, including various instructional strategies, materials and tools, activities, as well as assessment and feedback. For instance, in online and blended learning environments, integration of the instructional strategies and techniques, such as spaced practice, interleaving, and multiple forms of representation, can facilitate learning and subsequent transfer across contexts.

The ITL model aligns with contemporary views discussed earlier and conceptualizes transfer as a dynamic phenomenon. It recognizes the complexity and interconnectedness of the various factors affecting transfer and provides researchers and educators with a comprehensive and, at the same time, focused, lens to understand and enhance transfer across contexts and learning modalities. For this study, we were mainly concerned with the pedagogical dimension of transfer. Specifically, we were interested in exploring the various online pedagogical practices that could potentially enhance transfer of learning among graduate students. However, considering the complexity of the model and recognizing that transfer factors are interconnected, we also took into consideration the task, context, and personal dimensions in the interpretation of the results.

**Figure 1**

*Integrative Transfer of Learning Model (Galoyan & Betts, 2021).*



## Methods

### Research Design and Rationale

This study used an exploratory, sequential, mixed-methods design to address Research Question 1: How do online graduate students conceptualize transfer of learning in higher education? and Research Question 2: Which online pedagogical practices enhance transfer of learning in higher education? Mixed-methods research allows for combining qualitative and quantitative approaches “for the broad purposes of breadth and depth of understanding and corroboration” (Johnson et al., 2007, p. 123). This exploratory sequential study (Creswell & Clark, 2011) began with the collection and analysis of qualitative data from semi-structured interviews. The purpose of the interview was to address Research Question 1 by exploring how online graduate students conceptualize transfer of learning. The interview also explored participants’ experiences with online pedagogical practices that enhance transfer of learning, thus serving as the basis for the survey instrument design for the quantitative phase addressing Research Question 2.

### Participants and Recruitment

#### *Qualitative Phase*

For the qualitative phase, we recruited seven volunteers (6 females and 1 male) to participate in a 45-minute, semi-structured, in-depth interview by using purposive sampling technique. Participants’ age ranged from 31 to 60 years’ old. Selection criteria included enrollment in a full-time, online graduate degree program in education at a private university in the Mid-Atlantic US. All participants were contacted via an invitation email containing information about the study and selection criteria. Approval by the Institution Review Board (IRB) was obtained prior to the start of the study.

### ***Quantitative Phase***

The quantitative phase included 68 participants (60.4 % female and 27.9 % male). The majority of participants (58.7%) were between 35 and 54 years old. The recruitment procedure and selection criteria were the same as those described in the qualitative phase.

### **Instruments**

#### ***Interview Protocol***

The instrument used in the qualitative phase was a semi-structured interview protocol designed by the researchers of this study. The design of the protocol was informed by our research questions and our broader conceptual framework. Interviews were conducted via ZOOM video conferencing and lasted approximately 45 minutes. At the beginning of the interview, participants were provided with a brief overview of the study, including research goals, interview structure, anticipated time of completion, and broad definitions of key terms such as *learning* and *transfer of learning*. Participants were then asked a list of demographic questions followed by several opening questions related to their views of transfer and online pedagogical practices that helped them transfer their learning across contexts. Example questions from the interview protocol are included below. (The full protocol is available in Appendix A).

- How would you conceptualize the phenomenon of transfer of learning?
- What factors do you think facilitate/hinder transfer?
- What instructional strategies have instructors used in your classes to facilitate transfer of learning (across tasks, across courses, from the program to real-world contexts, etc.)?

#### ***Survey***

The quantitative phase included the collection and analysis of quantitative data from a survey instrument that was built upon the exploratory results of the qualitative phase (Creswell & Clark, 2011). The aim of the survey was to measure participants' perceptions of various online pedagogical practices related to enhancement of learning and transfer. The survey was administered online using the Qualtrics survey software. At the beginning of the survey, participants were provided with a brief overview of the study and the broad definitions of the key terms such as *learning* and *transfer of learning*. In addition, for clarity purposes, individual question items contained examples and explanations of some of the key terms (e.g., metacognition, interleaving, etc.). The survey consisted of three broad sections: (1) Metacognition and Learning (ML) (37 items), with specific reference to course design strategies, instructional strategies, as well as course activities, (2) Online Human Touch (OHT) (49 items), with specific reference to instructional strategies that contribute to a positive student experience and engagement, and learning, and (3) Feedback (10 items) with specific reference to ranking the importance of statements related to instructor feedback to support learning and transfer. Participants' ratings on the level of importance of the specific pedagogical practices were measured on a Likert-type scale ranging from 1="Not Important at All" to 5="Very Important. The feedback statements were rated by the participants in order of importance when receiving feedback with 1="Most Important" to 10="Least Important."

