RESEARCH DIRECTIONS

# Do Teaching Methods Affect Student's Attention Span, Engagement and Attainment?

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**Keywords:** *Attainment; Belonging; Engagement; Impact; Motivation*

## Abstract

Student engagement is essential for attainment, with one of the biggest challenges being attention span. There is clear evidence that attention has begun to wane in students over the past 50 years. This is thought to be due to external distractions such as mobile phones, but also the method of lecture delivery which could have severe repercussions on student engagement. This project aimed to investigate the measures that could be undertaken to enhance student engagement with lectures, by trying to understand some of the issues students currently face. This was achieved by completing a discrete paper-based questionnaire targeting student levels 3-6. Findings from the project revealed 49% of students lost focus due to the teaching approach being delivered, with 42% of students wanting more problem-based learning to enhance their engagement. Interestingly 49% of students were only able to focus for up to 45 minutes, suggesting the need for a shift from more static didactic lecture delivery to more engaging and interactive methods of delivery.

## Introduction

Over the past five decades, there has been a clearly observed decline in FE and HE students' attention spans. This has raised significant concerns among educators. In the 1970s, it was widely accepted that students could maintain focused attention on taught material for approximately 30 minutes during a lecture. By the 1990s, this estimate had thought to have dropped to 18 minutes, and more recent observations suggest that students today may only be able to concentrate for as little as one minute at a time (Mann, 2022). This dramatic shift in students' attention span has profound and huge implications for both Further Education (FE) and Higher Education (HE).

This decline in attention span is often attributed to the rapid evolution of digital technology. The huge growth of the internet, smartphones, and the abundance of social media platforms has fundamentally altered how individuals consume information. Students are now accustomed to receiving information in short, highly stimulating bursts, which can make the sustained focus required in traditional lectures increasingly difficult to maintain. Such applications as TikTok and YouTube shorts provide short 20-30 second videos which train the attention span to focus less. Today's students are part of a generation (Generation Z) that has been shaped by a culture of instant gratification, leading to a

significantly reduced tolerance for boredom and a heightened need for continuous stimulation (Mann, 2022).

The issue of decreased attention span cannot be solely attributed to the ever-evolving technology surrounding students. The pedagogical approaches employed by educators also play a crucial role in either mitigating or exacerbating student disengagement. The methods used by educators can have a profound impact on student engagement (Amerstorfer and von Münster-Kistner, 2021). with effective teaching strategies required to adapt to both the cognitive and emotional needs of students (Lodge and Harrison, 2019)

It is evident that traditional didactic lectures utilised with great effect previously need to be adapted, with students more adept to the notion of active learning. Active learning involves instructional methods that engage students in the learning process more directly than traditional lectures. Techniques such as problem-based learning (PBL), and the use of interactive technology has been shown to improve attention span and knowledge retention by fostering a more participatory classroom environment (Bonwell and Eison, 1991). PBL is an approach where students solve problems, enhancing critical thinking, self-directed learning, and teamwork. These methods not only help to break up the monotony and boredom of extended traditional lectures but also encourage deeper cognitive processing and thinking, which is essential for meaningful learning and long-term retention. (Winn, et al., 2019)

The integration of multimedia and digital technology into teaching practice is an interesting angle as it uses tools which has led students to reduced attention span over the years but nonetheless has emerged as a promising avenue for enhancing student engagement. The concept of an academic who not only teaches but entertains reflects a growing recognition that educators must now compete with a myriad of digital distractions. Incorporating a multitude of strategies into teaching such as video clips, real-time polls, and what is termed gamification to recapture students' attention and make learning more dynamic and enjoyable (Mann, 2022). However, the critical aspect here is to strike a balance between entertainment and educational value to ensure that the core learning objectives are met and taught not overshadowed by the medium of delivery. Another important consideration with today's teaching methods is the role of metacognition in student engagement. Encouraging students to reflect on their own learning can help them develop strategies to manage their attention and stay focused during lectures (James, et al., 2024). Techniques such as self-reflection, setting of targets, and keeping track of learning can allow students to take greater ownership of their learning (Zimmerman, 2002).

