

Stand by me: Does promoting university clubs and societies through personalised emails and videos work?

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Students have faced substantial challenges concerning belonging following the pandemic, particularly related to isolation and loneliness. This study implemented and examined the efficacy of an intervention using personalised emails and learning management system (LMS) based promotional videos designed to enhance membership in student-led clubs and societies. We obtained data from the personalised email platform, LMS and institutional records. Our empirical analysis, using partial least squares modelling, showed a significant and positive association between emails, videos, membership and student grades, thereby supporting the role of personalised emails and LMS videos in promoting club and society membership and improving grades. We also found a significant mediation chain from emails to videos to membership to grades, supporting the value of our integrated approach. However, low socio-economic status had a significant and negative moderating effect on the association between reading emails and watching videos, indicating potential disparities in low socio-economic status students' access to digital resources.

Implications for practice or policy:

- Tertiary institutions should leverage personalised email communications to increase engagement with LMS-based content promoting university clubs and societies membership, associated with improved membership and grade outcomes.
- Weaker response among low socio-economic status students suggests digital strategies alone are insufficient, and institutions should complement approaches with targeted outreach and alternative communication channels.
- Tertiary institutions should integrate data from email platforms, LMS systems and institutional records to identify where students disengage and design targeted interventions accordingly.

Keywords: university clubs and societies, personalised emails, LMS videos, socio-economic status (SES), grades, extracurricular, partial least squares analysis

Introduction

This paper examined two research objectives related to the use of personalised student emails (Pardo, 2018) to promote engagement with university clubs and societies. The first objective investigated whether personalised student emails increase engagement with learning management system (LMS) based videos promoting clubs and societies, and whether this engagement is associated with subsequent

participation and academic performance. The second research objective investigated whether the above approach is equally effective across socio-economic groups. To address these objectives, we used the OnTask application (Pardo, 2018), directing students to LMS-based videos promoting university clubs and societies.

The objectives were motivated by increasing concern around student disengagement and isolation in higher education. Recent evidence has documented high student loneliness and disruption to peer relationships (Phillips et al., 2022). Engagement in university activities, including peer connections and diverse social interactions, mitigates such challenges (Hopp et al., 2022). Personalised emails can enhance students' sense of belonging and motivation by signalling ongoing instructor care through learner-centred, first-name communication that helps maintain a close relationship (Fong et al., 2018; Hodges, 2008), provide clear and actionable prompts and increase students' willingness to invest effort (Boud & Molloy, 2013; Price et al., 2011). Promoting engagement with student clubs and societies aligns with membership benefits, including enhanced personal and professional development (Foley et al., 2024) and contributions to student identity, belonging and overall engagement (Moxey et al., 2023).

However, the effectiveness of personalised emails may vary across students. Concerns regarding student isolation are particularly pertinent for low socio-economic status (SES) students. These students often experience feelings of isolation attributed to social class-related barriers, financial pressures and engagement challenges (Jury et al., 2017), limiting the extent they engage with extracurricular opportunities. Accordingly, encouraging participation in clubs and societies may help alleviate barriers by fostering stronger connections, enhancing belonging and reducing isolation.

The research was undertaken in a business course with a cohort of approximately 4,000 students. Given large student numbers, students typically have flexibility in class enrolment and are frequently exposed to different peers across classes. Hence, students in large courses often struggle to form meaningful connections (Swayze & Jakeman, 2014). The research setting was ideal for examining the role of engagement interventions, as challenges relating to peer connection and belonging are prominent in large courses. Therefore, initiatives promoting participation in clubs and societies may play an important role in facilitating student engagement in our research setting.

This study contributes to educational technology literature by applying Kahu's (2013) conceptual framework of student engagement to evaluate a scalable, technology-mediated approach for strengthening students' connection to university life, with attention to equity students. Specifically, we show that personalised emails (delivered at scale via personalised messaging technology) prompt observable engagement behaviours (email reading and LMS-based video viewing), translating into affiliation behaviour (club and society membership) and, in turn, impact academic performance (course grades). In doing so, the study addresses limitations in prior literature on whether tertiary students act on institutional emails, which is often anecdotal (Chaparro-Peláez et al., 2022; Ha et al., 2018; Salehian Kia et al., 2023). By leveraging system-captured behavioural data, we extend recent work on personalised emails beyond course-specific activities (Iraj et al., 2021; Reynolds et al., 2024) to programme-level engagement. Finally, consistent with Kahu's emphasis on structural and contextual influences on engagement, we show that equity status moderates intervention effectiveness.

The paper is structured as follows. First, we detail the background and methodology. This is followed by the results, discussion and conclusion.

Background

Clubs and societies

Tertiary education models have changed substantially since the pandemic, with renewed emphasis on flexibility. Pragmatically, such flexibility appears positive; however, the importance of social connection and addressing inequalities is ever present (Gidley et al., 2010). Historically, clubs and societies were

regarded as important to student experience, encouraging peer connections (Foley et al., 2024). As the tertiary sector pivoted to online learning during the pandemic, important aspects of university experience, including equity practices, received less attention (Raaper & Brown, 2020; Tang, 2023). Many student-led clubs and societies became casualties of this pivot (Koç & Koç, 2021; Phillips et al., 2022). Low-SES students may experience social anxiety in unfamiliar environments and face financial, work and family pressures constraining participation (Devlin & McKay, 2018; Jury et al., 2017; Zembrod, 2021). Peer support is particularly valuable to these students, promoting progression outcomes, belonging and learning outcomes (Sadowski et al., 2018). Accordingly, institutional practices raising club and society awareness and improving information access about them are important for equity students.

Given the above, the question arises: how should universities encourage students to join these clubs and societies? From an engagement perspective, communication needs to help students recognise these opportunities as relevant and accessible and support the transition to action. Traditionally, recruitment focuses on clubs and society days during orientation. More recently, universities have leveraged social media (Khatri et al., 2015). A challenge with these approaches is information overload (Mayhew et al., 2010). Orientation can be overwhelming, thereby encouraging student focus on what is required rather than broader opportunities (Wakefield & Grabowski, 2025).

Personalised email communication

Course-focused pages on LMSs provide the opportunity to sequence information delivery progressively. Literature has suggested instructors cannot assume engagement will occur because information is available (Simon et al., 2025), but rather practices are required to direct attention and facilitate access (Almusharraf, 2024). One such practice is personalised email communication, directing attention. Anecdotal evidence has suggested students do not read emails (Chaparro-Peláez et al., 2022; Salehian Kia et al., 2023). Recent research has indicated students are more receptive when they realise an email is personalised (Lewis et al., 2021), including semi-tailored emails (Reynolds et al., 2024).