## Findings

### *Qualitative Phase*

All interview responses were audio-recorded. Audio responses were then transcribed and coded using MAXQDA software for qualitative data analysis. We applied two levels of coding: initial coding and pattern coding for themes. Initial coding employed in vivo coding, also known as literal coding, where a code is assigned to a word or a phrase from the actual language used by a participant (Corbin & Strauss, 2008; Saldaña, 2016). The second level of coding involved pattern coding (Miles et al., 1994; Saldaña, 2016), which helped to group the first-level codes into broader themes and categories. Pattern coding was applied to both within-subject and between-subject responses. The coding procedure was accompanied by intensive analytic memo writing that allowed for documentation and reflection on the coding process and code choices, as well as emerging patterns and themes.

The themes that emerged as a result of the qualitative data analyses were grouped into two broad categories: *Category One: Conceptualizations of Transfer* and *Category Two: Online Pedagogical Practices Enhancing Transfer*. Category One included themes related to participants' understanding of what transfer is and the factors affecting it. Examples include application, authentic experience, creativity, context and environment, and motivation and value. Category Two grouped the themes pertaining to online pedagogical practices that helped the participants transfer their learning across various contexts. Examples include practice, feedback, chunking, presentations, and guest speakers. Tables 1 and 2 illustrate example themes within the two categories and related excerpts from the interviewee responses.

The resulting themes from the qualitative phase as well as the related literature served as the basis of the survey instrument for the quantitative phase of this study. The survey explored online graduate students' perceptions of specific online pedagogical practices related to enhancement of learning and transfer, thus helping to validate and add to the exploratory findings from the qualitative phase (Creswell & Clark, 2011).

**Table 1**  
*Category One Themes: Conceptualizations of Transfer*

Theme	Description	Example
Application	Using the learned knowledge and skills across different contexts	"...some of that responsibility also rests on the student in terms of taking what has already been done and again taking it to the next level, to apply it to other situations and other work that we would do."
Understanding	Making sense of the knowledge and skills to be learned	"But if I didn't understand why she's (professor) doing it and I didn't understand the principles behind it, I don't know if I would be able to necessarily intentionally integrate it into my own courses and make it meaningful without having that knowledge, that in-depth knowledge."

Making Connections	The cognitive process of connecting pieces of information across contexts	“I think of it in terms of making connections with prior and future learning, putting together different pieces to create new learning and applying what learning has occurred to new and novel situations.”
Relevance	Being able to see a value in the learned content and make a connection between the learning content and different aspects of learners’ lives	“...if somebody felt like what they were doing, you know, was not relevant to their work environment and they might feel like, how is this going to benefit me in the long run?”
Motivation & Value	Affective factors that impact learning and transfer	“Lack of motivation. If there is no purpose for that particular knowledge or for it to be used later, why would anyone invest time in it?”
Context & Environment	The situation in which learning and/or transfer occurs	“Yes, I think it, definitely, is important that creating an environment where people want to learn. I think learning should be fun.”
Creativity	The cognitive process and the skill of generating and presenting ideas in a novel way	“When the instructor allows me to kind of express myself almost in a creative way to apply that information.”
Cultural Background	Learners’ culture and prior experiences that might affect their learning and transfer	“We have people from different cultures and backgrounds, maybe English is not their primary language. So that could hinder transfer.”
Instructional Design	Design and structure of an online course	“ I feel like both the assignments and the way that the courses were structured kind of inherently allowed for that transfer to occur.”

