email to 162 ACGME-accredited EM residency program directors from April through October 2018. Names and email addresses were obtained from the CORD mailing list and programs' public websites. Responses were manually screened for duplicate entries from the same program, and only the most recent response was recorded.

Results: We received 91 individual program responses (56% response rate) to the survey. Graded responsibility was utilized for intubating trauma patients by 54% of programs, managing critically ill trauma patients by 60% of programs, managing critically ill medical patients by 30% of programs, acting as physician-in-triage by 50% of applicable programs, supervising medical students by 68% of applicable programs, supervising junior residents by 50% of applicable programs, and moonlighting by 91% of programs. When graded responsibility was applied to a domain of practice, PGY level was ranked an "extremely important" or "very important" factor between 81% and 100% of the time, more frequently than any other factor.

Conclusions: There is no clear prevailing pattern to whether EM residency programs are utilizing graded responsibility for most surveyed domains of practice. When graded responsibility is applied, PGY level is consistently the most important factor in determining progression. While competency-based educational models such as milestones and entrustable professional activities (EPAs) appear to be a major feature in the future direction of graduate medical education, EM residency programs still rely heavily on a time-based learning model.

Table 1. Utlization of graded responsibility among surveyed emergency medicine residency programs.

Domain of practice	All residents allowed to	Only some residents allowed to	No residents allowed to	Not applicable
Intubating trauma patients	42 (46.2%)	49 (53.8%)	0 (0.0%)	---
Managing critically ill trauma patients	36 (40.4%)	53 (59.6%)	0 (0.0%)	---
Managing critically ill medical patients	61 (70.1%)	26 (29.9%)	0 (0.0%)	---
Acting as physician-in-triage	5 (13.2%)*	19 (50.0%)*	14 (36.8%)*	47
Supervising medical students	26 (31.7%)*	56 (68.3%)*	0 (0.0%)	3
Supervising junior residents	26 (36.1%)*	36 (50.0%)*	10 (13.9%)*	7
Moonlighting	2 (2.4%)	77 (90.6%)	6 (7.1%)	---

* Percentage calculated excluding "not applicable" responses

8 Learning Experience Design (LED) in Health Professions Education: A Critical Review

Pan J, Sheu J, Massimo L, Phillips A / Baylor College of Medicine, Houston, Texas; University of North Carolina Hospitals, Chapel Hill, North Carolina

Background: Internet-based learning (IBL) technologies have become increasingly prevalent in medical education, particularly in Emergency Medicine and Critical Care. Studies have shown learner preference towards IBL, emphasizing the importance of optimizing these platforms. Learning experience design (LED) is an approach aimed to enhance the learning experience in order to improve performance. This strategy can be applied to IBL in order to optimize learning outcomes.

Objectives: To critically evaluate current literature to identify optimal design features for text and media presentation in IBL technology.

Methods: Articles for this review were located using the PubMed database, followed by hand tracing of the initial search results. Exclusion criteria included studies that used CRT monitors, Kindle PaperWhite, or non-adult learners, and descriptive articles without comparisons.

Results: 42 articles were included with the following results (Table 1). Larger character sizes had greater legibility, shorter reading time, higher reader preference, lower mental workload, and greater accuracy. Veranda and Arial typefaces had greater legibility, higher reader preference, and lower mental workload than Times New Roman. Reading accuracy was unchanged with color and decreased with case enhancement. Boldface and font smoothing enhancements improved, while italics worsened legibility. Font smoothing also had higher reader preference and lower mental workload. Positive polarity increased legibility, reader preference, and outcomes. Greater glare increased learner fatigue, but did not have impact on performance. Greater luminance increased performance, although may be screen contrast dependent. Increased interletter spacing lead to slower reading times, but improved performance, while increased interword spacing lead to faster reading times with variable impact on outcome. Longer line lengths resulted in faster speed, yet poorer accuracy and reader preference. Accuracy was greatest with RSVP display, while reading time was fastest with scrolling display.

Table 2. Factors rated as "extremely important" or "very important" in determining progression of graded responsibility.

Domain of practice	PGY level	Completion of certain rotation	Clinical Competency Committee recommendations	Faculty evaluations	Observation of having performed task previously	Simulation	Milestone assessment
Intubating trauma patients	38 (80.9%)	25 (53.2%)	10 (21.3%)	7 (14.9%)	25 (53.2%)	9 (19.1%)	12 (25.5%)
Managing critically ill trauma patients	47 (94.0%)	23 (46.9%)	17 (34.0%)	15 (30.6%)	15 (30.6%)	9 (18.0%)	11 (22.4%)
Managing critically ill medical patients	22 (88.0%)	9 (36.0%)	7 (28.0%)	7 (28.0%)	7 (28.0%)	4 (16.0%)	2 (8.0%)
Acting as physician-in-triage	19 (100.0%)	1 (5.3%)	6 (31.6%)	5 (26.3%)	2 (10.5%)	2 (10.5%)	1 (5.3%)
Supervising medical students	52 (92.9%)	5 (9.1%)	17 (30.9%)	17 (30.9%)	10 (18.2%)	1 (1.8%)	6 (10.9%)
Supervising junior residents	36 (100.0%)	4 (11.4%)	20 (55.6%)	15 (41.7%)	11 (31.4%)	4 (11.4%)	5 (14.3%)
Moonlighting	77 (100.0%)	14 (18.4%)	55 (71.4%)	45 (58.4%)	25 (32.9%)	10 (13.2%)	36 (47.4%)

Conclusions: Recommendations for optimal reading performance for IBL technologies include 14 point font size, Veranda or Arial typeface, font smoothing, positive polarity, increased interletter spacing, and shorter line lengths.

