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An examination of student preference for traditional didactic or chunking teaching strategies in an online learning environment

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This research examined first year undergraduate tertiary student preferences for different online video playback options by comparing a didactic long lecture recording versus a series of topical 'chunked' videos of identical learning material in an information literacy unit. Student preference was determined by student unique download choice of streaming video lecture material, cumulative visits and percent completion of viewing of lecture videos. De-identified click-stream data for 1268 university students across two academic years 2016 (n = 647) and 2017 (n = 621) were pooled to examine student preference. The major findings indicated a significant preference for chunk-style videos between 3 and 17 min duration when compared to traditional long-view didactic lecture materials. Results also highlighted an increase in unique views (60%–67%), cumulative visits (54%–67%) and percentage completions (25%) of chunked videos compared to didactic lectures (60 min). Additionally, student total viewing of the unit information influenced the final grade for the unit. Student preference and success were in favour of the smaller chunk-style lectures, which may also improve student attention, assist with time management to complete the materials and increase unit engagement. The overall findings of this research re-enforce the value of student-centric learning design in university education settings.

Keywords: technology; video; tertiary education; learning management system; information literacy

Introduction

The development of fundamental information literacy skills is essential for students entering undergraduate tertiary courses to facilitate the identification, retrieval and critical evaluation of quality scientific research information to inform decision-making. Although these skills help support and strengthen all elements of student coursework, the learning of these skills is often multifaceted and requires time to successfully develop. Impacting this skill development is the choice of instruction methods and platforms used to deliver educational objectives (Ebbert and Dutke 2020; Koufogiannakis and Wiebe 2006). In addition, the learning environment is undergoing a global transformation with the integration of technology into traditional education

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to bring about a new era of digital education (Uslu 2018). Education must also adapt to the new-millennial undergraduate student, raised in a digital age that impacts how they learn, access information, locate resources, share information and communicate (Au-Yong-Oliveira *et al*. 2018; Guerrero, Baumgartel, and Zobott 2013; Weightman *et al*. 2017). Although online learning is becoming more common, is it realistic to use traditional lecture strategies with the digital medium for information delivery?

Research highlights that the traditional didactic lecture format follows a factual and manipulative one-way communication style that limits sharing and student involvement (Folley 2010; Miller, Mcnear, and Metz 2013; Rubio *et al*. 2008). This style of information delivery tends to focus on large blocks of time to provide extended background content to control the direction of learning without consideration to student cognitive load. Further, research has also reported student engagement with lecture content gradually declines after 10–20 min regardless of the method of teaching delivery (Miller 1956; Wilson and Korn 2007; Young, Robinson, amd Alberts 2009). The attention decline associated with didactic lecture formats has been related to the disproportion between content and learning. Research by Leppink (2017) highlights cognitive load theory and the limitations of human memory to acquire valuable information. An overriding guideline for the design of educational information suggests that minimising cognitive activity can contribute to student learning. Other research has also reported reducing cognitive load to optimise memory resources by streamlining attentional focus and removing distractors to improve long-term retention of information (Lewis 2016). Although the passive traditional didactic lecture format is still used in many institutions, alternative strategies that emphasise shared communication and manage cognitive load need to be explored.

One such lecture strategy is the delivery of information using smaller segments to improve learning and attentional focus, and this strategy has been referred to as chunking (Miller 1956). Chunking of information differs from traditional didactic lectures that typically present information as a single large block of information. Chunking reorganises bulk information into smaller blocks or units to allow the learner to manage information using both short- and long-term memory to improve retention and retrieval (Gobet *et al*. 2001). The smaller units of information allow for sequential or related units to be linked and stored in long-term memory compared with larger units of information that can become disjointed (Lah, Saat, and Hassan 2014; Mayer *et al*. 1996). Chunking assists with more than learner attention. It also provides the learner with an opportunity to revisit smaller units of information that can assist with retention and overall knowledge comprehension (Koufogiannakis and Wiebe 2006; Leppink 2017). By chunking information into smaller manageable blocks or units, students can develop meaningful links between literacy skills and more readily recognise the connections (Bodie, Powers, and Fitch-Hauser 2006).