The other aspect which can impact learning is the setting of teaching itself. Flexible seating and large open collaborative lecture rooms help significantly with engagement, while a cohesive classroom environment can all contribute to a more engaging and inclusive learning experience (Chickering and Gamson,1987).

This project seeks to explore the multifaceted nature of student engagement in higher education, with a particular focus on identifying and evaluating strategies that can enhance attentiveness and participation during lectures. By understanding the challenges students face in maintaining focus, educators can develop more effective pedagogical practices that align with contemporary learning preferences and cognitive capacities.

It is imperative to enhance the delivery of teaching in an engaging manner to address the issues raised by a reduced attention span. By identifying preferred teaching methods while assessing potential social media distractions, higher education institutions can better enhance teaching to be more engaging and allow increased attainment and progression.

# Method

### Preparation of the project

The student partner team were selected after interviews from the School of Life Sciences, Pharmacy and Chemistry from the Biomedical science, Biochemistry and Biological Science courses (all levels). Five students were selected. The students we recruited comprised an experienced final year student from Biomedical Science whom we previously worked with, two second year Biomedical Scientists, a second year Biochemist and a first year Biomedical Scientist whom we previously worked with (Fellingham, et al., 2024). Student partners arranged their own communication means. Full ethical approval for the project was approved by the Kingston University CHERP (Centre for Higher Education Research & Practice).

### Online Questionnaire

Both student and staff partners collaborated to prepare a paper-based questionnaire to understand the effect of teaching and social media on a student's attention span. The questionnaire was divided into three main sections: section 1: focusing on key student demographics with questions including: Gender, age, ethnicity, course of study, level of study and disability status. Section 2, to understand some of the distraction students may face, questions included: how long spent on social media, platforms accessed, engagement with lectures, and other suggestions. Section 3, focused on teaching styles and engagement, with questions focused on: Number of lectures attended, lecturers teaching methods, most appealing part of a lecture, favourite teaching methods, how long the student can focus on in the lecture and how to regain focus. Most of the questions were multiple choice type questions except for three free text questions.

### Questionnaire dissemination

The best way for questionnaire dissemination was to attend core lectures from each year group in the school of Life Sciences, Pharmacy and Chemistry, targeting all life science courses. The number of potential students who could complete the questionnaire were as follows: L4 (year 1) ~300 students, L5 (year 2) ~200 students, and L6 (year 3) ~200 students. When The questionnaire was distributed, a participant information sheet and consent form was also provided. The information sheet attached explained the information for the study and a clear consent form was also enclosed. In line with our ethics approval, students could withdraw without prejudice at any point before completion of the study.

### Presentation and analysis of data

The results extracted from the questionnaire was exported to an encrypted and secure excel spreadsheet with only access granted to the student and staff partners. The spreadsheet allowed clear analysis of student opinion of distractions and teaching engagement and allowed cross comparison analysis with different key demographics such as gender, age and ethnicity among others to see if there were any trends. This also allowed percentages to be determined for all questions and data tables to be created. For qualitative analysis, free text questions and comments were analysed using thematic analysis and word cloud-based software was used to generate key themes.

# Results

### Questionnaire distribution

The paper-based questionnaire was disseminated to levels 3-6 students (Foundation year-Year 3) within core Biomedical Science, Biological Science and Biochemistry modules. 193 of these were completed in full, all with signed consent forms.

### Demographics breakdown

The course enrolled upon for the participants were quite varied with 61% of students Biomedical Science students, 13% Biochemistry, 12% Biological science, 13% Pharmacology and a single participant from nutrition. The ages of participants were predominantly aged 18-21 years of age at 90%, with the remainder being 22-25 years of age (7%) and over 26 years of age (3%). In terms of gender there was a clear difference between females at 68% and males at 30%, with the predominant ethnicities of respondents being from the global majority (86% of total participants (**Table 1**).

