The influence of LinkedIn group community on postgraduate student experience, satisfaction and grades

Joe Hazzam [a,*], Stephen Wilkins [b], Carol Southall [a], Blend Ibrahim [c]

[a] *Staffordshire Business School, Staffordshire University, Stoke-on-Trent, United Kingdom*
[b] *Faculty of Business and Law, The British University in Dubai, Dubai, United Arab Emirates*
[c] *Faculty of Business, Istanbul Ticaret University, Istanbul, Turkey*

ABSTRACT

Social media platforms represent an opportunity for higher education institutions to complement and enhance classroom teaching and learning. The purpose of this research is to investigate the influence of a LinkedIn group community on student experience, satisfaction and grades. A total of 118 students from three postgraduate programmes at a university in the United Kingdom were randomly assigned during the second week of the semester to either an experimental group representing the LinkedIn group community or to the control group, where students attended the classroom sessions but were not included in a LinkedIn group. In week twelve of the semester, 40 students in the experimental group and 42 in the control group voluntarily completed the Post-graduate Taught Experience Survey questionnaire. The results of independent *t*-tests indicate that students in the experimental group scored significantly higher than the control group on engagement, satisfaction and grades, and the behavioural engagement within the LinkedIn group community contributes to satisfaction. Analysis of the learning activities reveals that the inter-active content produces a higher engagement rate than the informative content. International students who had previous experience with LinkedIn show higher levels of engagement within the experimental LinkedIn group. The research contributes to the educational use of LinkedIn and explains that the effective planning of learning activities in an online group community, which includes the consideration of individual characteristics and content types, may influence posi-tively students' levels of engagement, satisfaction and grades.

Ethics statement

Ethical approvals were gained from Staffordshire University. All identifiers were removed.

* Corresponding author. Staffordshire Business School, Staffordshire University, Stoke-on-Trent, ST4 2DE, United Kingdom.
  E-mail address: joe.hazzam@staffs.ac.uk (J. Hazzam).

1. Introduction

Social media facilitates the creation and exchange of user generated content and represents a wide group of Internet-based applications that build on the technological foundations of Web 2.0 (Kaplan & Haenlein, 2010). The use of social media as an educational tool has increased during the last two decades. Several researchers have explored the impact of these networks on student engagement, satisfaction, and performance (Chen et al., 2023; Hosen et al., 2021; Junco et al., 2011; Rahman et al., 2019). According to Al-Qaysi et al. (2020), most social media studies are conducted in a higher education context since graduate and undergraduate students represent the major users of educational social media, and Facebook is the most popular social media site that has been used in these studies, followed by YouTube, Twitter (now X) and blogs. Manca and Ranieri (2016) explain that the objectives to improve students' motivation and quality of teaching, and sharing content material easily with students are the main reasons for social media teaching. Although social media highlights an opportunity to engage students in learning activities, the successful integration of these platforms in an education setting is influenced by several factors that may hinder their benefits and effectiveness (Alshuaibi et al., 2018; Junco, 2012).

Several years of research have advanced our knowledge of how social media platforms influence student engagement and performance. According to Akçayır and Akçayır's (2016) review, previous studies have highlighted the influence of social media on learner performance, engagement, professional development, motivation and satisfaction, among others. Several instructional approaches were used such as collaborative, informal, creative and social learning (Akçayır & Akçayır, 2016). For example, Junco et al. (2011) provide evidence that the use of the Twitter in undergraduate first year courses impacts positively upon students' engagement and grades. Menkhoff et al. (2015) proposed that the use of pedagogical tweeting stimulates students to learn more about a respective subject matter and offers rich interaction experiences. Also, Evans (2013) concluded that the amount of Twitter usage is associated with student engagement. Chugh and Ruhi (2017) identified several benefits of Facebook as an educational tool, such as improving student-student and teacher-student interactions, supporting convenience for learning, and fostering higher engagement and performance. Similarly, Moghavvemi et al. (2018) argue that YouTube videos have the potential to enhance student learning experiences and recommend the integration of this platform in teaching and learning.

Previous studies on networked learning have supported the use of social media to enhance knowledge sharing and collaboration among students (Anders, 2018). However, research on educational social media has not explored the types of content that may engage students in an online group community, and how students' social media group engagement contributes to their overall satisfaction and grades (Evans, 2013). Further, prior studies are cross-sectional and correlational in nature, presenting limitation to determine causal effects of social media platforms on students' engagement, satisfaction and grades (Evans, 2013; Junco, 2012). Although, the studies of (Junco et al. 2011, 2012) were experimental, the design includes incentives to use Twitter and an assessment component on the platform, which may influence the student usage and engagement with this social network. On the other hand, the two studies did not highlight the control variables such as the influence of students' face to face attendance on their grade achievements. Besides, learning performance in previous studies was measured using students' ratings or perceptions and not actual grades (Chen et al., 2023; Eid & Al-Jabri, 2016). Thus, there is a gap in the literature on how various types of social media platforms may enhance learning experiences, satisfaction and grades, and how different types of learners engage and perceived their learning in social media educational communities (Akçayır & Akçayır, 2016; Lacka et al., 2021; Zhu & Dawson, 2023).