Chunking strategies have also been shown to be successful for teaching chemistry (Adhikary, Sana, and Chattopadhyay 2015; Lah, Saat, and Hassan 2014), decision-making (Agahi and Dmytrenko 2016), communication and literacy skills (Bodie, Powers, and Fitch-Hauser 2006; Brettle and Raynor 2013; Ferrer-Vinent *et al*. 2015) and developing specific languages (Ordás 2015). Research-based best practice also suggests chunking improves comprehension and retention for special needs children (Evmenova and Behrmann 2011). Although chunking has been shown to improve cognitive learning, there has been limited success when using chunking to teach compound human movement sequences that can be impacted by cueing errors when learning an entire movement sequence (Cohen and Sekuler 2010). The chunking of information has been more successful in learning cognitive information and assists in limiting student cognitive overload, allowing students to manage learning in an ever-changing technological educational environment (Gobet *et al*. 2001; Leppink 2017; Risko *et al*. 2013). The chunking of information has been researched in conjunction with blended learning strategies (Chia *et al*. 2015; McGee 2014), distance learning (Au-Yong-Oliveira *et al*. 2018), technology-enhanced lecturing (Folley 2010), multimedia learning (Mayer *et al*. 1996), engaging learning (Miller, Mcnear, and Metz 2013) and instant messaging (So 2016). Regardless of the teaching strategy or discipline, chunking of information appears to be beneficial in learning information; however, the uptake and preference of chunking is not clearly understood in the new-millennial undergraduate student.

Chunked information can be stored, and the connected pieces retrieved more readily than non-chunked, arising from the reduced cognitive load. Teaching strategies have typically used a blend of learning strategies; however, there has been little investigation of student preferences for information delivery. This is more pronounced in a technocentric world, in which students gain their information using smartphone devices, social media, applications and YouTube. The primary purpose of this research was to examine the preference for didactic or chunking of the same lecture information for information literacy skills in first year undergraduate tertiary students. The preference was determined by student choice based on unique accesses of the lecture videos, the cumulative accesses of the lecture material and percent of viewing completion of the lecture videos. A secondary purpose of the research was to determine the total unique student accesses of the study unit information and its relationship to student final grades for the unit.

Methods

Cohort

This study applied a descriptive quantitative approach using archived click-stream data from the institutional Moodle LMS developed by Moodle Pty. Ltd. (Australia)® and an associated online video streaming platform – Echo360 developed by Echo360, Inc. (USA)® – for the delivery of online lecture content. De-identified participant information for 1268 university students enrolled in a first year Study and Research Skills for Health Sciences (SRSHS) unit over the academic years 2016 (n = 647) term one and 2017 (n = 621) term one was accessed for this study. The SRSHS unit is core curriculum for many first year students, drawing participants from exercise science (n = 152), medical science (n = 171), paramedical science (n = 371), sonography (n = 266), medical imaging (n = 80), oral health (n = 35), chiropractic (n = 134), echocardiography (n = 28), psychology (n = 10) and elective students (n = 21) from music, digital media, public health, engineering, environmental science, education and chemistry. Students enrolled into this unit are familiar with the technology used, as they are utilised by all students across the entire institution. Prior to data retrieval, ethical approval was obtained through the Institution's Human Research Ethics Committee.

Procedures

The Moodle® online LMS was used for uploading all learning contents, assessments and student submissions for the SRSHS unit. The unit content is designed to provide students with knowledge and skills that include information literacy, scientific writing skills, research methodology, statistics and ethical practice. All lecture and tutorial recordings for this unit are recorded and stored in the institutional video streaming platform Echo360® and published via the Moodle® online LMS. As a point of difference for the academic years 2016 and 2017, the exact same lecture material for the SRSHS unit was provided in both traditional didactic and chunking lecture styles. The entire lecture content was recorded as a single event using a picture-in-picture format. This long-view video in its entirety was published alongside its chunk-style variants.

The lecture material for the SRSHS unit presented in the traditional didactic style consisted of 12 topics listed in the unit Moodle site, which were delivered weekly using a one-hour lecture. The didactic lecture style provided 12 lectures for the 2016 academic year and the same again for the 2017 academic year for a total of 24 long-view lectures. The lecture recoding rooms have a timed cut off at 5 min to the hour to allow for room change overs. This allows only 55 min of actual lecture time for the hour-long lectures. The recorded lectures were accessed from the video streaming platform Echo360® via Moodle, and each video provided students with the weekly topic and lecture duration.

