Korean EFL Learner Preference for Text-Based Digital Composing During Emergency Remote Learning

David Forbes Washburn[*]

Washburn, David Forbes. (2021). Korean EFL learner preference for text-based digital composing during emergency remote learning. *English Teaching*, *76*(2), 131-152.

This study utilized a longitudinal data collection to examine online factors of digital multimodal composing (DMC) preference and measure learner course satisfaction with digital composing *modes* in an online EFL communication course. The purpose of this research was to involve learners in a process of online, interactive, and multimodal curricular design during emergency remote learning due to the coronavirus pandemic. Innovative online technologies such as a new learning management system and digital educational components were implemented and used to quantitatively examine learners' acceptance of technology. Korean learner preferences for textual and audio modes of DMC were indicated by Relative Advantage, Perceived Usefulness, and User Satisfaction factors. These factors also indicated an aversion to video-based DMC including video recordings and video responses as well as moderate concern for video conferencing. Qualitative findings revealed student concern for the constructs of Ease of Use and Using Video Modalities when transitioning to new online learning technologies.

Key words: emergency remote learning, EFL, text-based digital composing, video-based digital multimodal composing, technology acceptance model, Canvas LMS, interactive curricular design

1. INTRODUCTION

Recent technological innovations in information technology have and are reshaping the circumstances of education in the 21st century. Moreover, these innovations are altering how we humans connect and interact, increasingly online and in digital forms (The New London Group, 1996). There is little doubt that the long-term advances made during this difficult period will reverberate with lessons learned through success as well as through failure. Emergency remote learning (ERL) to a large extent is responsible for and has made education possible around the world in a year of pandemic (Hafner, 2020). Aguilera-Hermida (2020) articulates that it is important to distinguish the circumstances of ERL as distinct from distance or online learning. The main distinctions of ERL are the learners' expectations of face-to-face instruction, the saddling of learners with the sudden adoption of new technologies, and the unpreparedness of universities, campus systems, and professors for online instruction (Hodges, Moore, Lockee, Trust, & Bond, 2020). The remainder of this study will investigate uncertain gaps within the literature regarding best practices in designing interactive online technologies to meet learners' pedagogical needs during ERL. This research occurred within the context of the first semester, Spring 2020, as an unexpected response to a worldwide pandemic.

2. LITERATURE REVIEW

2.1. Multiliteracies and Digital Multimodal Composing

Multiliteracies are an ever-widening framework of efforts by educators to embrace changes in the nature of language, communication, and connecting with each other (The New London Group, 1996). Innovative pedagogical and theoretical approaches are responding to changing technology and the organizational shape of work, education, and life precipitated by globalization, immigration, and unprecedented interconnectivity. The New London Group (1996) selected 'multiliteracies' as a term to focus on the multiplicity of communication channels and media whereby textual modes increasingly overlap "the visual, the audio, the spatial, [and] the behavioral" (p. 64) in mass media, multimedia and electronic hypermedia. Kress (2000) details how different modes of speech, writing and image operate using a functional specialization known as affordances. Affordances such as images behave according to the logics of display in space, are spatial and nonsequential; writing and speech on the other hand are temporal and sequential, following a logic of succession in time (Kress, 2000). Within these multimodal contexts, the distinct

affordances allow English language learners to become more than agents to reify the dominant communication modes.

English language teaching (ELT) practitioners have joined the call for increased and improved multiliteracy instruction (Belcher, 2017; Early, Kendrick, & Potts, 2015; Kress, 2000; Lotherington & Jenson, 2011). Lotherington and Jenson (2011) described multimodal communication as not particularly new to ELT such that speech and gesture interact in face-to-face communication just as text and image do in print books; these multiple signifying modes have long been incorporated in ELT practice. However, the increasing presence of digitally mediated interaction is breaking down traditional ELT approaches (i.e., productive and receptive skills), blending them with multiple digital modes, and offering dynamic new dimensions of space and time (Kress, 2000; Lotherington & Jenson, 2011). Today, multimodal literacy opportunities surround us, and English language learners have become interpreters who actively transfigure the meanings of linguistic and semiotic works through the consumption and production of digital content (Belcher, 2017; Kress & Selander, 2012). In this broadened scope of meaning-formations, linguistic products such as texts or utterances are expanded to include the signs and symbols of cultural recognition operating in multiple modes: image, gaze, gesture, movement, dance, music, speech, and sound-effect (Early et al., 2015; Kress & Selander, 2012). The simultaneous coexistence of multimodal signifiers can operate to complement, extend, and/or contradict each other, thereby creating resonance and/or dissonance in the meaning-formation process (Early et al., 2015).

The implications for pedagogy, as Kress and Selander (2012) have argued, call for the need to rethink curricular design as interactive design whereby both products and social processes are underway. The researchers discuss how a new cultural recognition relays processes for "feed up, feedback and feed forward" between learner and instructor that can become a means to reposition learning as an instance of communicating in and of itself (Kress & Selander, 2012, p. 267). These interactive or multimodal curricular designs can react and respond to learners' needs, expectations, and preferences in online, digital, print, as well as in-person communication (Camiciottoli & Campoy-Cubillo, 2018). Thus, the involvement of learners in the decision-making of an interactive online modality is a role that educators ought to increasingly engage (Belcher, 2017). In such a fashion, new digital learning environments, replete with multiple modes and affordances, are impacting how educators and learners conceptualize, frame, and negotiate learning outcomes, assessment practices, online standards, and the criterion needed for success (Hafner & Ho, 2020).

Developing educational interaction systems for the transition to online learning is as important for today's learners as is the delivery of instructional content. Learners today are increasingly partaking active roles as interpreters and producers of new meaning within various digital genres and modes (Belcher, 2017) as well as the production of digital

products (Hafner, 2020). These digital modalities, widely termed digital multimodal composing (DMC), allow for the creative use of language with multiliteracy applications (Hafner, 2020). Each mode of digital communication or interaction can create a unique set of task-based learning, which may vacillate in the configuration of linguistic and cognitive complexity, contextual factors, and types of interactions (Belcher, 2017).