In our study, we used personalised emails addressing students directly by their first name, encouraging them to watch short peer videos about club and society benefits (see Appendix A). While personalisation by name alone does not provide tailored dialogic feedback (Boud & Molloy, 2013), within an engagement framing, it can still signal relevance, prompting attention (Kahu, 2013; Reynolds et al., 2024). This study used OnTask (Pardo, 2018), an open-source learning application facilitating efficient distribution of personalised emails while tracking reading. Two short videos promoting clubs and societies were developed and made available in the LMS, the first, related to professional development clubs and societies, and the second to student clubs and societies (see Appendix B). The personalised emails with video links were distributed in Week 7 of a 12-week teaching semester. Emails were clear and concise, providing straightforward executable tasks (Kelly, 2019, Chapter 12, pp. 120–128), consistent with translating an institutional prompt into actionable engagement behaviours (Simpson et al., 2025). Recent research has highlighted the importance of emails from instructors students know (Simpson et al., 2025), in this case, the programme director.

Theoretical framing: Kahu's (2013) conceptual framework of engagement

To explain how a technology-mediated communication practice may translate into students' actions and outcomes, we used Kahu's (2013) conceptual framework of student engagement. This framework distinguishes antecedents of engagement (structural and psychosocial influences situated within a broader sociocultural context), engagement as a multidimensional psychosocial state (affect, cognition and behaviour) and proximal and distal consequences (e.g., learning, achievement, satisfaction and well-being). This distinction was useful for positioning our intervention and measures within a coherent engagement process.

Guided by Kahu's (2013) framework, we modelled the personalised email as an institutional psychosocial influence (antecedent) intended to promote attention and encourage membership. We operationalised engagement primarily through the behavioural dimension using indicators captured by the email platform

and LMS (email opening and video viewing). Club and society membership was then treated as an observable participation behavioural outcome linked to students' connection experience, and grades are a proximal academic consequence. These observable variables were captured via institutional records. Affective and cognitive mechanisms (e.g., belonging, interest) are perception-based and were not directly measured in our data set. Consistent with Kahu's emphasis on structural and sociocultural influences shaping engagement, we examined whether equity status (low SES) constrains the translation of institutional prompts into engagement behaviours. Our model is shown in Figure 1.

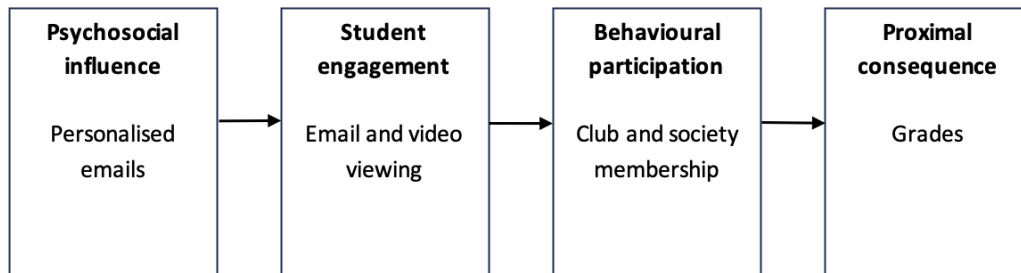


Figure 1. Theoretical model and observable measures

Hypotheses development

The literature indicates that personalised communications encourage students to engage with LMS-based resources (Almusharraf, 2024; Brown et al., 2024), particularly when the pathways to action are clear and low cost (Ning et al., 2025). In Kahu's (2013) framework, such personalised communication constitutes an institutional psychosocial influence (an antecedent) prompting engagement. Accordingly, we hypothesised that engagement with the personalised email is positively associated with subsequent behavioural engagement with the linked LMS videos.

Hypothesis 1: Personalised emails are positively related to watching LMS-based videos

In Kahu's (2013) framework, students' engagement is shaped by antecedent influences, including structural constraints such as life load (Hall, 2010), and psychosocial influences that may hinder students' willingness and capacity to participate in extracurricular opportunities. Consistent with Kahu's emphasis on the role of institutional and relational influences in shaping engagement, we designed short peer videos portraying clubs and societies as accessible and relevant, through authentic, student-delivered messaging (Kumar & Mangain, 2023; Seemiller & Grace, 2017). Peer sharing may be particularly valuable where perceptions of university life vary across backgrounds (Lizzio et al., 2002), including first-in-family students (O'Shea, 2016).

We hypothesised that video viewing supports movement from awareness to affiliation by increasing the likelihood of a subsequent participation step, club and society membership. We treated membership as a downstream behavioural participation outcome aligned with Kahu's (2013) framework.

Hypothesis 2: Watching LMS-based videos is positively related to club and society membership

Student belonging has been well recognised as critical to student success (Tinto, 2012). In Kahu's (2013) framework, belonging aligns with the affective dimension of engagement, shaped by students' relational and institutional experiences. Opportunities to develop belonging are important for retention (O'Keeffe, 2013; Pedler et al., 2022), and peer interaction through clubs and societies support belonging (van Gijn-Grosvenor & Huisman, 2020). Clubs and societies can also contribute to graduate attributes, including leadership, teamwork, communication and resilience (Foley et al., 2024), allowing students to pursue interests aligned with peers, enhancing overall learning (Pittaway et al., 2024).

Aligned with Kahu's (2013) distinction between engagement and its consequences, we treated learning and achievement as proximal academic consequences, following engagement processes. We therefore argued that club and society membership is an affiliation and participation outcome linked to students' connection to university life, and propose that membership is positively associated with performance.

Hypothesis 3: Club and society membership is related to student grades

Consistent with Hypotheses 1 to 3 and the overarching theoretical framing based on Kahu (2013), we expected psychosocial influence (antecedent) of emails to promote video viewing (engagement), leading to membership (behavioural participation) and finally to higher grades (proximal consequence). Consistent with the integrated approach, we expected a mediation pathway and proposed the following hypothesis.

Hypothesis 4: The positive association between personalised emails and student grades is transmitted via videos and club and society membership

In Kahu's (2013) framework, personalised digital communication can be understood as an institutional psychosocial influence (an antecedent), where the effectiveness depends on whether students have the resources, trust and attention to act on it. Consistent with this, uptake of personalised messages depends on perceived relevance, trust in the sender and whether the message reduces friction via clear calls to action, particularly amid email overload (Pardo et al., 2019; Simpson et al., 2025). Evidence from LMS-based engagement design has indicated that nudges can increase access to key resources, but effects are smaller when facing constraints (Brown et al., 2023; Pan et al., 2024). Low-SES students may also experience lower self-efficacy and belonging uncertainty, which are psychosocial mechanisms interacting with institutional practices reducing follow through (Jury et al., 2017; Tan, 2024). Accordingly, we expected low SES to weaken the translation of the focal institutional prompt in this study (personalised emails) into behavioural engagement (video viewing), consistent with Kahu's emphasis on contextual and structural influences shaping engagement processes.

Hypothesis 5: Equity (low-SES) students negatively moderate the relationship between personalised email engagement and watching LMS-based videos, such that the positive association is weaker for equity students**Methodology****Data**

First, OnTask was used to obtain the data, identifying whether students opened emails. While students could open the emails and not read the content, literature has indicated that when individuals receive substantial volumes of emails, they only open those they read (Hanrahan et al., 2016; Kalman & Ravid, 2015). Second, via the LMS, we tracked video watching. Third, the university body overseeing clubs and societies provided the membership data. Finally, institutional data warehousing provided demographic information. Data on society membership and course grades were obtained for 2020 and 2021 (intervention year). The combined data sample consisted of 3,701 students. This study received institutional ethics clearance.