**Table 2**

*Category Two Themes: Online Pedagogical Practices Enhancing Transfer*

<b>Theme</b>	<b>Description</b>	<b>Example</b>
Technology	Online technological tools, applications, and resources used to enhance learning	"...we were required to select a different technology every time. That definitely forces you to go outside of your comfort zones, which I still find very, very helpful in my career now ..."
Differentiated Instruction	Instructional approaches and strategies that provide learners with a wide range of different pathways (diverse assignments, activities, etc.) to learn and transfer.	"I think that transfer can be enhanced by, again, looking at instruction in terms of multiple modalities or multiple options."
Group Assignments	Assignments that involve students working together	"...some of the things have been group assignments, have been surprisingly helpful transfer knowledge in the sense that I have learned how they are using certain skills, strategies, something like that, in their own professional world."
Portfolio Assignments	Type of assignment that allows learners to document and showcase their achievements, knowledge, and skills	"Also, another thing that she (professor) has done is the creation of the portfolio assignment...I have been able to really kind of showcase my work and then showcase how I have been able to apply it outside of my school my own professional role as well."
Practice	Instructional approaches and strategies that use repeated rehearsal and practice of the learned skills by applying them to a variety of contexts	"How do we make that learning stick in terms of putting it together in your brain? So again, sometimes it is something like, "Every repeated practice until a certain comfort level."
Feedback	Different instructional strategies, techniques, and tools for providing learners with feedback within an online course	"Written feedback, audio feedback, using Screencast-O-Matic to show you what that feedback is so that is really a big part of how she (professor) has facilitated my learning and I've been able to use that throughout the courses."

Chunking	The process of breaking down information elements into smaller pieces/units to enhance understanding, learning, and transfer	“...chunking the information and having things chunked and broken down into logical components and organized sequentially chronologically or whatever it is, depending on if it is a skill or is it knowledge or whatever it is.”
Instructor	The role of an instructor in enhancing learning within online learning environments	“If the professor is not excited about the content, then it's funny, I tend to be not myself...”
Discussions	Using conversations and discussions as an instructional strategy to enhance learner understanding, learning, and transfer	“...and then as you move through the content, always referring back to the short assignments or the discussion board topics...”
Presentations	Assignments that allow learners to showcase their learning by using online tools and applications	“...I have kind of made it a point to apply to do presentations, to offer to share my writing in some different ways...”
Guest Speakers	Having an invited guest expert talk about a specific topic in a synchronous or asynchronous session within an online course	“So, we've hosted live discussions and often brought in guest speakers that could drive the concept home.”
Metacognition	Instructional approaches or strategies that prompt learners to think about / reflect upon their own learning	“So, that intentional reflection is really crucial because it also helps me to see connections between my courses, connections to my dissertation research...”
Authentic Experiences	Providing learners with opportunities to apply and practice their learning outside the learning environment.	“So, in terms of instruction, I kind of think it's more of a making things authentic and applicable and providing the support that students would need to acquire new learning.”
Experiential Learning	Hands-on approach to teaching and learning	“Everybody learns differently, you know, I know for me, I'm a hands-on person.”

### ***Quantitative Phase***

A Cronbach's alpha coefficient was calculated to measure the internal consistency of the survey instrument. The Cronbach alpha was 0.962, which indicates a high level (96.2%) of internal consistency for the Likert-type questions (Gliem & Gliem, 2003). The statistical analysis included descriptive statistics reporting on frequency of responses on each of the three sections.

The results of the descriptive statistical analysis for each section have been reported in Tables 3-5. It was found that various online pedagogical practices were rated as *very important* by the participants. For ML, examples of *very important* online pedagogical practices included receiving detailed directions in the syllabus for each assignment (89.7 %), having rubrics for

graded assignments (80.3 %), aligning assignment topics (e.g., papers, projects) with their field of study (79.4 %), their current job (79.4%), and their potential dissertation topic (75 %) (Table 3). For OHT, examples of very important practices included the opportunity to review "Sample Assignments" by previous students (80.9 %), timely feedback on graded assignments (7-10 days) (79.4 %), timely responses (24-48 hours) from the instructor to emails (79.4 %) (Table 4). For Feedback, receiving understandable feedback was ranked first, followed by timely and specific feedback, respectively (Table 5).