Among the various conceptualizations of video modalities, it is important to differentiate between synchronous video conferencing, in which instructor and learner may participate in a structured simulacrum to offline classes; between asynchronous instructor-generated video lectures, whereby learners consume digital content at their convenience; and between asynchronous learner-generated multimodal composing, whereby learners navigate the technological, cognitive, linguistic, and affective states necessary for producing various digital products (Hafner, 2020; Hodges et al., 2020).

2.2. Educational Technology Systems

New and emerging educational technology systems with interactive components are accommodating a rapidly growing need. The adoption of new learning management systems (LMS) is becoming a standard practice across universities. LMS designs, following many of the UIX trends in social media, are moving to make online learning interfaces more user-friendly, interactive, and dynamic (Liaw & Huang, 2013). Among the leaders of LMS services in the United States is Canvas Instructure, launched in 2011 with a 30.6% share of institutions though Canvas led with 35.47% student enrollment over all others (Baldwin & Ching, 2019). Indeed, Canvas is the fastest growing LMS with 80% of new contracts in the U.S and Canada moving toward the expanding open-frame system (Baldwin & Ching, 2019). Canvas Instructure also offers a free version for educators, Canvas Free for Teachers [1], if an institution has yet to buy in. More than ever, platforms like the Canvas LMS feature more streamlined learner-centric, autonomy-motivating interfaces with powerful digital tools to enhance voice and engage audiences with unique learner interfaces (Belcher, 2017).

The Canvas LMS aptly and flexibly provides a platform which allows a variety of instructional delivery including interactive digital technologies with multiple configurations for discourse, style, genre, and voice as explicated in the Theory of Situated Practice (The New London Group, 1996). The native modes of submission within the Canvas LMS represent a technological cluster offering: text entry, audio or video media recording, or file upload (Rogers, 1983). Likewise, Canvas online discussions allow for small groups to be assigned within the discussion including the above native technological

---

[1] This study utilized the Canvas Free For Teacher version.

cluster offerings. In addition, Canvas operates upon a platform which allows for the integration of add-on applications (Davis, 2019). One add-on application touted in the Canvas online forums is Flipgrid, acquired by Microsoft in 2014 (Canvas LTI Integration - Setup., n.d.). The app is unique as it offers video response interactivity and adds social presence to an existing community. There has truly been a dearth of data collected on student preferences and use of these various modes of digital composing (text, audio, video, and Flipgrid) capabilities on the Canvas LMS. At the same time, there has been an acceleration in the adaptation of video conferencing during the pandemic. Thus, there is a need to understand learner perceptions and acceptance of these new innovations.

2.3. Innovation Diffusion Theory and Technology Acceptance Models

The acceptance of new information technology has been of interest to researchers in many fields (organizational management, agriculture, education) for nearly forty years. Building upon behavioral and motivation theories such as the Theory of Reasoned Action, Theory of Planned Behavior, Motivational Model, Model of PC Utilization, and Social Cognitive Theory (Kemp, Palmer, & Strelan, 2019), models have been created to examine the acceptance of technology in online education. These models utilize research such as Innovation Diffusion Theory (Rogers, 1983), Technology Acceptance Model (Davis, 1986), Adoption of Information Technology Innovation (Moore & Benbasat, 1991), and Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis, & Davis, 2003).

Rogers' (1983) hallmark text in the social sciences, *Diffusion of Innovation*, elucidated several dimensions of the perceived attributes of innovation in examining the rate of its' adoption. The perceptual factors selected by Rogers included Relative Advantage as being "better than the idea it supersedes" (Rogers, 1983, p. 213); Compatibility as "consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 1983, p. 223); Complexity as "relatively difficult to understand and use" (Rogers, 1983, p. 230); Trialability as "the degree for which an innovation may be experimented with on a limited basis" (Rogers, 1983, p. 231); and Observability as "the degree to which the results of an innovation are visible to others" (Rogers, 1983, p. 232).

The technology acceptance model (TAM) has been revisited and revised with multiple versions including TAM-0 (Davis, 1986), TAM-R (Davis, 1989), TAM-2 (Venkatesh & Davis, 2000) and TAM-3 (Venkatesh & Bala, 2008). All the versions postulate that a user's attitudes, behavioral intentions, and actual use of a technology are preceded by the user's Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of the specific digital technology (Abdullah & Ward, 2016; Davis, 1986; Kemp et al., 2019). One of the main criticisms comes from Venkatesh, Morris, Davis, and Davis (2003). In it, the authors posit

that the reliability of user's attitudes may depend upon the voluntariness of use (Venkatesh et al., 2003). TAM researchers reviewing the myriad studies on the external variables influencing PU and PEOU express concern for the inconsistent use and poor definition of measurement constructs across studies (Abdullah & Ward, 2016; Kemp et al., 2019; Moore & Benbasat, 1991; Venkatesh et al., 2003; Venkatesh & Bala, 2008).

Two recent comprehensive reviews have applied these theories to education (Abdullah & Ward, 2016; Kemp et al., 2019). The systematic meta-analysis of user acceptance of educational technologies by Kemp, Palmer, and Strelan (2019) proposes a taxonomy of factors to reduce redundancy among similar or overlapping factors in past research. The researchers created a catalogue of constructs (organized into seven taxonomy groups) that could influence a user's attitude and behavioral intention: Attitude & Affect, Social Factors, Usability & Visibility, Perceived Behavioral Control, Instructional Attributes, Cognitive Engagement, and System Attributes. They refined and enumerated a flexible assemblage of 61 constructs which may be effective measures to gauge online learning environments (Kemp et al., 2019).

