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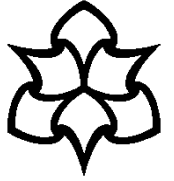
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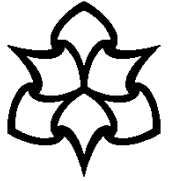
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# **Exploring the use of teaching videos to improve educational outcomes: A cross-faculty study**

**Dr Fiona Saunders, Sandor Gellen, Jack Stannard, Colin McAllister-Gibson, Dr Lisa Simmons, Professor Andy Gibson**

**Advance HE T&L Conference, 7<sup>th</sup> July 2020**



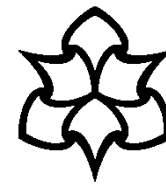
# Introducing the Presenters



Dr Fiona Saunders: Faculty Head of Education for Science and Engineering, Manchester Metropolitan University



Sandor Gellen: Faculty Planning Officer, Manchester Metropolitan University:



# Introducing Man Met

MARCH 2019




A modern university, delivering better outcomes for students, to add value to businesses, the economy and society

  
**38,000**  
**students**  
6th in the UK

  
**7th**  
most popular university  
by applications  
(UCAS)

  
**112**  
more than half of new  
students have 112 tariff  
points, equivalent to BGC  
at A level (UCAS)

  
**52%**  
of our students are the  
first generation of their  
family to attend university

  
**1st**  
for degree  
apprenticeships  
1300 degree apprentices  
by summer 2019

  
**233**  
employers partnering with us  
on degree apprenticeships  
including 75 SMEs

  
**Top 5**  
for Knowledge  
Transfer Partnerships  
currently working with  
31 SMEs (Innovate UK)

  
**968**  
primary and secondary  
school teachers graduate  
from us each year  
6th in the UK

  
**UK's largest**  
community of academic and student  
creative writers, including Poet  
Laureate Dame Carol Ann Duffy,  
and more than 85 published authors

  
**Top 10**  
ranked globally  
Manchester School of Architecture  
(QS World Ranking by subjects)

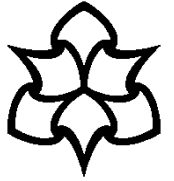
  
**The UK's  
greenest  
university**  
(People and Planet University  
League 2017)

  
**Anchor institution  
in Manchester**  
significant partner in the  
Greater Manchester regional  
strategy – digital, health, skills,  
age friendly, green economy

  
**Institute of  
Coding**  
Founding member  
Driving diversity and inclusion  
in the digital industries

  
**Student  
Mental Health**  
a partner in Greater  
Manchester student GP  
passport programme

  
**Over  
£400M  
invested**  
School of Digital Arts and Manchester  
Poetry Library: flagship developments  
to support the creative industries



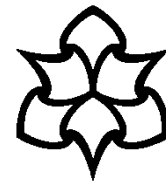
# Project Overview

Faculty wide project to support retention and progression of 6000 UG and PGT students

Over 2000 videos produced since 2017

Short explainers, past exam solutions, coursework briefings, lab demos

Positive anecdotal feedback from staff and students



2016/2017

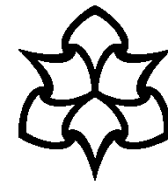
L4/L5 Progression

80% against  
target of 85%

2016/2017

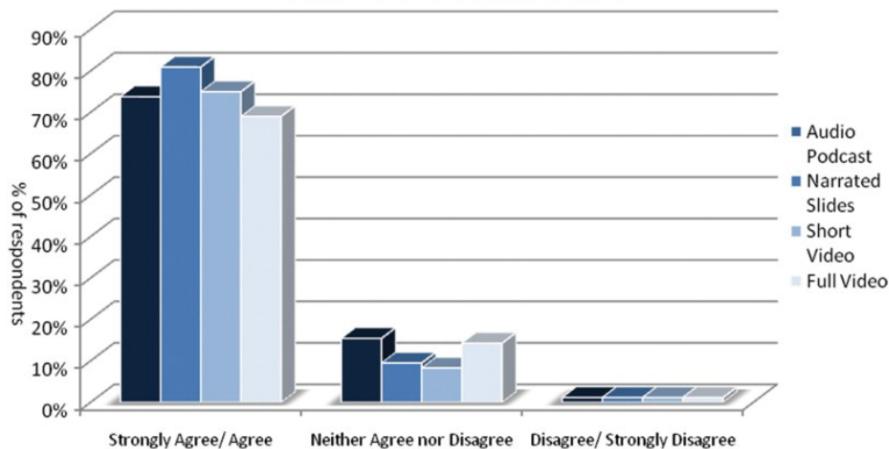
Good Honours

65% against  
target of 80%



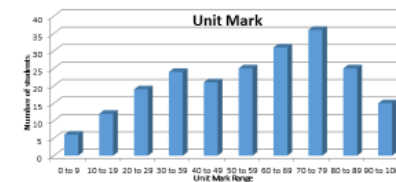
# Underpinning Theory and Ideas

The rich-media tools aided or added to my understanding of the topics they covered (Qu13, 18,23,28)

