

The Risks and Benefits of Social Media, and Its Place in Higher Education: a study

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Abstract—This paper investigates the use of social media systems as tools in higher education institutions and the risks and benefits attached to social media use. This investigation will facilitate the development of a purpose-built social media platform to assist the learning and social aspects of university life. A follow up mixed-method study is proposed to analyse and measure the effectiveness of the new platform in an academic setting.

Index Terms—Social Media, Social Networking, Higher Education.

I. INTRODUCTION

Social media is all around us, and the vast majority of us use social in some way or another very frequently. Many studies have taken place to explore the impact social media could have on students when they have been encouraged to use existing platforms as a contact and collaboration tool as part of their course. Finding your place socially at university can be very daunting, especially if you have been unable to find your way into any large social events, or onto any student-run social channels such as Discord [1] etc, if any such things are in place at all. Failure to find such places can have a major impact on not only the university experience but also their mental health, as they can find themselves isolated. I plan to research into the question; could a social media platform embedded into higher education institutions be of benefit to students starting university by aiding their integration into their new social setting?

II. RELATED WORK

This literature review investigates the risks and benefits attached to social media and the potential advantages that it could bring forward as a tool in higher education and pedagogy. Social media has made a massive impact on society in many ways, and using it one way or another has become commonplace in most of our lives, but do we fully understand the risks and advantages that it presents? This literary analysis of recent (2010-2022) research papers aim to explore findings on the possible side effects of social media to weigh the pros against the cons regarding the integration of social media with higher education (HE) and pedagogy. I hypothesize, that with proper application, social media could become a valuable tool within HE institutions and could help increase engagement with learning materials and courses.

A. Social Media in Higher Education

Liu [2] acknowledges that each social media platform comes with its own set of strengths and weaknesses and that the

integration of such into pedagogy must be planned cautiously, ensuring that it is the strengths of the platform that are leveraged and not the potential distractions and difficulties that could hinder student learning. Liu talks of each social media platform being a tool, each in its own specific right and each with its designated purpose, so a one size fits all approach would only bring about nuisance. The author notes, for instance, that we could capitalize on Facebook's ubiquity and capabilities for collaboration. Liu [2] and Baruah [3] both talk about the integration of social media into higher education and both conclude by sharing their thoughts on that it would be an advantage to implement social media elements as tools within higher education. Baruah further empowers Liu's point about different platforms providing different tools, by discussing how much easier collaboration becomes when using online facilities. Online mediums that provide features allowing users to co-draft documents, organise members, arrange meetings, spread information, and gauge opinion, all while having the capability to reach audiences all over the world. Baruah concludes that there will be a greater capacity for groups to participate in collective action, going on to say that it is the hallmark of civil society.

Kelm [4] also implemented social media into their course and noticed an increase in engagement from their students and reported a greater sense of team ethic between classmates. Kelm concluded with a note stating that the secret for educators is to observe how technology is used in everyday life and then implement that use into our education systems. Wang et al. [5] mention in their paper that there is a call for an approach to try and better balance the relationship between social media and academic study but pays a great deal of respect to the potential benefits that it can offer. The paper goes on to mention that students are very likely to be affected by social media, whilst it provides a world in which to make new friends and release pressure, it can absolutely impact students' lives and grades, calling for the aforementioned balance.

Evans [6] encouraged students to interact with him and their peers through Twitter and found that the amount of Twitter usage was associated with increased student engagement. Course-related tweeting showed no evidence of being related to interpersonal relations between students and their tutors, and finally that Twitter usage did not relate to class attendance.

Williams [7] talks of the capabilities that social media brings forward as advantages in enhancing learner engagement in a very efficient way and reiterates the points provided by Junco et al [8]. The paper from Junco et al. follows a similar experiment to Evans and his 2014 paper [6] but in a slightly more robust and comprehensive fashion. This was achieved by

using two separate groups, the first consisting of 125 students, half of whom were required to use Twitter while the other half were required to use Ning, whereas the participation of Twitter and Ning usage was voluntary for study group 2. The study recognised greater motivation towards engagement from study group 1 (those required to use Twitter and Ning). The paper concludes by stating that new technologies being incorporated into contemporary classrooms is an important development in an effort to produce more effective learning strategies and outcomes, while calling for contemporary students to improve their capacity to engage in more self-directed collaborative practices in order to better take ownership of their learning.