This paper will examine innovative uses of educational technology during ERL using the measurement constructs and definitions presented in Kemp et al. (2019). The key factors are Relative Advantage, Perceived Usefulness, and User Satisfaction measured against the use of several digital modes of composing (text, audio, video recording, video response, and video conferencing). Kemp, Palmer, and Strelan (2019) define Relative Advantage as "the degree to which use of an educational technology meets an operational need more than alternatives" (p. 2402). Perceived Usefulness is "the user's subjective probability that using a specific application system will increase his or her job performance within an organizational context" (Davis, Bagozzi & Warshaw, 1989, as cited in Kemp et al., 2019, p. 2399). User Satisfaction is "the degree to which users are satisfied and pleased with their prior use of an information system" (Lee & Lehto, 2013, as cited in Kemp et al., 2019, p. 2404). Kemp et al. (2019) contend User Satisfaction may be an alternative to Anxiety. Thus, this study investigated the following research hypotheses:

1. Korean EFL learners will prefer DMC modalities that offer richer and more dynamic interactions (video recordings, video response, video conferencing) in the loss of face-to-face learning due to the pandemic. Three assumptions are that (1) learners will place a higher Relative Advantage on video than other modalities; (2) learners will have higher User Satisfaction of video modalities; (3) learners will have higher Perceived Usefulness of video modalities.
2. As the interactive curricular design recognizes and implements learner feedback, learners will become more satisfied with the course overall and more satisfied with components of the course.

3. Learners will be concerned with obtaining high-quality educational content and interactions during unexpected, emergency remote learning.

3. METHODS

3.1. Participants

The participants came from four class sections in one first-year general English course at a private university in South Korea. From a total of 74 potential respondents, only 57 respondents completed all three surveys. Thus, 17 incomplete respondent surveys were not included in the analysis. Participants were freshmen composed of 19 males (33.3%) and 38 females (66.7%). Their majors varied from foreign languages (17.6%) and nursing (45.6%) to engineering (7.0%) and life sciences (29.8%).

3.2. Procedure

As this research was a longitudinal within-subjects study, one set of survey questions was repeated in three questionnaires (Venkatesh et al., 2003). The surveys were administered at the end of each 5-week module during a 15-week semester via Google Forms. Due to the amount and richness of the results, this paper will cover the responses of the first questionnaire and second questionnaire, which reflect learners' actual use of video and text modalities; learners were not exposed to nor asked to evaluate audio modes until the end of Week 15. Therefore, the third questionnaire (on the actual use of digital audio composing) will be examined separately.

Table 1 provides the curricular distinctions from the first five-week learning module and second five-week learning module. Module 1 (T_1) focused on social interactivity between learners with several digital composing opportunities offered through the Canvas LMS: assignment text entry, discussion text entry, assignment video media recording, Flipgrid video responses, and Zoom video conferencing. The instruction utilized in Module 1 was a scaffolded deployment of simple cognitive writing and speaking tasks. Learners submitted text entries and video recordings through Canvas assignments and received audio feedback on ways to improve. Standards for writing and standards for speaking were mutually developed with learners through a brainstorming text group discussion and made into Canvas rubrics for feedback and grading. Two Flipgrid interactions and two Zoom meetings occurred in Module 1. Thus, learners reported on prior experience with the educational technologies.

Module 2 (T_2) corresponded to a curricular shift due to learner requests for more text-based digital composing rather than video-based digital modes indicated in two survey items. Therefore, the use of video recordings, video response, and video conferencing was stopped. The second module targeted the instruction of linguistic units to foster writing and formal speech communication skills. The tasks developed learners' ability to create logical short answer responses and to form meaningful questions. The primary digital technologies utilized were Canvas assignment text entry and Canvas text-based quizzes.

TABLE 1
Two Five-Week Learning Modules

	Module 1 (T_1): Weeks 1-5	Module 2 (T_2): Weeks 6-10
Concepts:	social interactivity	linguistic units
Skills:	informal speaking & listening	short answer writing & formal speech
Task type:	communicative tasks	writing skills development
DMC type:	video-based digital composing	text-based digital composing
Digital composing technologies:	Canvas text entry, Canvas groups text discussions, Canvas video media recording, Flipgrid video responses	Canvas text entry via assignment and quiz functions
Interaction type:	learner-learner interaction	learner-instructor interaction
# of interactants:	post and reply to 3 peers	1-to-1, submit to instructor

3.3. Instrument

Participants were administered a repeat measures survey at two times; each questionnaire contained the same 24 items on selected constructs of the Technology Acceptance Model as revised by Kemp et al. (2019). The questionnaires were created to involve learners in the design of an interactive course using DMC. To collect actionable curricular feedback, the measure of Relative Advantage asked learners to indicate the digital modes they wanted more of, and less of, in subsequent learning modules. Learners responded with their preferences and aversions to various DMC types. Then, learners rated their perceptions of these DMC types based upon Perceived Usefulness and User Satisfaction variables. Learners also provided ratings for several course satisfaction factors. Finally, qualitative commenting supplemented the quantitative data collection.

Data analyses were conducted using SPSS version 26 for research hypothesis 1 and 2, with an Omega extension added to measure internal consistency of item sub-scales (Hayes, n.d.). Paired Sample Tests were conducted to compare within-subjects mean ratings. The results evidenced significant means differences between several variables shown in Table 3 and Table 4, as well as in the retests shown in Table 5.

3.3.1. Quantitative items

The questionnaire included 23 quantitative items to examine several measurement constructs. Two categorical items looked at Relative Advantage (System and Learning Usefulness group). These two items about Relative Advantage were multiple-selection categorical measures, and thus were not included in the reliability analysis. To enhance learner participation in the decision-making and direction of their online learning environment, two items asked learners to "select all that apply" from a selection of possible digital technologies (1) to see more of, and (2) to see less of, on the Canvas LMS platform. The options included: Canvas text entry, Canvas audio recordings, Canvas video recordings, Flipgrid video responses, Zoom video conferencing, Google Hangouts video conferencing, and Canvas Collaborations.

Eighteen items were rated using a 6-point Likert scale, and 3 items on a nominal yes/no scale. The reliability analysis of 21-items from Questionnaire 1 & Questionnaire 2 resulted in very good internal consistency (Cronbach's alpha of 0.91 and 0.87, respectively). Eight items looked at the two measurement constructs of User Satisfaction (Affect group) and Perceived Usefulness (System and Learning Usefulness group). Participants were asked to rate their User Satisfaction and Perceived Usefulness of four digital composing technologies. The four technologies were Canvas assignment text entry, Canvas video recording, Flipgrid video responses, and Zoom video conferencing. Eight items examined course satisfaction variables: Content Attributes, Learner-Instructor Interactivity, Feedback Systems; two items measured Effort Expectancy; two items measured System Function & Response; one item measured overall class Satisfaction. The five remaining items are not displayed in the results: two items measured Satisfaction (with the university), which are not pertinent here; three items measured Accessibility to Technology using a nominal scale, indicating most learners (93.0% at T_1; 98.2% at T_2) had no issues of access.

