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Abstract

Communities of Practice (CoPs) are naturally forming groups of individuals who come together through a shared passion or goal and learn collectively by reciprocating knowledge and experiences (Lave & Wenger, 1991). With competing demands of faculty, universities are increasingly challenged to provide professional development opportunities that actively encourage innovative pedagogical practices to enhance student success and quality of the learner experience. We report on four embryonic CoPs, based on collaborative processes, supporting institutional transformation and the formation of a new education model at Ireland's first Technological University (TU). Juxtaposing a series of planned learning innovations with spontaneous interactions and actions of CoP members, we draw out common themes with respect to how these members developed as professional educators, how they accelerated the adoption of new innovations and their perceived factors for CoP success. Findings from this funded initiative are first reported as separate case-studies each covering a six-month period. The CoP model is then evaluated as a professional development strategy to initiate and sustain practice-based change. Finally, a thematic analysis of our shared perceptions across the four CoPs is undertaken. Whilst selection bias is inherent in these perceptions, we nevertheless conclude from our shared experiences that CoPs are particularly attuned to rapid and extensive adoption of teaching and learning practice innovations and organisational transformation in Higher Education (HE). Consequently, CoPs can serve as vehicles for sustainable professional development in teaching and learning practice. Based on our findings, we offer recommendations for fostering CoPs in supporting strategy-as-practice in the technological university sector.

Key words: change management; collaboration; community of practice; innovation; organisational transformation; sustainable professional development

Introduction

TU Dublin aims to be a provider of professional career-focused education through innovative practices that will maintain its institutional reputation for excellence in teaching and learning practice and for a high-quality and inclusive student experience. In acknowledging people as one of its key assets, TU Dublin's strategic intent strives "to offer space to foster ideas, relationships and individual personal development" (TU Dublin, 2020, p. 9). It underpins a commitment by Ireland's first technological university to support a continuous professional development framework for its staff. Concomitantly, the implementation of TU Dublin's new student-centred quality enhancement framework necessitates investment in staff professional development aligned to key performance indicators supporting the achievement of strategic objectives focused on quality and academic excellence. Currently, TU Dublin staff involved in teaching and learning can avail of a suite of postgraduate programmes in education, professional development modules, training workshops and consultancy supports on matters related to pedagogical innovation, programme development, assessment strategies, technology enhanced learning and the virtual learning environments (VLEs).

Yet, with competing demands on resources, a more sustainable professional development strategy must be considered so that staff can develop their pedagogical expertise and engage with innovative practices. In this paper, we explore the cultivation of communities of practice (CoPs), underpinned by social theory of learning (Bandura, 1969), as a sustainable model of professional development in which democratised forms of agenda-setting and a relational approach to knowledge-share would seem congruent with rapid adoption of teaching and learning innovations. In contributing to emergent case-study literature on cultivating CoPs in HE for professional development, innovation and/or organisational transformation purposes (e.g. Maistry, 2008, Mak & Pun, 2015, Dirckinck-Holmfeld & Coto, 2019). The following research questions guide this exploratory study.

RQ1: How did the CoP members perceive that they learned and developed from the CoP?

RQ2: How did the CoP members perceive their innovations in teaching and learning practice were adopted?

RQ3: What success factors did CoP members perceive to be influential in cultivating the CoP?

Having articulated the objective of this paper and its guiding research questions, the remainder of the paper is structured as follows. First, we outline the context, in which the

formation of four distinct CoPs is summarised: [1] Assistive Technologies, [2] Games for Learning [3] Authentic Assessment, and [4] Sustainability Literacy

Background to the study

With a foundation in situated and social learning, a CoP model (Lave & Wenger, 1991) provides an attractive approach to initiate pedagogical change by drawing staff with a common interest together to voluntarily exchange innovative practices, skills and/or knowledge (see for example Dirckinck-Holmfeld & Coto, 2019). Research has demonstrated that CoPs (Wenger, 1998) can also be a catalyst to encourage the engagement of often time-constrained staff with professional development opportunities (Lantz-Andersson, Lundin & Selwyn, 2018; Patton & Parker, 2017) Building learning communities where practices are willingly exchanged can also increase the effectiveness of the outputs by enabling members who might not have the relevant expertise to develop the pre-requisite skills to be able to contribute meaningfully within any collaborative engagements (Barab, Kling, & Gray, 2004; Patton & Parker, 2017).