Tripathi [9] observed that nearly two-thirds of faculty at their institution had used social media in a class session, some even posting content for students to further read outside of classes, which saw promising levels of engagement while other members of the faculty ask students explicitly to utilise social media as part of course assignments. On an end note the paper reaffirms that the presence of social media within HE is increasingly visible as instructors continue to further employ technology to enhance their teaching methods and promote active learning for students.

Haythornthwaite, Paulin, and Gruzd [10] discuss an overview of the measures and potential of a multi-method approach for studying learning through means of social media, based on a workshop held at the 2014 Learning Analytics and Knowledge conference. The paper pays vast respect to the implementation of social media into both teaching and learning being new, but still advancing rapidly. It is recognised that learners are already present on these channels and are already capable of information search and acquisition, learning community support, knowledge building, and engagement. In one of the final notes of the paper, there is mention that different settings of formality would call for different considerations to be made. In a formal setting, the intent of the instructor must be taken into consideration while examining the discussion formation comparatively against the desired communication and pedagogical outcomes. Whereas in more informal settings, we must consider the impact of things on a more societal level of mass learning and how the balance of the development of sustained learning communities is affected by massively distributed learning and the 'just-in-time learning' associated with social media exchanges.

B. The Effects of Social Media

The paper by Amedie [11] mentions that, ironically, social media is in effect turning us into one of the most antisocial generations yet. The paper talks about the connection between social media and anxiety – It states that social media causes depression and anxiety in two ways. Chronic stress causes depression and anxiety. Being constantly alert for new social media messages, to your instinctive fight or flight limbic system, is the same as being on continuous alert for predators, which causes a release of the stress hormone cortisol. The second cause of depression anxiety is constantly trying to maintain an unrealistic and unachievable image of oneself on their chosen social network. The paper also mentions

that social media can pave the way for criminal activity, by putting to use the freedoms offered by social media to hide their identity and engage in things like cyberbullying, cyber terrorism, human trafficking and drug dealing, though only talks in depth of cyberbullying, criminal and terrorist activities as they are the most common illicit activities. Amedie concludes that despite the positive benefit of rapid information sharing, social media enables people to create false identities and superficial connections, causes depression and is a primary recruiting tool for criminals and terrorists. It also mentions that the negative impacts of social media are rarely discussed, while the benefits are often emphasized.

Kuppuswamy and Narayan [12] recognise that social media sites provide function for individuals to create and maintain social ties, which can be of great benefit in both academic and social settings. It is also observed that these same sites present a risk to individuals' privacy, health, safety and professional reputations if the platforms are not used responsibly.

In a 2012 paper by Tariq et al [13], the authors observed that more than 90% of college students use social media [14] and they found social media to be having a negative impact on education. Tariq et al believe this to be due to social networks capturing the total attention of their users and redirecting them towards non-educational, inappropriate and unethical activities such as "useless chatting, time killing by random searching and not doing their jobs". The paper goes on to note that social networking sites quite often play host to attractive activities such as gaming or advertisements, enticing people to sign up or simply waste time, it is the over-indulgence of such activities that causes users to develop social media addiction. It states that providing ubiquitous facility of social networks is a straight invitation to addiction for any teenager and even an adult, as academic satisfaction is not enough got those students who suffer from social isolation [15].

A study conducted by W.Akram and R.Kumar [16] observes both the negative and positive impacts of social media on society and business. The paper notes the merits presented by social media while also recognising that it has some faults. Touching on social media within higher education, Akram et al discuss that social media allowing individuals to share thoughts with others on the other side of the planet instantly is a massive positive, and in many cases, this shared information then becomes easily available for many others to see and benefit from. The literature saw that social media helped in development towards simply being more prepared, stating that social media is fundamentally about showcasing and taking part in current trends around the world, further enabling students to plan or gauge an idea of what might be expected of them. In contrast to those points, the paper outlines that social media could aid in reduced learning and research capabilities. With a growing dependency on information being easy to find, this could hinder the development of research skills. In most cases, people tend to use slang or abbreviated language on social media as most relationships between individuals tend to be interpersonal, coupled with an increased reliance on spellcheckers and autocorrection, this decreases their charge over the dialect and formal writing abilities. Another valuable note from the paper shines a light on time wastage, while