3.3.2. Qualitative items

The questionnaires included 1 item for open-ended commenting for freeform responses stating: "Please write one important message that you would like to communicate to [the professor] below." On Questionnaires 1 and 2, fifty-six and fifty-one learners, respectively, responded with comments covering a variety of measurement constructs. The constant comparative method was used to thematically code and categorize the 1274 words provided by learners in Questionnaire 1, and 783 words in Questionnaire 2 (Maykut & Morehouse, 1994). This method evaluated explicit terms and applied an analytical process to determine the existence and frequency of categories. Subsequently, the categories were placed within themes catalogued in Kemp et al. (2019). This method was used as a

supplemental tool to capture descriptive aspects that learners found important enough to share when asked. These qualitative responses strongly support the quantitative results, offering further insight into the learners' perceptions.

4. RESULTS AND DISCUSSION

4.1. Results

There are a variety of factors concerning the adaptation of an educational innovation, even if there are inherent theoretical and pedagogical benefits. The following section will review the research hypotheses and present the corresponding results.

4.1.1. Research hypothesis 1

Research hypothesis 1 stated that Korean EFL learners would prefer DMC modalities that offer richer and more dynamic interactions (video recordings, video response, video conferencing) in the loss of face-to-face learning due to the pandemic. There were three assumptions to this hypothesis: (1) Learners would place a higher Relative Advantage on video than other modalities; (2) Learners would have higher User Satisfaction of video modalities; (3) Learners would have higher Perceived Usefulness of video modalities.

The first hypothesis was in fact null. Learners did not, as expected, prefer more dynamic interactivity. This finding may challenge some assumptions about traditional instructional approaches for informal speaking and listening skills during a face-to-face semester. The survey instrument investigated learner perceptions of Relative Advantage (RA) related to seven digital composing types, as well as User Satisfaction (S) and Perceived Usefulness (PU) related to four digital composing types offered through the Canvas LMS platform and compatible platforms.

Table 2 displays the results of the qualitative data measures at the end of Week 5 (T_1). Regarding RA, forty-six learners (80.7%) requested more Canvas text as 92.9% responded while twenty-four (42.1%) asked for more Canvas audio media recordings with 52.6% responding. At the same time, thirty-four learners (59.6%) requested fewer Canvas video recordings as 68.4% responded, thirty-six (63.1%) asked for fewer Flipgrid video responses with 70.2% responding, eighteen (31.6%) requested less Zoom video conferencing as 52.6% responded, eighteen (31.6%) sought fewer Google Hangouts with 52.6% responding, and twenty-three (40.4%) requested less Canvas Collaboration as 50.8% of learners responded.

As a result of RA responses to Module 1 (T$_1$), a text-based digital composing module was implemented in Module 2 (T$_2$). Table 2 also records the results of the qualitative data measures at the end of Week 10 (T$_2$). Regarding RA, forty-seven learners (82.5%) requested more Canvas text with a 92.9% response rate. Twenty-four (42.1%) asked for more Canvas audio media recordings with 61.4% responding. Meanwhile, thirty-nine individuals (68.4%) requested fewer Canvas video recordings as 78.9% responded, thirty-four (59.6%) wanted fewer Flipgrid video responses with 70.2% responding, twenty-five (43.9%) requested less Zoom video conferencing as 63.1% responded, twenty-one (36.8%) sought fewer Google Hangouts with a 45.6% response rate, and twenty (35.1%) asked for less Canvas Collaboration with 43.9% of learners responding. As Google Hangouts and Canvas Collaborations were not implemented, it stands to reason the ratings did not refer to specific experiences in either learning module.

TABLE 2
Relative Advantage (RA): Learner Preference and Aversion by Type of DMC

DMC Type	N	RA (T$_1$)			RA (T$_2$)		
		Response N (%)	↑ N (%)	↓ N (%)	Response N (%)	↑ N (%)	↓ N (%)
Canvas text	57	53 (92.9)	**46 (80.7)**	7 (12.3)	53 (92.9)	**47 (82.5)**	6 (10.5)
Canvas audio	57	30 (52.6)	**24 (42.1)**	6 (10.5)	35 (61.4)	**24 (42.1)**	11 (19.3)
Canvas video	57	39 (68.4)	5 (8.8)	**34 (59.6)**	45 (78.9)	6 (10.5)	**39 (68.4)**
Flipgrid	57	40 (70.2)	4 (7.0)	**36 (63.1)**	40 (70.2)	6 (10.5)	**34 (59.6)**
Zoom	57	30 (52.6)	12 (21.1)	**18 (31.6)**	36 (63.1)	11 (19.3)	**25 (43.9)**
Hangouts	57	30 (52.6)	12 (21.1)	**18 (31.6)**	26 (45.6)	5 (8.8)	**21 (36.8)**
Canvas collab.	57	29 (50.8)	6 (10.5)	**23 (40.4)**	25 (43.9)	5 (8.8)	**20 (35.1)**

Table 3 presents User Satisfaction (S) with the use of four digital composing types. At the end of T$_1$, learners rated their S with Canvas text (4.26) greater than S with Zoom video conferencing (3.96); however, this did not represent a significant difference, $t(56) = 1.316$, $p = .194$, and had a marginal effect of $d = 0.17$. The results indicate that S with Canvas text (4.26) was greater than S with Canvas video recordings (3.12), which represented a significant difference, $t(56) = 6.415$, $p < .001$, and displayed a large effect of $d = 0.85$. The results indicate that S with Canvas text (4.26) was greater than S with Flipgrid video responses (2.88), representing a significant difference, $t(56) = 6.124$, $p < .001$, and displayed a large effect of $d = 0.81$. As a mean rating of 3.50 would indicate a neutral position, it is fair to say that learners were rather satisfied with digital text composing and Zoom, but dissatisfied with Canvas video recordings and Flipgrid video responses.