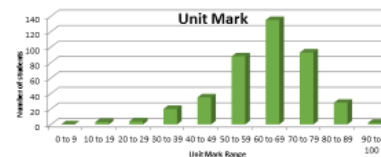


Source: Saunders and Hutt, 2014

Video Support



Without Video Support



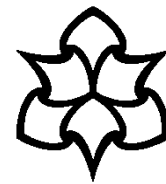
With Video Support (420 students, 100% progression)

Source: UoM, Unit Performance Electrical Energy Supply and Circuits 1 2014/2015

technology and learning experience more explicit, still stating that

... technology is an engaging and highly responsive medium; it can gather content according to interest; it can respond to individual needs of pace and level; it fits with the style and forms of youth culture; it can link the classroom to the workplace and in doing so allows teachers to provide much more of what only they can do for their students (Laurillard, 2007).

# Educating the Netflix Generation



**MathsWatch**

SOH **CAH** TOA

Find side x

A right-angled triangle with a right angle at the bottom-left. The hypotenuse is labeled 'H' and '13cm'. The angle at the bottom-right is labeled '48°'. The side opposite to the 48° angle is labeled 'x' and 'A'.

$$\cos 48 = \frac{A}{H}$$
$$\cos 48 = \frac{x}{13}$$
$$13 \times \cos 48 = x$$
$$x = 8.7$$

01:19 / 07:11

**BBC** News | Sport | Weather | iPlayer | TV | Radio | More | Search

**KS2 Bitesize** KS2 Bitesize

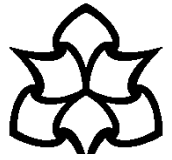
Home English Maths Science

English Maths Science

**YouTube**



# What do the videos cover?



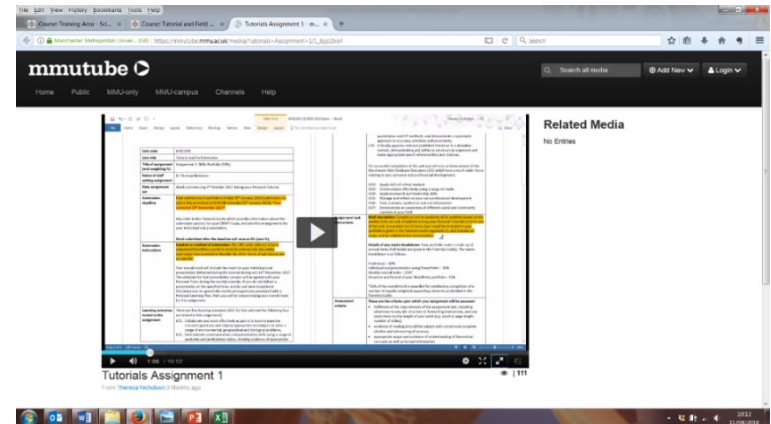
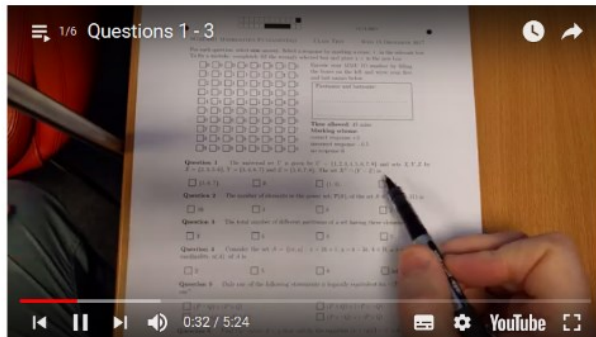
- revision tips
- exam paper explanations
- coursework guidance
- coursework feedback
- solutions to tutorial problems
- core concept videos

Particle Animations (explained)



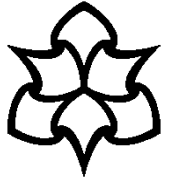
## Class test information from term 1

The playlist below contains videos discussing the solutions to the questions from the MCQ in-class test from December 2017.

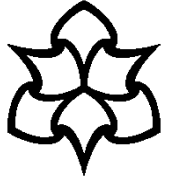


Source: MMUtube on Moodle

Below is a link to a copy of the test with the correct responses indicated.