This paper reports on work supported as part of the Integrate work package 3 of the TU Dublin IMPACT project (<https://tudublinimpact.wordpress.com/>). The project was funded under the National Forum and HEA-funded project as part of the *Strategic Alignment of Teaching and Learning Enhancement* (SATLE) call during the 2020/21 Academic Year. Following a sequence of different funding calls within this work package, funding was allocated to support the development of four CoPs across the university Although these communities already existed as informal groups of individuals with a shared interest it was hoped that the targeted seed funding could allow these communities to become self-sufficient and in doing so, embed a culture of collegial support and enhancement in key teaching and learning areas related to the TU Dublin Strategic Plan.

This research explored the evolution of four CoPs as separate case studies. The three characteristics of the Lave and Wenger (1989) theoretical model were used to structure the case studies with the aim of exploring

- the distinct stages of development and level of engagement within these communities.
- the perceived relative mutual benefits from participation and engagement for both new and experienced staff involved within these CoPs.

- the CoP model as a potential scalable sustainable academic professional development strategy to encourage teaching and learning practice innovative practices to enhance student success across the university.

It was hoped to evaluate whether a CoP model could be a sustainable effective strategy for supporting professional development that actively encouraged pedagogical innovative practices to enhance student success and quality of the learner experience within TU Dublin. If there was potential within this approach, what had been learned from these current experiences that might inform and guide the establishment of any future communities.

As core founders of the four CoPs, we used a series of agreed reflective prompts to guide our thinking as a case study framework. In recognising that reflexive accounts cannot be complete or impartial, as they represent a construction on the part of the researcher (Scott & Usher, 2010), this paper offers an auto-ethnography (Pithouse-Morgan, Pillay, & Naicker, 2021) of our first-hand experiences in establishing CoPs. So, rather than merely acknowledging our personal role as authors in this paper just to then play it down, this paper accentuates our subjectivity as a means of articulating a proposed research agenda on CoPs for innovating in teaching and learning.

The following section provides an overview of the inspiration and rationale for funding to establish the CoPs. We follow with review of current literature to contextualise the four case studies.

CoP One: Teaching and Learning Assistive Technologies

Assistive technology is any piece of equipment, software, or product system used to increase, maintain, or improve the functional capabilities of persons with disabilities (World Health Organisation, 2011). This community aimed to inform and empower the use of ubiquitous Assistive Technologies (AT) that can be found throughout all commonly used software and hardware platforms and devices to enhance teaching and learning in higher education at TU Dublin.

This CoP was initially centred on the creation of an accessible student-centred resource that defined, explained and supported the AT and how it can be embedded and used to support and enhance educational tasks such as planning assignments, writing and/or proofreading.

The primary aim is to reduce a perception of AT as a niche element of technology and promote the concept of ‘AT for All’. The CoP has also placed Universal Design for Learning as a priority element within the wider academic community, with resources to reflect same highlighted in the community’s central online resource www.tudublinassistivetechology.ie, as well as an AT Toolkit and other resources. As part of this CoP, physical technology resources are being procured for an inclusive technology library area, as part of the library loan catalogue.

This CoP has led the design of additional accessibility resources such as the TU Dublin THRIVES accessibility framework, an easy-to-follow resource that is a guide for the development of all digital resources/assets (TU Dublin, 2021).

CoP Two: Games for Learning

The use of games for teaching, learning, assessment, and engagement has gathered increasing attention in recent years, and a growing body of research evidence supports the theory that games are effective motivators for human engagement and performance (Wiggins, 2016; Sailer, Hense, Mayr, & Mandl, 2017). In an HE context, research indicates that practitioners are exploring two approaches in particular: gamification, defined as “the use of game design elements in non-game contexts” (Deterding, Dixon, Khaled & Nacke, 2011), and playful learning, an approach based on the “magic circle” concept that provides a safe space for experimentation (Nørgård, Toft-Nielsen, & Whitton, 2017). Both games and play are emerging as valuable tools for supporting student success.