At the end of T$_2$, the results indicate that S with Canvas text (4.32) was greater than S with Zoom video conferencing (3.61), representing a significant difference, $t(56) = 3.006$,

$p = .004$, and had a small effect of $d = 0.40$. The results indicated that the mean S with Canvas text (4.32) was greater than the mean S with Canvas video recordings (3.21), representing a significant difference, $t(56) = 5.144$, $p < .001$, and showed a medium effect of $d = 0.68$. The results indicate that S with Canvas text (4.32) was greater than S with Flipgrid video responses (2.96), representing a significant difference, $t(56) = 6.521$, $p < .001$, and displayed a large effect of $d = 0.86$. As a mean rating of 3.50 would indicate a neutral position, it is fair to say that learners were satisfied with digital text composing, near neutral with Zoom, and remained dissatisfied with video composing modalities.

TABLE 3

User Satisfaction (S) of Text Composing Compared with Three Video Modes

Text / Video Modes	S (T_1)	T_1 Text vs. Video Modes			S (T_2)	T_2 Text vs. Video Modes		
	M (SD)	t(56)	p	Cohen's d	M (SD)	t(56)	p	Cohen's d
Text	4.26 (1.044)				4.32 (1.121)			
Zoom	3.96 (1.476)	1.316	.194	0.17	3.61 (1.264)	3.006	.004	0.40
Video	3.12 (1.310)	6.415	<.001	0.85	3.21 (1.292)	5.144	<.001	0.68
Flipgrid	2.88 (1.428)	6.124	<.001	0.81	2.96 (1.336)	6.521	<.001	0.86

Note. Mean ratings are on a 6-point likert scale from 1 (very unsatisfied) to 6 (very satisfied).

The internal consistency of User Satisfaction item subscales displayed unreliable or perhaps suppressed coefficients when calculated using Cronbach's alpha (0.64 in T_1 and 0.54 in T_2). However, recent methodologists suggest using McDonald's omega as a more reliable measure of internal consistency than Cronbach's alpha when the conditions of the essentially tau-equivalent model cannot be met; here perhaps the factors are not truly unidimensional (Dunn, Baguley, & Brunsden, 2014; Hayes & Coutts, 2020). The User Satisfaction responses appear to hold an acceptable internal consistency when calculated using McDonald's omega (0.71 in T_1 and 0.70 in T_2).

Table 4 presents Perceived Usefulness (PU) with the use of four digital composing types. At the end of T_1, learners rated PU of Canvas text (4.21) higher than PU of Zoom video conferencing (3.77), representing a significant difference, $t(56) = 2.320$, $p = .024$, and had a small effect of $d = 0.31$. Learners also rated PU of Canvas text (4.21) higher than PU of Canvas video recordings (3.65), representing a significant difference, $t(56) = 3.140$, $p = .003$, and had a small effect of $d = 0.42$. Learners, too, rated PU of Canvas text (4.21) higher than PU of Flipgrid video responses (3.44), representing a significant difference, $t(56) = 4.450$, $p < .001$, and showed a medium effect of $d = 0.59$.

At the end of T_2, it appears learners saw greater usefulness in digital text composing, perhaps because Module 2 highlighted writing and formal speech skills. At the same time, learners viewed video modalities as less useful for online learning. Learner ratings of PU

of Canvas text (4.49) were greater than the PU of Zoom video conferencing (3.51), representing a significant difference, $t(56) = 4.315$, $p < .001$, and showed a medium effect of $d = 0.58$. Learner ratings of PU of Canvas text (4.49) were greater than the PU of Canvas video recordings (3.65), representing a significant difference, $t(56) = 6.132$, $p < .001$, and showed a medium effect of $d = 0.57$. Learner ratings of PU of Canvas text (4.49) were greater than the PU of Flipgrid video responses (3.26), representing a significant difference, $t(56) = 4.402$, $p < .001$, and displayed a large effect of $d = 0.81$. As a mean rating of 3.50 would indicate a neutral position, it appears that learners perceived Canvas digital text composing as more useful to their English language learning processes than any of the video modalities. PU ratings of Zoom video conferencing dropped to neutral while ratings of Flipgrid video responses indicate the app remained a distraction.

TABLE 4
Perceived Usefulness (PU) of Text Composing Compared with Three Video Modes

Text / Video Modes	PU (T_1)	T_1 Text vs. Video Modes			PU (T_2)	T_2 Text vs. Video Modes		
	M (*SD*)	*t*(56)	*p*	Cohen's *d*	*M* (*SD*)	*t*(56)	*p*	Cohen's *d*
Text	4.21 (1.065)				4.49 (1.088)			
Zoom	3.77 (1.363)	2.320	.024	0.31	3.51 (1.364)	4.315	<.001	0.58
Video	3.65 (1.356)	3.140	.003	0.42	3.65 (1.316)	6.132	<.001	0.57
Flipgrid	3.44 (1.239)	4.450	<.001	0.59	3.26 (1.357)	4.402	<.001	0.81

Note. Mean ratings are on a 6-point likert scale from 1 (very useless) to 6 (very useful).

Perceived Usefulness item subscales provided acceptable internal consistency in T_1 (Cronbach's alpha = 0.79; McDonald's omega = 0.81) and T_2 (Cronbach's alpha = 0.69; McDonald's omega = 0.75).

4.1.2. Research hypothesis 2

Research hypothesis 2 stipulated that as the interactive curricular design recognized and implemented learner feedback, learners would become more satisfied with the course overall and more satisfied with components of the course. The transitioning to a text-based digital composing learning module increased course satisfaction as learners dramatically requested less video and more text and audio modalities in Questionnaire 1.

Table 5 provides evidence to suggest that while some learner Course Satisfaction items had no significant change, others significantly improved from Module 1 to Module 2. As would be expected, the following satisfaction items did not show statistically significant changes. Feedback Systems were reduced from 4.88 to 4.84, yet did not represent a significant difference, $t(56) = 0.265$, $p = .792$, and had a negligible effect, $d = 0.04$.

Communication (with professor) increased from 4.65 to 4.95, yet the difference was not significant, $t(56) = -1.552$, $p = .126$; however, it had a small effect of $d = 0.21$. Instructional Videos, too, rose from 4.51 to 4.60, yet the difference was not significant, $t(56) = -0.627$, $p = .533$, and had a negligible effect, $d = 0.08$.