Variable measurement

We assigned a value of 1 to email engagement (EMAIL) if the student read one or more of the emails sent to them and 0 otherwise. We also measured video engagement (VIDEO) as an indicator variable, assigning a value of 1 if the student watched one or more videos and 0 otherwise. The next variable, society participation in the intervention year (SOC21), captured student membership in clubs and societies. We assigned a value of 1 to SOC21 if the student was a member of one or more clubs or societies during 2021 and 0 otherwise. We also measured academic performance (GRADE21) measured as the average grade received (out of 100) from all completed subjects in the course enrolled at the end of 2021. We assigned a value of 1 to equity status (EQUITY) if a student had experienced long-term disadvantage, was a refugee and/or was Indigenous (low-SES student) and 0 otherwise.

We included several control variables. We included two lagged variables to control for prior society membership and baseline academic outcomes. To report on the incremental effect of the intervention, we included prior year society membership. Prior grades were widely accepted as a proxy for aptitude (Thompson & Zamboanga, 2004). We assigned a value of 1 to SOC20 if the student had been a member

of one or more clubs or societies in the prior year (i.e., 2020) and 0 otherwise. We measured average grade received from completed subjects in the prior year (GRADE20), that is, 2020. We also included age as an important control variable relating to student motivation and commitment (Timms et al., 2018). We measured student age (AGE) as the natural logarithm of the number of years since date of birth. In our analysis, we used the natural logarithm of the age variable as the values were right skewed.

We also included several variables as both control and moderating variables. First, gender has implementations on student engagement and outcomes (Shoaib & Ullah, 2021; Tison et al., 2011). We assigned a value of 1 for females (FEMALE) and 0 otherwise. Second, literature indicates that non-English speaking background (NESB) status affects student motivation and commitment (Phakiti et al., 2013). We assigned a value of 1 for NESB students (NESB) and 0 otherwise. We also used FEMALE and NESB as moderators in additional testing.

Descriptive statistics

Descriptive properties of the data are presented in Table 1. These descriptive statistics are in line with student enrolment patterns at the institution, in terms of age (mean = 24.1 years), gender balance (45% female), NESB (54%), equity status (36%) and average course grades (67.36 to 67.61). Table 1 also reports the percentage of missing observations for each variable. The two variables with the highest missing observations are SOC20 and GRADE20. Most of the missing data for these variables is due to students who were in their first year of enrolment during the intervention period (i.e., 2021), and hence do not have prior year data. Descriptive statistics also indicate that 47% of students read the emails, while only 3% watched the videos. The correlations are reported in Table 2.

Table 1
Descriptive statistics

Variable	<i>n</i>	% missing	<i>M</i>	<i>Md</i>	<i>SD</i>	Min.	Max.
AGE	3701	0.0%	24.10	23.63	2.69	19	58
FEMALE	3701	0.0%	0.45	0.00	0.50	0	1
EQUITY	3701	0.0%	0.36	0.00	0.48	0	1
NESB	3701	0.0%	0.54	1.00	0.50	0	1
EMAIL	3656	1.2%	0.47	0.00	0.50	0	1
VIDEO	3701	0.0%	0.03	0.00	0.18	0	1
SOC20	2552	31.0%	0.18	0.00	0.38	0	1
SOC21	3486	5.8%	0.18	0.00	0.38	0	1
GRADE20	2565	30.7%	67.36	69.13	12.91	0	96
GRADE21	3505	5.3%	67.61	69.88	13.61	0	97

Table 2
Correlation matrix

	AGE	FEMALE	EQUITY	NESB	EMAIL	VIDEO	SOC20	SOC21	GRADE20
AGE									
FEMALE	-0.08								
EQUITY	-0.20	0.06							
NESB	-0.14	-0.07	-0.03						
EMAIL	-0.03	0.10	-0.01	-0.01					
VIDEO	-0.04	0.04	-0.02	-0.02	0.10				
SOC20	-0.18	0.06	0.09	0.08	0.04	0.03			
SOC21	-0.18	0.10	0.13	0.07	0.09	0.08	0.36		
GRADE20	-0.13	0.08	-0.06	0.11	0.16	0.05	0.08	0.09	
GRADE21	-0.09	0.07	-0.05	0.11	0.16	0.05	0.06	0.11	0.58

Note. Correlations with an absolute value greater than 0.03 are significant at $p < 0.05$.

Partial least squares path modelling

As our analysis required the examination of mediation and moderation effects, we used partial least squares (PLS) path modelling. This approach allowed for the simultaneous estimation of these associations and the assessment of indirect effects within a single structural model (Hair et al., 2019). As all of the constructs were represented by manifest variables, no separate measurement model was required. To handle missing data, we used pairwise deletion, which allowed all available data to be used for each pairwise association. Most of the missing data was not random but missing due to structural reasons (i.e., first-year students who did not have prior-year grades or society membership). As such, we did not impute missing values and instead used pairwise deletion in the main results. As a robustness check, we also ran models using case-wise deletion and removing the control variables SOC20 and GRADE20 (these results are available upon request). There are no substantive changes to the interpretation of the results reported in this paper.

Path significance was assessed using bias-corrected and accelerated bootstrap confidence intervals based on 5,000 bootstrap samples. As the hypotheses are directional, statistical significance was assessed using one-tailed tests corresponding to 90% bootstrap confidence intervals. We assessed potential multicollinearity concerns by calculating the variance inflation factors. Across all models, no the variance inflation factors exceeded the value of 3, indicating that multicollinearity was unlikely to be a concern (Hair et al., 2019).

An alternate modelling approach is covariance-based structural equation modelling. As a robustness check, we ran the models using covariance-based structural equation modelling and found substantively similar results to those reported below (these results are also available upon request).

Results

Main model

The results of the base model are shown in Table 3 (see also Figure 2). We report standardised beta coefficients and effect sizes using Cohen's f^2 statistic. As indicated, our first hypothesis predicted that personalised emails are positively related to watching LMS-based videos. We found support for Hypothesis 1 with a significant and positive association between EMAIL and VIDEO ($\beta = 0.032$; $p < 0.01$). To determine the magnitude of this effect, we calculated predicted probabilities. As these cannot be directly inferred from the PLS coefficients, we calculated them using a general linear model with a logit link. Even though only 3% of students watched the video, and the effect size is small ($f^2 = 0.008$), opening the email increased the predicted probability of watching a video by 2.7 percentage points compared to those who did not open the email. This corresponds to a threefold increase relative to the baseline viewing rate. As only 3% of students watched the video, we also conducted a Firth logistic regression, which adjusts for potential bias attributable to rare events. We found that EMAIL is positively and significantly associated with VIDEO ($\beta = 1.255$; $p < 0.01$). This gives an odds ratio of 3.51, suggesting that students who opened the email are about 3.5 times more likely to watch a video than those who did not.