**Do the videos  
improve student  
performance?**



# Our study

1.  
Research  
Design

2.  
Dataset  
and  
Analysis

3. Findings

# 1. Research Design



Faculty wide project to support retention and progression – 2000 videos produced since 2017, 81% of units now have video support

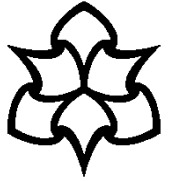
Research Aim: Investigate whether students' level of engagement with videos impacted academic performance

Quantitative Research Design: Data 8 units across the Faculty (4 first year and 4 second year units)

Regression Analyses (Multiple Regression & Logistic Regression)

**Outcome variable** - final unit marks **Independent variable of interest** – level of engagement with videos

## 2. Data Set



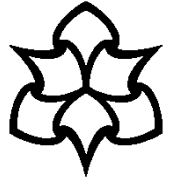
8 units L4/L5  
from 2018/2019  
Each unit >80  
students and >5  
videos available

Total sample  
size 1442  
students

Excluded 30 P/T  
students and  
164 students  
who did not  
engage with any  
VLE material

Final sample size  
1248 students

## 3. Key Findings



### Linear regression – unit performance v's video views

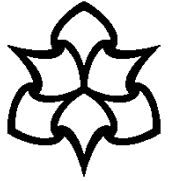
Model included the following predictors: video view, level of study, disability, first generation, age, entry qualification, clearing, commuting, multiple deprivation and ethnicity

Entry qualification ( $b = .725, p < .001$ ) and ethnicity ( $b = .311, p < .001$ ) are strongest predictors of unit mark

Model produced  
 $R^2 = .186, F(11, 784) = 17.51, p < .001$

Adjusted  $R^2$  indicates that 18.6% of the variance in unit mark is explained by those predictors

Video engagement also significant predictor of unit mark ( $b = .110, p < .001$ ),

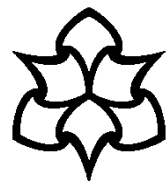


**Logistic regression – view/no view against  
pass/fail, above 60% and above 70%**

Viewing at least one video significantly  
improves the likelihood of getting a mark  
above 60%

Even stronger predictor  
of getting a 1<sup>st</sup> class  
mark

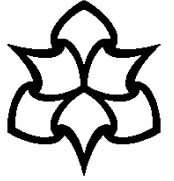
But it does NOT predict  
failure (below 40)  
significantly



**Predicted First (70 or above)**

GENDER	Entry Quals	Ethnicity	Viewed?	Success	Failure	Total	p-Obs	p-Pred
Female	Vocational	BAME	No	0	8	8	0%	4%
Male	Vocational	BAME	No	0	21	21	0%	6%
Female	Vocational	White	No	0	2	2	0%	7%
Female	Academic	BAME	No	4	7	11	36%	10%
Male	Vocational	White	No	0	5	5	0%	11%
Female	Vocational	BAME	Yes	8	92	100	8%	12%
Male	Academic	BAME	No	1	18	19	5%	16%
Female	Academic	White	No	3	10	13	23%	18%
Male	Vocational	BAME	Yes	31	119	150	21%	19%
Female	Vocational	White	Yes	3	25	28	11%	21%
Male	Academic	White	No	6	13	19	32%	27%
Female	Academic	BAME	Yes	41	95	136	30%	29%
Male	Vocational	White	Yes	44	79	123	36%	31%
Male	Academic	BAME	Yes	63	92	155	41%	41%
Female	Academic	White	Yes	55	66	121	45%	44%
Male	Academic	White	Yes	96	84	180	53%	57%





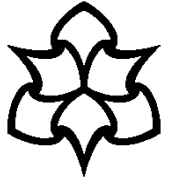
# Implications for Practice

Student feedback on the videos has been consistently positive (in line with earlier studies (Schmid et al., 2014, Stockwell et al., 2015 and Taslibeyaz et al. (2017))

Our primary contribution is to show a direct correlation between viewing videos and unit performance

Although effect size was small, video view was the only significant contributor to improved unit performance besides entry qualification and ethnicity

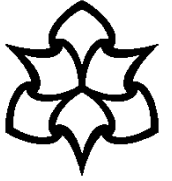
The impact of the videos on student performance is most pronounced at the 60% mark (important given current sector focus on teaching metrics: e.g good honours)



# Take Away Message



Producing videos offers educators alternative ways of explaining concepts, practising worked examples and preparing students for assessment, which we have shown can lead to improved unit performance.



# Tips and Tricks for Implementing Video

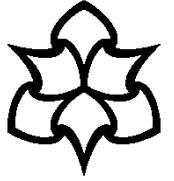
An engaged and proactive senior sponsor

Responsive, experienced and proactive e-Learning technologists

Make friends with them

Start small and build resources incrementally

Make it easy for academic teams to generate video resources and hard for them not to.



# Thanks for watching



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