The following Course Satisfaction factors significantly improved due to the curricular changes from T_1 to T_2. Online English Class increased from 4.21 to 4.63, representing a significant difference, $t(56) = 3.675$, $p < .001$, and showed a small-to-medium effect of $d = 0.49$. Satisfaction with the Canvas LMS likewise rose from 4.16 to 4.70, representing a significant difference, $t(56) = -3.722$, $p < .001$, and showed a small-to-medium effect of $d = 0.49$. Moreover, ratings indicate learners became more satisfied as the mean for Grading Systems increased from 3.98 to 4.47, representing a significant difference, $t(56) = -2.954$, $p = .005$, and had a small effect of $d = 0.39$; satisfaction with the Amount of Work rose from 3.68 to 4.30, representing a significant difference, $t(56) = -4.102$, $p < .001$, and showed a medium effect of $d = 0.54$; and satisfaction with Various Types of Work improved from 3.63 to 4.28, representing a significant difference, $t(56) = -4.235$, $p < .001$, and showed a medium effect of $d = 0.56$.

TABLE 5

Change in Course Satisfaction from Module 1 to Module 2

Course Satisfaction Items	N	T_1	T_2	Paired Samples Tests		
		M (SD)	M (SD)	t(56)	p	Cohen's d
Feedback systems	57	4.88 (1.036)	4.84 (0.978)	0.265	.792	0.04
Communication	57	4.65 (1.203)	4.95 (1.141)	-1.552	.126	0.21
Instructional videos	57	4.51 (1.037)	4.60 (0.884)	-0.627	.533	0.08
Online English class	57	4.21 (1.114)	4.63 (0.938)	-3.675	<.001	0.49
Canvas LMS	57	4.16 (1.162)	4.70 (0.944)	-3.722	<.001	0.49
Grading systems	57	3.98 (1.203)	4.47 (1.104)	-2.954	.005	0.39
Amount of work	57	3.68 (1.311)	4.30 (1.068)	-4.102	<.001	0.54
Various types of work	57	3.63 (1.219)	4.28 (1.031)	-4.235	<.001	0.56

Note. Mean ratings are on a 6-point Likert scale from 1 (very unsatisfied) to 6 (very satisfied).

Course satisfaction item subscales showed very good internal consistency in both T_1 (Cronbach's alpha = 0.87; McDonald's omega = 0.87) and T_2 (Cronbach's alpha = 0.87; McDonald's omega = 0.87).

4.1.3. Research hypothesis 3

Research hypothesis 3 proposed that learners would be concerned with obtaining high-quality educational content and interactions during unexpected, emergency remote learning.

The results suggest that learners had their own preoccupations. A significant finding came from the thematic analysis of open-ended commenting. Comments provided a wider view of additional themes not measured in the quantitative survey, which offered descriptive explanation for the learners' aversion to video modalities. Through the thematic analysis of one item in each questionnaire 1 and 2, twenty categories were identified and catalogued. Then, the categories were placed into seven thematic groups identified in Kemp et al.'s (2019) taxonomy of factors. These were then defined as a positive or negative aspect and displayed in Table 6 according to the total frequency of comment at the end of T_1 and T_2.

Three themes emerged from positive commenting: Affect Toward Lectures; Instructional Attributes; and Attitude Toward Digital Technologies.

Affect Toward Lectures. Korean learners by and large displayed polite and positive affirmations for the effort and work of the lecturer on lessons. Comments on Module 1 included, "Thank you for your hard work for class." These comments continued, and the Satisfied category emerged in Module 2 with comments such as, "Professor is doing well (clearly posting assignments and videos, and proper feedback, etc)." Having learners recognize positive aspects is an indicator of balanced evaluation and pragmatic communicative competence.

Instructional Attributes. A few participants noted their satisfaction with systems for listening to student voices. One student wrote, "Thank you very much for trying to listen to our opinion." As well, several more shared their praise for the method to provide feedback to students. One expressed, "Your feedback [f]or class is very good."

Attitude Toward Digital Technologies. In Module 1, there were a handful of participants who articulated their fondness for certain education technologies. One commented, "I like the canvas" and another, "I think the best method for class is by zoom meetings or meetings with classmates." These unprompted additions suggest participants took an active role in shaping the curriculum toward their desired end. These types of comment were absent at the end of T_2.

Four themes emerged from negative commenting: Complexity or Ease of Use; Affect (neg.); Using Video Modalities (Image & Esteem, Visibility, Information Security & Privacy); and Accessibility.

Complexity or Ease of Use. The most frequent complaints came from this theme. Comments on the difficulty of work were, "It is hard because…there are a lot of assignments every week and it is difficult." Moreover, as participants shared difficulties with the amount of work, one even added the type of work into the critique, "There are too many video shooting assignments." Again and again, students mentioned, "I don't like flipgrid and taking a video." One explanation may come from a comment on grading, "I hope the evaluation criteria are not too high." These concerns were serious to address as heightened anxiety may harm the confidence and motivation of learners.

Affect (neg.). Frequently Korean learners referenced the "burden," "stress," and "pressure" of completing tasks. One said, "Professor, please shorten the video assignment. It's too much pressure and it's too hard ㅠㅠ." Another form of negative feeling is foreign language anxiety, expressed as, "I am not good at English, so...please explain Korean."

Using Video Modalities (Image & Esteem, Visibility, Information Security & Privacy). Perhaps the most powerful words were catalogued in this theme. Participants repeatedly emphasized, "There are many crimes using video media these days" in reference to the enhanced visibility when using video modalities. Another expressed a similar concept with respect to sharing their image, and a particular worry, "Uploading videos to Flipgrid is concerned about portrait rights." Indeed, for some learners, their personal beliefs may be incompatible with online applications of video as one learner expressed, "I am not comfortable uploading my information or videos online…Please consider people like me." Concerns such as these must be carefully measured to protect learners from improper netiquette and cyberbullying.

Accessibility. The last few types of comments focused on aspects of accessibility to technology. One commented, "i am worried that i use an old computer so i can't participate second small group conference." Another discussed some technical issues as, "Flipgrid is so many error in my notebook ㅠㅠ." The more dynamic and complex the educational platforms, the more likely there will be conflict with accessibility.