**Table 1** Table of Demographics looking at course enrolled upon, age, gender and ethnicity of participants completing questionnaires, expressed as numbers and a percentage of total (%). Note: Some students did not respond to all questions.

| Course | | | | |
|---|---|---|---|---|
| BSc Biomedical Science | BSc Biochemistry | BSc Biol Science | BSc Pharmacology | BSc Nutrition |
| 118 (61.14%) | 25 (12.95%) | 24 (12.44%) | 25 (12.95%) | 1 (0.52%) |

| *Age* | | | *Gender* | | |
|---|---|---|---|---|---|
| 18-21 Years | 22-25 Years | 26+ Years | *Male* | *Female* | *Other* |
| 173 (90.1%) | 13 (6.77%) | 6 (3.13%) | 57 (29.69%) | 130 (67.71%) | 5 (2.6%) |

| *Ethnicity* | | | | | |
|---|---|---|---|---|---|
| White | Black/Black British | Asian/Asian British | Mixed | Other | PNTS |
| 45 (23.81%) | 35 (18.52%) | 74 (39.15%) | 10 (5.29%) | 23 (12.17%) | 2 (1.06%) |

## Distraction based questions

The first part of the project was to try understanding what platforms students accessed the most on social media to try to unpick their distractions when it comes to lectures. When asked which social media platforms students used the most, 36% responded Instagram, 29% TikTok and 15% snapchat, all three were way above the other choices which was an interesting initial observation.

When asked to expand further and find out how long students spent on social media, it was quite evident that usage above 6 hours per week resulted in a total of 80% of participants, with 22% using social media for over 20 hours per week. Interestingly, 47% of students thought social media had a moderate impact on their focus (**Table 2**).

**Table 2** Response table analysing the usage of social media and effect on focus, expressed as numbers and a percentage of total (%). Note: Some students did not respond to all questions.

| Which platforms do you use the most? | | | | | | |
|---|---|---|---|---|---|---|
| TikTok | Instagram | X | Facebook | Discord | Snapchat | Other |
| 105 (28.85%) | 131 (35.99%) | 23 (6.32%) | 8 (2.2%) | 18 (4.95%) | 56 (15.38%) | 22 (6.04%) |

| How often do you spend on social media platforms per week? | | | |
|---|---|---|---|
| 0-5 Hours | 6-10 Hours | 11-15 Hours | 20+ Hours |
| 37 (19.37%) | 56 (29.32%) | 56 (29.32%) | 42 (21.99%) |

| How much do you think the platforms above affect your focus in lectures? | | |
|---|---|---|
| No impact on focused | Moderately impacted focus | Considerable impact on focus |
| 72 (38.1%) | 89 (47.09%) | 28 (14.81%) |

## Responses to the structure of a lecturer and teaching methods

It was important to understand if the actual lecture and teaching style impacted a student's attention span and engagement with the material. When asked what the most important part of the lecture was, the key themes were the structure of the slides (37%) and the pace of the lecturer (34%). Overwhelmingly, the teaching style of the lecturer affects participants (94%). Oddly, this did not specifically relate to a specific method of teaching with participants responding that they did not have

a preference (47%), (**Table 3**).

**Table 3** Table of data analysing key aspects of lecture engagement., expressed as numbers and a percentage of total (%). Note: Some students did not respond to all questions.

| What is the most important part of a lecture | | | |
|---|---|---|---|
| Structure of slides | Multiple MCQs | Repeated pauses for questions | Pace of the lecturer |
| 138 (36.6%) | 78 (20.69%) | 34 (9.02%) | 127 (33.69%) |

| Does the lecturer's teaching style affect your engagement during a lecture | |
|---|---|
| Yes | No |
| 178 (93.68%) | 12 (6.32%) |

| What percentage of lectures do you attend usually | | | |
|---|---|---|---|
| 0-30% | 30-50% | 50-70% | 70%+ |
| 0 (0%) | 4 (2.14%) | 26 (13.9%) | 157 (83.96%) |

| Do you have a favourite teaching method or style | |
|---|---|
| Yes | No |
| 94 (53.41%) | 82 (46.59%) |

