(Word Count: 1990)

Introduction

In our initial investigation of the complex problem, the group came across this question:

Why do we need a digital campus?

By establishing this question as a focal point of our project, the group was able to uncover three distinct elements of the current challenges faced by USYD stakeholders in their education.

1) Infrastructure challenges.
2) Value of a university degree.
3) Cost of living pressures and shifting culture towards flexible learning.

Firstly, there are inherent internal infrastructure challenges with USYD. As the institution grows exponentially and the number of enrolments increase, the Camperdown campus is being pushed to its limits. It is not uncommon to see lecture theatres, libraries and study tables being full, with students and some staff having to sit on the floor or on the corridors of buildings. Our group members who frequently utilise the Abercrombie Building and the New Law building highlight the difficult nature of finding spaces to study. Furthermore, as some buildings age and require renovations, students are impacted by construction noise, poor odour in classrooms. Ultimately, these factors all reduce capacity and impact the quality of learning on campus. Studies demonstrate a 16% decline in grades for students who studied in poorly designed and maintained classrooms (Barrett et al, 2015).

Unpacking the complex problem further,. USYD has embedded multiple layers of software supporting learning, such as Canvas, Zoom and Sonia (The University of Sydney, 2024). However, there are numerous challenges with this. Firstly, not all apps and software support the UniKey login feature, which forces stakeholders to

make accounts to utilise these apps. Creating multiple apps across multiple USYD apps can be a security risk for USYD and drains a significant amount of resources compared to a single app that integrates all these features (Chanians et al, 2019). Furthermore, stakeholders are not aware of many apps offered by USYD beyond the USU and the USYD app, which was a common challenge explored by the Microsoft partner and other groups in our classroom. Research supports that digitisation and simplification of processes can reduce 8% in IT security and maintenance costs (Chanians et al, 2019).

A key external infrastructure challenge is transportation and commuting to USYD. Unlike other global institutions where students largely live on campus, USYD has around 90% of its students living off-campus (The University of Sydney, 2024), often requiring a significant commute time (Taylor, 2021). As a result, this is a key area of inconvenience where students have to come into campus for a single one-hour lecture or a tutorial and 61% of students have identified this as a barrier to a successful university experience (Taylor, 2021). Furthermore, studies have shown that commute time also impacts the students' results, with every hour of commute time reducing around 0.2 points in GPA for students in the US (Taylor, 2021).

Another element of the complex problem lies with the structural questioning of the value in tertiary education. As Large-Language-Models (LLMs) such as ChatGPT, Gemini and Claude replicate human-like responses, education stakeholders are questioning the value of a tertiary education in the world of AI (Dwivedi et al, 2023). As a result, institutions aim to restore value in tertiary education by banning LLMs, return to pen and paper in assessments and using AI detectors (Dwivdei et al, 2023). As Universities navigate through these challenges, the digital campus is being suggested as an effective method of providing value (Chanias et al, 2019). This was a huge success, whereby introducing digital avatars and interfaces where colleagues felt more welcomed have shown to increase the performance of the organisation as a whole (Subhash & Cudney, 2018).

Additionally, with significant cost of living pressures, students are often required to prioritise employment to pay bills over education (Gianinni, 2024). This contributes to the declining student participation in university and even for casual staff, who are PhD candidates needing to balance their PhD and employment (Otte, 2024). However, these jobs often have poor working conditions and excessive hours (Johnson, 2024). As a result, with the adoption of flexible working approaches in the workspace, flexible learning approaches like the digital campus are being investigated by institutions across the world (Dwivedi et al, 2023).

Whilst the most ideal situation would be to resolve all of these challenges, the group believes the most relevant challenge to the current context is the value of tertiary education with the presence of AI. This problem statement was further solidified after feedback from the group's presentation on Week 5, where the internal partner suggested that the value of tertiary education with AI is one of the most effective arguments of the group's identified challenges.

In summarising the above points, the problem statement is:

- To what extent would AI challenge the existence of USYD, online and offline? How might USYD continue to provide value to its stakeholders through the digital campus?
    a. Identify strategies to ensure that the digital campus can provide value to future technological innovations beyond AI.
    b. Discuss strategies to shift the cultural perspectives around tertiary education "Get in and get out".