**Table 3**

*Example Item Analysis for ML (N=68)*

Statement	Important (%)	Very Important (%)	Combined (%)
<b>Metacognition and learning</b>	30.1	45.6	75.7
<i>Course design strategies to support learning</i>	27.0	43.4	70.4
Detailed directions in the Syllabus for each assignment.	10.3	89.7	100.0
Having rubrics for graded assignments.	10.6	80.3	90.9
Having access to the syllabus prior to the course starting	24.2	69.7	93.9
Having access to the course (e.g., Announcement page, specific tabs) in the Learning Management System (Blackboard) prior to the course starting.	25.8	60.6	86.4
Assigned readings (articles, reports) related to weekly course content.	21.2	56.1	77.3
<i>Instructional strategies to support learning</i>	32.3	53.3	85.6
Providing opportunities to align assignment topics (e.g., papers, projects) with your field of study or "professional field."	17.6	79.4	97.0
Scaffolding of the final writing assignment by having multiple shorter writing assignments with feedback leading to the final assignment.	13.2	79.4	92.6
Providing opportunities to align assignment topics (e.g., papers, projects) with your "current job."	13.2	79.4	92.6
Providing opportunities to align assignment topics (e.g., papers, projects) with your "potential dissertation topic."	13.2	75.0	88.2
Spacing of activities so students are first introduced to new content, concepts or applications in a Discussion Board or Group Activity and then students work with the content, concept, or application later in the course as part of a major graded assignment.	38.2	55.9	94.1

Building upon prior knowledge to assist in making connections to new material (e.g., content or concepts from previous weeks or from previous quarter).	42.6	54.4	97.0
<i>Course activities to support learning</i>	32.9	36.2	69.1
Optional Live Sessions throughout the course to review and discuss upcoming assignments and answer questions.	32.4	45.6	78.0
Integration of the arts into the course (i.e., being able to complete an assignment using a medium other than a paper such as creating a video, Padlet, music, PowToons, concept map, etc.).	27.9	45.6	73.5
Optional Week 1 Live Session” Orientation” with a detailed overview of course content, assignments, and expectations.	33.8	42.6	76.4
Course activities that enable you to see assignment submissions of your peers (E-Poster Galleries, E-Flipbooks, reflections).	27.9	42.6	70.5
Posting a reflection at the end of the course related to learning and transfer of learning.	26.5	33.8	60.3

**Table 4**  
*Example Item Analysis for OHT (N=68)*

<i>Statement</i>	Important (%)	Very Important (%)	Combined (%)
<b>OTH Instructional Strategies</b>	25.5	35.1	60.6
<i>Engagement</i>	26.0	28.4	54.4
Weekly “welcome announcements” the day a new week starts.	23.7	57.6	81.3
Text announcements throughout the course with specific information related to weekly course content.	28.8	44.1	72.9
Instructor using your name when speaking with you during the Live Sessions.	35.6	42.4	78.0
Instructor using your name when replying to you in the discussion boards.	27.1	42.4	69.5
Text reminder announcements for upcoming assignments.	28.1	38.6	66.7
Welcome video announcement from the instructor on the first day of class.	23.7	32.2	55.9
<i>Positive Student Experience</i>	24.2	27.8	52.0

Online pedagogical practices for enhancing transfer of learning in higher education

Text announcements throughout the course with specific information related to weekly course content.	23.5	48.5	72.0
Weekly "welcome announcements" the day a new week starts.	32.4	47.1	79.5
Instructor using your name when speaking with you during the Live Sessions.	33.8	45.6	79.4
Instructor using your name when replying to you in the discussion boards.	22.1	41.2	63.3
Text reminder announcements for upcoming assignments.	25.0	38.2	63.2
Welcome text announcement from the instructor on the first day of class.	29.4	32.4	61.8
Welcome video announcement from the instructor on the first day of class.	25.0	29.4	54.4
<i>Learning</i>	26.0	46.1	72.1
Opportunity to review "Sample Assignments" by previous students.	13.2	80.9	94.1
Timely feedback on graded assignments (7-10 days).	17.6	79.4	97.0
Timely responses (24-48 hours) from the instructor to emails.	13.2	79.4	92.6
Text feedback by the instructor on graded assignments with tracked changes.	8.8	77.9	86.7
Receiving text feedback by the instructor on graded assignments with tracked changes and comments.	27.9	60.3	88.2
One-on-One online meeting with the instructor by Zoom, Skype, Collaborate, etc. to discuss your research, project topic, and/or career interests.	27.9	57.4	85.3

**Table 5**

*Descriptive Statistics for Ranking Feedback Received (N=68)*

Feedback statements	Ranking	Mean	Median	Mode	Std. Dev.
<b>Understandable:</b> Expressed in a language that a student will understand	1	3.07	2.00	2	2.342
<b>Timely:</b> Provided in time to improve the next assignment	2	3.30	2.00	2	2.219
<b>Specific:</b> Pointing to instances in your submission where the feedback applies	3	4.35	4.00	3	2.441

