

DIGITAL LEARNING COMMUNITIES: A STREAMLINED APPROACH TO LEARNING SUPPORT IN TECHNOLOGY EDUCATION

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Abstract

Digital Learning Communities is a flexible, real-time student learning support initiative with a digital hub in the form of an active forum hosted in MS Teams. It is also supported through the on-campus drop-in learning support sessions facilitated jointly by academics and volunteer peer mentors. This initiative aims to integrate and streamline face-to-face and digital learning support activities to address the growing need for seamless, flexible, expertly moderated learning support mechanisms. This model can be instrumental in fostering learner engagement, collaboration and academic support by using an existing learning management ecosystem that is easily accessible to the learners and academics. Microsoft Teams, which emerged as a significant learning management tool when COVID-19 struck to support the continuity of learning activities, has since established itself as a leader and enabler in providing online, flexible and real-time learning support in various learning environments, including face-to-face, hybrid and distance education. Therefore, the efficient use of Microsoft Teams and its features to host the Digital Learning Communities platform is expected to help enhance peer interaction, mentorship and real-time academic assistance. This idea paper discusses the planned initiative's theoretical framework, platform design, and expected outcomes.

Keywords: *Learner engagement, collaborative learning, learning support.*

1. Introduction

On average, UK universities have around 6% dropout rates, ranging from 1% for highly ranked to almost 12% for other universities (Bryson, 2023; Smith, 2023; Roberts, 2023). The whole higher education sector is trying to address and solve this problem. However, the answer is not one set of actions or interventions.

The rise in popularity and adoption of hybrid delivery of university programs makes this issue even more critical. When students are engaged in learning via hybrid delivery arrangements, they are exposed to even more isolation, leading to a severe lack of adequate learning support and collaboration. Active community engagement and opportunities for collaboration are vital to stimulating an excellent learning experience and ensuring greater learning support amongst learners. To better understand this issue and address some aspects of student engagement and collaboration, we plan a Digital Learning Communities initiative at Queen's University Belfast (QUB) for its Business Information Technology (BIT) program.

The initiative is at its conceptual stage. The project plan is to implement the initiative's services for learners in the next academic year, 2025/2026. Business Information Technology (BIT) program is a unique program with students from across the School of Electronics, Electrical Engineering, and Computer Science (EEECS), as well as Queen's Business School (QBS) cohorts. As a result, learners in the program experienced varying levels of student support needs and requirements, which required following the different student support mechanisms/guidelines from two separate schools. Therefore, there is a need for a platform where learners can interact and collaborate with their peers and the academic teaching team to resolve any learning support-related queries when and where they are required. This initiative offers a flexible environment to promote peer-to-peer interaction, academic performance, and community building, aligning with global trends towards digital and flexible learning (Dziuban et al., 2018).

The instantaneous shift to hybrid and online learning in the higher education sector across the world, accelerated by the COVID-19 lockdowns, brought new norms to the delivery of education flexibly. However, it also presented educational practitioners and learners with challenges, such as limited social interaction and delays in academic support (Dhawan, 2020). These issues are significant for higher

education programs where multiple skill sets must be learned and developed in interdisciplinary fields like Business Information Technology, requiring technical and business knowledge. Studies have shown that the accessibility of peer collaboration and real-time academic assistance can bridge these gaps in learning support (Hrastinski, 2009). Therefore, this initiative aims to create a structured platform that enhances students' engagement, offering peer mentoring and collaborative learning spaces.

2. Theoretical framework

The Digital Learning Communities initiative builds on several well-established educational theories emphasising the importance of social interaction and peer learning in learning support.

2.1. Social presence theory

According to social presence theory (Dziuban et al., 2018), engagement with digital platforms/interfaces positively affects the sense of being with another person. Within the context of the Digital Learning Communities initiative, any interaction or engagement the learner has with the digital learning platforms to socially engage in learning support positively impacts the learning outcomes by providing the sense of being with another learner or the academic. When the learners feel socially present in the learning environment along with their peers, learning facilitators and academics, providing them with real-time learning support opportunities can greatly enhance student satisfaction and perceived learning. The proposed Digital Learning Communities initiative aims to increase social presence by fostering interactive and collaborative learning spaces within Microsoft Teams and on the planned regular drop-in learning support sessions.