Research aims and objectives

The aim of this project is to utilise Microsoft's capabilities in digitisation to integrate a successful digital campus that will co-exist with the current Camperdown campus to support USYD's mission of "Leading to improve the world around us" (The University of Sydney, 2024)

This aim will be supported by these specific objectives:

1) Further research on the challenges with tertiary education, with predominant focus on how to provide value to tertiary education.
2) Case study of a similar digitisation effort, Meta's Metaverse, with an analysis of its shortcomings.
3) Examining the financial impact of international student enrolment caps to USYD, and its ability to deliver the digital campus.
4) Identifying methods on maximising engagement by motivation - intrinsic and extrinsic motivation
5) Understanding whether the digital campus has the potential to exclude our disadvantaged communities further (E12 Scheme Entrants and USYD global campuses in Vietnam / India with low technology penetration)

Approach and methods

The chosen method for our project was design thinking (Interaction Design Foundation, 2024). This allowed the group to integrate a broad spectrum of disciplines, from business analytics to marine science. Furthermore, communication was identified as a key success factor for the group and design thinking implemented communication and flexibility as the two most critical principles (Interaction Design Foundation, 2024). Additionally, some members had some familiarity with the design thinking process, which was a benefit over other non-familiar models such as Kanban.

Administrative wise, the group had established a WhatsApp chat for all communications, established a fortnightly meeting, delegated roles and identified Kevin as the team leader who would enforce deadlines. Furthermore, Prosper was tasked as the devil's advocate with his strength of critical thinking and challenging ideas. Clariya would be our technical lead, with her expertise in coding, charts and graphs. Martina and Yi were assigned with graphics and fonts, as they had a keen

interest in the styling elements. The established Google Drive was where we would complete all of our work.

The group understood that there was much more research to be completed before developing our project further. However, instead of using Google, Kevin recommended a software, Litbasket that was extremely effective in collecting literature across 847 different business, arts and science journals. Furthermore, the group would compliment this with various academic databases from Scopus, Elsevier and Jstor.

Prosper had identified Meta's Metaverse as a similar project to this digital campus. The Metaverse aimed to provide value through digitisation (Brookshire, 2024). Furthermore, Meta faced an existential threat with declining Instagram and Facebook utilisation and aimed to utilise the Metaverse to reignite their dominance in social media (Brookshire, 2024). However, the Metaverse ultimately failed due to challenges with the need for a VR headset, capable hardware and internet connection (Lee et al, 2018). Additionally, the group also perceived the Metaverse as a reference point to what the digital campus could look like. Kevin, Clariya and Prosper suggested utilising the Root cause analysis (RCA) methodology (Tableau, 2024), which was the industry practice in identifying the root cause of shortcomings and failures. The group wanted to identify some of the key factors that led to the failure of the Metaverse and wanted to ensure that the digital campus could mitigate these challenges.

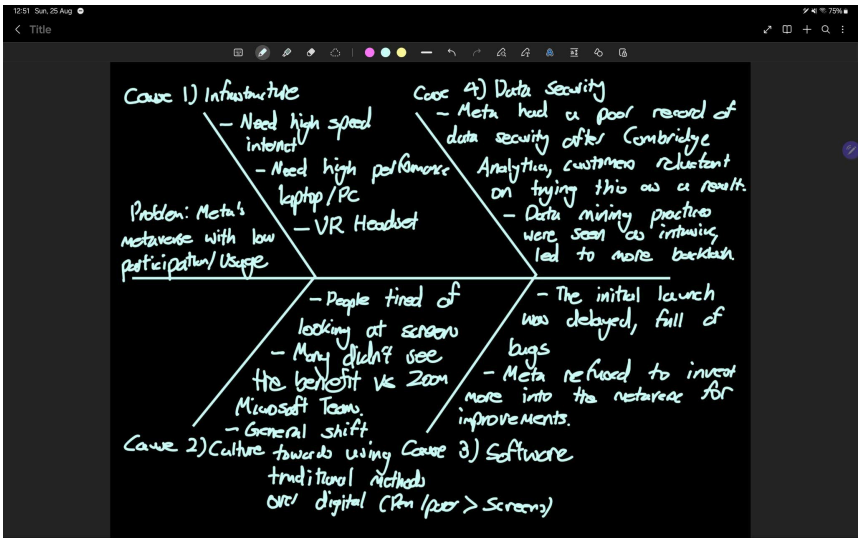


Figure 1. Example Root Cause Analysis of the Metaverse.