The degree of interest and engagement in these topics in TU Dublin was evident from the high numbers attending the *G2T2020 Games To Teach* conference and several webinars on gamification hosted at the university during 2020. IMPACT funding was therefore sought to establish a *Community of Practice on Gamification, Game-Based Learning, Playful Learning and Serious Games*, with the aim of expanding pedagogical understanding, sharing practices, and developing resources to support members’ application of games in their teaching. This community brings together staff and students; gamification is by nature student-centred and enables connection, engagement, flexibility and diversity of provision, thereby directly supporting and enabling TU Dublin’s educational model.

CoP Three: Authentic Assessment

As staff made the rapid shift online during 2020-21, many used the opportunity to adopt more of an authentic approach to their assessment. Authentic assessment (AA) is defined as a form in which students are asked to perform exemplary real-world tasks in meaningful contexts (Swaffield, 2011) Developing effective assessment strategies for learning presents unique challenges and opportunities. However authentic assessments can be more time-consuming and resource-intensive to design, organise and evaluate and with increasing complexity comes the additional need to ensure that students have the relevant supports in place.

It was felt that the community-based model of professional development would help build upon a foundation of existing effective practices. It was hoped that building a CoP, bringing together individuals with a shared interest in Authentic Assessment, would provide staff with an opportunity to exchange ideas and practices. The subsequent involvement of AA experts in the design of appropriate templates and guides, with input from a range of stakeholder groups, would help to create a consistent, high-quality approach to authentic assessment within TU Dublin. This in turn could help build capacity within TU Dublin and contribute to a sustainable model for embedding best teaching and learning practice within the curriculum.

CoP Four: Sustainability Literacy

In 2015, the Sustainable Development Goals (SDGs) emerged as one of the most ambitious global agreements in history (UN, 2015). Under SDG 4.7, universities were mandated to develop sustainability literate graduates and become catalysts for achieving the SDGs through collaborative and engaged scholarship (Delaney & Horan, 2020). A CoP to evangelise sustainability literacy (Décamps, Barbat, Carteron, Hands & Parkes, 2017) seemed an obvious alignment that would stem sustained engagement and collaboration among many stakeholders, beyond faculty and students, to affect university-wide transformation (Filho et al., 2019). The idea that CoPs could facilitate large numbers of people with varying skills in social learning to rapidly achieve literacy appeared particularly appealing in light of challenges posed by TU Dublin's ambitious strategy to integrate the SDGs in the curriculum. The UN Sulitest www.sulitest.org (a repository of MCQ style questions) and a reflective assessment served as collaborative artefact, which provided as basis for the formation of CoP's identity (Table 1).

Table 1: Sulitest Engagement at TU Dublin

Year	2018	2019	2020	2021
Invitations	13	150	597	1518
Completions	3	41	340	1255

Whilst the Sulitest served as a focal point for low-barrier engagement, a more substantive element to the CoP has been the ongoing development of open education resources (OERs) digitally badged to five SDG clusters identified by Elsevier and the organisation of awareness-building events.

CoPs: the wider benefits

The concept of the Community of Practice first entered academic discourse in the 1990s (Wenger, 1998), before proliferating through a range of literatures in areas including knowledge management and organizational learning (Wenger, McDermott & Snyder, 2002), public governance and administration, and teaching and learning in HE (McDonald & Cater-Steel, 2017). At a basic level, a ‘community of practice’ denotes a “group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger-Trayner & Wenger-Trayner, 2015). The model of the CoP as a vehicle for collective learning and knowledge sharing is underpinned by a set of assumptions about the social and situated nature of learning which emphasise the acquisition of knowledge through a process of social participation (Brown, Collins & Duguid, 1989) over transmissive modes of instruction or isolated study.

Whilst each CoP tends to have its own unique repertoire of experiences and problem-solving routines and there are many definitions of community of practice, Wenger-Trayner and Wenger-Trayner (2015) outline three “crucial characteristics” of any CoP, which they describe as “domain”, “community”, and “practice”. “Domain”, firstly, refers to the “shared domain” of concern or practice that initially impels members to come together, such as – in the cases outlined here - a common interest in enhancing teaching and learning through sustainability, assistive technologies, gamification, or authentic assessment. Secondly, “community” denotes the mutual engagements, activities and social exchanges that characterise the CoP, comprising the variously formal and informal discussions, workshops,

knowledge-sharing events, and regular interactions in which members “interact and learn together”. Finally, “practice” signifies the result of this joint enterprise evolving from a community of “interest” to a community of “practice” to develop a “shared repertoire” of resources including “experiences, stories, tools and ways of addressing recurring problems” that might be said to constitute a community’s “shared practice” (Wenger-Trayner & Wenger-Trayner, 2020).