LinkedIn is the world's largest professional network with more than 950 million users, located in countries all over the world (LinkedIn, 2023). Unlike most social media, LinkedIn fosters business connections between students and industry professionals, supporting the development of students' professional careers (López-Carril et al., 2020). LinkedIn is important for postgraduate students and aspiring candidates for job opportunities, providing them a platform to highlight their professional profiles including education, skills, competencies and experience (Ruparel et al., 2020). Previous studies have outlined the potential use of LinkedIn in higher education settings including the development of students' professional profile and career based activities (Gerard, 2011; López-Carril et al., 2021). Furthermore, the study of López-Carril et al. (2022) has found that the pedagogical use of LinkedIn has positive outcomes on undergraduate student engagement and interactions. Recently, Hamadi et al. (2022) have confirmed that the integration of LinkedIn as a pedagogical tool contributes to students' cooperative leaning. Although previous research has advanced the knowledge on the effective use of LinkedIn in classroom settings, studies that explore the influence of a LinkedIn group community on postgraduate students' experience, satisfaction and grades are limited (Healy et al., 2023). Thus, the purpose of this research is to investigate the experience, satisfaction and grades of postgraduate students being part of a LinkedIn group community, and how the engagement with the online community, including the types of content, may enhance their overall satisfaction. The study aims to answer three main questions:

RQ1 How does participation in a LinkedIn group community enhance students' experience, satisfaction and grades?
RQ2 How does student engagement with a LinkedIn group community impact upon their satisfaction?
RQ3 What types of learning activities stimulate the highest levels of student interaction with the LinkedIn group community?

The findings of the study contribute to the educational use of the LinkedIn by providing suggestions for improving students' engagement, satisfaction and grades through online group community activities. The study adds to the literature on the use of social media in regard to the effective integration of LinkedIn, and the instructional design that engages postgraduate students and enhances their overall satisfaction and grades.

2. Literature review

2.1. Social media as a learning tool

Social media applications such as Twitter, Facebook and LinkedIn differ from traditional education technologies by providing real-time communication and facilitating the creation, exchange and discussion of module content (Rueda et al., 2017). Social media tools have the potential to connect formal to informal learning by developing an environment of involvement and creation that engages students in the learning process (Chen & Bryer, 2012). According to Chen et al. (2023), the increase in the use of educational social media facilitates team bonding, knowledge sharing and efficacy among students in a team project. Several factors impact students' use of these platforms in education including their features, students' motivation and uses, ease of use and perceived usefulness (Salloum et al., 2019). Besides, self-efficacy, subjective norms, perceived enjoyment and trust are essential factors that influence students' adoption of social media platforms (Al-Qaysi et al., 2020). On the other hand, perceived risk, privacy concerns, and lack of competencies and skills discourage students from using social media tools (Benson & Morgan, 2016; Manca & Grion, 2016; Rahman et al., 2019).

Several studies have investigated the outcomes of personal and educational use in higher education (Akçayır & Akçayır, 2016; Chugh et al., 2020). For example, Junco (2012) explains that the overall time spent on Facebook with certain activities can negatively predict students' engagement, and higher education institutions may intervene to support and provide resources enhancing their experiences while using social media platforms. According to Michikyan et al. (2015), students' grades may influence their use of social media and their online disclosure of academic performance. Several studies have documented the positive influence of social media educational use on students' engagement, satisfaction, learning performance and grades (Evans, 2013; Junco et al., 2011, 2012; Menkhoff et al., 2015; Moghavvemi et al., 2018; Rueda et al., 2017).

From the institutional and faculty members' perspective, social media educational tools are used to enhance teaching and learning, such as sharing and communicating information, building communities and supporting students (Chugh et al., 2020). According to Cao et al. (2013), faculty members' use of social media in teaching and learning has a positive influence on students' satisfaction and learning outcomes. However, this usage should fit specific subject requirements and teaching styles including the development of training that match the effective implementation of these tools in an educational environment (Cao et al., 2013). Although the use of social media by academics presents several barriers and challenges, several studies have highlighted lecturers' positive perceptions toward the impact of social media on facilitating transformative learning, improving students' social skills, academic performance, productivity and enhancing the quality of teaching (Chugh et al., 2020; Manca & Ranieri, 2016; McPherson et al., 2015).

2.2. LinkedIn as a learning tool

The two social media platforms that have been studied extensively in educational settings are Facebook and Twitter (Al-Qaysi et al., 2020; Chugh & Ruhi, 2017). However, the benefits of new platforms that provide new features and which are targeted at specific audience groups are yet to be explored (Manca, 2020). LinkedIn differs from other social media by facilitating the creation of relationships between professionals and enabling the exchange of experience and knowledge (Pena et al., 2022). The platform allows users to follow companies and apply for job openings by presenting their public profiles to talent and human resource managers (Knight, 2019). LinkedIn enables organisations to showcase job openings and serves as first step for screening applications. Thus, some employers expect that all applicants have a LinkedIn profile (Knight, 2019). Also, LinkedIn supports users' expansion of professional networks and provides members access to professional business articles that focus on career insights and advice (Bridgstock, 2019). These LinkedIn characteristics fit the purpose of marketing and business postgraduate courses, facilitating students' communication and interaction in professional communities and representing a first step for career development (López-Carril et al., 2020).