social media and the internet, in general, are a boon for education, it opens the door for many distractions if the right amount of self-discipline is not present. While social networking has improved the quality and rate of coordinated efforts from students, it remains important to be responsible and understand the possible negative effects that social media brings forward. A consensus is established with Tariq et al's [13] points on the factor of distraction before concluding that people are advised to adopt the positive aspects of social media while avoiding the negatives, to benefit from the latest and emerging technologies.

Kaur and Bashir [17] reiterate that there are many benefits to social media use for adolescents and that there are also multiple potential risks that can act in detriment to their mental health and well-being. Some of the positive impacts outlined were access to health information, enhanced communication and learning opportunities, while the negatives involve stress, depression, suppression of emotional awareness, fatigue, on-line harassment, a decline of intellectual ability and a shrinking capacity for concentration. The paper goes on to express that these risks could be navigated successfully with proper handling, such would call for education around social media abuse being provided (expressly to parents to mitigate the risks for children and adolescents), but a greater awareness of the capacity for potential harmful effects that these platforms can inflict must be attained.

Bashir and Bhat [18] touch on these points again exploring the psychological effects of social media, asserting that excessive use of social media can lead people to disastrous results, starting with anxiety and leading to depression. They saw in Pantic et al.'s study [19], mirrored by a study conducted by Rosen et al. [20], that depression and time spent on Facebook by adolescents were directly correlated and that those that spent most of their time engaging in online activities were among those with major depressive symptoms. The paper concludes to suggest that social media can have an epidemic-like on any individual. Social networking sites should be constrained to an age limit and any social media application that does not have a positive impact and enables such things as discrimination, violence and racism should be dissolved at once, completely.

Naslund et al. [21] found in their paper that in young people, many benefits of social media were recognised. Among these benefits were elevated self-esteem and more opportunities for self-disclosure. Some of the negative aspects observed were increased exposure to harm, depressive symptoms, social isolation and bullying. The paper concludes by highlighting that social media has become an important part of the lives of many individuals living with mental disorders and that many of them use social media to share lived experiences regarding mental illness, seek support from others, find treatments and recommendations as well as access to mental health services. It also recognises that social media platforms could be used to allow individuals to access evidence-based treatments and support. The authors end on the recognition that to fully close the gap in mental health services integrated into social media, it would require researchers to work closely with clinicians to make sure that the benefits of such things on social media

platforms would outweigh any possible risks.

III. EVALUATION

A. Social Media in higher Education

Almost all papers found positive outcomes with integrating social media into higher education and in most cases, the utility and ease of collaboration are at the centre of praise. It is recognised that each platform has something different to offer and we are perhaps better off seeing them as tools each in their own regard, built for their own purpose. With that said, one characteristic shared among these platforms is the opportunity to easily reach others from across the globe whilst still making effective team management and organization possible and instant. The studies observed noted an increase in team ethic with the introduction of social media in their courses and a direct correlation between social media usage and course engagement while their online activities showed no evidence of being related to interpersonal relationships between students and their tutors. Another consensus is that to fully leverage social media within higher education, a balance must be found. Social media sites play host to many distractions and irrelevant activities and nonsensical information, calling for the responsibility of domain selection, and responsibility of proper use. In the same vein as striking balance, setting and formality must be taken into consideration, different approaches and rule sets may need to be applied between settings of different formalities and would not be a one size fits all scenario. To fully employ social media in pedagogy, the staff and faculty would be at the heart of operations, it would require a small degree of technical competence and familiarity for teaching staff to use such platforms effectively and engagingly. All literature reviewed conducts a study on existing mediums of social media where distractions already exist and the courses may have altered slightly to fit into social media space. For this research project, I will build a platform expressly for use within higher education, and conduct my study in the same fashion as those previously mentioned.