<b>Selective:</b> Commenting in reasonable details on two or three things that the students that you can do something about	4	5.78	5.00	5	2.578
<b>Forward-looking:</b> Suggesting how you might improve subsequent assignments	6	5.98	6.00	5	2.274
<b>Contextualized:</b> Framed with reference to the learning outcomes and/or assessment criteria	5	6.12	6.00	7	2.336
<b>Non-judgmental:</b> Descriptive rather than evaluative, focused on learning goals, not just performance goals	7	6.28	7.00	8	2.787
<b>Balanced:</b> Pointing out the positive as well as areas in need of improvement	8	6.63	7.00	8	2.597
<b>Transferable:</b> Focused on process, skills and self-regulatory process, not just on the knowledge content	9	6.68	7.00	9	2.777
<b>Personal:</b> Referring to what is already known about you and your previous assignment	10	6.80	7.00	10	3.134

*Note: The scale ranged from 1 = Most Important to 10 =Least Important*

## Discussion

Technological advancements have enhanced and expanded the traditional classroom learning environment to meet the needs of increasingly diverse undergraduate and graduate populations through web-enhanced, hybrid, and online learning, thus extending the mission of IHEs locally, regionally, nationally, and internationally. With increased enrollments in online graduate and undergraduate degree programs in US and all over the world (Betts et al., 2021), it is critical that faculty members explore and apply innovative pedagogical strategies to help students quickly adapt to the constantly changing workforce demands by transferring the learned knowledge, skills, and attitudes across a variety of contexts. According to Kubsch et al. (2020), “The ability to transfer one’s knowledge is considered especially important in the rapidly changing world we live in” (p. 1). Furthermore, the ability to transfer learning beyond university graduation to the real world is particularly important in an ever-changing economy and workplace (Galoyan & Betts, 2021; Downs, 2019; National Research Council, 2012).

We addressed Research Question 1 (How do online graduate students conceptualize transfer of learning in higher education?) by collecting and analyzing qualitative data from semi-structured interviews. Qualitative findings revealed that participants’ conceptualizations aligned with our conceptual framework, including traditional and contemporary views of transfer as well as the ITL model (Galoyan & Betts, 2021). For instance, we found that some conceptualizations of transfer aligned with the cognitivist views (e.g., Ertmer & Newby, 2013; Schunk, 1996), where transfer was characterized in terms of individual mental processes and cognitive skills. For example, one participant described transfer as “...making connections with prior and future learning, putting together different pieces to create new learning and applying what learning has occurred to new and novel situations.” Some other conceptualizations reflected the situated views (e.g., Lave & Wenger, 1991), where transfer is characterized in terms of contextual, environmental, and sociocultural factors. One participant noted that “We have people from different cultures and backgrounds, maybe English is not their primary language. So that could hinder transfer.”

The interview participants’ conceptualizations of transfer confirmed the different dimensions of the ITL model (Galoyan & Betts, 2021). For example, some of the themes aligned with the *Personal* dimension of the ITL model, where transfer was described in terms of cognitive abilities, such as understanding, making connections, creativity, metacognition, or

affective features like motivation and value, and relevance. Other themes, such as cultural background, context and environment, related to the *Context* dimension of the ITL model. Several themes, such as cognitive load and specificity of the task, related to the *Task* dimension. Finally, considering our research questions, many emergent themes tapped into the *Pedagogical* dimension of the ITL model, revealing multiple effective pedagogical practices for enhancing learning and transfer including instructional strategies, materials and tools, assessment, and feedback. Examples include group assignments, portfolio assignments, opportunities to practice, inviting guest speakers, technology, and feedback.