It is theorised that while a CoP’s domain or common interest initially draws together participants, and its community sustains their “fellowship and learning”, it is its “practice that crystallises these experiences and shared knowledge” (Mercieca, 2017, p. 11). Where this third characteristic is concerned, Wenger (1998) uses the term “reification” to denote the “process of giving form” (p.59) to practice which results from the activities of the CoP. This term is deployed purposively to denote the relationship between the concrete practices that emerge out of a successful CoP, in the shape of new methods, discourses, stories, tools and ideas, artefacts and other “observable outputs” (Mercieca, 2017, p.11) and its more tacit and intangible outcomes in the areas of professional identify development, sustained community building, and reflective practice.

Organic and Intentional CoPs

Within CoPs, members typically pose questions, swap resources, identify outside expertise, map knowledge, design solutions to problems, develop artefacts and tools, share ideas and provide a scaffold of emotional support (Trust & Horrocks, 2019). Research has shown that CoPs (Wenger, 1998) can be a catalyst to facilitate learning in organizations and to encourage the engagement of often time-constrained staff with professional and academic development opportunities (Lantz-Andersson, Lundin, & Selwyn, 2018; Patton & Parker, 2017) that might otherwise elude them. Though originally conceptualised as “self-emerging and self-organizing organic networks” (Zboralski & Gemünden, p. 221) rooted in the informal, social learning environments of traditional apprenticeships (Lave & Wenger, 1991), the CoP model has come to be used more recently in intentional and applied sense to denote planned efforts to harness collective learning and knowledge sharing to achieve defined strategic objectives. Yet Trust (2015) suggests that members do not necessarily learn in a planned way. Rather, they learn through observing each other's actions and interactions, engaging in conversations and socially constructing their knowledge.

In a 2012 report on building and sustaining leadership capacity for CoPs in Australian HE, McDonald, Star, Burch, Cox, Nagy, Margetts and Collins (2012) identified three types of CoPs, classified as “Organic”, “Nurtured/Supported”, and “Created/Intentional”. Here, organic CoPs were those that were “bottom-up” and “self-determined”, emerging naturally out of the needs of university staff without formally turning to the institution or its management for support, while “nurtured/supported” CoPs were similarly established and often steered by staff but with some degree of institutional or senior leadership support or influence. Where this latter type of CoP was concerned, the “timing for outcomes” is usually self-determined but influenced to an extent by the requirements of funding. Lastly, the authors described a type of “created/intentional” CoP, convened from the top-down, with its agenda and outcomes aligned with specific institutional needs or strategies. In terms of their positioning along this continuum from organic, through supported, to created, each of the CoPs outlined here can be described as having emerged out of the initiative of TU Dublin staff, whilst also intentionally brought into being to fulfil the objectives of the university’s IMPACT project (<https://tudublinimpact.wordpress.com/>) and, by extension, national priorities for the enhancement of teaching and learning in Irish HE. Though none could be described, as a spontaneous evolution of an existing community, they have been established with the expressed intention of drawing together staff from across the university with the aim of maximising its current teaching and learning strengths, highlighting and enhancing existing practice, and promoting student-centred pedagogical innovation.

In the broader literature on organisational learning, Wenger and Snyder (2017) point to evidence that CoPs can make demonstrable contributions to organizational goals and performance, “promote the spread of best practices”, and meaningfully “develop people’s professional skills” (Wenger & Snyder, 2000). Research has also shown that CoPs can be a catalyst to encourage the development of time-constrained staff with professional development opportunities (Lantz-Andersson, Lundin, & Selwyn, 2018; Patton & Parker, 2017) which is of particular importance in contemporary HE where academic work is often characterised by isolation and competition, rather than collegiality and peer support (Lipton, 2019).