LinkedIn provides students with the opportunity to offset networking challenges and enhance their professional and career-based activities (Gerard, 2011). Additionally, this professional social network provides current and recently graduated students the opportunity to build a professional online presence, thus enhancing their employability (Slone & Gaffney, 2016). LinkedIn as a classroom tool can reinforce basic concepts in business education and increase students' engagement and collaboration (Cooper & Naatus, 2014). LinkedIn facilitates interactions between the lecturer and students in a professional environment, creating a sense of belonging to a professional group and linking the students to future professional opportunities (Rueda et al., 2017). According to López-Carril et al. (2022), the use of LinkedIn as an educational tool supports the teaching-learning process and has shown positive outcomes such as developing students' professional profiles, increasing class engagement and interactions between students and teachers. Hamadi et al. (2022) emphasise the role of instructions for LinkedIn integration in teaching and learning, which mitigate students' challenges of using the platform and influence their intention to use it, enhancing their learning process and cooperative learning. Furthermore, López-Carril et al. (2021) introduced a LinkedIn innovation to undergraduate sport management students that included specific activities and an assignment, and this intervention led to stronger student perceptions of LinkedIn as a tool to develop their careers and interact with industry professionals.

Although the emerging studies on the influence of LinkedIn as a pedagogical tool are positive, Healy et al. (2023) argue that the current research highlighting the impact of LinkedIn on career and employability learning lacks consistency and cohesion. For example, using a longitudinal experimental design among two classes, Brown and Pederson (2019) found that the group of students not using LinkedIn scored significantly higher on classroom community than did the LinkedIn-centric group. On the other hand, students that join LinkedIn private groups that share the same interest may discuss and exchange information about a specific topic, adding value to their education and providing access to content from high-profile industry professionals (López-Carril et al., 2020).

Social learning theory explains that individuals may learn from observations, imitation and interactions with others in a social context (Bandura, 1977). Thus, by networking with successful industry professionals, students may interact with role models and recognise the attributes and actions they need to develop and adopt for career success (López-Carril et al., 2021). Social learning theory integrates behavioural and cognitive theories of learning to provide a comprehensive model that may address the wide range of learning experiences that occur in the real world. Social learning theory later evolved into social cognitive learning theory, to emphasise the role of cognition in learning (Bandura, 1986). However, learning is enhanced when the environment, behaviour and cognition combine and support one another (Smith & Smith, 2008). LinkedIn promotes cognitive learning through the interactions between the people who use the platform in a professional environment. Further, LinkedIn group community can support several pedagogical approaches such as experiential, collaborative or cooperative learning, enhancing students' teaching and learning experience (Hamadi et al., 2022; López-Carril et al., 2021). For example, business management and marketing educators may adopt an experiential learning approach and request students each week to search a trending specific topic, discuss it in a LinkedIn private group, generate a valuable content from the discussion and share it with their network (López-Carril et al., 2020, 2021). Educators may request students to re-share valuable content from experts in the field and add their own views to make the information more valuable. Also, collaborative and cooperative learning approaches may be effective on LinkedIn, such as, requesting a group of students to choose one of several digital marketing topics including search engine optimisation, social media marketing or website analytics and create a series of 'how to' videos that can be shared on their LinkedIn pages (Hamadi et al., 2022; López-Carril et al., 2020).

2.3. Student experience and satisfaction

Student experience refers to the student's overall interaction with the higher education institution including teaching and learning, student life and support among others, and student satisfaction explains their perceptions on how the university performance meets or exceeds their expectations (Wilkins et al., 2022). Student experience and satisfaction are important comparative metrics that influence students' decision making and choice of higher education institution in several countries including the United Kingdom (UK) (Wilkins & Huisman, 2012). At the undergraduate level, the National Student Survey (NSS) has been undertaken annually since 2005, and the students registered at participating UK universities are asked about their learning experiences and overall satisfaction during their final year of study (Bell & Brooks, 2017). The NSS survey includes several dimensions that measure teaching, assessment and feedback, academic support, organisation and management, learning resources, personnel development and overall satisfaction (Langan & Harris, 2019).

The Postgraduate Taught Experience Survey (PTES), introduced in 2009, is the main national survey in the UK that collects insight from taught postgraduate students about their learning and teaching experience (Poon, 2019). The PTES supports a better understanding of postgraduate students' experience in several areas including teaching and learning, engagement, assessment and feedback, organisation and management, and skills development (AdvanceHE, 2023).

The main objective of this research is to assess and better understand the impact of a LinkedIn group community on postgraduate students' experience, satisfaction and grades. This includes the investigation of a LinkedIn group community's influence on students' perception of teaching and learning, engagement, community, support and skills development. Also, the study aims to investigate the types of content and learning activities that engage students in the group community and enhance overall satisfaction. The results of this study inform higher education practitioners on the effective integration of social media platforms in the teaching and learning process and provides suggestions on the types of content and learning strategies that engage students and drive satisfaction in LinkedIn social media learning communities.

3. Methodology

3.1. Procedures

This research is based on an experimental cross-sectional design with convenience sampling. The study was conducted during the second semester of the 2022–2023 academic year, starting on February 1 and ending May 10. To answer the research questions, we created a LinkedIn group community during the second week of the semester, and postgraduate students undertaking a digital marketing module at a university in UK were randomly assigned to either the experimental group or the control group after gaining ethical approval from the research ethical committee of the university where the study was conducted. Also, students were informed about the objectives of the study including their voluntary participation and anonymity. The survey questionnaire includes a consent form that the students need to check and confirm before proceeding and answering the survey questions.

The digital marketing module is one of six core modules that are delivered in the MSc in Digital Marketing Management, and it is also as an optional module in other degrees such as the Master in Business Administration and MSc in International Business Management. The module delivery consists of three contact hours per week including 2 h of lecture and 1 h of tutorial. The experimental group used the LinkedIn group community as part of the teaching and learning process, while the control group did not. The faculty member posted on average five times during the week on the LinkedIn group community chat, including informative and reading materials before and after the teaching sessions and interactive questions or polls to test students' knowledge after the teaching session. The intervention started on the second week of the semester and ended during the twelfth week of the semester.