We addressed Research Question 2 (Which online pedagogical practices enhance transfer of learning in higher education?) by collecting and analyzing survey data that built upon the exploratory qualitative findings from the interviews. The findings revealed several online pedagogical practices that participants perceived as important. Some of these include, but are not limited to, course design strategies such as rubrics for graded assignments and detailed directions in the syllabus for each assignment; instructional strategies such as providing opportunities to align assignment topics (e.g., papers, projects) with learners' current job; building upon prior knowledge to assist in making connections to new material (e.g., content or concepts from previous weeks or from previous quarter); ongoing course activities such as optional Live Sessions to review and discuss upcoming assignments and answer questions; and integration of the arts and technologies into the course (i.e., being able to complete an assignment using a medium other than a paper such as creating a video, Padlet, music, PowToons, concept map, etc.). Some other pedagogical practices perceived as important by our learners' strategies included OHT strategies such as text announcements throughout the course with specific information related to weekly course content, a welcome video announcement from the instructor on the first day of class, and timely feedback on graded assignments (7-10 days).

We recommend that researchers and practitioners further explore and use the above-mentioned practices to enhance learning and transfer across online learning environments. However, since our study was limited to only graduate student population within a single private US university, the generalizability of the findings must be treated with caution. As discussed earlier, best educational practices are context-specific and may vary depending on various contextual factors such as disciplinary content, type of curriculum and educational level (Steele et al., 2019).

To conclude, the pedagogical practices discussed in this paper consider multiple aspects of pedagogy, including the learner, instructor, and curriculum, and reflect an array of learner-centered and personalized online instructional approaches and strategies that are geared toward maximizing learning and enhancing transfer. These pedagogical practices are of increasing significance as IHEs prepare to meet the needs of an increasingly diverse student population post-pandemic.

### **Declarations**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

The authors received approval from the ethics review board of Drexel University, USA for this study.

The authors received no financial support for the research, authorship, and/or publication of this article.

## References

- Ally, M. (2004). Foundations of educational theory for online learning. *Theory and Practice of Online Learning*, 2, 15-44.
- Battig, W. F. (1979). The flexibility of human memory. *Levels of processing and human memory*, Lawrence Erlbaum Associates, 23-44.
- Beach, K. (1999). Chapter 4: Consequential transitions: A sociocultural expedition beyond transfer in education. *Review of Research in Education*, 24(1), 101-139.
- Betts, K., Delaney, B., Galoyan, T., & Lynch, W. (2021). Historical review of distance and online education from 1700s to 2021 in the United States: Instructional design and pivotal pedagogy in higher education. *Journal of Online Learning Research and Practice*, 8(1), 269-63.
- Bransford, J. D., & Schwartz, D. L. (1999). Chapter 3: Rethinking transfer: A simple proposal with multiple implications. *Review of Research in Education*, 24(1), 61-100.
- Corbin, J. S., & Strauss, A. A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*, 3<sup>rd</sup> edition. Sage Publications.
- Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. Sage Publications.
- Daffron, S. R., & North, M. W. (2011). *Successful transfer of learning*. Krieger Publishing Company.
- Detterman, D. K., & Sternberg, R. J. (1993). *Transfer on trial: Intelligence, cognition, and instruction*. Ablex Publishing.
- Downs, L. R. (2019). Addressing the skills gap and new opportunities in higher ed. WCET Frontiers. <https://wcetfrontiers.org/2019/05/31/wes-poised-skills-gap-with-partner-schools/>
- Ertmer, P. A., & Newby, T. J. (2013). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2), 43-71.
- Fauth, F., & González-Martínez, J. (2021). On the concept of learning transfer for continuous and online training: A literature review. *Education Sciences*, 11(3), 133.
- Gagné, R. M. (1968). Contributions of learning to human development. *Psychological Review*, 75(3), 177.
- Galoyan, T., & Betts, K. (2021). Integrative transfer of learning model and implications for higher education. *The Journal of Continuing Higher Education*, 1-27. <https://doi.org/10.1080/07377363.2020.1847970>

- Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education.
- Hansen, D. E. (2008). Knowledge transfer in online learning environments. *Journal of Marketing Education*, 30(2), 93-105. <https://doi.org/10.1177/0273475308317702>
- Hora, M. T. (2017, February 01). Beyond the skills gap. *NACE*. <http://www.nacweb.org/career-readiness/trends-and-predictions/beyond-the-skills-gap/>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133.
- Kubsch, M., Touitou, I., Nordine, J., Fortus, D., Neumann, K., & Krajcik, J. (2020). Transferring knowledge in a knowledge-in-use task—investigating the role of knowledge organization. *Education Sciences*, 10, 20.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Leberman, S., McDonald, L., & Doyle, S. (2006). *The transfer of learning: Participants' perspectives of adult education and training*. Gower Publishing, Ltd.
- Lobato, J. (2003). How design experiments can inform a rethinking of transfer and vice versa. *Educational Researcher*, 32(1), 17-20.
- Miles, M. B., Huberman, A. M., Huberman, M. A., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- National Research Council. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.
- Organisation for Economic Cooperation and Development (OECD). (2018). The future of education and skills: Education 2030. *OECD Education Working Papers*.
- Perkins, D. N., & Salomon, G. (2012). Knowledge to go: A motivational and dispositional view of transfer. *Educational Psychologist*, 47(3), 248-258.
- Quality Matters & Eduventures Research (2021). CHLOE 6: Online Learning Leaders Adapt for a Post-Pandemic World. <https://encoura.org/project/chloe-6/>
- Royer, J. M., Mestre, J. P., & Dufresne, R. J. (2005). Introduction: Framing the transfer problem. In J. P., Mestre (Ed.). *Transfer of learning from a modern multidisciplinary perspective*, vii-xxvi.
- Saldaña, J. (2016). *The coding manual for qualitative researchers*. Sage.

Scribner, S., Cole, M., & Cole, M. (1981). *The psychology of literacy* (Vol. 198, No. 1). Harvard University Press.

Selingo, J. (2018, June 22). Hands-on learning is a necessary part of college, but here's what it doesn't teach students. *The Washington Post*. <https://www.washingtonpost.com/news/grade-point/wp/2018/06/22/hands-on-learning-is-a-necessary-part-of-college-but-heres-what-it-doesnt-teach-students/>

Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26(3-4), 207-231.

Steele, J., Holbeck, R., & Mandernach, J. (2019). Defining effective online pedagogy. *Journal of Instructional Research*, 8(2), 5-8.

Thorndike, E. L., & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions. II. The estimation of magnitudes. *Psychological Review*, 8(4), 384.

Thorndike, E. L. (1924). Mental discipline in high school studies. *Journal of Educational Psychology*, 15(1), 1.

Wyman, N. (2018, August 3). Hiring is on the rise, but are college grads prepared for the world of work? *Forbes*. <https://www.forbes.com/sites/nicholaswyman/2018/08/03/hiring-is-on-the-rise-but-are-college-grads-prepared-for-the-world-of-work/#7f0de7a74e7e>

## Appendix A

### Interview Protocol

#### *Overview*

The aim of this semi-structured interview is to explore your understanding of transfer of learning and instructional strategies for enhancing transfer within the EdD Program and across real-world context. This interview takes about 45 minutes to complete. At the beginning of the interview, you will be asked several questions related to your demographic background followed by questions about your conceptualizations of transfer of learning and pedagogical practices that your instructors in the Ed.D. program used to enhance transfer.

#### *Definitions*

- **Learning:** The acquisition of knowledge or skills through instruction, study, or experience
- **Transfer of learning:** Applying knowledge and skills from one context to another within a course, across courses, professionally within the workplace, or other real-world contexts. Broadly defined, transfer is “a term that describes a situation where information learned at one point in time influences performance on information encountered at a later point in time” (Royer, Mestre, & Dufresne, 2005, p. vii).

#### *Demographic Questions*

1. Full Name: \_\_\_\_\_
2. In which year are you enrolled in the EdD program (1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year, 4<sup>th</sup> year or are you alumni?)
3. What is your age group?
  - 22-30
  - 31-40
  - 41-50
  - 51-60
  - 61-70
  - 71+
  - I prefer not to respond.
4. What is your sex assigned at birth?
  - Male
  - Female
  - I prefer not to respond.
5. What is your gender identity?
  - Man
  - Woman
  - Transgender
  - Other (please, specify) \_\_\_\_\_
  - Prefer not to answer

***Opening Questions***

1. How would you conceptualize the phenomenon of transfer of learning? What factors do you think facilitate /hinder transfer?
2. Do you think transfer can be enhanced by instruction and/or instructional design? If yes, how?
3. What instructional strategies have instructors used to facilitate transfer of learning (across tasks, across courses, across the EdD program to real-world contexts, etc.) in your classes at Drexel?
4. Describe how you have been able to transfer learning from your EdD courses professionally and to other real-world contexts?
5. Do you think the phenomenon of transfer of learning can affect student persistence and completion in a degree program?
6. Is there anything else you would like to share regarding transfer of learning?