2.2. Vygotsky's social constructivism

Social constructivist theory explores the role of social interaction in cognitive development (Vygotsky, 1974). There is an argument in the theory that learning is a socially situated process, and individuals and learners receive and create knowledge through participation and collaboration in group settings. Within the context of this initiative, Vygotsky's notion is supported by the Digital Learning Communities, with the help of learner engagement in peer discussions to signpost and co-create knowledge (Vygotsky, 1974). Peer mentoring, a core feature of the initiative, aligns with this theoretical approach, as senior learners/peers help guide their junior peers through academic challenges. However, this heavily depends on the potential uptake of volunteer roles by the senior peers in the program. This will require meticulous planning and some recognition and incentives for those willing to contribute to the initiative in different ways.

2.3. Peer-assisted learning

Peer-assisted learning (PAL) has long been recognised as a practical educational approach, particularly in enhancing learners' understanding of subjects involving complex and practical components (Topping, 2005). Research sheds positive light on the learners' success in improving their academic skills and social networks and creating a better learning support environment within PAL situations (Capstick, 2004). The proposed Digital Learning Communities initiative will establish a structured PAL program where senior peers provide academic guidance and a culture of mutual support and learning to their junior counterparts.

2.4. Socio-cultural approaches

While cognition-related theories have dominated much of the research on learning support in research across the learning support in all fields of study or topics including STEM, socio-cultural approaches have also made significant contributions. These approaches particularly stress on the role of social context, identity, and culture in shaping the learning experience, particularly in STEM education.

3. Platform design and structure

The Digital Learning Communities will be based on Microsoft Teams, leveraging its existing usage and seamless integration with other QUB learning management systems (like Canvas and Outlook). The platform's design creates an accessible, structured, dynamic space for student engagement and learning support.

3.1. Platform structure

3.1.1. Course and module specific channels. Each academic stage and the core modules (e.g., Programming and System Development, Databases, Modern Web App Development, User Experience Design, and Information Systems) will have their dedicated channels. These channels will be used for module-specific discussions, resource sharing, and project collaboration (Hrastinski, 2009).

3.1.2. Peer mentorship program. Senior students (stage 2 and beyond) will be invited to serve as peer mentors for first- and second-year students. This will not be a one-to-one arrangement but rather a more prominent and active contribution to the discussion topics from an active group of students who are either top performers or from higher stages. Research shows that peer mentoring helps bridge gaps in understanding and creates an inclusive environment (Ten Cate, & Durning, 2007). This structure will ensure that junior learners receive both academic and social support.

3.1.3. Collaborative workspaces. Collaborative channels will be created for project-based learning in either group or individual settings. These workspaces encourage real-time collaboration, problem-solving, and project management, helping students build essential teamwork and technical skills (Le, Janssen, & Wubbels, 2018).

3.2. Weekly communities of learning drop-in sessions

To extend the learning support and positive engagement among the learners, especially the ones with challenges in planning and managing their studies and deadlines or who may be facing any exceptional circumstances, communities of learning weekly drop-in sessions at a designated time and venue will be organized. This will be an opportunity for the students and the program leadership to act on any issues arising to be addressed on time. This will provide proactive learning support at a module or program level, helping students develop a sense of satisfaction.

3.3. Automatic enrolments and flexible participation

The plan is that starting in 2025/2026, all Business IT students will be automatically enrolled in the Digital Learning Community MS Teams group. Students can then customize their participation by subscribing to relevant channels for their year group and semester, ensuring that learners' engagement over the platform remains relevant, flexible, and user-friendly.

4. Objectives and initiatives

The Digital Learning Community aims to achieve several key objectives for the Business IT program in the 2025/2026 academic year. This represents a significant step forward in enhancing student engagement, collaboration, and academic support within the BIT program at Queen's University Belfast. This initiative aligns with QUB's vision of creating a student-centered, collaborative, and digitally enabled learning experience by fostering a digitally connected, peer-supported environment. The initiative will serve as an effort to enhance peer learning and student success in the digital age through careful research, design, and data collection.

4.1. Improve student engagement

Research shows that students, irrespective of the several learning environments, such as face-to-face, online, or hybrid courses, are often and always known to struggle with engagement at some level (Dziuban et al., 2018). This platform as a Digital Learning Community in MS Teams and the weekly drop-in sessions will serve as a central hub for student interaction, improving engagement through peer discussions, mentorship, and real-time expertly moderated academic support.