B. Effects of social media

All studies reviewed seem to agree that there is a need for a greater understanding of the risks of social media to fully be able to leverage its many benefits. Social media sites if left unmonitored can be the prime environment for negative things to thrive such as bullying and discrimination. There are also the less directly harmful aspects to consider, such as excessive amounts of advertisements that cause distraction and promote time wasting and other non-productive activities. It is engaging in these activities and succumbing to the lure of these advertisements that gives social media its addictive nature, which if left unchecked can lead to conditions such as depression and anxiety. To satisfy the concerns outlined by the literature, a platform would need to be created with these points at the forefront of its design. It would need to be engaging but not distracting, a place safe from harm and free from discrimination and bullying, and host activities on which time spent is time well spent

IV. PROPOSED RESEARCH

A. Question

Could an institutionalised social media platform benefit higher education institutions regarding the quality of education and the social aspects of university life?

B. Hypotheses

1) *Hypothesis*: The platform has a positive effect on the education provided or the social aspects of university life.

2) *Null Hypothesis*: The platform has no, or has a negative effect on the quality of education provided or the social aspects of university life.

V. ARTEFACT DESIGN

The title of the platform is “myUniSocial”, the core of which will be an evolution of my work carried out in developing a previous social media system [22]. The previous system or ‘myCircle’ [23] is built around interests and hobbies as opposed to simple media reposting to navigate the negative impacts observed in the above review of literature and the comparison culture that exists in modern society. In recognition of the distraction factor mentioned by many in the literature review, it feels like somewhat of a responsibility to minimise possible distractions on the platform, and if they do exist, to make them a benefit to engage with and for it to be relevant to their course. To achieve this, in place of the interest groups or ‘circles’, course modules could be displayed allowing users to quickly access course content and helpful materials. Work from my other platform ‘myUni404’ [24] will be built in as a feature to aid students in various fields of computing, this platform offers users the ability to post coding and programming questions, and is browsable by speciality ie. - Web Development, Game Development, Robotics and so on. ‘myUni404’ is built with a beginner-friendly focus and this will be a great step in the direction of making the social network educational while building confidence in expertise.

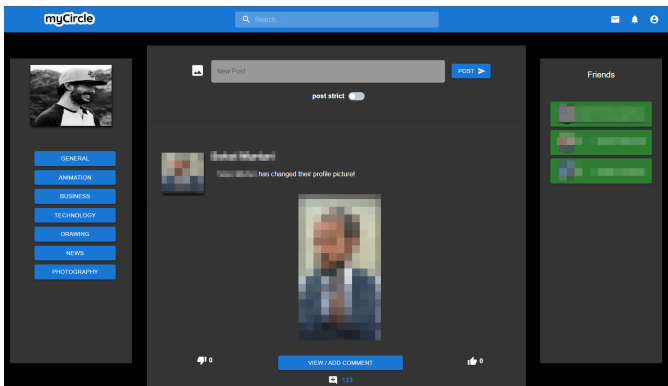


Fig. 1. myCircle user interface

In appendix A figure 2 we can see a class diagram for the base system, with the main functionality coming from ‘App.js’ and being passed into functional child components. This class diagram is a derivative of the previously mentioned ‘myCircle’ system with the relevant adjustments, as is the same for the

Use Case Diagram which can be seen in Appendix A figure 3.

A. Technological Stack

The stack for this platform will be a React.js front end [25] making use of Material UI for styling [26], alongside a Node powered back end [27] with Express for server functionality [28]. With the stack expected to grow throughout development, these technologies will be the foundation of the application.

B. Development & life cycle

Given that the core of the application is already built, I expect to have the main functions of the platform live within two weeks following the commencement of development. The development will be carried out from an Agile approach [29] which will help in getting a minimum viable product somewhat working immediately, followed by iterative cycles of refinement until completion. These cycles will occur as weekly sprints up until the testing phase. Development is expected to take no more than 12 weeks.

C. Testing of artefact performance

The application front end will be unit tested throughout development using Jest [30], while the Express server will be unit-tested using Mocha [31] and Supertest [32] to execute HTTP requests against the server.

D. Validation and Verification

To ensure the validation and verification of the proposed system, the application will be built in line with ISO/IEC 25010 [33] standards. These standards ensure that elements such as functionality, performance, security, maintainability etc. are satisfactory to ensure the development of a high quality system.

The product quality model defined in ISO/IEC 25010 consists of the quality categories seen in figure 2, below.