The content and learning resources that were discussed in the LinkedIn group were posted on the learning management system. The two types of learning activities include (1) Informative content prior and post the weekly teaching session, for preparing or extending class discussions, and providing supplementary learning materials and information that support their assessment's development (e.g.,

see Appendix 1); (2) Interactive content that includes a question for the students to answer and provide their opinions or a poll quiz (e. g., see Appendix 2). This approach was implemented to understand and improve students' experiences and satisfaction during a real course. This design has some of the 'action research' characteristics since the students were active participants who engaged with the LinkedIn group community as a part of the learning process (Denscombe, 2003; Sharp, 2012).

At the end of week twelve, students in the two groups were surveyed using the PTES dimensions. Two survey links were created using the Qualtrics platform, to collect data from the experiment and control groups separately. A link to the survey was posted in the LinkedIn group community for the experimental group and emails including the survey link were sent to the control group. Further, the qualitative aspect of students' engagement in the experimental group was collected using an open question, and the learning activities that generate higher engagement was analysed using LinkedIn metrics such as number of likes and comments.

3.2. Study participants

The participants in this study were postgraduate students enrolled in a digital marketing strategy module, which is a core module in the MSc Digital Marketing Management programme, and optional in the Master Business Administration (MBA) and MSc International Business Management. The total sample population was 118 students, and 59 students were randomly assigned and invited to the LinkedIn group community during the second week of the semester. The number of participants is similar to other experimental studies that have been conducted on social media in educational settings (Junco et al., 2011; López-Carril et al., 2021, 2022). 51 students accepted the invitation and represent the experiment group. In week 12, 40 out of 51 students in the experiment group and 42 out of 59 students in the control group voluntarily completed the questionnaire.

The sample comprises 53.7% males and 46.3% females. 7.3% of the participants are aged between 18 and 22 years old, 34.1% between 23 and 27 years old, 28.1% between 28 and 32 years old, and 30.5% are aged over 32 years old. 60 students (73.2%) are enrolled in the MSc Digital Marketing course, 18 (22%) in the MBA, and 4 (4.9%) in the MSc International Business Management. The majority of the students (54.9%) have 1–3 years of experience with LinkedIn, and most of them were using social media between 1 and 3 h per day (51.2%). Finally, 73 (89%) are international students and 9 (11%) are domestic students. The higher percentage of international students at postgraduate level in our sample reflects the overall percentage of postgraduate international students studying in UK universities, which is 79% as compared to 21% domestic students in the academic year 2021–2022 (House of Common Library, 2023). The detailed descriptive statistics about the experiment and control groups are shown in Table 1.

3.3. Data collection instruments

The PTES is a well-established survey that provides insights into the experience and satisfaction of postgraduate students at UK universities (AdvanceHE, 2023; Poon, 2019). The PTES is designed to support higher education institutions, comparing their student ratings with sector benchmarks (Muijs & Bokhove, 2017). 80,000 taught postgraduate students from 91 UK higher education institutions participated in the 2022 survey (AdvanceHE, 2023). The PTES includes several dimensions including teaching and learning, engagement, assessment and feedback, dissertation or major project, resources and services, community and support, which measure students' experience and satisfaction at the programme level (AdvanceHE, 2023; Muijs & Bokhove, 2017; Poon, 2019). Thus, for the purpose of this study, the items were adapted to the module level, and the dimensions were chosen to fit the context and the duration of module delivery. For example, the components that relate to dissertation, resources and assessment and feedback were not included in the final survey instruments. On the other hand, teaching and learning, engagement, community, support and skills development were included in the final survey. These items were measured using a five-point Likert scale ranging from 'Definitely disagree' coded as 1 to

Table 1
Descriptive data of participants.

Variables	Variation	Experiment	Control	Total
Gender	Female	23(28%)	15(18.3%)	38(46.3%)
	Male	17(20.7%)	27(32.9%)	44(53.7%)
Age	18–22 years old	1(1.2%)	5(6.1%)	6(7.3%)
	23–27 years old	17(20.7%)	11(13.4%)	28(34.1%)
	28–32 years old	10(12.2%)	13(15.9%)	23(28.1%)
	Over 32 years old	12(14.6%)	13(15.9%)	25(30.5%)
Programme of study	Digital Marketing Management	33(40.2%)	27(32.9%)	60(73.2%)
	MBA	7(8.5%)	11(13.4%)	18(21.9%)
	International Business Management	0(0%)	4(4.9%)	4(4.9%)
Experience with LinkedIn	1–2 years	19(23.2%)	26(31.7%)	45(54.9%)
	3–4 years	11(13.4%)	5(6.1%)	16(19.5%)
	5–6 years	7(8.5%)	6(7.3%)	13(15.9%)
	7 years or more	3(3.7%)	5(6.1%)	8(9.7%)
Social media usage per day	Less than 1 h	3(3.7%)	4(4.9%)	7(8.5%)
	Between 1 and 3 h	18(22%)	24(29.3%)	42(51.2%)
	Between 4 and 6 h	5(6.1%)	8(9.8%)	13(15.9%)
	More than 6 h	14(17.1%)	6(7.3%)	20(24.4%)
Registration status	Domestic	5(6.1%)	4(4.9%)	9(11%)
	International	35(42.7%)	38(46.3%)	73(89%)

'Definitely agree' coded as 5.