4.2. Provide prompt academic support

One of the main goals of the Digital Learning Communities is to reduce delays in academic assistance and learning support by enabling real-time support through peer mentors, faculty members, and program leadership staff. Students will likely benefit from on-demand academic help, which addresses a fundamental shortcoming in traditional office hour models (Hrastinski, 2009).

4.3. Promote collaborative learning

Collaborative learning has been shown to improve academic performance, particularly in group-based or individual take-home coursework settings (Le, Janssen, & Wubbels, 2018). The platform

will provide designated channels for those types of take-home coursework assessment component management, where students can collaborate and share ideas, fostering a better understanding of course material.

4.4. Foster strong community

Building a solid sense of community has been linked to higher retention rates and academic success in various academic settings, including face-to-face, hybrid and distance (Berry, 2019). This initiative aims to foster an engaging community at the program level where students feel connected and supported throughout their educational journey at different stages as they progress.

5. Data collection strategy and plan

A comprehensive data collection strategy will be implemented to assess the impact of the Digital Learning Community initiative. This strategy will help measure engagement, the overall academic performance of the student cohorts, and satisfaction with learning support among Business IT students. The research will take a mixed-methods approach, combining quantitative data (e.g., surveys, performance metrics) with qualitative data (e.g., MS Teams data and focus group interviews). The following methods will be employed to gather data on the initiative's effectiveness.

5.1. Academic performance and student satisfaction metrics

Microsoft Teams will provide data on student participation in the Digital Learning Community Hub. Metrics such as the number of messages posted, frequency of interactions, and involvement in peer mentoring activities will be tracked. This data will help quantify students' engagement and collaboration levels throughout the academic year (Hrastinski, 2009).

5.2. Engagement analytics from Microsoft Teams

One of the main goals of the Digital Learning Communities is to reduce delays in academic assistance and learning support by enabling real-time support through peer mentors, faculty members, and program leadership staff. Students will likely benefit from on-demand academic help, which addresses a fundamental shortcoming in traditional office hour models (Hrastinski, 2009).

5.3. Focus group

At the end of the academic year, a sample of BIT students will participate in focus group discussions to gain deeper insights into the student experience. These sessions will explore students' perceptions of the initiative, including the benefits of peer support, any challenges encountered, and suggestions for improvement in the next academic cycle (Berry, 2019).

6. Data analysis plan

Survey results and academic performance metrics will be analyzed using descriptive statistics, such as mean scores and percentage changes. Inferential statistics (e.g., paired t-tests) will be used to compare pre- and post-implementation outcomes, determining the initiative's impact on student engagement and performance [Johnson, Johnson, & Smith, 2014]. The qualitative data from MS Teams engagement data, focus groups, and mentor logs will be analyzed thematically. This will identify key themes related to student experiences with the platform, including benefits, challenges, and overall satisfaction (Berry, 2019).

7. Anticipated challenges and mitigation strategies

Some challenges include possible student reluctance to engage with the platform or overreliance on peer mentors for academic support. To mitigate these issues, the initiative will offer orientation sessions, provide clear guidelines on the role of peer mentors, and encourage faculty to participate in the Digital Learning Community platform to ensure a balance between peer and instructor support (Topping, 2005).

Additionally, one anticipated challenge is adequate monitoring and moderation of the communications posted within the Digital Learning Communities forum. To address this, academic teaching staff will actively participate and manage this.

8. Research timelines

Implementing the Digital Learning Communities initiative and successive data collection processes will follow a structured timeline aligned with the BIT program's academic calendar.

Phase	Timeframe	Activity
Phase 1: Pre-Implementation	August – September 2025	Getting the Digital Learning Community Hub and face-to-face drop-in student support session activity plan and scheduling.
Phase 2: Implementation	September 2025 – April 2026	Data from Microsoft Teams and student satisfaction metrics collected in real-time
Phase 3: Post-Implementation	May - June 2026	Focus groups and academic performance data collected
Phase 4: Qualitative Research and Evaluation of the Initiative	June – July 2026	Analysis of the data together to refine the process for the next academic year.

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