The next aspect was to understand a student's preference for how teaching could be adapted to consider attention span. Students want to see more use of problem-based learning approaches (42%) and extra videos (32%) in lectures to engage them further. Students understood problem-based learning as lectures designed as workshops with a split between theoretical and activities to reinforce the understanding. Critically, almost half (49%) of participants mentioned that their active focus time is around 31-45 minutes, which could be the basis for redesigning our future lecture content. the key themes were the structure of the slides (37%) and the pace of the lecturer (34%). Students can be engaged by various methods, including teaching method (49%), their phone (23%) and the lecture environment (21%). To regain focus, participants depending on the academic could return to focus (31%), undertake interactive activities (33%) or reset during the lecture break (23%), (**Table 4**).

**Table 4** Table of data analysing key aspects of lecture requirements by students (%). Note: Some students did not respond to all questions.

| What do you want to see more of in a lecture | | | | |
|---|---|---|---|---|
| Group work | Flipped lectures | Problem based learning | More videos | Something else |
| 41 (16.27%) | 21 (8.33%) | 107 (42.46%) | 81 (32.14%) | 2 (0.79%) |

| How many minutes do you feel you can actively focus for | | | |
|---|---|---|---|
| 0-10 minutes | 11-30 minutes | 31-45 minutes | 45 minutes + |
| 5 (2.65%) | 42 (22.22%) | 93 (49.21%) | 49 (25.93%) |

| In what ways do you lose engagement during lectures | | | | |
|---|---|---|---|---|
| Phone | The lecturer's teaching method | Breaks | Environment | Other |
| 67 (23.34%) | 140 (48.78%) | 17 (5.92%) | 59 (20.56%) | 4 (1.39%) |

| How do you regain focus | | | | |
|---|---|---|---|---|
| Breaks | Interactive activities | Group work/ discussion | Lecture's delivery of presentation | Other |
| 70 (23.26%) | 99 (32.89%) | 37 (12.29%) | 93 (30.9%) | 2 (0.66%) |

## Qualitative data

Students who completed the questionnaire also had the option of a free text question which was:

- What is your Favourite teaching method?

Participants stated a range of key methods which included problem-based learning, fun and engaging content, more visual aids, active teaching rather than passive, exercises to reinforce the content and group work. (**Table 5**).


https://doi.org/10.29311/ndtns.vi20.4998

**Table 5** Qualitative data responses to free text question 'What is your Favourite teaching method?

| Open question | Most frequent comments |
|---|---|
| What is your Favourite teaching method | 'Problem based learning'<br>'Fun, engaging and informative lectures'<br>'A very visual lecture/use of videos/lots of images'<br>'Active teaching style'<br>'Lecture involving exercises after main topics in between'<br>'Group work' |

Finally, by analysing all the words mentioned in the free text and considering the frequency of certain words from the question 'What additional ideas do you suggest would enhance student engagement?', a word map was made to summarise key words (**Figure 1**).