The novel chunked lectures consisted of the exact same content as the long-view didactic lectures and were provided as 119 short-view lectures across both academic terms. The weekly long-lecture format was rendered down to provide approximately five short-view videos per week that matched the long-format content. The chunked lectures provided to students were presented under each weekly topic heading with the addition of distinct sectional content headings and video duration times. Lectures covering 'Ethics' for example were provided to students using the didactic style and listed under week 10 of the unit content as 'Lecture Ten: Ethics'. On selecting the lecture content, students are logged into the Echo360® platform to view the lecture material and utilise the lecture mark-up functions provided by Echo360, such as highlighting, note-taking and online discussion related to the lecture content. The chunking lecture material was listed directly under the didactic lecture link. The chunking lectures are presented under the common topic 'Ethics' using sectional content headings as follows: 'What is Ethics (10 minutes)?', 'Ethics in Research (Human and Animal Ethics) (14 minutes)?', 'Institution Human Research Ethics Committee HREC (8 minutes)?', 'Example of Ethics Statements in Manuscripts (3 minutes)?', 'Informed Consent (4 minutes)?' and 'Examples of National Ethics Statements (6 minutes)?'.

Data for each year were collated and student preferences analysed. The lecture videos for the traditional didactic format were consistent in length; however, the chunk style lectures varied in length depending on the topic they covered. All the lecture videos for both didactic and chunking formats were grouped based on video length: (1) 60 min (average 50.32 ± 4.17 min); (2) ≤ 5 min (average 3.50 ± 0.98 min); (3) 6–10 min (average 7.01 ± 1.61 min) and (4) 11–20 min (average 17.02 ± 7.28 min). This allowed for a single group time for the didactic lecture style and three distinct group times for the chunk style lectures.

Across the entire academic semester, the online Moodle LMS and the video streaming platform Echo360® were used for student tracking and analytics to collate information on unique views to the lecture content, cumulative visits to the lecture content, and lecture minutes and percentage completion of viewing the lecture content. In addition, the analytics of the Moodle LMS were also used to collate the total unique visits of the material for each student and their associated unit grades. The grade distributions, aligned to the institution's grading boundaries which are commonly used across the Australian higher education sector, are as follows: high distinction (HD) 84.5–100%, distinction (D) 75.5–84.49%, credit (C) 65.5–74.49%, pass (P) 49.5–64.49% and fail (F) <49.5%.

Statistics

Descriptive statistics are presented for cohort demographics as means (M) and standard deviations (SD). A Shapiro-Wilk's test ($p < 0.05$) and a visual inspection of their histograms and normal Q–Q plots were used to indicate normality. Consequently, a non-parametric analysis using the Kruskal–Wallis ANOVA test was performed to determine the differences between the four lecture video groupings (60 min, ≤5 min, 6–10 min and 11–20 min) based on unique visits, cumulative visits and percent completion of lectures. The Kruskal–Wallis ANOVA test was also used to determine the differences between student grades (HD, D, C, P and F) and total unique visits to the unit content. Following a significant difference, a series of Mann–Whitney *U* tests were performed as a *post hoc* analysis using pairwise comparisons to determine which groups were significantly different from the other. A Bonferroni multiple-comparison correction was also used to adjust alpha levels to 0.008 per test for the video groups and 0.005 per test for the grades to reduce the risk of a type I error. Effect sizes (Cohen's *d*) were also used to compare the size of the difference within-variable changes. Threshold values for small, moderate and large effects were ±0.2, 0.5 and 0.8, respectively. The Statistical Package for the Social Sciences Version 23 (IBM Corp., New York, NY) was used for all analyses. All tests were undertaken using two-tailed interpretations using a set $p < 0.05$ for significance prior to applied corrections.

Results

The demographic information for the two academic years of the first year SRSHS unit is provided in Table 1. The total participants ($n = 1268$) involved in the SRSHS unit included 1243 first year, 16 second year and 9 third year students. The non-first year students also comprised 15 females (1.8%) and 10 males (2.2%). The entire data set highlights a 74% difference between unique visits in favour of the short chunk-style video format, a 72% difference for the short chunk-style video format for cumulative visits and a 25% difference for percent completion of the short chunk-style video format when compared to the long-view didactic format.

An inspection of the Shapiro–Wilk (*W*) statistics indicated that the assumption of normality was not supported for unique visits ($W = 0.9232$), cumulative views ($W = 0.929$), percent completion ($W = 0.820$) and video minutes ($W = 0.696$) for each

Table 1. Gender breakdown of the Study and Research Skills for Health Sciences (SRSHS) unit across two academic terms.