To measure students' engagement with the LinkedIn community in the experimental group, we adapted the pre-validated instrument that was developed by Dessart (2017), which measures the three dimensions of social media community engagement namely, affective (6 items), cognitive (6 items) and behavioural engagement (10 items). These items were also measured using a five-point Likert scale ranging from 'Definitely disagree' coded as 1 to 'Definitely agree' coded as 5. Finally, an open qualitative question was included in the survey to further investigate students' attitudes, experiences and opinions ('Looking back on your participation in the LinkedIn group, can you please elaborate on why you chose to engage or not engage with the group?'). All of the items used in this study are provided in Appendix 3.

4. Data analysis and results

To answer the research questions on the effects of a LinkedIn group community on student experience and satisfaction, SPSS 28 and AMOS statistical package were used to perform descriptive analysis, confirmatory factor analysis (CFA), reliability tests, and independent sample t-tests. To answer the research question on the effect of student engagement with the LinkedIn group on satisfaction, a linear regression was performed to test the relationships between cognitive engagement, affective engagement and behavioural engagement as independent variables, and satisfaction as the dependent variable. A word frequency analysis using NVivo software was performed on the qualitative open question to better understand the factors that have influenced students' engagement with the community. Finally, to answer the research question on the instructional activities that generate higher levels of engagement in the LinkedIn group, we analysed the likes and comments metrics provided by LinkedIn's analytic dashboard.

4.1. Measurement model

Confirmatory factor analysis (CFA) was conducted to examine how well the measured variables of the PTES represent the research constructs (Anderson & Gerbing, 1988; Gallagher et al., 2008). The measurement model was estimated using maximum likelihood estimation and covariance matrix in AMOS software version 26. The results indicate that the data has a good fit with the model: $\chi^2 = 108.262$ ($df = 82$, $p < 0.01$); $\chi^2/df = 1.32$; RMSEA = 0.06; CFI = 0.97, and SRMR = 0.05, and the values of the standardised factors' loading estimates are higher than 0.7 with statistical significance of $p < 0.05$ for the majority of the items, excluding TL2, TL3, TL6, ENG4, ENG5 and CO3 that have loading estimates below 0.7 and were removed from further analysis as per the recommendation of Hair et al. (2014). Results of the measurement model (Table 2) indicate that all the constructs achieved values above the minimum cut criteria of > 0.70 for composite reliability (CR) and >0.50 for average variance extracted (AVE), thus establishing convergent validity (Anderson & Gerbing, 1988). Finally, the Cronbach's alpha tests used to confirm the internal reliability of the measurement scales each produced a result of 0.84 or higher, where 0.70 represents the minimum threshold (Hair et al., 2014). (See Table 2).

Discriminant validity is achieved if the value of the square root of AVE of each construct is higher than its highest correlation with any other construct in the model. First, the construct support was highly correlated with skills development and community and these correlations were higher than the square root of the AVE of these two constructs. Thus, support was removed from further analysis. The following analysis (see Table 3) shows that the square root of AVE of the study constructs, in the diagonal, is greater than their correlations below the diagonal line (Fornell & Larcker, 1981). The research constructs achieved discriminant validity.

4.2. Independent sample t-test analysis

Several independent sample t-tests were performed to understand whether there were statistical differences in teaching and

Table 2
Results of the confirmatory factor analysis, with the corresponding factor loadings and reliabilities.

Construct	Item	Loading	α	CR	AVE
Teaching and Learning	TL1	0.795	0.85	0.866	0.617
	TL4	0.794			
	TL5	0.774			
	TL7	0.778			
Engagement	ENG1	0.799	0.85	0.863	0.680
	ENG2	0.744			
	ENG3	0.921			
Community	CO1	0.856	0.90	0.833	0.713
	CO2	0.833			
Support	SU1	0.849	0.84	0.867	0.684
	SU2	0.819			
	SU3	0.814			
Skills development	SK1	0.785	0.89	0.923	0.667
	SK2	0.882			
	SK3	0.761			
	SK4	0.852			
	SK5	0.700			
	SK6	0.902			

Table 3
Convergent and discriminant validity.

	CR	AVE	TL	ENG	CO	SK
Teaching and learning	0.86	0.61	0.*78*			
Engagement	0.86	0.68	0.73	0.*82*		
Community	0.83	0.71	0.76	0.79	0.*84*	
Skills development	0.92	0.66	0.75	0.72	0.81	0.*81*

Notes: CR = composite reliability; AVE = average variance extracted.
figures in italics on the diagonal are the square roots of the average variance extracted.

learning, engagement, community, support, skills development and overall satisfaction between the experimental and control groups. The results (see Table 4) indicate that the experiment group (M = 4.537, SD = 0.634), $t(80) = -0.542$, p = 0.589 did not have statistically higher scores on teaching and learning than the control group (M = 4.464, SD = 0.588). The same results were recorded for: (1) community in the experiment group (M = 4.293, SD = 0.622) in comparison to the control group (M = 4.238, SD = 0.917), and (2) skills development in the experiment group (M = 4.462, SD = 0.550) as compared to the control group (M = 4.267, SD = 0.823). However, the results highlight that the experiment group (M = 4.525, SD = 0.488), $t(80) = -2.062$, p = 0.042 scored significantly higher than the control group (M = 4.190, SD = 0.908) on engagement.