Table 3
Results of the base model

Independent variables	Dependent variables					
	VIDEO		SOC21		GRADE21	
	β	f^2	β	f^2	β	f^2
EMAIL	0.032*** (5.328)	0.008	0.040*** (3.148)	0.003	0.130*** (4.711)	0.006
VIDEO			0.134*** (3.189)	0.005	0.064 (0.886)	0.000
SOC21					0.155*** (4.141)	0.005

Independent variables	Dependent variables					
	VIDEO		SOC21		GRADE21	
	β	f^2	β	f^2	β	f^2
EQUITY	-0.013** (2.117)	0.001	0.070*** (5.026)	0.009	-0.062** (1.863)	0.001
Control variables						
SOC20	0.011 (1.034)	0.001	0.315*** (12.46)	0.113	-0.031 (0.690)	0.000
GRADE20	0.004* (1.379)	0.001	0.015*** (2.563)	0.002	0.556*** (21.917)	0.443
AGE	-0.007*** (2.482)	0.001	-0.039*** (6.631)	0.011	-0.001 (0.053)	0.000
FEMALE	0.009* (1.538)	0.001	0.043*** (3.437)	0.004	0.045* (1.576)	0.001
NESB	-0.011** (1.773)	0.001	0.022** (1.810)	0.001	0.094*** (2.889)	0.003
R^2	1.5%		16.5%		34.6%	
Q^2	0.163		0.225		0.333	
SRMR	0.026					

Note. *T* statistics reported in parentheses.

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$ (one tailed).

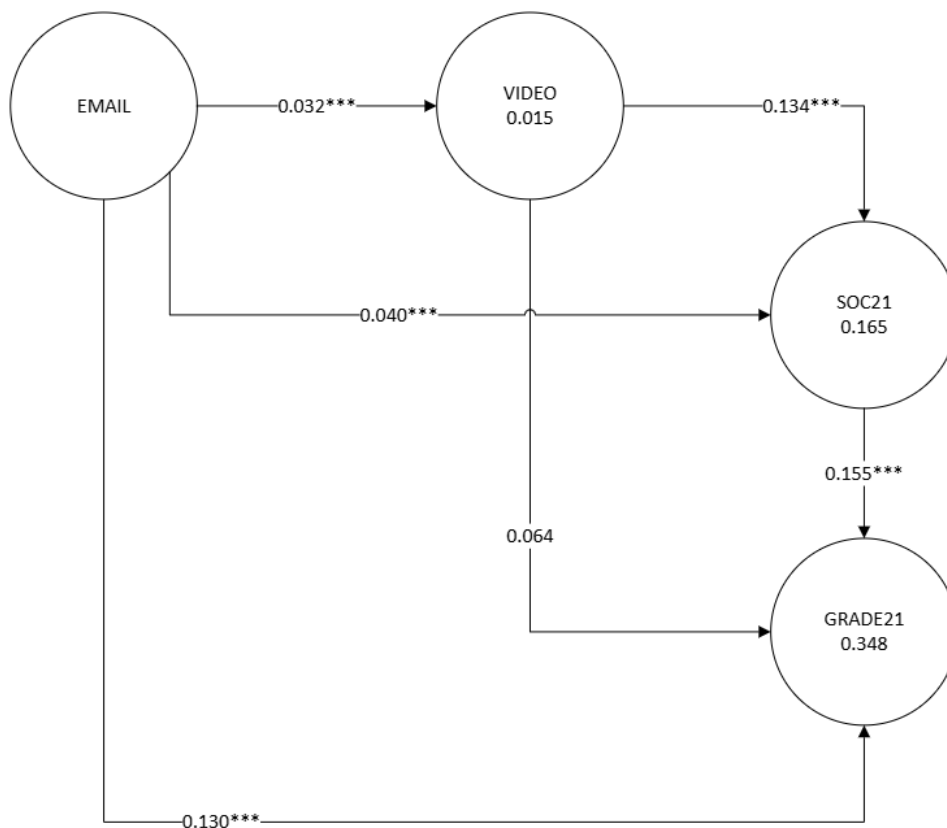


Figure 2. Results of the main model

Note Coefficients reported on each path, and R^2 values within each construct..

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$ (one tailed).

Furthermore, we found a direct and significant path from EMAIL to SOC21 ($\beta = 0.040$; $p < 0.01$). This suggests that personalised emails may have a direct influence on society membership independent of video views.

The association between VIDEO and SOC21 is also positive and significant ($\beta = 0.134$; $p < 0.01$), indicating that watching one or more videos is associated with society membership, supporting Hypothesis 2. Despite a small effect size ($f^2 = 0.005$), predicted probability calculations indicate that students who watched a video were 15.6 percentage points (or 1.9 times) more likely to participate in a society than those who did not.

We also found support for Hypothesis 3 with a positive and significant association observed between SOC21 and GRADE21 ($\beta = 0.155$; $p < 0.01$). This corresponds to a predicted improvement of 1.7 % in grades (approximately 1.1 marks). This finding aligns with the multiple benefits of clubs and societies reported in the literature. This includes building belonging (Pedler et al., 2022) and soft skills (Foley et al., 2024), which positively contribute to academic performance.

We found that the indirect effect (i.e., the mediation path) of EMAIL on GRADE21 (via VIDEO and SOC21) is positive and significant ($\beta = 0.001$; $p < 0.05$), supporting Hypothesis 4. The fully mediated effect of EMAIL on GRADE21 was an increased grade of 3.2% (approximately 2.1 marks). We also examined the mediated path from EMAIL to GRADE21 through SOC21. This indirect effect is also positive and significant ($\beta = 0.006$; $p < 0.01$), suggesting that personalised emails have a positive effect on student outcomes independent of watching the videos.

To test Hypothesis 5, we included the interaction term between EQUITY and EMAIL. The results are shown in Table 4.

We found support for Hypothesis 5 with a negative and significant association between the interaction term and VIDEO ($\beta = -0.016$; $p < 0.10$), suggesting that the effect of email communication on watching online videos is lower for equity students than non-equity students. The simple plot of the interaction term is shown in Figure 3. The predicted probability is 2.8 percentage points smaller for equity students, which corresponds to nearly half the rate of watching the video after opening the email. This finding resonates with concerns regarding low-SES students' university resource access (Jury et al., 2017; Zembrod, 2021). As an additional test, we examined whether EQUITY moderates any of the hypothesised paths in our main model. No other significant interaction effects were observed.