SRSHS year	Female, *n*	Female age (years)	Male, *n*	Male age (years)
2016 ($n = 647$)	414	29.91 ± 7.56	233	31.39 ± 8.83
2017 ($n = 621$)	405	28.67 ± 11.44	216	27.98 ± 8.13
Total ($n = 1268$)	*819*	*29.29 ± 9.50*	*449*	*29.69 ± 8.48*
%Total	*65%*		*35%*	

of the four video lecture times ($p < 0.00$). A Levene's statistic reports significant statistical differences between unique visits (159.00 ± 110.34), cumulative views (184.22 ± 131.30), percent completion (76.02 ± 12.19) and video minutes (15.23 ± 17.00), with $F(3, 568) = 113.72$, $p < 0.00$, violating the homogeneity of variance. A Kruskal–Wallis ANOVA test was implemented and found significant differences between the four lecture time groups of 60 min, ≤5 min, 6–10 min and 11–20 min for unique visits ($H(3) = 28.95$, $p < 0.00$), cumulative visits ($H(3) = 30.48$, $p < 0.00$), percent completion ($H(3) = 33.23$, $p < 0.00$) and actual video minutes ($H(3) = 131.49$, $p < 0.00$), respectively, as shown in Table 2. A *post hoc* analysis using a series of Mann–Whitney *t*-tests with a Bonferroni correction factor $p = 0.008$ highlighted significant group differences, see Table 3.

An inspection of the Shapiro–Wilk (W) statistics indicated that the assumption of normality was also not supported for total unique visits ($W = 0.876$) and grades ($W = 0.653$, $p < 0.00$). A Levene's statistic was also shown to be significant between total unique visits and the five grades (HD, D, C, P and F), with $F(4, 1217) = 18.12$, $p < 0.00$, violating the homogeneity of variance. A Kruskal–Wallis ANOVA test followed and indicated that there were statistically significant differences between the grades (HD, D, C, P and F) assigned to SRSHS students and total unique visits ($H(4) = 277.77$, $p < 0.00$). A *post hoc* analysis using a series of Mann–Whitney *t*-tests with a Bonferroni correction factor ($p = 0.005$) highlighted significant group differences. A Kruskal–Wallis ANOVA test also found significant differences between the grades (HD, D, C, P and F) assigned to SRSHS students and their actual marks ($H(4) = 1005.47$, $p < 0.00$). A *post hoc* analysis using a series of Mann–Whitney *t*-tests with a Bonferroni correction factor ($p = 0.005$) highlighted significant group differences between all marks, see Table 4.

Discussion

The aim of this research was to examine first year undergraduate tertiary student preference for the same lecture material presented in the long-view didactic video or short-view chunking style formats in an information literacy unit. The preference was determined by identifying student choices, captured through the Moodle LMS clickstream data. Factors analysed were unique visits to the lecture material, cumulative visits and percent completion of viewing lecture videos. The major findings from this research highlight a significant preference for chunk-style lecture materials between 3 and 17 min duration as opposed to the single traditional long-view didactic lecture materials. Chunk-style lecture video materials had greater unique, cumulative and percent completion rates than didactic video lectures. Additionally, student total viewing of the unit information influenced the final grade for the unit.

In the present study, chunk-style lectures were the preferred format for students engaging with information literacy material in an online environment. A surprising three-quarters of the student cohort elected to uniquely and cumulatively access the chunk-style lectures in preference to the long-view didactic form of the same material. The uptake of cognitive information in this manner by the new-millennial student clearly identifies the style of learning that supports their interaction with technology. These students embrace digital technology and all the benefits of data transfer rates, rich images, informative video, rapid communication and speed of delivery for varying file sizes (Chen and Wu 2015; Hadie *et al*. 2018; Palenque 2016). Research reported

Table 2. A comparison of didactic and chunk-style video lectures for unique visits, cumulative visits, percent completion and video minutes for the SRSHS unit (n = 1268) by a Kruskal–Wallis H ANOVA test.