The same findings were recorded for students' overall satisfaction in the experiment group (M = 4.530, SD = 0.784), $t(80) = -2.271$, p = 0.026, who significantly scored higher than the control group (M = 4.120, SD = 0.834). Finally, the experiment group (M = 60.423, SD = 13.555), $t(92) = -4.241$, p < 0.001 scored significantly higher than the control group (M = 48.928, SD = 12.424) on grades. This difference is significant and affects students' final degree achievements, classifying grades between 60 and 69 as merit and between 40 and 49 as fail. In our study, 25.5% of the students have failed their first attempt in the control group and 8% in the experiment group. To check the robustness of the independent t-test for grades, we followed this analysis with an ANCOVA test controlling for students' attendance and duration using the learning management system that may affect their grades. The result indicates that the difference in grades between the two groups remains significant (F = 13.111, p < 0.001) including a variance of 12.7% (Partial Eta squared = 0.127) between the two groups.

4.3. LinkedIn group engagement and satisfaction

The engagement with the LinkedIn group community was operationalised following the recommendation of Dessart (2017) including affective, cognitive and behavioural engagement. First, an exploratory factor analysis (EFA) was conducted, which resulted in the majority of the items loading on their respective factors, except CE2 and BE8 which were removed from further analysis. Then, a linear regression was performed to understand the relationships between the three levels of LinkedIn group engagement and the overall satisfaction. The results explain that the relationships between affective (β = −0.29, p = 00.12), cognitive (β = −0.13, p = 00.49) and overall satisfaction are not statistically significant. However, the relationship between behavioural engagement (β = 0.51, p = 00.01) and overall satisfaction is positive and significant. This analysis was followed by an ANOVA test to understand the influence of students' characteristics on their engagement with the LinkedIn group. The results highlight that MBA international students having an experience of 5–6 years with LinkedIn scored significantly higher on LinkedIn group engagement than MSc Digital Marketing Management students, national students and the students who have only 1–2 years or 3–4 years of experience with LinkedIn.

To understand why students engaged with the LinkedIn group, a word frequency query was performed in NVivo. The results (see Fig. 1) indicate that the words 'posts', 'useful', 'content' and 'placement' are the top four prevalent words. Several examples illustrate how the students have used these words to highlight why they engage with the group community. For example, one student mentioned: 'All the posts have been a takeaway content, useful and interesting to me'. Other students explained that: 'Most of the posts are very informative' and 'I have engaged with the group because of the quality of content I see. It's very useful'. Further, the types of

Table 4
Results of independent sample t-tests.

Variable	Group	N	Mean	SD	t	df	Sig. (two-tailed)	Lower CL	Upper CL
Teaching and learning	Experimental group	40	4.53	0.63	−0.542	80	0.589	−0.341	0.195
	Control group	42	4.46	0.58					
Engagement	Experimental group	40	4.52	0.48	−2.062	80	0.042	−0.657	−0.011
	Control group	42	4.19	0.90					
Community	Experimental group	40	4.29	0.62	−0.320	80	0.750	−0.401	0.290
	Control group	42	4.23	0.91					
Skills Development	Experimental group	40	4.46	0.55	−1.252	80	0.214	−0.504	0.114
	Control group	42	4.26	0.82					
Satisfaction	Experimental group	40	4.53	0.78	−2.271	80	0.026	−0.762	−0.050
	Control group	42	4.12	0.83					
Grades	Experimental group	40	60.42	13.55	−4.241	92	0.000	−16.877	−6.112
	Control group	42	48.92	12.42					

Abbreviations: SD, standard deviation; df, degrees of freedom; CL, 95% confidence level.

Fig. 1. Word cloud generated from the qualitative open question.

post and content were highlighted as a factor influencing engagement: 'I like the Poll posts on the LinkedIn group. I engage more with these'. On the other hand, students engage with the LinkedIn group to support their work placement as one student mentions: 'I am engaged because the data or posts I receive on it are highly valuable. It improves my learning ability and helps me to understand more my things at my placement.' Alternatively, the main reason for not engaging with the LinkedIn group community is the students' general use of the platform as one student mentioned: 'I don't use LinkedIn often, just when I need to'. The same reason was highlighted by another student: 'I have not been very active on LinkedIn as it is very new to me'.

4.4. LinkedIn dashboard analytics

To analyse the impact of learning activities on students' engagement with the LinkedIn group community, LinkedIn's analytic insights was used to generate the average engagement rate for the informative and interactive posts learning activities. Engagement per post was calculated by adding the total number of reactions and comments (de Vries et al., 2012). Average engagement rate was calculated by dividing the average engagement per post by the total number of members in the group, which is in our case 51, with the result then multiplied by 100 to produce a percentage score.

First, the total number of views at the end of the semester was 8,570, including 6301 for informative content and 2269 for interactive content. The number of posts' views has increased over the course of the semester and declined during the Easter break at the end of the semester (see Fig. 2).

The engagement including the number of reactions and comments shows a similar trend and highlights an increase over the course of the semester until the break before the end of the semester (see Fig. 3).

Second, the total number of posts was 56, and the overall engagement was 577 resulting in an average of 10.3 engagements per post (577/56) and a 20.2% overall engagement rate per post for all learning activities (10.3/51*100).