Fig. 2. Quality Characteristics of ISO 25010 - <https://iso25000.com/images/figures/en/iso25010.png>

VI. RESEARCH METHODOLOGY

A. Philosophical Position

Having great applications within sociology and psychology, the philosophical approach of this study will be from an interpretivist point as the application of this platform and the observations of its utility align with the social sciences and as such will require a socioscientific approach. This interpretivist approach by its nature calls for a qualitative method; often

criticised for its generalisability and flaws in reliability, I will combine quantitative and qualitative methods in order to increase reliability and validity of findings through means of mixed method study.

B. Experimental Design

To gather information on the effectiveness of my platform, I will conduct a between groups study involving two study groups. Both groups will be given the same set of tasks to complete, group A will be asked to fulfil these tasks on the existing online university portal ie. Learning Space or Moodle while group B will do so on the prototype platform. I will use a survey to collect information on the test users' experiences of both platforms in an effort to gauge how much of a benefit they feel the systems offer in both the learning and social aspects of university life. The survey will be conducted in a similar manner to studies explored in the review of literature [2] [3] [5] [6] [16], the results obtained from those papers seem proficient and I feel it well justifies the survey as a means for collecting data. We have chosen a between subjects study as each group will be testing only one platform as a cohort and asked to test all functionalities of the system as per the tasks. Users will be asked to complete a Likert scale style survey and a qualitative survey to fully convey their experience.

C. Data Management Plan

To collect data for this a Likert scale survey will be used to collect users experience. A separate qualitative survey will also be used to increase the integrity of the research. Data Will be displayed using the code found on Appendix B.

D. Ethical Considerations

1) *Legal*: Database entries for users, required for functionality of the artefact, will be handled responsibly. All key identifiers, such as user names, names, email addresses and passwords, will be hashed, salted and hosted in an environment protected by the appropriate SSL certificate.

All regulations defined by GOV.UK and the Data Protection Act 2018 [34] will be met and abided by throughout the development and life of the platform. More sensitive information such as race, ethnic background, religious beliefs and other more sensitive categories mentioned at the cited website will not be stored for functionality of the platform as such information is irrelevant for the platform to function properly. A full privacy policy will be drafted informing users that their data will solely be used for functionality within the platform, such as displaying their name, email for log in authentication and so on. All stored personal key identifiers will be hashed and salted.

ICO (information Commissioners Office) [35] Data protection self assessment for Data Controllers, Data Processors and Information Security checklist reports gave an overall rating of green, with all required Data Control and Security measures set to be in place and that there are no other parties receiving, processing or controlling user data from my platform.

Any data held as part of research conducted will also be held to such standards, regulations and be considered an utmost priority.

2) *Social*: Measures will be taken to ensure that opportunities for unwanted or harmful behaviours to take place (ie. bullying and discrimination) are minimised to ensure that the platform is a safe space for its users.

3) *Ethical*:

a) *Informed Consent*:

- participants will be fully informed of the evaluation being conducted.
- Participants will be aware of the purpose of the project and how the findings will be used.
- Participants will have full freedom to withdraw from this study without, or for any reason.

b) *Voluntary Participation*:

- Participants will participate free of coercion.
- Participants are free to withdraw from participation at any point without negatively on their involvement, and without explanation.

c) *Do no harm*:

- The evaluation process will in no way cause harm (unintended or otherwise) to participants ie. stress, pain, anxiety, diminishing of self-esteem or an invasion of privacy.

d) *Confidentiality*:

- Any identifying information will not be made available to, or accessed by anyone apart from myself.
- Any identifying information will be excluded from any reports or published documents.

e) *Anonymity*:

- Participants submissions will be anonymous and no identifying factors will be asked or be relevant in the tasks they are asked to complete or responses required.

f) *Only assess relevant components*:

- Only relevant features of the platform will be included in the users participation of this study.

4) *Professional*: My work will be will be original and free of plagiarism or any research misconduct, my research results will be accurately represented.

VII. EXPECTED OUTCOMES

Users will prefer the prototype platform over the one currently in place. I expect this to be due to a more feature rich environment, especially to those within computing disciplines as the integration of myUni404 will cater for them directly. Users will find it easier to find their cohort and socialise in an online setting, while finding it easier to find local, university and student events and updates.