SRSHS	*N*	Mean	SD	95% CI LCL, UCL	H	df	*p*	Cohen's d
Unique visits, n					*28.95*	*3*	*0.00**	0.20
60 min	*24*	*63.71*	*105.68*	*19.08, 108.33*				
≤5 min	*46*	*158.20*	*96.53*	*129.53, 186.86*				
6–10 min	*43*	*187.74*	*103.62*	*155.86, 219.63*				
11–20 min	*30*	*195.23*	*103.19*	*156.70, 233.77*				
Cumulative visits, n					*30.48*	*3*	*0.00**	0.21
60 min	*24*	*78.13*	*128.01*	*24.07, 132.18*				
≤5 min	*46*	*172.35*	*109.35*	*139.88, 204.82*				
6–10 min	*43*	*218.93*	*125.00*	*180.50, 257.40*				
11–20 min	*30*	*237.53*	*126.37*	*190.35, 284.72*				
Percent completion (%)					*33.24*	*3*	*0.00**	0.23
60 min	*24*	*59.29*	*18.50*	*51.48, 67.10*				
≤5 min	*46*	*78.89*	*6.33*	*77.01, 80.77*				
6–10 min	*43*	*81.47*	*5.24*	*79.85, 83.08*				
11–20 min	*30*	*77.20*	*7.98*	*74.22, 80.18*				
Video minutes (min)					*131.49*	*3*	*0.00**	0.93
60 min	*24*	*50.34*	*4.17*	*48.56, 52.08*				
≤5 min	*46*	*3.45*	*0.96*	*3.16, 3.74*				
6–10 min	*43*	*7.01*	*1.61*	*6.52, 7.51*				
11–20 min	*30*	*17.02*	*7.28*	*14.30, 19.74*				
Total long view lectures	*24*							
Total short view lectures	*119*							

*Significant at $p < 0.05$; LCL = lower confidence limit; UCL = upper confidence limit.

Table 3. A comparison of percentage differences between didactic- and chunk-style video lectures for unique visits, cumulative visits, percent completion and video minutes for the SRSHS unit (n = 1268) by Mann–Whitney t-tests with a Bonferroni correction factor.

	60 min	<5 min	6–10 min	11–20 min
Unique visits (%diff)				
60 min	***1.00***			
<5 min	148.31*	***1.00***		
6–10 min	194.68*	15.73	**1.00**	
11–20 min	206.44*	18.97	3.84	**1.00**
Cumulative visits (%diff)				
60 min	***1.00***			
<5 min	*120.59**	***1.00***		
6–10 min	180.21*	21.28	**1.00**	
11–20 min	204.02*	27.44*	7.83	**1.00**
Percent completion (%diff)				
60 min	***1.00***			
<5 min	*33.06**	***1.00***		
6–10 min	*37.41**	*3.17*	**1.00**	
11–20 min	30.21*	*2.19*	*5.53**	**1.00**
Lecture times (%diff)				
60 min	***1.00***			
<5 min	*93.14**	***1.00***		
6–10 min	*86.07**	*50.78**	**1.00**	
11–20 min	66.18*	*79.73**	*58.81**	**1.00**

*Significant at Bonferroni correction factor ($p < 0.008$).

Table 4. A comparison of percentage differences between grades with total unique views and marks for the SRSHS unit (n = 1268) by Mann–Whitney t-tests with a Bonferroni correction factor.

	HD	D	C	P	F
Total unique views (%diff)					
HD	***1.00***				
D	25.17*	***1.00***			
C	43.18*	24.08	**1.00**		
P	51.64*	35.37*	14.88	**1.00**	
F	78.06*	70.68*	61.38*	54.63*	**1.00**
Marks (%diff)					
HD	***1.00***				
D	11.89*	***1.00***			
C	22.23*	11.74*	**1.00**		
P	37.32*	28.86*	19.39*	**1.00**	
F	90.60*	89.33*	87.91*	84.99*	**1.00**

*Significant at Bonferroni correction factor ($p < 0.005$).

by Palenque (2016) relating to single idea podcasts that create a series of related material suggested that the delivery of information in this manner would enhance student learning. Further research has also highlighted the decline in learning performance as demonstrated by unit exam results based on traditional didactic lectures when compared with engaging lecture methods that include small breaks (Miller, Mcnear, and Metz 2013).

Research by Stephenson, Brown, and Griffin (2006) compared three lecture delivery styles on similar content for 58 undergraduate university students. The virtual (chunk)-structured lecture utilised the Macromedia Authorware developed by Adobe, Inc. (USA) to create an interactive program using a range of multimedia that was largely text based, an e-lecture which is a live-audience recording of all visual materials used in a lecture and a traditional face-to-face lecture using PowerPoint®. The results from this research highlighted a preference for traditional lectures compared to either of the electronic formats. Surprisingly, when compared to chunked lectures, the virtual lecture scored significantly ($p < 0.05$) higher for knowledge, comprehension and application questions. The remaining two questions on analysis and evaluation were not significant between either lecture format. Although students preferred the traditional lecture format, the results highlighted that cognitive learning was not different between either format. Additionally, the participants in this research did not have regular exposure to online lecture formats or chunk-style materials, which could serve to influence student preferences. In contrast, other researchers have reported on the benefits to chunk-style information (Hadie *et al*. 2018; Lah, Saat, and Hassan 2014; Ordás 2015).