Additionally, at the time of writing, the Australian Government had announced international student enrolment caps (White, 2024). This was a personal issue for Yi, Prosper and Clariya who were international students and they wanted analyse whether international students would feel the need to endure expensive living costs in Sydney (Gianinni, 2024) if the digital campus allowed them to complete their studies remotely. Furthermore, they also wanted to analyse the challenges with China's restrictive policies on online education. Furthermore, Martina highlighted unreliable internet connection and lower technology penetration in Vietnam (Chanias et al, 2019) as one of her key challenges in completing remote learning during COVID-19 and wanted to assess the impact of infrastructure in the ability to complete remote education.

Building on, Ritika and Martina wanted to utilise their disciplines in Psychology and Marketing respectively to explore gamification as a feature on the digital campus. Gamification has proven to be one of the most effective methods in increasing engagement in digitisation strategies (Subhash & Cudney, 2018). From the initial discussions, features such as rewards for logging in everyday, points for networking or adding new friends, participating in events and functions were identified.

Lastly, Kevin had recognised through his past experience in consulting for a charity, that there was scope for some disadvantaged communities to be further marginalised with the digital campus. Although the group understands that the digital campus will likely complement the existing Camperdown campus and co-exist, we believed in the need for all students to have equal access to these services provided by USYD, in line with the University's values (The University of Sydney, 2024). For these communities, technology penetration and access was an issue, but some students found university as a place to get away from their personal issues and connect with friends. Kevin had a keen interest in analysing the impact of the digital campus to these disadvantaged communities at USYD to ensure that they would not be left behind. Furthermore,

At this stage, the group wanted to remain flexible in utilising more frameworks and focus more on research. However, the group had brainstormed various frameworks such as SWOT, PESTLE, Porter's Value Chain and Five Forces and understood that we will utilise these frameworks where we see fit, but was cautious of trying to force frameworks without much substance.

After receiving feedback from stakeholders on Friday, the group also believed in the need to model the total addressable market of the digital campus. The industry partner had mentioned whether there was even a need for the digital campus if AI continue to disrupt the education industry. This was noted to everyone as a focal point for our future research.

