Ushering in the New Normal: A Scorecard for Emerging Technologies

Julie A. McGeorge, Anna Fox, Krishna Gamble

University of Maryland Global Campus

OMDE 603: Technology in Distance Education & E-learning

Dr. Rhonda Blackburn

August 4, 2020

Ushering in the New Normal: A Scorecard for Emerging Technologies

Distance education opportunities are increasing at an exponential rate. Technology has transformed the learning landscape for students and teachers alike. According to Bates (2015), “the future will be determined by a host of factors, many outside the control of teachers and instructors." Considering the current state of the environment, the future is *now*. COVID-19 has not only disrupted educational institutions and workplaces, but it has opened the door of opportunity for new technological tools to promote learning, engagement, and collaboration. As various stakeholders consider how to adapt to evolving educational environments, these spaces are morphing into new technological environments as well. As such, it is a critical time to think about emerging technology: *emerging* both in a sense that innovation may be borne out of necessity and urgency and *emerging* in a sense that existing technologies may now realize a new purpose.

Educators, trainers, and leaders are tasked with choosing tools to facilitate meaningful experiences in an online environment. They are looking for innovation that helps—rather than hinders—a smooth transition. To assess a seamless transition with emerging tools, scorecards are used to evaluate effectiveness based on specific criteria. Results from these scorecards can help educators make confident decisions about the best tools and applications to satisfy their needs, because “[they] can be used to provide objective, meaningful, and substantive feedback” (Arcuria & Chaaban, 2019).

Putting Technology to the Test

Fox, Gamble, and McGeorge evaluated a series of applications and tools: technology for communication; for designing, developing, and delivering courses; for managing and evaluating distance education; and other emerging technologies that may rise to prominence in future

classrooms and workplaces (Figure 1). Technologies were also explored through different lenses and contexts for use, including those for adult learners in private/public sectors, global learners, persons with varying abilities, and K-12 language learners. The goal was to create a balanced scorecard to accurately assess each technology in six fundamental areas of distance education.

Fox, Gamble, and McGeorge created a scorecard to determine which technologies are suitable for the "new normal," with an eye on how scorecards can "not only determine program quality but also assist with future goal setting and strategic planning" (Shelton, 2020, p. 37). The resulting scorecard includes six broad categories: accessibility, usability/ease of use, support of learning outcomes, compatibility, cost, and security. Each category includes between three and five descriptors, and descriptors are awarded point values based on a five-point Likert scale. Percentages were calculated based on total number of points awarded in a single category versus total number of points available in a single category. These percentages are provided in the aggregate tab (Figure 2). Any scores lower than 50% were flagged in red. Additionally, any ratings scored significantly differently by Fox, Gamble, or McGeorge were flagged in yellow on the individual scorecard.

The six categories for scorecard consideration were chosen largely based on EdTech predictions made by Shearer (2015) and Kelly (2017). For example, with work moving online, there needs to be significant consideration for accessibility, as some of the support of a physical environment may not be available in the same, familiar capacity. Future technologies should therefore try "to meet each student's personalized education needs and support [] learning, with the assistance of automated and predictive course feedback that is available to students as well as instructors" (Kelly, 2017). Technology has the potential to bridge an accessibility gap in that it

can create more bespoke, adaptive opportunities that may be unavailable in face-to-face environments.

Fox, Gamble, and McGeorge chose the support of learning outcomes as an essential category, as even five years ago, various organizations started to "see[] a continued shift away from lecturing and old methods of delivering content, and into new modalities of exploring content" (Shearer, 2015). Some of the scored technologies were more successful than others in this area (e.g., Pear Deck and EdPuzzle), while others were less successful (e.g., Mural and Camtasia). Other technologies, like Second Life and Magic Leap, embrace the idea of content exploration and will be interesting to watch in the future; these applications reflect what Kelly (2017) describes as a move toward training learners to be more "self-directed" and focused on problem solving.

Compatibility, cost, and security are critical pieces to consider in the "new normal" as well, particularly with the volume of users moving online (compatibility), concerns about cost effectiveness of new technologies, and scrutiny with regard to user security and sharing of personal information (Shearer, 2015; Kelly, 2017). These factors contribute to the transparency and accountability of technologies for individual and organizational benefit. The more these specific factors can adequately and effectively meet the basic needs of the user, the more a particular technology will be used and developed.

Figure 1
Emerging Technologies

Module	Fox	Gamble	McGeorge
2 Communication Tool	EdPuzzle: "Make any video your lesson. Choose a video, give it your magic touch and track your students' comprehension."	Pear Deck: "Effortlessly build engaging instructional content, right from google slides."	Talking Points: "Reach all your students' families in their home languages to build strong partnerships"