Research by Chen and Wu (2015) reported on three online lecture formats using lecture capture technology, voice over narration and picture-in-picture methods. All lectures were 15 min duration, and participants ($n = 37$) were assessed for learning responses. Results indicated a superior learning performance and lower cognitive load from the lecture capture technology and picture-in-picture methods compared to the voice over narration strategy. These results would suggest that the picture-in-picture method of lecture delivery is far superior for online learning and supports learning performance while reducing cognitive load. This style of delivery was used for the present study and was found to be improved further by the concept of chunking the lecture material to improve attention, material completion and reduce cognitive load compared to the didactic lecture capture technique. Similar to Chen and Wu (2015), the present research also used some post-production of the recorded lecture information to develop the sequential chunk-style videos between 3 and 17 min duration that made the process more time dependent. The main point of difference for the present study compared with the research literature reported is the online technology, and video production is common to the staff and students as this form of learning has been in use within the institution for over 20 years.

The present study also found that sequential chunk-style information was 25% more likely to maintain student attention as shown by the viewing completion rates compared to the traditional didactic lecture format. A primary concern for the traditional didactic lecture resides in its inability to match our cognitive learning capacity and maintain student motivation and attention (Lah, Saat, and Hassan 2014; Leppink 2017; Lewis 2016). Research highlights a directional change away from the traditional didactic lecture format as reported in educational settings (Farland *et al*. 2015; Hadie *et al*. 2018; Reis *et al*. 2015), and even as far as changes to conferencing formats (Gottlieb, Riddell, and Njie 2017). There have been few research studies that have directly looked at learning performance for didactic- and chunk-style lecture materials using an online environment. What is evident from the online environment is the improved engagement, improved learning performance, peer support and student–teacher interaction (Reis *et al*. 2015). With the new-millennial student, technology is a primary driver of online learning, and the traditional didactic lecture is not staying pace with the learning of these students.

The technology associated with the online learning environment lends itself to understand more about new-millennial student habits and their unique interaction with this technology. The more students interacted with the unit materials, the more likely they were to succeed in the unit. Although the results were overwhelmingly in favour of the number of unique visits and final grade, the results may be skewed by the underlying structure, whereby each weekly topic contained far more links to access the desired information with the chunking links accounting for five to six videos compared with the traditional single lecture video. However, students who failed to engage with the learning content had far less unique visits to the material than the 119 links to the chunk-style lectures, which were reflective of their grades. A surprising outcome between grades and unique visits was noticed between the middle grades of C and D as these grades only span 10 marks compared with the end grades of P and HD that span 15 marks.

Despite the contributions to the learning and teaching knowledge database, this study has certain limitations. The main consideration for data retrieval is the Echo360® system; however, it does not record unit access statistics when a student downloads video lectures directly from the EchoPlayer without first accessing the Moodle site. Since all video lectures were linked to the main Moodle page, students were not required to directly access the EchoPlayer and as such it was unlikely that information was missed. Another potential limitation to the data retrieval was when a student views an EchoPlayer video on a mobile device, the view is not counted when course statistics are compiled. Since the smartphone access did not commence until the end of 2016, students did not have access until the 2017 delivery of this unit. Students were instructed not to view Echo videos using their smartphones as the online platform was unstable with certain phone configurations.

This study used data retrieval to examine the preference for didactic or chunking style lectures based on the same material using an online learning environment. What became evident from this research is that new-millennial undergraduate students who are high consumers of technology prefer information to be presented in sequential smaller blocks compared with traditional didactic lecture methods. The value of utilising chunk-style lectures for blended online learning environments will provide efficient and effective learning materials suited to these platforms and associated technologies. The smaller chunk-style lectures may also improve student attention, assist with time management to complete the materials and increase unit engagement. Regardless of teacher pedagogical preferences for didactic or chunk-style lectures, the current research supports student preference for chunk-style lectures that suit digital natives.

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