Table 4
Results of the full model

Independent variables	Dependent variables					
	β	VIDEO f^2	β	SOC21 f^2	β	GRADE21 f^2
EMAIL	0.037*** (4.819)	0.007	0.040*** (3.148)	0.003	0.130*** (4.703)	0.006
VIDEO			0.138*** (2.846)	0.004	0.061 (0.846)	0.001
SOC21					0.188*** (3.998)	0.005
EQUITY	-0.006 (0.886)	0.000	0.070*** (5.025)	0.009	-0.048 (1.231)	0.001
EQUITY x EMAIL	-0.016* (1.307)	0.001				
EQUITY x VIDEO			-0.013 (0.139)	0.000		
EQUITY x SOC21					-0.069 (1.066)	0.000
Control variables						
SOC20	0.011 (1.039)	0.001	0.315*** (12.451)	0.113	-0.033 (0.734)	0.001

Independent variables	Dependent variables					
	β	VIDEO f^2	β	SOC21 f^2	β	GRADE21 f^2
GRADE20	0.004* (1.393)	0.001	0.015*** (2.571)	0.002	0.556*** (21.926)	0.449
AGE	-0.007*** (2.507)	0.002	-0.039*** (6.632)	0.011	-0.001* (0.060)	0.001
FEMALE	0.009* (1.504)	0.001	0.043*** (3.430)	0.004	0.045* (1.594)	0.001
NESB	-0.011** (1.761)	0.001	0.022** (1.810)	0.001	0.094*** (2.882)	0.004
R^2	1.5%		16.5%		34.8%	
Q^2	0.163		0.224		0.333	
SRMR	0.028					

Note. *T* statistics reported in parentheses.

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$ (one tailed).

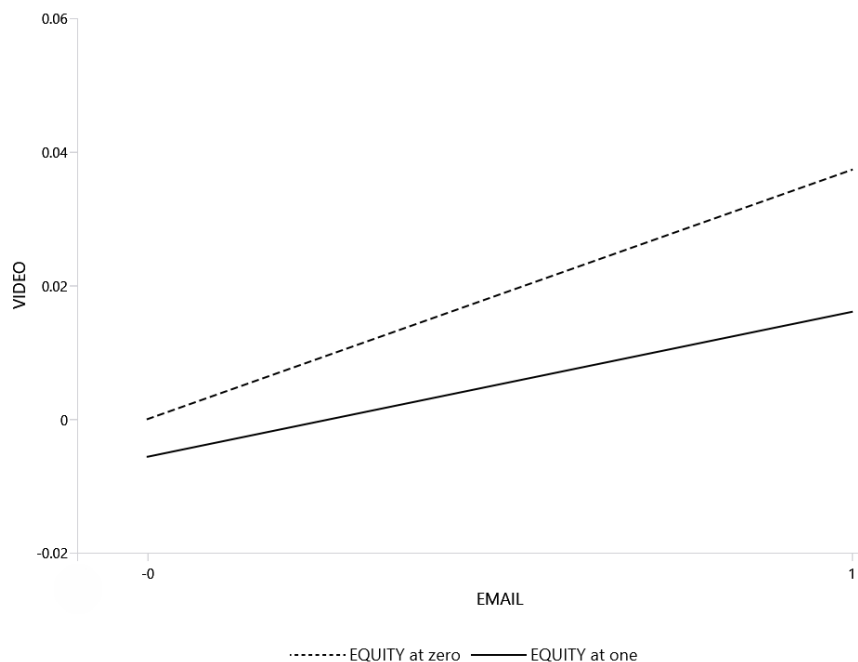


Figure 3. Simple plot of the interaction between EMAIL and EQUITY on VIDEO

Additional tests

In our main results, we found that FEMALE and NESB are significantly associated with VIDEO, SOC21 and GRADE21. We therefore explored whether our main results varied between these groups. To do so, we split the sample in two ways: whether the student was female and whether the student was from an NESB. Prior literature has suggested that these factors shape equity student perceptions, behaviours and performance (Jenkins et al., 2013; Phakiti, 2008). The results of the split-sample analyses are shown in Tables 5 and 6, and for brevity, we refrain from reporting the effect sizes.

The paths between EMAIL and VIDEO, VIDEO and SOC21, and SOC21 and GRADE21 are positive and significant in each of the split samples, supporting the main model results in Table 3. The indirect effect of EMAIL on GRADE21 is positive and significant for all split samples. In particular, for samples of NESB = 1, NESB = 0, and FEMALE = 0, the indirect effect of EMAIL on GRADE21 is significant at $p < 0.01$. For the subsample of FEMALE = 1, the indirect effect is positive and significant at $p < 0.10$. When the sample is

split by gender (Table 5), the moderation effect of EQUITY on the association between EMAIL and VIDEO is only significant for the sample where FEMALE takes a value of 1 ($\beta = -0.029$; $p < 0.10$). In relation to the NESB subsamples, we found that the effect of EQUITY on the path between SOC21 and GRADE21 is significant and negative ($\beta = -0.201$; $p < 0.05$) when NESB is equal to 0. We show the simple plots of the two significant interaction terms in Figures 4 and 5.

Table 5
Results of sample split by gender

Independent variables	Dependent variables					
	Model 1: FEMALE = 1			Model 2: FEMALE = 0		
	VIDEO	SOC21	GRADE21	VIDEO	SOC21	GRADE21
EMAIL	0.044*** (3.342)	0.056*** (2.826)	0.070* (1.598)	0.032*** (3.310)	0.031** (1.858)	0.173*** (4.652)
VIDEO		0.146** (2.226)	0.042 (0.336)		0.127** (1.774)	0.081 (1.121)
SOC21			0.239*** (3.538)			0.147** (2.164)
EQUITY	-0.007 (0.600)	0.090*** (4.215)	-0.059 (0.985)	-0.004 (0.604)	0.054*** (2.979)	-0.039 (0.741)
EQUITY x EMAIL	-0.029* (1.527)			-0.002 (0.094)		
EQUITY x VIDEO		0.057 (0.428)			-0.114 (0.874)	
EQUITY x SOC21			-0.065 (0.722)			-0.064 (0.645)
Control variables						
SOC20	0.008 (0.514)	0.315*** (8.915)	-0.181*** (2.509)	0.013 (0.963)	0.31*** (8.691)	0.079* (1.380)
GRADE20	0.005 (0.817)	0.028*** (3.189)	0.608*** (17.338)	0.005* (1.323)	0.012* (1.534)	0.521*** (15.13)
AGE	-0.012*** (2.446)	-0.066*** (7.366)	0.031 (1.154)	-0.003 (0.901)	-0.018** (2.300)	-0.026 (0.780)
NESB	-0.007 (0.694)	0.009 (0.434)	0.151*** (3.254)	-0.015** (1.943)	0.030** (1.982)	0.057 (1.288)
R^2	31.8%	13.7%	1.5%	31.8%	13.7%	1.5%
Q^2	0.186	0.247	0.353	0.123	0.197	0.333
SRMR				0.037		

Note. *T* statistics are reported in parentheses

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$ (one tailed)

Table 6
Results of sample split by non-English speaking background

Independent variables	Dependent variables					
	Model 1: NESB = 1			Model 2: NESB = 0		
	VIDEO	SOC21	GRADE21	VIDEO	SOC21	GRADE21
EMAIL	0.033*** (3.340)	0.054*** (2.945)	0.095*** (2.448)	0.042*** (3.321)	0.023* (1.355)	0.173*** (4.262)
VIDEO		0.144** (1.968)	0.157** (1.800)		0.127** (1.985)	-0.024 (0.220)
SOC21			0.153*** (2.504)			0.242*** (3.123)
EQUITY	0.001 (0.112)	0.080*** (3.942)	-0.076* (1.422)	-0.014* (1.445)	0.056*** (2.934)	-0.038 (0.664)