3 Designing, Developing, Delivering Courses Tool	Camtasia: "makes it simple to record and create professional-looking videos on Windows and Mac."	SurveyMonkey: "A global leader in survey software. 20 million questions answered daily."	Mural: "a digital workspace for visual collaboration"
4 Managing or Evaluating DE Tool	SABA: "We combine the art and science of talent with dynamic technology to deliver a 'just for me' talent experience – personal journeys for every person, every team, and every company.	Blackboard: "Blackboard is a leading EdTech company serving higher education, K-12, business and government clients around the world. We connect a deep understanding of education with the power of technology to continuously push the boundaries of learning."	
5 Emerging Tool	Second Life: "We develop platforms that empower everyone to create virtual experiences"		Lobe: "Build, train, and ship custom deep learning models using a simple visual interface."
OTHER	Twine: "an open-source tool for telling interactive, nonlinear stories."	Kahoot!: "on a mission to make learning awesome. Our platform makes it easy to create, share and play learning games or trivia quizzes in minutes."	Hopin: "The virtual venue for all your events"
		Canvas: "The Learning Platform that Helps Great Education Happen"	Magic Leap: "Magic Leap 1 is a lightweight, wearable computer that brings the physical and digital worlds together as one."

Figure 2
Aggregate Scores for Emerging Technologies

	List of Scored Technologies>>>	EdPuzzle	Pear Deck	Talking Points	Camtasia	Survey Monkey	Mural	SABA	Blackboard	Second Life	Labs	Twine	Kahoot	Hapin	Canvas	Magic Leap
ACCESSIBILITY																
1	*Technology is available to a wide range of users (e.g. based on location, industry, age)*	10	15	9	15	15	10	7	15	7	8	6	10	14	12	6
2	*Technology can accommodate learners with diverse needs (e.g., languages, etc.)*	10	15	9	12	15	10	10	12	3	7	7	9	10	12	4
3	*Technology adheres to web content accessibility guidelines (WCAG)*	9	14	3	12	15	3	9	14	5	6	6	10	3	13	3
4	*Technology allows users to navigate it at their own pace*	10	15	6	10	15	10	11	12	10	9	9	8	10	12	9
	Total points	**39**	**59**	**27**	**49**	**60**	**33**	**37**	**53**	**25**	**30**	**28**	**37**	**37**	**49**	**22**
	Percentage	**65.00%**	**98.33%**	**45.00%**	**81.67%**	**100.00%**	**55.00%**	**61.67%**	**88.33%**	**41.67%**	**50.00%**	**46.67%**	**61.67%**	**61.67%**	**81.67%**	**36.67%**
USABILITY/EASE of USE																
1	*Technology can be implemented and modeled in different settings (e.g., small-, large-scale training)*	11	13	9	13	13	10	8	10	7	9	6	12	9	11	3
2	*Technology can be adapted for different purposes or contexts*	12	13	9	13	15	9	8	12	9	11	7	12	10	11	10
3	*Different stakeholders can use the technology with ease*	11	14	9	6	15	10	9	9	6	9	10	12	5	9	3
4	*Technology includes clear instructions or intuitive interaction*	10	11	6	5	15	9	4	7	3	10	10	12	5	9	3
5	*Technology includes clear inputs (e.g., quality A/V, speed)*	9	12	7	12	15	9	8	6	7	9	8	12	5	9	7
	Total points	**53**	**63**	**40**	**49**	**73**	**47**	**37**	**44**	**32**	**48**	**41**	**60**	**34**	**49**	**26**
	Percentage	**70.67%**	**84.00%**	**53.33%**	**65.33%**	**97.33%**	**62.67%**	**49.33%**	**58.67%**	**42.67%**	**64.00%**	**54.67%**	**80.00%**	**45.33%**	**65.33%**	**34.67%**
SUPPORT OF LEARNING OUTCOMES																
1	*Technology supports learning outcomes across diverse contexts*	10	13	10	12	10	9	7	13	8	8	6	12	12	12	8
2	*Technology is engaging*	11	13	6	12	10	12	7	8	12	12	8	14	10	12	12
3	*Technology provides motivational support (e.g., badges, awards, benchmarks)*	10	10	3	3	12	3	10	9	9	9	6	12	8	12	7
4	*Technology contributes to advancement in learning*	11	12	9	6	10	6	10	10	10	9	6	12	7	12	10
5	*Technology can be used in conducting accurate assessment*	11	12	3	8	11	3	8	8	6	6	3	11	6	10	7
	Total Points	**53**	**60**	**31**	**41**	**53**	**33**	**42**	**48**	**45**	**44**	**29**	**61**	**43**	**58**	**44**
	Percentage	**70.67%**	**80.00%**	**41.33%**	**54.67%**	**70.67%**	**44.00%**	**56.00%**	**64.00%**	**60.00%**	**58.67%**	**38.67%**	**81.33%**	**57.33%**	**77.33%**	**58.67%**
COMPATIBILITY																
1	*Technology is supported by different operating systems*	15	12	9	10	12	10	8	12	10	9	10	12	9	12	3
2	*Technology is stable (e.g., server reliability, bandwidth, latency)*	12	12	9	9	12	10	8	9	9	9	10	12	9	11	3
3	*Technology is available on different devices with consistency (e.g., mobile versus desktop)*	13	12	9	7	12	10	8	11	10	9	9	13	9	12	3
	Total points	**40**	**36**	**27**	**26**	**36**	**30**	**24**	**32**	**29**	**27**	**29**	**37**	**27**	**35**	**9**
	Percentage	**88.89%**	**80.00%**	**60.00%**	**57.78%**	**80.00%**	**66.67%**	**53.33%**	**71.11%**	**64.44%**	**60.00%**	**64.44%**	**82.22%**	**60.00%**	**77.78%**	**20.00%**
COST																
1	*Technology is cost effective for all users*	14	12	13	6	10	9	4	4	7	0	15	9	9	2	3
2	*Cost of technology is transparent (e.g., subscription membership, monthly payments, free trials)*	12	12	9	3	12	9	3	0	9	0	15	8	9	0	3
3	*Cost to use technology is justified*	12	12	10	5	12	7	6	5	6	0	15	8	10	2	3
	Total points	**38**	**36**	**32**	**14**	**34**	**25**	**13**	**9**	**22**	**0**	**45**	**25**	**28**	**4**	**9**
	Percentage	**84.44%**	**80.00%**	**71.11%**	**31.11%**	**75.56%**	**55.56%**	**28.89%**	**20.00%**	**48.89%**	**0.00%**	**100.00%**	**55.56%**	**62.22%**	**8.89%**	**20.00%**
SECURITY																
1	*Technology is able to be used without restrictions (e.g., country restrictions, firewalls)*	12	12	6	9	12	6	10	15	6	9	6	11	11	7	14
2	*Technology provides security supports (e.g., passwords, 2-step authentication)*	9	13	6	9	10	5	10	15	7	6	8	9	6	6	9
3	*Technology protects user information (e.g., third-party sharing, ads, personal information)*	13	14	6	9	10	5	10	15	7	6	7	9	9	6	9
	Total points	**34**	**39**	**18**	**27**	**32**	**16**	**30**	**45**	**20**	**21**	**21**	**29**	**26**	**19**	**32**
	Percentage	**75.56%**	**86.67%**	**40.00%**	**60.00%**	**71.11%**	**35.56%**	**66.67%**	**100.00%**	**44.44%**	**46.67%**	**46.67%**	**64.44%**	**57.78%**	**42.22%**	**71.11%**