Table 1. Summary of design features and learning outcomes.

	Legibility	Reading Time	Reader preference	Mental Workload	Accuracy & Performance
Character size					
Larger size (10-14 pt)	+	+	+	+	+
Typeface					
Veranda	+		+	+	+
Arial	+		+		+
Times New Roman	--		--		--
Courier New		+			
Frutiger	+				
Eurostile	--				
YingHei	+				
Computer Type					O
Kai Type					O
Text Enhancement					
Boldface	+				
Italic	--				
Font Smoothing	+		+	+	
Text Color					O
Text Case					--
Polarity					
*Positive polarity	+		+		+
Text-on-Screen Color					
Blue-on-yellow			+		M
Purple-on-red			--		--
Red-on-white					M
Blue-on-white					M
Green-on-white					M
Brightness					
Increased glare				--	O
Increased luminance					M
Spacing					
Increased interletter		--			+
Increased interword		+			M
Line Length					
Increased line length		+	--		--
Display Type					
RSVP					+
Scrolling		+			
Display Speed					
Increased WPM					M

*black text on white background

Legend	
+	Improves
--	Worsens
O	No change
M	Mixed results
	N/A (no data)

9 A Novel and Well-Received Process for Tracking the ACGME 15 Key Index Procedures

Mohagheghian H, Fiesseler F, Walsh B, Esposito A, Riley N, Biggs D / Morristown Medical Center, Morristown, New Jersey

Background: The ACGME has created minimum procedural requirements for graduation. Tracking of these procedures is cumbersome and fraught with inconsistencies. A simplified means for residencies to track procedures is needed.

Objectives: We sought to implement a simplified tracking system and determine how residents viewed this Procedural Achievement Count Evaluation (PACE) score to track procedural progress vs a traditional counting method.

Methods: The setting was a three-year ACGME-approved residency with 25 residents and an annual census of 96,000. We performed a prospective analysis of a procedural tracking system using residents' progression. Data were imported from New Innovations into a Google spreadsheet. The total number of procedures required for each procedure was divided by 36 (total months of residency) and then multiplied by the resident's month of residency, creating an expected number of procedures that a resident should have completed at that specific time. We calculated this number for each of the resident's 15 core procedures. We termed this the PACE score. Residents can be 1) below the PACE (too few procedures for level of training); 2) at PACE (at the expected number for level of training); or 3) above PACE (exceeding the expected number for level of training). The cumulative resident PACE score spreadsheet was distributed to all the residents. Subsequently, we analyzed the perception of residents on this scoring system. We used a chi-squared test on the proportions along with differences and calculated 95% confidence interval (CI).

Results: All 25 residents completed the evaluation, of whom 72% (N=18) were male. One additional resident resided in the PGY3 year. Sixty-eight percent of residents said that the PACE score was more beneficial than a count of procedures, compared to 8% who said it was less beneficial (Difference 60%, 95% CI, 34-76; p<0.0001). Thirty-six percent said that seeing other residents' PACE scores was motivating, compared to 8% who said it was not motivating (Difference 28%, 95% CI, 5-48; p<0.05). Ninety-six percent of residents said that they were neutral or not offended by having their PACE scores shared with the other residents compared to one resident (4%) who said he or she was "slightly offended" (Difference 92%; 95% CI, 70-97; p<0.0001).

Conclusion: Calculating a PACE score is an easy way to track residents' procedural progress, and it is motivating and well-received by residents.

10 Impact of an Emergency Department Resident Sign-Out Checklist on Attending Assessments of Quality

Lorenzo C, Stankewicz H, Healy B, Stoltzfus J, Salen P / St. Luke's University Health Network, Bethlehem, Pennsylvania; St. Luke's Temple School of Medicine, Bethlehem, Pennsylvania

Background: Education and assessment of transition of care during emergency department (ED) shift change constitute essential elements of emergency medicine (EM) training.

Objectives: To determine if using a sign-out (SO) checklist (CL) resulted in improvement in the quality of transfer-of-patient responsibilities and impacted the consistency of attendings' assessments.

Methods: Oncoming and departing attending physicians prospectively assessed EM residents' unstructured morning SO for 38 consecutive days. They then assessed their CL-guided, structured, morning SO over the subsequent 39 days. Assessments included SO duration, SO patient quantity, SO quality visual analog scores (VAS), patient management issues, and oncoming and departing attending interobserver agreement.

Results: Oncoming and departing attendings made 548