TABLE 6
Thematic Analysis of Learner Commenting

	Theme	Category	T_1	T_2
Positive aspects	Affect Toward Lectures	Thank you	15	19
		Effort of professor	11	6
		Satisfied	—	12
	Instructional Attributes	Meet on campus	3	4
		Feedback	1	4
		Listening to students	1	1
	Attitude Toward Digital Technologies	Canvas	3	—
		Zoom	3	—
Negative aspects	Complexity or Ease of Use	Difficulty of work	11	6
		Amount of work	10	1
		Grading	9	6
		Type of work	3	2
	Affect (neg.)	Anxiety	6	1
		English is difficult	4	6
	Using Video Modalities*	Image	4	—
		Visibility	4	—
		Privacy	1	—
	Accessibility	Lecture delivery	3	—
		Access	2	—
		Technical issues	1	—

*All themes emerge from Kemp et al. (2019) except Using Video Modalities.

Korean EFL Learner Preference for Text-Based Digital Composing During Emergency Remote Learning

4.2. Discussion

When innovation occurs, there is a need for caution. Despite the sudden transition to ERL, the learners did not directly choose to study online. They had very much self-selected a traditional educational opportunity in a face-to-face university environment. Learners may range widely in their preferences and willingness to engage in online communities, particularly when they have never met in person (Jiang, 2018). Moreover, there may be significant differences between the requirements to digitally compose a text and those needed to produce a video as a form of DMC, whereby students "spend considerable time rehearsing and re-recording their linguistic performances" (Hafner, 2020, p. 136).

As this study has addressed text-based and video-based digital composing, a few summary words about Korean learners' preferences and aversions are appropriate. Through the measure of Relative Advantage, it was clearly evidenced that Korean EFL learners were averse to the use of video modalities, and they sufficiently indicated they wanted more text modalities. User Satisfaction ratings of four DMC types reveal text composing to be significantly higher than ratings for video modes. The same was true of Perceived Usefulness ratings; text composing was viewed as more useful for learning than video modes. As well, the significant improvement of five of the eight Course Satisfaction items appears to be the result of the curricular shift from T_1 to T_2. As video DMC tasks ended, learners rated their Course Satisfaction significantly higher once digital text composing was implemented. This suggests that actual use of text was preferred to the previous use of video modes. Paired Sample Tests demonstrate this improved effect (Field, 2018). The change from video modalities in T_1 to text modalities in T_2 suggests that despite some of the potential richness of video DMC, the "savings from discomfort" and "time-savings" of more traditional text entry improved learner willingness to accept the technology (Rogers, 1983, p. 229). The learners' intensity of preference for text composing here may also reflect their ability to opt in, though the learners' S and PU ratings of text modes were higher than video modes before the change, too.

Text-based digital discussions or digital assignments can meaningfully challenge learners to apply new linguistic knowledge and language skills while also encouraging cognitive and reflective learning, all without the affective challenges of face-to-face classes or synchronous video conferencing. Thus, it is relatively unsurprising that text-based digital composing is a preference for Korean learners. Garrison, Anderson, and Archer (2000) investigated the qualities of text-based interactions in a computer-meditated environment as a comparison to face-to-face communication. The researchers argued that while the face-to-face benefits of non-verbal and paralinguistic cues such as facial expression and tone of voice may be lost in text-based communication online, other advantages emerge for learners. Learners found more time for reflection and critical

responses, which are aspects of the cognitive dimension (Garrison et al., 2000). Indeed, the loss of visual cues may only be an issue if the participants have not yet met, or if the community's social presence cannot be fostered through an interactive modality (Garrison et al., 2000).

Korean learners' aversion to video-based DMC, in all likelihood, is due to video composing being time-consuming, or the result of the visual element of video that threatens learners' image and/or self-esteem, or because video modes invade their sense of privacy and information security. Despite these limitations, DMC remains a valuable approach for linguistic performance and project-based learning. Due to some of the affective challenges for the producers of digital products, one concern could be alleviated by offering a generous and non-threatening grading schema to prompt linguistic risk-taking in the L2 (Pyun, Kim, Cho, & Lee, 2014). Such a strategy could encourage rehearsing and experimentation with voice before recording a performance. As each step takes time, learners likely will prefer a minimal number of projects, tasks with low complexity, low or limited observability, and flexible deadlines.

In one study on the use of multimodal composing in the EFL classroom, Jiang (2018) found learner investment and commitment to language learning interacted with learner identity, which was impacted by social factors as well as individual characteristics. Jiang (2018) discussed how multimodal projects and interactive products can appear as a distraction to linguistic or cognitive aspects when learner identity may be constrained by language-dominant success models such as high-stakes testing and print heavy curriculum (Jiang, 2018). In the few cases examined, Jiang (2018) warned against using DMC as an alternative to traditional tasks and suggests it rather as a bridge.

Rogers (1983) said that the rate of adoption of innovations takes time, and that cross-sections provide researchers only a glimpse into what is true of the moment. For these reasons, continual efforts to evaluate innovations in educational technology and learner preferences toward these adaptations should remain significant areas of research. Educators ought to contemplate innovations in educational technology by asking a few salient questions: Will learners view the innovation as an obvious improvement? Is the implementation consistent with the learner's educational practices and cultural expectations? Will learners have the technical facility to navigate the change? Is the use of the innovation optional or at least offered as a choice? Could the nature of the innovation negatively impact learner identity, self-esteem, or self-image?

Considering the above questions, it may be inferred that ERL will generally not be seen as an "obvious improvement," nor will the sudden implementation be seen in keeping with learners' educational expectations. In addition, the inundation of many and various online educational technologies by several courses in a semester might pose an overwhelming challenge for learners. Researchers continue to point to two important aspects for an

educational technology innovation to become widely diffused and accepted—namely, the initial voluntariness of use, and the role of experience leading to acceptance after actual use (Kemp et al., 2019; Rogers, 1983; Venkatesh et al., 2003). Therefore, educational instruction ought to involve learners in interactive curriculum design (Kress & Selander, 2012). Instructor-learner dialogue allows learner choice and preference to be an aspect of negotiation, compromise, and possibly even a means to differentiate the curriculum to the needs of learners and learning.