Third, the total number of posts was 41 for informative content and an engagement of 391, resulting in an average of 9.5 engagements per post (391/41) and a 18.6% engagement rate per post for informative learning activities (9.5/51*100). On the other

Fig. 2. Post views by the students over the course of the semester (source – LinkedIn Analytics).
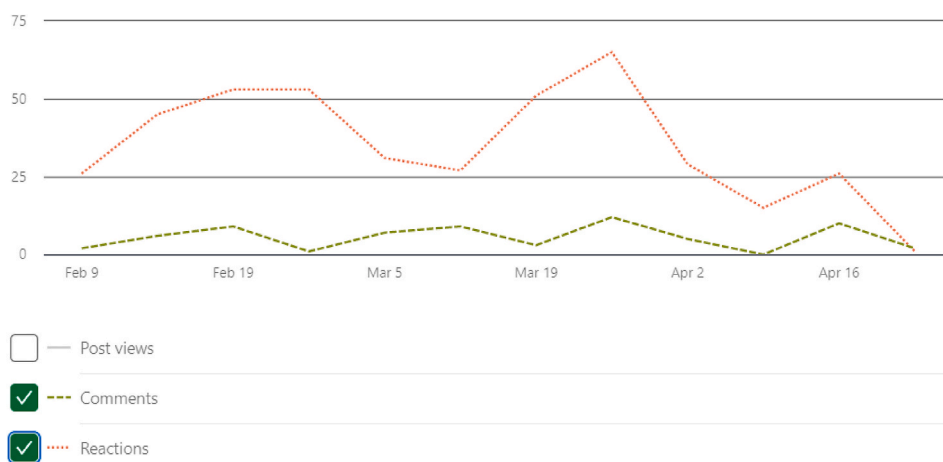
Fig. 3. Post engagement (number of comments and reactions) by the students over the course of the semester (source – LinkedIn Analytics).

hand, the total number of posts was 15 for interactive content and the engagement was 186, resulting in an average of 12.4 engagements per post (186/15) and a 24.3% engagement rate per post for interactive learning activities (12.4/51*100) (see Table 5). Further, a Chi-square difference test ($\chi^2 = 72.833$; df = 2, p < 0.05) indicates that the difference in engagement between the two learning activities is significant.

5. Discussion

5.1. The effect of LinkedIn group community on student experience, satisfaction and grades

The study explains that the LinkedIn group community has impacted positively and significantly upon students' engagement, satisfaction and grades. For the other students' experience dimensions including teaching and learning, community and skills development, the results did not highlight significant differences between the LinkedIn group and the control group. This finding indicates that educational social media may improve students' engagement and satisfaction by improving the interactions outside the classroom, and provide students with an alternative platform to disseminate knowledge, ask questions and learn from group discussions. This finding is consistent with previous literature that has used other social media networks in educational settings at the undergraduate level (Evans, 2013; Junco et al., 2011, 2012; Menkhoff et al., 2015). Further, the results explain that the experiment group has achieved higher grades than the control group, and this difference is not affected by students' classroom attendance, or the time spent using the virtual learning management system. This result contrasts with the broader outcomes of Eid and Al-Jabri (2016) and Junco et al. (2011) who found that social media education tools improve students' learning performance and grades. However, our results extend these previous findings to LinkedIn which differ from other social networks for its functionality and use in professional settings (Knight, 2019; Pena et al., 2022), and to the postgraduate student population, which has distinctly different characteristics compared to undergraduate students. Our study confirms that LinkedIn may be effective for experiential learning, and students can complete tasks, interact with each other and network with industry professionals, which is important for developing their future careers (López-Carril et al., 2021). A LinkedIn group community mimics a controlled work environment, facilitating debates and stimulating reflections and improving students' future employability (López-Carril et al., 2022).

On the other hand, the results indicate that the LinkedIn group did not impact upon students' teaching and learning perception, or community and skills development. First, the findings contradict the argument of Chugh et al. (2020) that social media educational use may enhance students' perception of teaching and learning and support for learners. Second, the result is in line with the study of Brown and Pederson (2019) who found that social media tools might not affect classroom community because the students' attention and energy are drawn to multiple outlets rather than the actual class experience. Finally, the impact of the LinkedIn group on skills development did not differ from the control group confirming the suggestion of Healy et al. (2023) for more coherent, cohesive, and integrated theories of careers and employability learning when using LinkedIn as a pedagogical tool. This result may be related to the instructional design and the inclusion of other activities that link students to future career and employability skills.

Table 5
Learning activities and engagement rate.

Learning activity	Post views	Number of posts	Post engagement (reactions and comments)	Average engagement per post	Engagement rate
Informative content	6301	41	391	9.5	18.6%
Interactive content	2269	15	186	12.4	24.3%
Total	8570	56	577	10.3	20.2%

5.2. The effect of student engagement with LinkedIn group community on student satisfaction

This study found that behavioural engagement with the LinkedIn group community is positively and significantly related to students' satisfaction. This result is consistent with several studies that highlighted the positive relationship between student engagement outcomes and satisfaction in online classrooms (Hazzam & Wilkins, 2023; Kucuk & Richardson, 2019). Surprisingly, the relationships between cognitive and affective engagement with the LinkedIn group and student satisfaction were not significant. These results have several explanations including the perceived usefulness of LinkedIn as an educational tool between students on different programmes or students with different years of experience with the platform (Al-Rahmi et al., 2018; Salloum et al., 2019). Business and marketing postgraduate students may perceive the benefit of LinkedIn for practical skills development, which explain their behavioural engagement with the platform. These students may have to develop campaigns on social media platforms as future marketing or business professionals (Bridgstock, 2019). On the other hand, many international students are active users of social media and the integration of LinkedIn in their teaching and learning may enhance their engagement and interactions with their peers, resulting in higher satisfaction with the programme of study (Sleeman et al., 2020).