Independent variables	Dependent variables					
	Model 1: NESB = 1			Model 2: NESB = 0		
	VIDEO	SOC21	GRADE21	VIDEO	SOC21	GRADE21
EQUITY x EMAIL	-0.019 (1.179)			-0.012 (0.633)		
EQUITY x VIDEO		0.020 (0.130)			-0.039 (0.309)	
EQUITY x SOC21			0.035 (0.426)			-0.201** (1.941)
Control variables						
SOC20	-0.005 (0.406)	0.290*** (8.875)	0.000 (0.007)	0.033** (1.687)	0.355*** (8.763)	-0.079 (1.044)
GRADE20	0.006** (2.027)	0.019*** (2.463)	0.579*** (16.919)	0.002 (0.387)	0.012* (1.334)	0.526*** (14.24)
AGE	-0.005* (1.384)	-0.031*** (3.825)	0.063** (2.016)	-0.009** (2.017)	-0.047*** (5.316)	-0.067** (2.040)
FEMALE	0.015** (1.931)	0.041** (2.257)	0.090** (2.313)	0.002 (0.240)	0.045*** (2.679)	0.004 (0.100)
R^2	1.4%	14.2%	36.6%	2.0%	19.7%	31.8%
Q^2	0.155	0.211	0.355	0.173	0.242	0.308
SRMR	0.045			0.029		

Note. *T* statistics are reported in parentheses

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$ (one tailed).

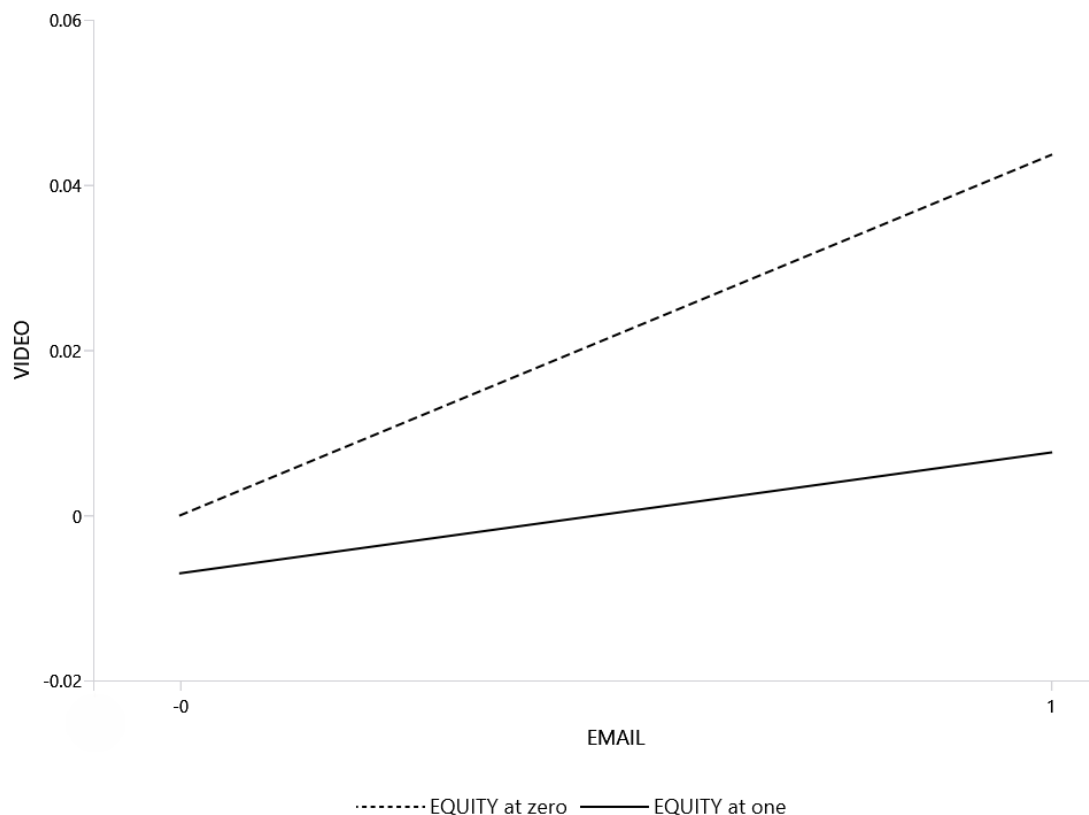


Figure 4. Simple plot of the interaction between EMAIL and EQUITY on VIDEO (when FEMALE = 1)

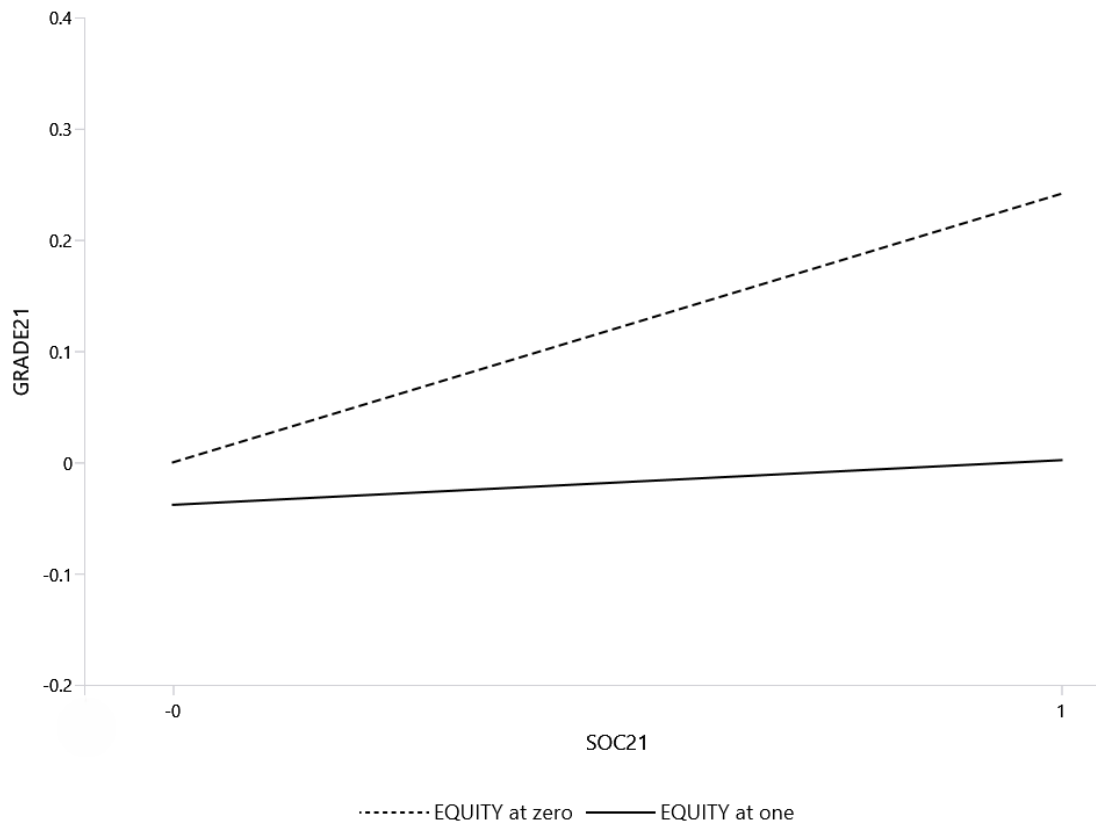


Figure 5. Simple plot of the interaction between SOC21 and EQUITY on GRADE21 (when NESB = 0)