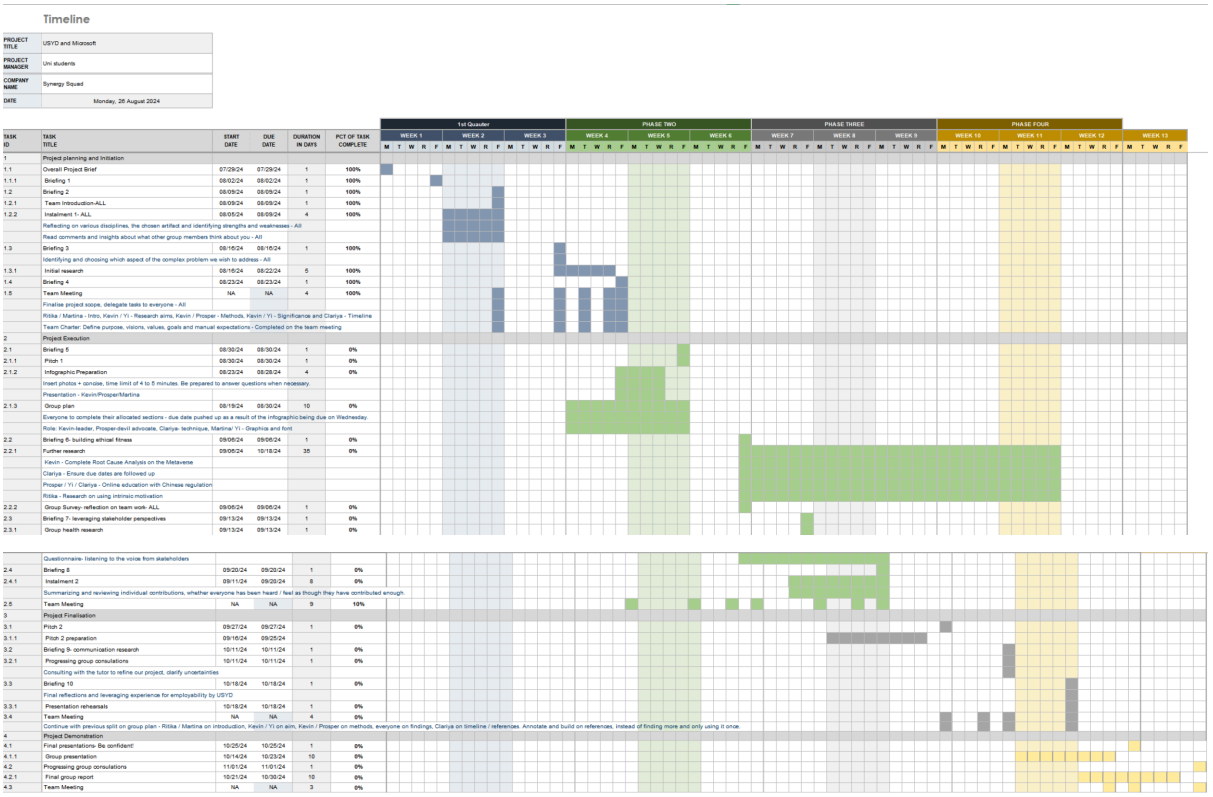
Significance

The significance of our project is dependent on whether we can address our problem statement. On this, the group understands that challenges to education will continue to exist even with the creation of the digital campus. As a result, our team believes that by identifying and analysing these challenges, we can offer a comprehensive framework that can serve as a reference point to what the digital campus needs to achieve in order to justify it as a success.

Furthermore, the digital campus is a foundational step towards the broader digitalisation of industries, contributing to advancements in digital workspaces and preparing the educational sector for further digitisation efforts. Therefore, our project not only addresses immediate educational needs but also plays a critical role in the ongoing digital evolution of society. Although some of the challenges identified may be too significant for the digital campus to resolve entirely, our work will likely contribute as a checklist for the digital campus to consider and devise strategies to avoid, mitigate, and minimise potential problems.

Timeline

Using Claryia's data science knowledge with Gantt Charts and project management skills, the below is a rough timeline of the project ahead. This timeline is correct as of 1/9/24. [The link of Timeline]



Some events are identified in greater detail below:

Event ID	Details	Event ID	Details
Briefing 1	Introduction to the entire project and complex problem solving with diversity by USYD/Education Innovation.	Group health research	A research about maintaining group health
Briefing 2	Digital transformation and AI concept by Microsoft.	Instalment 2	Self-reflection on the evolution of an individual's learning experience.
Team introduction	Self-introduction by Kevin, Prosper, Martina, Clariya,	Pitch 2	Team creates a pitch to notify any updates to the

	Rikita and Yi.		USYD and Microsoft partners.
Instalment 1	Referring to an artefact from various areas of study for each member, Martina - consumer behaviour graph, Clariya - codes and data, Rikita - Categorisation, Kevin - lock, Yi - social media platform, Prosper - circuit board.	Pitch 2 preparation	Different sections of the plan will be distributed to each member equally. The further details will be updated soon.
Briefing 3	Digital campus concept and expectations by USYD/ICT.	Briefing 9	Communicating research: presenting for impact by USYD.
Initial research	Each member conducts at least 3 readings for the problem, why do we need a digital campus?	Progressing group consultations	If a team has any problem, the tutor will do the consultations.
Briefing 4	Integrating different ways of doing research design by USYD.	Briefing 10	Final reflections and leveraging your experience for employability by USYD.
Team meeting	Team agrees to meet on every Friday and Wednesday fortnightly.	Presentation rehearsals	Demo presentation for every group, the feedback will be provided after everyone is done.
Briefing 5	Designing primary research instruments by USYD	Final presentations	Every team member will engage in the final presentation for both USYD and Microsoft partners.
Pitch 1	Pitching complex problem to Microsoft and USYD	Final group report	A well written final report will be submitted on the deadline.
Infographic	The first page of the		

Preparation	infographic is team introduction and the second page highlights the topic that will go through. Yi and Martina take charge and Prosper supports them to finish.		
Group plan	An achievable group plan for a team to work through the semester. Introduction is assigned to Rikita/ Martina, Research Aims and Objectives is assigned to Kevin/YI, Approach and Methods is assigned to Kevin/Prosper, Significance is assigned to Kevin/Yi and Timeline is assigned to Clariya/Prosper.		
Briefing 6	Building ethical fitness by USYD.		
Group Survey	A group survey about the team work.		
Briefing 7	Leveraging stakeholder perspectives by USYD.		