Students may not engage in sharing their ideas and knowledge due to worrying about misuse of the information or judgments of others (Chen et al., 2023). This finding aligns with the study implication of Zhu and Dawson (2023), which highlights the challenges of engaging every member of the community. For example, privacy and safety concerns represent a barrier for student participation in social media educational communities (Akçayır & Akçayır, 2016; Benson & Morgan, 2016). Besides, student competences and skills are necessary to enhance the confidence for students' engagement with social media communities (Manca & Grion, 2016). These challenges can be mitigated by providing training and clear instructions on the use of LinkedIn which may positively influence students' use and engagement with the platform (Hamadi et al., 2022). For example, students can be trained to develop their profiles and provided guidelines on how to participate in a LinkedIn public community including the types of content that is valuable to create and maintain a strong network of contacts (López-Carril et al., 2021).

5.3. The effect of learning activities on student engagement with a LinkedIn group community

The analysis of the LinkedIn analytics reveals that students are more engaged with interactive learning activities and that learning posts which encourage discussions and request students' opinions (e.g., polls) generate higher engagement rates. This finding highlights the importance of instructional design that fosters inclusion and improves student engagement in social media educational communities (Manca & Grion, 2016). This is consistent with several social media and online learning studies, which recommend the design of interactive and collaborative learning activities that encourage rapport and provide students with active learning opportunities (Al-Rahmi et al., 2018; Kent et al., 2016). The finding emphasises that instructors need to support students' own learning paths through guiding discussions and interactions, and this may not be achieved through the generation of informative content only (Chen & Bryer, 2012; Junco et al., 2012). Educators may plan several activities and assignments to enhance students' engagement with LinkedIn such as developing their personal brand, identifying and connecting with stakeholders from their desired industry and creating content that links to their course syllabus (López-Carril et al., 2020).

6. Implications for practice

The study provides several recommendations for educators and instructors planning to integrate social media educational technologies, and specifically LinkedIn, in their teaching and learning activities at the postgraduate level. Although the results of this study reveal a positive impact of the LinkedIn group community on students' engagement, satisfaction and grades, the other dimensions of student experience such as teaching and learning, community and skills development were not influenced by the group community. Thus, educators may use a LinkedIn group community to complement classroom learning activities and avoid the mere reliance on these platforms to support students, develop their skills, and build communities and active learning environments. Instructors that set these expectations can successfully integrate LinkedIn learning tools and provide engaging learning activities that satisfy student needs.

The second implication of this study highlights that educators need to assess and understand the student characteristics which influence their engagement with social media educational communities. Instructors may support students with training on the functionality of LinkedIn, which may enhance students' confidence and engagement levels. Also, higher education practitioners need to understand the requirements of students from different backgrounds and programmes of study. The inclusion of students from different backgrounds and experiences at the planning stage of learning activities support the instructor's development of engaging learning activities and effective communication messages.

The third implication explains the importance of instructional design and experimentation with different types of learning activities. This study reveals the importance of several types of learning activities to engage students with a LinkedIn group community. Although informative posts receive acceptable levels of engagement, the results highlight that interactive learning activities stimulate the highest levels of students' engagement. Thus, educators must include in their learning strategies creative and interactive posts that foster discussions, collaborative and active learning.

7. Conclusion

This research demonstrates that the effective integration of a LinkedIn group community in teaching and learning at the postgraduate level contributes to students' engagement, satisfaction and grades. The postgraduate students who participated in the LinkedIn group scored higher than the control group on engagement, satisfaction and grades. This finding extends the literature that has investigated social media educational tools at the undergraduate level using Facebook and Twitter, among others. Also, this study contributes to the literature by providing insights on students' characteristics and requirements that facilitate their engagement with LinkedIn learning activities. International students that had previous experience with LinkedIn show higher levels of engagement within the experimental LinkedIn group. Finally, this study underlines the types of learning activities that engage students in a LinkedIn group community, contributing also to a better understanding of instructional design that stimulates engagement with a LinkedIn group community.

7.1. Limitations and suggestions for future study

The study presents several limitations and opportunities for future research. First, the research was conducted with a convenience and relatively small sample size and specific student population and programmes of study. Thus, future research may replicate and extend this study using larger samples and more diverse participants and programmes of study. Second, the experience outcomes are measured using the dimensions of the postgraduate taught experience survey at one point of time. Future studies may deploy a pre and post experiment study design supporting a better understanding of how students' perceptions change over time. Although we controlled for the duration using the learning management system in our analysis, the experimental group had access to the content on both the LinkedIn group and the learning management system, which may influence their experience and grades. Thus, future studies may create a separate group for the control group on the learning management system, which is not accessible to the experimental group, allowing the analysis of the control group interactions separately.

The sample characteristics in our study may have significant influence on the students' outcomes in the LinkedIn group. For example, postgraduate and international students may use LinkedIn more frequently than undergraduate and domestic students. Thus, future studies can investigate if a LinkedIn group community impacts undergraduate and postgraduate students' experience and grades equally. Also, an examination of the student outcomes between domestic and international students may add an in depth knowledge on how and when to integrate LinkedIn in teaching and learning. Finally, the two types of learning activities in the LinkedIn group community were informative and interactive, which limits our understanding on how students engage with other types of activities such as gamification or optional assessment. Future studies may employ several types of learning strategies to deepen our understanding on the optimal combination of activities that stimulate higher engagement and students' satisfaction.

CRediT authorship contribution statement

Joe Hazzam: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Stephen Wilkins:** Writing – review & editing, Conceptualization. **Carol Southall:** Writing – review & editing. **Blend Ibrahim:** Writing – review & editing.

Declaration of competing interest

There is no potential conflict of interest in this study.

Data availability

The data that has been used is confidential.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.compedu.2024.105052.

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