Building learning communities, where practices are willingly exchanged, can also increase the effectiveness of CoPs’ outputs by enabling members who might not have the relevant expertise to develop the pre-requisite skills to contribute meaningfully, and from the “periphery” (Wenger & Lave, 1991) within any collaborative engagements (Barab, Kling, &

Gray, 2004; Patton & Parker, 2017). CoPs are also sometimes held up as vehicles for building up a culture of collegiality (Lave & Wenger, 1991; Sánchez-Cardona, Sánchez, Lugo, & Vélez-González, 2012) where early career staff benefit from exchanging knowledge and practice with senior colleagues in a supportive environment built on mutual trust, reciprocity, and sustained peer collaboration. Conversely, recent studies (e.g. Arthur, 2016; Dirckinck-Holmfeld & Coto, 2019; Wilson, Wilson & Witthaus, 2020; Jakovljevic & Veiga, 2020) suggest that there is more of a mutual benefit to be gained with both levels of participation and the direction of learning being reversed as early career teaching staff may have greater levels of digital literacy and more recent industry or research-related experience.

As COPs are based on social learning principles, their success is often a function of active participation of its members. Moreover, learning tends to be delimited by their members' partial knowledge of the COPs interests. Yet, the literature also suggests that little is known about the effectiveness, or impact on social learning or practice improvement, of “artificially created” (Hara, 2009, p.5) or “arranged” CoPs (Palermo, 2017, p.20). Also, despite their flat, egalitarian organisation, “created” CoPs tied to specific strategic aims raise interesting questions about leadership, core and peripheral participation and contribution, and the tensions that exist between the imperative to fulfil project deliverables and the extended work required to create sustained communities of learning.

Four CoPs: Case study reflections on practice

Using Lave and Wenger's (1991) three characteristics of (1) **Domain**: shared interest and identity 2) **Community**: sustained engagement, mutual gain and learning processes, 3) **Practice**: a way of working together or a shared practice, as a reflective framework, members of the CoP core founding teams present their experiences as a set of case studies in the following section. Emergent themes are identified and then contextualised within current literature. The paper concludes with a set of recommendations based on this work.

CoP One: Teaching and Learning Assistive Technologies

To date, assistive technology has been considered somewhat of a niche element of educational technology. It has not always been particularly well understood that flexibility and accessibility is a key element of universal design and that this may be supported by and facilitated with technology (Hitchcock & Stahl, 2003). The Educational Assistive Technologies CoP was formed initially by an academic and a former AT officer of the university who had a mutual interest in the promotion and support of technology-aided

learning from an accessibility perspective. It was also an aim from the beginning, given that the university has a significant population of students with disabilities, to have this CoP co-led by a student. A TU Dublin student with an active interest and expertise in AT now co-leads and advises the CoP on the development of the resources.

Initially, the CoP community was partially closed, in that members were recruited from existing functions and networks in the university such as the Access and Disability services, the Library services, IT services and the TU Dublin Ability network. The latter network is a diverse and open forum for staff and students to discuss and raise issues about the management of disability in the university, the former are well-defined functions that have specific perspectives and expertise that proved invaluable in the establishment and development of the CoP.

On the development of the first iteration of the online resource, the CoP is now operating as an open community and has hosted three well-attended interactive workshop events. Two of these were openly accessible as Teaching and Learning events, one with more restricted access in a safe space format. The CoP leader is also preparing training materials for the university's staff development skills platform. The CoP also has a closed focus group, comprising of staff and students, who advise on the content, structure and accessibility features of the CoPs online resource and test same before updates are released.

A particularly rich source of interaction within the community is the 'AT Stories' section of the online resource, where community members, both students and staff, contribute a first-person user case account of an assistive technology element. The nature of the shared identity of the CoP members tends to vary, depending on the context in which the member is accessing the community and/or the resources. Some members wish to use the resources directly, according to their own specific and unique needs. Some wish to discuss technology usage with peer groups. Others wish to gain insight into student challenges and explore relevant technologies collaboratively via the workshops.