Discussion

Main findings

Aligned with Kahu's (2013) conceptual framework of student engagement, we examined whether scalable, technology-mediated communication practices are associated with observable engagement behaviours and academic outcomes. We found that while there are low rates of email opening, these personalised emails are significantly and positively associated with watching videos. This is despite literature suggesting that considerable variation in student commitment and motivation across a cohort can influence the degree of email impact (Reynolds et al., 2024). The videos, in turn, are positively associated with university club and society membership. While literature has provided evidence on the benefits of club and society membership (Foley et al., 2024; Moxey et al., 2023), Kahu's framework also shows that students have competing priorities that impact their degree of engagement with extracurricular activities, including family, life load and support. Our results indicate that video-based communication can encourage engagement and membership in the context of such prioritisations. In turn, club and society membership is positively associated with course grades, consistent with Kahu's framing of learning and achievement as consequences linked to engagement processes. We also found that the personalised emails themselves have a positive and significant association with university society engagement. Consistent with the significant direct effects discussed above, we found that the indirect mediation path from emails to video watching, to clubs and society membership, to grades is significant across our full sample and subsamples. This strongly supports the effectiveness of the integrated approach presented in this study, in line with Kahu's overall framework.

Within Kahu's (2013) framework, the role of structural and contextual influences in shaping engagement is foregrounded, and our findings highlight important boundary conditions for technology-mediated approaches. We found that low-SES students significantly and negatively moderate the association

between personalised email reading and video watching, indicating that these students are less likely to watch the videos than their non-SES peers and, therefore, less likely to join a club or society. Further analysis revealed that this finding applies to females only. This confirms suggestions in literature on low-SES students' more limited access to technology due to resource constraints, leading to a lower likelihood of engaging with the materials (Jury et al., 2017; Zembrodt, 2021), which we observed particularly impacts females. This is a considerable concern, as this study's emails and video resources are not time and resource intensive, relative to course-based materials students would be required to access. This may suggest that females have greater life load responsibilities, less resource access and support, and/or self-efficacy and belonging anxieties in low-SES contexts, and therefore do not follow through by watching and engaging with the videos. Interestingly, we also found that the association between society membership and grades is only negatively moderated for low-SES students from English-speaking backgrounds, and not NESB students, suggesting that NESB students' motivation and commitment may be sufficient to overcome such an impact (Phakiti et al., 2013).

Limitations and future research

There are several limitations and opportunities for future research. First, we did not measure the psychosocial processes underpinning engagement with clubs and societies and associated outcomes. Consistent with Kahu's (2013) emphasis on psychosocial processes underpinning engagement, future studies could combine behavioural indicators with validated measures of belonging, interest, and motivation to test the proposed mechanisms more directly. The second limitation of this study is the low video viewing rates. Future work could examine alternative or complementary practices, translating prompts into engagement. This could be achieved by leveraging learning analytics to identify early engagement signals and targeting students more likely to benefit. Analytics-informed adaptive messaging would help further build on the benefits and opportunities for learning analytics reported in the literature (Corrin et al., 2020; Pan et al., 2024). Finally, we did not consider artificial intelligence-enabled platforms. There is the opportunity to provide more responsive guidance through this technology, helping students identify relevant clubs and societies and reducing effort involved in translating interest into action.

Implications

These findings are particularly relevant as the tertiary sector recovers from a sustained period of student isolation and grapples with flexible learning models, not always aligned with promoting student experience and belonging (Hopp et al., 2022; Phillips et al., 2022). These findings have practical implications by demonstrating how to promote extracurricular involvement in a personalised and cost-effective manner, with significant implications for learning outcomes. In addition, this study provides insight into the broader intervention's effectiveness across the student cohort and, importantly, the moderating effects of SES and gender. The varying impacts of the intervention across cohort characteristics suggest that engagement interventions do not operate uniformly across student groups. These findings point to the potential role of learning analytics and artificial intelligence-enabled systems in supporting tailored communication and engagement strategies. For example, the approach we examined in the intervention is effective for students with medium to high SES, while alternative strategies may be more effective for others. The findings based on data integrated from multiple sources also reinforce the importance of calls for cross-system linkages to support institutionally meaningful analytics and associated action (Márquez et al., 2024).

The study further highlights the importance of considering alternative support strategies to support low-SES students, particularly low-SES females. This could include low-bandwidth videos to improve resource accessibility in financially constrained situations and alternative messaging, for example, via SMS, where students do not have consistent email access. More broadly, the findings also support the importance of equity-focused scholarships, particularly for females, to reduce financial pressures and isolation by facilitating alternative living arrangements. Accordingly, within the financial constraints the tertiary sector currently faces, at least in Australia, the study provides suggestions for funding priorities.

Conclusion

This study demonstrates that a scalable, technology-mediated communication pathway through personalised emails directing students to short, LMS-based peer videos can prompt engagement behaviours with extracurricular opportunities and is associated with meaningful downstream outcomes. Using system and institutional data from a large cohort, we found that opening personalised emails was positively associated with watching LMS-based videos; watching videos was positively associated with club and society membership; and membership, in turn, was positively associated with grades. We also found that the pathway throughout all our variables (mediation chain) is significant, supporting the value of this integrated approach. Consistent with Kahu's (2013) conceptual framework of student engagement and its emphasis on structural and contextual influences, our findings also highlight an important equity boundary condition. In particular, low-SES students negatively moderate the association between email opening and video watching, specifically for female students. Taken together, the results suggest that institutions can leverage personalised messaging and LMS-based video content to extend opportunities for belonging and engagement through university clubs and societies, while also highlighting the need for equity considerations to avoid reinforcing participation gaps. Future research could combine behavioural indicators with psychosocial measures (e.g., belonging and self-efficacy), test alternative or complementary messaging designs to improve movement from prompts to action, and evaluate learning analytics and/or AI-enabled approaches that tailor communication pathways to students' contexts to support equitable engagement outcomes.

Author contributions

Anna Bedford: Conceptualisation, Investigation, Data curation and analysis, Writing – review and editing; **David Bedford:** Conceptualisation, Investigation, Data curation and analysis, Writing – review and editing; **James Wakefield:** Conceptualisation, Investigation, Data curation and analysis, Writing – review and editing; **Kathy Walsh:** Conceptualisation, Investigation, Writing – review and editing.

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Appendices

Appendix A – Email distributed

Subject: Explore opportunities with student societies

Email text:

Dear [student first name inserted here]

Ever thought about joining a cultural society or professional development society at university?

In the first video Abdallah Harun finds out about the benefits of joining various [professional societies](#) [URL to video included here] (lasting friendship, sense of belonging, access to various competitions nationally and internationally).