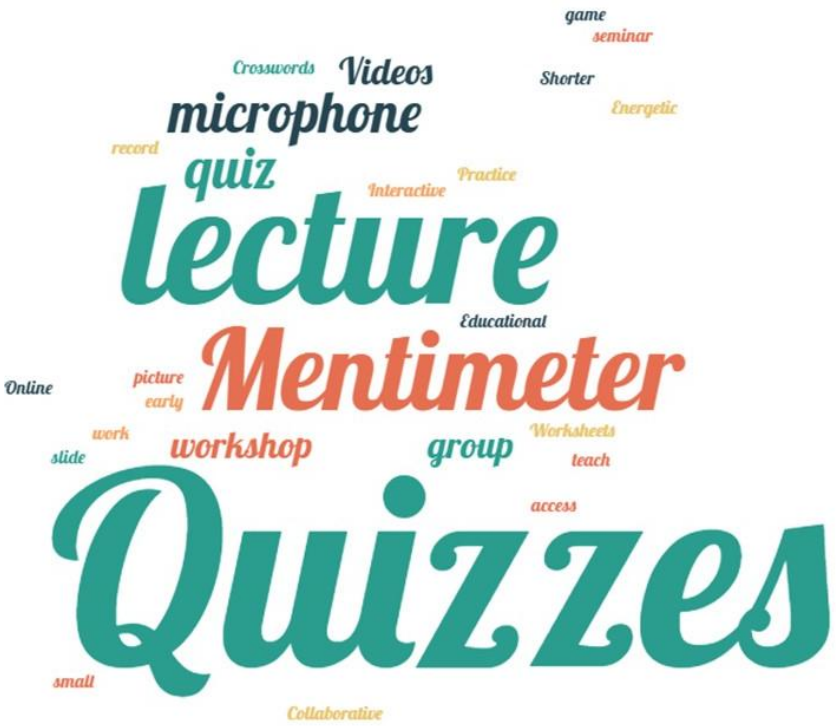


**Figure 1** Word map to illustrate key words related to engagement.

## Discussion

### Project findings

This project focused primarily on trying to explore and understand the correlation between social media use and whether it affected students' attention span and subsequent academic retention. The project also tried to deduce if certain teaching methods were more beneficial when it came to student


https://doi.org/10.29311/ndtns.vi20.4998

engagement. Some of the key findings include the observation that students spend a lot of time on social media which can impact their focus in lectures, relate their focus to the teaching style of the lecturer, find that the pace of the lecture and slides are critical for their focus, can only focus for short periods, and require various interactive methods during lectures to ensure that they can focus.

**Social media and the impact on student focus**

The first important finding was to understand the mentality of student's when it came to social media and subsequent focus. 36% of students engaged with the app Snapchat, while 29% engaged with TikTok, and 15% with Instagram. As these are the main platforms students engage with, the concern is that these mediums and their overuse can enhance what is known as Continuous Partial Attention (CPA). CPA refers to an individual continuously shifting their attention across multiple tasks without fully focusing on one specific task, and only partially focusing on all tasks (Shanmugasundaram and Tamilarasu, 2023). What was also evident was that 51% of students used social media for 11 hours or more a week, a large proportion. Students also reported that this impacted their focus moderately 47%, with 15% saying that social media had a considerable impact on their focus. There is a common consensus in the field that student's attention span tended to start declining 10-15 minutes into a lecture, hence the need to adjust our teaching of traditional didactic 2-hour lectures (Bradbury, 2016)

**Lecture structure and student perception**

The structure of a lecture is an essential aspect of a student's attempt to retain knowledge and information. When asked what the most important part of a lecture was, students highlighted two main areas: the structure of the slides (37%) and the pace of the lecturer (34%). These are critical as the slides if they contain too much information in the form of text, will disengage students and prevent them from focusing on the content. Slides almost act as the bait to reel students into the topic, coupled alongside this, the pace of the lecturer is also critical. If the pace is too fast, then students would struggle to keep up with the content and disengage. Varying the pace is a good way to engage students (Vogel, 2018). Interestingly, when asked if students have a favourite teaching method or style, 53% did indeed have a preference, with more entertaining content being popular. The relationship between a lecturer and student and the rapport built is essential for engagement. Items such as classroom dialogue or activities help reinforce this engagement. Clarity of the academic when teaching is also an essential trait (Álvarez-Álvarez and Falcon, 2023). When students were asked what methods would be useful during a lecture to enhance student engagement, several interesting findings were observed. Students strongly voiced their preference for Problem Based Learning (PBL) (42%) and additional videos (32%).