Forming Conclusions

After completing scorecards, clear trends emerged across technologies, as well as among specific categories. For example, scores were consistently high (all technologies scored >50%)

for compatibility. After all, emerging technologies should account for significant numbers of users.

Quite a few scorecards for cost were low (six technologies scored <50%), likely because the more robust learning management systems were not transparent about pricing. However, an interesting finding was with regard to how many applications apply a "freemium" business model; this model involves a user or customer accessing and using a basic version of a product for a time at no cost, with the option to purchase additional features or services to continue use (Gu et al., 2019). EdPuzzle, Pear Deck, Survey Monkey, and Kahoot all incorporated this freemium model into their pricing strategy.

Reviewing the data in more detail, a few technologies provided unexpected accessibility results, specifically with regard to standards like Web Content Accessibility Guidelines (WCAG). Although these guidelines are well-known and commonly used, some technologies had minimal or nonexistent accommodations (Figure 2). Certain populations will need more support in an online environment; this is an area where technologies need to do more.

Like most emerging technologies, there are always opportunities to iterate on processes or evaluation methods to make scorecards better fit the needs of the scorer. Some areas of opportunity include adjusting scale and scoring to have different weights. For instance, some organizations prioritize security features (e.g., two-factor authentication) more than applications that strive to support learning outcomes (Figure 2). Another important scorecard category is cost, which may require a different weight because it is usually non-negotiable. Scorecards could further be enhanced by tailoring high-level categories to better match user needs.

The "new normal" has certainly forced teachers and instructors to usher in new and emerging technologies. These technologies should be tested and scored to ensure they perform

based on specific needs and to help guide decision-making. A descriptive and detailed scorecard can ensure that technologies in the “new normal” fill in gaps rather than create them. This will only enhance the learning experience for all and promote continual improvement on quality technologies.

References

Arcuria, P. & Chaaban, M. (2019, February 8). Best practices for designing effective rubrics. Arizona State University. https://teachonline.asu.edu/2019/02/best-practices-for-designing-effective-rubrics/

Bates, T. (2015). Chapter 10.4: The Implications of 'Open' for Course and Program Design: Towards a Paradigm shift? *Teaching in a Digital Age: Guidelines for Teaching and Learning*.

Gu, X., Kannan, P.K., Ma, L. (2019, March 20). How companies can get the most out of a freemium business model. Harvard Business Review. https://hbr.org/2019/03/how-companies-can-get-the-most-out-of-a-freemium-business-model

Kelly, R. (2017, January 18). 11 ed tech trends to watch in 2017. Campus Technology. https://campustechnology.com/articles/2017/01/18/11-ed-tech-trends-to-watch-in-2017.aspx

Shearer, R. (2015, January 12). Four evolving trends that may shape the future of eistance education. The Evolllution. https://evolllution.com/opinions/evolving-trends-shape-future-distance-education/

Shelton, K. (2010). A quality scorecard for the administration of online education programs: A Delphi Study. *Journal of Asynchronous Learning Networks, (14)*4, 36-62.