References

Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2015). The impact of classroom design on pupils' learning: Final results of a holistic, multi-level analysis. Building and Environment, 89(1), 118–133. https://doi.org/10.1016/j.buildenv.2015.02.013

Brookshire, K. (2024). Three Powerful Lessons to Learn From Metaverse Failure. https://www.goodfirms.co/blog/lessons-from-the-failure-of-metaverse#:~:text=The%20entire%20market%20has%20no,then%20it%20needs%20a%20purpose

Chanias, S., Myers, M. D. & Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. The Journal of Strategic Information Systems, 28(1), 17–33. https://doi.org/10.1016/j.jsis.2018.11.003

Interaction Design Foundation (2024). The 5 Stages in the Design Thinking Process. The Interaction Design Foundation. https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process#:~:text=Design%20thinking%20is%20an%20iterative

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., & Carter, L. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. International Journal of Information Management, 71(0268-4012), 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Gianinni, D. (2024). Cost of living has cut a swathe through overseas students moving to Australia. https://www.inqld.com.au/business/2024/04/30/cost-of-living-has-cut-a-swathe-through-overseas-students-moving-to-australia

Johnson, L. (2024). Insecure and overworked: It's getting harder to pursue an academic career. Crikey; Crikey. https://www.crikey.com.au/2024/05/09/academic-career-universities-covid-casual-overworked/

Lee, D., Hosanagar, K., & Nair, H. (2018). Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook. Management Science, 64(11), 5105–5131. https://doi.org/10.1287/mnsc.2017.2902

Otte, J. (2024). "I see little point": UK university students on why attendance has plummeted. The Guardian. https://www.theguardian.com/education/article/2024/may/28/i-see-little-point-uk-university-students-on-why-attendance-has-plummeted

Subhash, S., & Cudney, E. A. (2018). Gamified learning in higher education: A systematic review of the literature. Computers in Human Behavior, 87, 192–206. https://doi.org/10.1016/j.chb.2018.05.028

Tableau. (2024). Root cause analysis, explained with examples and methods. Tableau. https://www.tableau.com/learn/articles/root-cause-analysis#:~:text=Root%20cause%20analysis%20(RCA)%20is

The University of Sydney. (2024). Global engagement. The University of Sydney. https://www.sydney.edu.au/engage/global-engagement.html

White, D. (2024). "Great uncertainty": Sydney Uni warns staff of cuts ahead of foreign student caps. The Sydney Morning Herald; The Sydney Morning Herald. https://www.smh.com.au/national/nsw/sydney-uni-warns-staff-of-cuts-in-face-of-international-student-caps-20240813-p5k218.html

Appendix

Appendix A – Group Plan Outline and Work Distribution

Research Question/AIM: What are some of the underlying challenges that all relevant stakeholders, including students and teaching staff at USYD experience with online education?

Section/Task	Words/Number	Assigned to	Due	Status
Reading & annotations	3 each, with citation	ALL	22/8/24	Complete
Readings/notes on methods	2 each - Read the week 4 lecture slides for more reference	Kevin, Martina, Ritika	22/8/24	Complete
Group Plan detailed structure		All	22/8/24	
Introduction ● Body 1 on Infrastructure ● Body 2 on Value ● Body 3 on Culture	700	Ritika, Martina	26/8/24	Complete
Aims & objectives	200	Kevin / Yi	26/8/24	Complete
Approach/ ● Root Cause Analysis ● Limitations of Root Cause Analysis	900	Kevin / Prosper	26/8/24	Complete
Significance	200	Kevin / Yi	26/8/24	Complete
Project Schedule	Word count not included in the actual project	Clariya	26/8/24	Complete

References	Appendix section should include this document, team charter etc.	Clariya APA7th	26/8/24	Complete
Editing		All - everyone needs to review their own sections + others	31/8/24	Complete
Visualisations	PowerPoint / Canva		27/8/24	Complete
Total		ALL	DATE	