In the second video Abdallah Harun chats to various [cultural societies](#) [URL to video included here] on campus.

What societies are you likely to join? Let us know in the feedback section below the videos on Canvas.

Want further information about the many student societies and clubs available at university? Just click [here!](#)

Appendix B – Video transcripts

Professional development clubs and societies

[0:00] Host: While doing your business degree, have you ever wondered how you could develop yourself further—or where your degree could take you?

[0:05] Welcome to Business School TV. I'm <anonymised 1>, and I'll be your host for today.

[0:10] Right here, we've got some mentors—business school students in their natural habitat. Let's see if we can get a close-up!

[0:20] Hey guys, is it okay if I grab you for a minute?

[0:23] <anonymised 2>, <anonymised 3> and <anonymised 4>: Yes?

[0:24] Host: Amazing—let's go!

[0:26] First of all, thank you for joining today's discussion. There are many business students out there curious about joining professional development societies and wondering how to get more involved. To help answer some of those questions, I've invited a few students who've been part of different societies and made the most of their university experience.

[0:36] First up, we have <anonymised 2> from Women in Business. <anonymised 2>, how has your experience been?

[0:40] <anonymised 2>: Well, another way I like to describe Women in Business—quoting Blair Waldorf, one of my favourite people—is that we're a group of powerful women working together to reach our goals.

[0:48] Since joining WIB in my first year, I've met a ton of new people, participated in professional activities, and built a strong network. I've made lifelong friends—it's an experience I'll never forget.

[1:03] Host: Amazing! A network of inclusive women that support each other. And can men join your society as well?

[1:08] <anonymised 2>: Oh, absolutely! There's no “women” without the “men” part.

[1:11] Host: That's fantastic—an inclusive society helping people grow.

[1:15] Next, we have <anonymised 3> from Beta Alpha Psi, one of the leading academic and professional societies for accounting, finance, and information systems students. Patrick, can you tell us about your journey with Beta Alpha Psi?

[1:22] <anonymised 3>: I found out about Beta Alpha Psi in a first-year accounting lecture—some students came in to talk about the society and its events. I joined after that, starting with the ethics competition.

[1:31] It was a really rewarding experience—I enjoyed the people and the events, so I stuck around. This year, I even competed in both the Oceania and international competitions. It's definitely been a highlight of my university life, and something I'll always cherish.

[1:50] Host: From first year to international competitions—amazing, <anonymised 3>!

[1:54] And now we're joined by <anonymised 4> from the Consulting Club. <anonymised 4>, how has joining the club helped shape your sense of belonging at uni?

[2:00] <anonymised 4>: When I first joined uni, I didn't have many friends. I didn't know anyone from high school and didn't make friends in class, so I felt really alone.

[2:11] Halfway through my first year, I decided to join Consulting Club—and I'm so glad I did.

[2:17] Through it, I met some of the most passionate, intelligent, and inspiring people I've ever known. That gave me a sense of belonging, and I'm incredibly grateful. I've made lifelong and inspirational friendships.

[2:39] Host: That's amazing—by joining the Consulting Club, <anonymised 4> found a community that supports him and lifts him up throughout his life.

[2:47] Today we were joined by <anonymised 2>, <anonymised 3>, and <anonymised 4>, who shared how joining a society helped them grow professionally and make lifelong friends.

[2:55] Thank you for tuning in to this episode of Business School TV. See you next time! [End]

Student clubs and societies

[0:02] Host: Hi my name is <anonymised 1> and I'm your host for today.
[0:05] Welcome to another episode of Business School TV. This time we're talking to cultural societies.
[0:11] As a Business student, it's important to discover your identity and feel like you belong.
[0:18] Let's go check out what they're doing.
[0:22] Hey guys, what are you up to?
[0:24] Students: We're just vibing.
[0:25] Host: Nice. I wonder if I can grab you guys for a minute?
[0:28] Students: Yeah!
[0:28] Host: Amazing. So first up, we have <anonymised 5> from K-Pop .
[0:33] So <anonymised 5>, could you please tell us about your experience joining a cultural society?
[0:37] <anonymised 5>: Yep, thanks <anonymised 1>. So K-Pop is a cultural society that focuses on spreading love for Korean culture.
[0:44] I joined K-Pop last year through a friend with similar interests.
[0:47] Through joining the society, I was able to meet others of different ages, ethnicities, and across different faculties. They made me feel really welcomed and connected to university social life.
[0:56] Host: That's awesome. Through joining K-Pop, <anonymised 5> was able to find like-minded people and feel like she belonged.
[1:04] Next up, we'll be talking to <anonymised 6> from Filipino Society. Thank you for joining me today, <anonymised 6>.
[1:07] Could you please tell me a bit about your time being part of the Filipino Student Society?
[1:13] <anonymised 6>: So I've been at the Filipino Student Society for the past two years and I have had an amazing experience.
[1:21] Growing up I didn't know many Filipinos, and the society really gave me the opportunity to meet other local students with a Filipino background and also international students from the Philippines.
[1:34] I've been able to learn so much from them and their experiences.
[1:39] When I joined the society, I was given the opportunity to reconnect with my Filipino heritage.
[1:45] Now I can understand and speak more to my parents and other Filipinos I meet on campus.
[1:53] It's been amazing and I'm looking forward to growing more with the society.
[1:57] Host: Awesome. By joining Filipino Society, Sarah was able to learn more about herself and feel like she belonged.
[2:03] Next up we're joined by <anonymised 7> from Japan Club. <anonymised 7>, could you please tell me a bit about your experience?
[2:10] <anonymised 7>: My experience with Japan Club this year as a first-year was very interesting because of COVID.
[2:15] With Japan Club, I found a sense of belonging through the online class Discord.
[2:22] I joined the online Discord and met lots of people. They hosted language classes weekly, which I attended.
[2:29] Through those classes, I met people I never thought I'd become friends with, all connected by our shared interest in the Japanese language.
[2:39] That's how I found some of my closest friends at uni.
[2:46] Even with COVID, Japan Club hosted successful online events. One event was with a university in Japan where we learned about each other's cultures.
[3:04] It was really satisfying to connect and share our traditions.
[3:08] Host: Thank you for that, <anonymised 7>. Even in the middle of COVID, <anonymised 7> found people to connect with and a place where he belonged.
[3:15] Next up we have <anonymised 8> from Indian Society. Dinesh, could you tell us about your experience being the president of the society?
[3:22] <anonymised 8>: I believe being the president of the Indian Society has been one of the best decisions I've ever made.
[3:26] The way students interact with us at events is absolutely astonishing.
[3:33] We not only give them access to events, but also to an entire community where everyone looks after each other.

[3:46] Even though it's the Indian Society, I want everyone to join us, understand our culture, and feel a sense of belonging.

[3:54] Host: Amazing. Through Indian Society, Dinesh was able to make an impact on the wider community.

[4:02] Thank you for joining us for another episode of Business School TV.

[4:05] And remember—as a Business student, it's not just about your grades. It's also about finding a place where you belong and making lifelong friends.

[4:13] Awesome guys, let's go! [End]