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- [26] Material UI <https://mui.com>
- [27] Node JS <https://nodejs.org>
- [28] Express JS <https://expressjs.com>
- [29] Agile Development Method <https://www.atlassian.com/agile>
- [30] Jest JS <https://jestjs.io/>
- [31] Mocha JS <https://mochajs.org/>
- [32] SuperTest <https://www.npmjs.com/package/supertest>
- [33] ISO 25000 Software and data quality. <https://iso25000.com/index.php/en/iso-25000-standards/iso-25010>
- [34] Gov.UK. <https://www.gov.uk/data-protection>
- [35] Information Commissioner's Office. <https://ico.org.uk/for-organisations/sme-web-hub/checklists/data-protection-self-assessment/>

APPENDIX B

R STUDIO TESTING PROCEDURE

```

likert_recode x  Likert myUniSocial.R x  survey_positive x
Source on Save  Run  Source

1 # Activate likert and plyr
2 library("likert")
3 library("plyr")
4
5
6 items <- select(data, starts_with(c("ST082")))
7
8 # Questions
9 names(items) <- c(
10   ST082Q01="I feel that the platform would benefit my education.",
11   ST082Q02="I feel that the platform will benefit socialising at university",
12   ST082Q03="I found it easy to locate course content on the platform.",
13   ST082Q08="I found it easy to find relevant help on the platform.",
14   ST082Q09="I enjoyed using the platform."
15 )
16
17 # A custom function to recode numerical responses into ordered factors
18 likert_recode <- function(x) {
19   y <- ifelse(is.na(x), NA,
20             ifelse(x == 1, "Strongly disagree",
21                   ifelse(x == 2, "Disagree",
22                         ifelse(x == 3, "Agree", "Strongly agree"))))
23   y <- factor(y, levels = c("Strongly disagree", "Disagree", "Agree", "Strongly agree"))
24
25   return(y)
26 }
27
28 # Transform the items into factors and save the data set as a likert object
29 items_likert <- items %>%
30   mutate_all(likert_recode) %>%
31   likert()
32
33 # Create a stacked bar chart
34 plot(items_likert,
35       # Group the items alphabetically
36       group.order=names(items),
37       # Plot the percentages for each response category
38       plot.percents = TRUE,
39       # Plot the total percentage for negative responses
40       plot.percent.low = FALSE,
41       # Plot the total percentage for positive responses
42       plot.percent.high = FALSE,
43       # Whether response categories should be centered
44       # This is only helpful when there is a middle response
45       # option such as "neutral" or "neither agree nor disagree"
46       centered = FALSE,
47       # Wrap label text for item labels
48       wrap=30)

```

1.1 (Top Level) ^ D Sprint

APPENDIX C
ETHICS APPROVAL

The following ethics approval form has been submitted.

| | |
|---|-----|
| Will your project involve participants? | Yes |
| Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people in non-public places) | No |
| Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants? | No |
| Will your project involve collecting participant data (e.g. personal and/or sensitive data referring to a living individual)? | Yes |
| Will your project involve accessing secondary data that is not in the public domain (e.g. personal data collected by another user)? | Yes |
| Will your project involve accessing commercially sensitive information? | Yes |
| Could your project have negative environmental impacts (e.g. disturbance of natural habitats; damage to, or contamination of, buildings/artefacts/wildlife) | No |

The study will be of medium risk, given that none of the high risk criteria applied to this project and that the above stated medium risk elements will be used at some point within the research and development of myUniSocial.

My project will involve the creation of a social media platform to be used as a learning and socialization tool for universities and higher education institutions. The methodology for my study will be to conduct a between subjects study involving two study groups. Both groups will be given the same set of tasks to complete, group A will be asked to fulfil these tasks on the existing university platform ie Learning Space or Moodle while group B will be asked to complete them on my prototype platform. I will use a survey to collect users experience of both platforms to gauge how much of a benefit they feel the systems to be in both the learning and social sides to university life.

APPENDIX D
ARTEFACT REPOSITORY

The artefact can be found at the following location :
<https://github.falmouth.ac.uk/DD252935/myUniSocial>