Problem based learning has been found to be much more effective at student engagement than traditional lectures in the context of recall and problem solving. (Anthony, et al., 2024 and Zheng, et al., 2023). Embedding videos is also a good way to switch the lecture delivery to something more dynamic and gives a pause from traditional delivery further enhancing engagement. Group work was also encouraged (16%), which shows how students' preference of learning has evolved from the more traditional didactic delivery to more peer led, interactive methods, a more appealing method to current students. What is interesting is that most students (74%) can focus only for up to 40 minutes at a time, suggesting that the sector needs to change its mindset when we think of lecture delivery and adapt a more flexible lecture-based model. With this model, lectures are broken up into very short segments, and these vary to ensure excitement and suspense, with students also changing position in the lecture to enhance engagement (Layzell, 2023). It is quite evident that the main way students lose focus however is due to the academic themselves (49%), however other common factors include the lecture environment (21%) and their mobile phone themselves (23%). In order to regain their focus, more interactive activities are obviously required (33%), and as students have pointed out, more entertainment from the academic. The lecture-tainer is an academic who integrates several tools into lectures to engage student such as videos, stories, interactive exercises, and quizzes (Mann, 2022), therefore, to engage students, we must change our mindset as to what a typical lecture is.

**Free text comment summary**

With the qualitative comments from the project, it was evident that when asked to elaborate on their

favourite teaching methods, several of what we mentioned in the rest of the discussion was highlighted again. The request for problem-based learning, fun, engaging and informative lectures, more visualisation, more active learning, group work and pauses for activities were all requirements from students to engage and reinforce their attention span.

**Implementing the study findings for the university sector**

The findings from this project offer valuable insights into the evolving learning preferences of students and the challenges posed by social media on academic focus. To adapt the sector effectively, universities must reimagine traditional lecture formats and embrace more dynamic, student-centred teaching strategies.

Firstly, the pervasive use of social media and its link to Continuous Partial Attention (CPA) suggests that students are increasingly accustomed to fast-paced, visually stimulating content. Research shows that excessive social media use is associated with media multitasking and attention problems, which can negatively impact academic performance (Barton, et al., 2021). Universities may need to respond by integrating multimedia elements such as short videos, animations, and infographics into lectures. These tools can help reset attention spans and re-engage students periodically throughout a session.

Secondly, the structure, pace and delivery of lectures must evolve. With students identifying slide design and lecturer pace as critical to their engagement, academics should be trained in effective presentation techniques maybe by masterclasses from academics who can deliver lectures successfully. Slides should be concise, visually appealing, and used to complement not overwhelm spoken content. Additionally, lecturers should vary their pace and tone, incorporating pauses for reflection or discussion to maintain student interest.

The preference for PBL and group work highlights a shift towards active learning. Universities should embed PBL into curricula across disciplines, encouraging students to collaborate on real-world problems. This not only enhances engagement but also develops critical thinking and teamwork skills. Studies have shown that active learning strategies like PBL significantly improve student engagement and retention (Anthony, et al., 2024).

Given that most students can only focus for up to 45 minutes, universities should consider restructuring lectures into shorter, modular segments. These segments can alternate between delivery, discussion, and activity, creating a rhythm that aligns with students' cognitive endurance. Flexible lecture formats, including flipped classrooms and hybrid models, can also cater to diverse learning preferences and schedules (Haliti-Sylaj and Sadiku, 2024).

Finally, the role of the lecturer must evolve. The concept of the "lecture-tainer" an academic who blends storytelling, humour, and interactivity should be embraced. Professional development programs should support lecturers in adopting these techniques, fostering stronger rapport with students, and enhancing the overall learning experience.

One suggestion going forward would be to analyse the retention of students post lecture with some form of basic assessment of the material delivered. Another aspect would be to try use different methods and assess which would work more effectively for student retention and attainment.

In conclusion, the university sector must acknowledge the changing landscape of student engagement. By adopting flexible, interactive, and student-centred teaching methods, institutions can better support academic retention and foster a more engaging, effective learning environment.

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