One request that Korean learners asked for was more audio modalities in the Relative Advantage items after both T_1 and T_2. While learners were not reporting on actual use, audio composing modes seem to be an important avenue for further investigation. Indeed, it may be wise to provide English language learners with multimodal options (text, video, audio) to complete any creative task. Rogers (1983) found that the free trialability by the early adopters of a new technology could help to coax later users to accept the implementation more readily, particularly when the innovation was observable to peers. In the end, if we can promote the sense of learner autonomy and control over the use of the technology, new digital modes may afford learners meaningful new opportunities.

5. CONCLUSION

It would be wise to critically consider the limitations of this study. Some of the shortcomings include but are not limited to the small number of students (N=57), the fact that students were selected from a convenience sample and were all treated with the same instructional intervention, and that the survey items had not been validated before sampling. Aguilera-Hermida (2020), using a similar methodology, argued for the benefits of conducting research during ERL as it provided insight into learners' thoughts during the transition, not after. Consequently, it is important to evaluate carefully the merits provided in this study. Conducted from the very beginning of the emergency response to the coronavirus pandemic, the research is unlike previous online learning conditions. The circumstances surrounding the transfer to, and continuation with, ERL when face-to-face classroom instruction was the preferred mode of educational delivery allowed for a unique opportunity to gauge learner perspectives, expectations, and acceptance of alternative instructional delivery and digital composing modes.

While Zoom, Google Hangouts, and other video conferencing modes of interaction were marginal in this study, the constructs shared by Kemp et al. (2019) provides a methodology for evaluating learner preferences toward the use of new educational technologies. A significant takeaway is that Korean EFL learners expressed a preference for text and audio digital modalities. Another suggests that while Korean learners felt strongly against the use

of video-based DMC, there may be simple solutions to minimize and mitigate for Image and Esteem, Visibility and Observability, and Privacy. One simple way is to allow for voluntary use. Another is to feature a responsive curriculum design.

The origins of this research sought the transition as a chance to embrace innovations in online educational interaction. Digital composing offers educational benefits that allow learners to make and design language products. As well, it can engage English language learners in the social processes of DMC—creating, sharing, and interpreting linguistic and semiotic elements. Moreover, the challenges of adapting to technological innovation ask that future studies examine how best to integrate DMC within an educational technology system so that learners can focus on its' positive aspects—developing one's own voice, adapting one's message to audiences, and improving genre awareness (Hafner, 2020; Jiang, 2018).

Applicable level: Tertiary

REFERENCES

Abdullah, F., & Ward, R. (2016). Developing a general extended technology acceptance model for e-learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior, 56*, 238–256.

Aguilera-Hermida, A. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open, 1*, 100011.

Baldwin, S., & Ching, Y.-H. (2019). Online course design: A review of the Canvas course evaluation checklist. *International Review of Research in Open and Distributed Learning, 20*(3), 268-282.

Belcher, D. (2017). On becoming facilitators of multimodal composing and digital design. *Journal of Second Language Writing, 38*, 80–85.

Camiciottoli, B. C., & Campoy-Cubillo, M. C. (2018). Introduction: The nexus of multimodality, multimodal literacy, and English language teaching in research and practice in higher education settings. *System, 77*, 1-9.

Canvas LTI integration: Setup. (n.d.). Flipgrid. Retrieved on June 01, 2021, from https://help.flipgrid.com/hc/en-us/articles/115002727834-Canvas-LTI-Integration-Setup

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and result*. Unpublished doctoral dissertation, Massachusetts Institute of Technology, Cambridge.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Davis, J. D. (2019). Free apps that integrate with Canvas LMS. Canvas. Retrieved on June 01, 2021, from https://community.canvaslms.com/t5/K12-Users/Free-Apps-that-Integrate-with-Canvas-LMS/ba-p/273208

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology, 105*(3), 399–412.

Early, M., Kendrick, M., & Potts, D. (2015) Multimodality: Out from the margins of English language teaching. *TESOL Quarterly, 49*(3), 447–460.

Field, A. (2018). *Discovering statistics using SPSS* (5th ed.). Los Angeles: Sage Publications, Inc.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87−105.

Hafner, C. A. (2020). Digital multimodal composing: How to address multimodal communication forms in ELT. *English Teaching, 75*(3), 133-146.

Hafner, C. A., & Ho, W. Y. J. (2020). Assessing digital multimodal composing in second language writing: Towards a process-based model. *Journal of Second Language Writing, 47*, 100710.

Hayes, A. F. (n.d.). "My Macros and Code for SPSS, SAS, and R." Retrieved on May 24, 2021, from https://afhayes.com/spss-sas-and-r-macros-and-code.html

Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. But... *Communication Methods and Measures, 14*(1), 1-24.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review, 27*, 1-12.

Jiang, L. (2018). Digital multimodal composing and investment change in learners' writing in English as a foreign language. *Journal of Second Language Writing, 40*, 60–72.

Kemp, A., Palmer, E., & Strelan, P. (2019). A taxonomy of factors affecting attitudes towards educational technologies for use with technology acceptance models. *British Journal Education Technology, 50*(5), 2394–2413.

Kress, G. (2000). Multimodality: Challenges to thinking about language. *TESOL Quarterly, 34*(2), 337–340.

Kress, G., & Selander, S. (2012) Multimodal design, learning and cultures of recognition. *Internet and Higher Education, 15*(4), 265–268.

Liaw, S.-S., & Huang, H.-M. (2013). Perceived satisfaction, perceived usefulness and interactive learning environments as predictors of self regulation in e-learning environments. *Computers & Education, 60*(1), 14–24.

Lotherington, H., & Jenson, J. (2011). Teaching multimodal and digital literacy in L2 settings: New literacies, new basics, new pedagogies. *Annual Review of Applied Linguistics, 31*, 226–246.

Maykut, P. S., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. London: Falmer Press.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192–222.

Pyun, D. O., Kim, J. S., Cho, H. Y., & Lee, J. H. (2014). Impact of affective variables on Korean as a foreign language learners' oral achievement. *System, 47*, 53-63.

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York: The Free Press.

The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2), 273-315.

Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186–204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425– 478.