To date, the impact of the community is determined primarily through the engagement with the online resource and an inbuilt feedback form. The CoPs website has been endorsed by the university's IT services and will be linked to its main site via links from the main site. The

development of the university's THRIVES¹ accessibility framework (TU Dublin, 2021) was prompted by this CoP and the EU directive on web accessibility. This is shown in Figure 1.

Accessibility is defined within this EU directive as meaning web content and mobile apps that must be “Perceivable, Operable and Usable” by persons with disabilities, and they must be robust enough to work on different browsers, and with different assistive technologies (EU, 2016). It is through this work that the CoP may reach a larger audience throughout the university as, certainly during and post-pandemic, the volume of digital materials produced for online publication has significantly increased. Physical AT resources are being sourced for access by all that are to be housed in the campus library. These will be supported and enhanced to complement the online resource. It is through these accessible physical and online resources, as well as the more far-reaching legislative accessibility requirements, that this CoP sees its primary development opportunities.

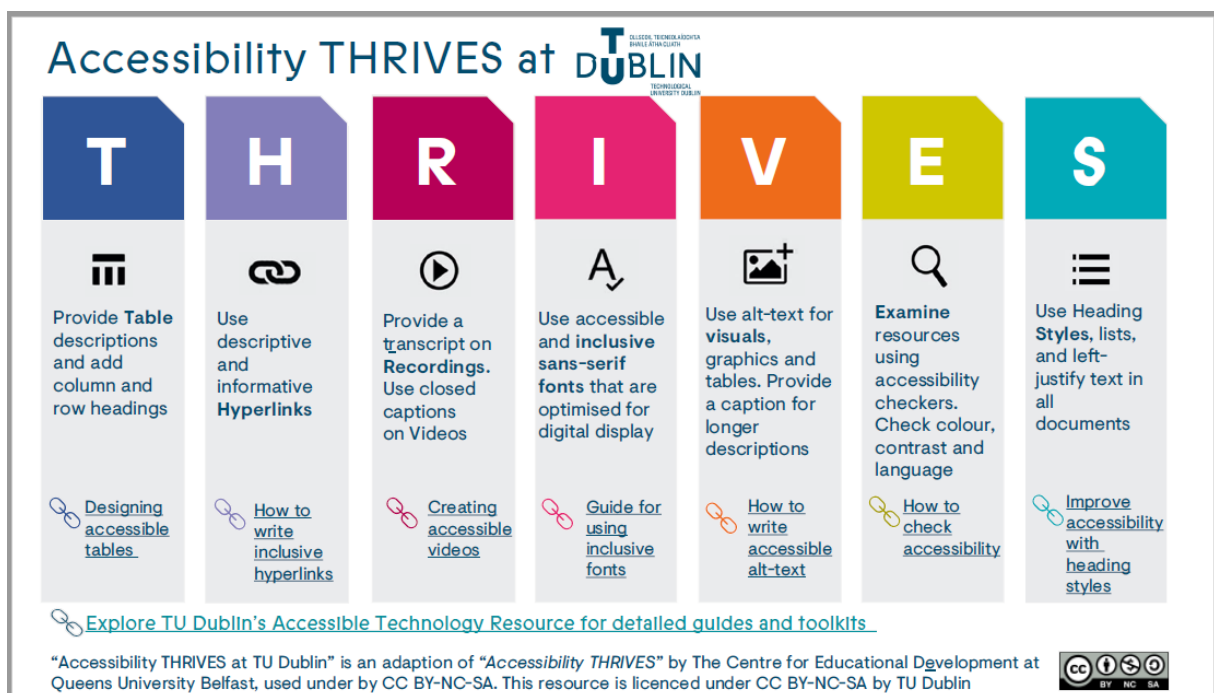


Figure 1: TU Dublin's THRIVES Framework

CoP Two: Games-based Learning

The Gamification CoP was founded to encourage the sharing of best practices, research, resources, case studies and experience among all those interested in the use of games and

¹ The TU Dublin THRIVES Framework is an adaption of "Accessibility THRIVES" by Tracy Galvan and Jen McPartland of the Centre for Educational Development at Queens University Belfast, used under CC-BY-NC-SA

play for teaching, learning, assessment and/or engagement. To establish the potential interest for the CoP, an initial survey was circulated to TU Dublin staff across all campuses. Of the 84 respondents, 31 had never used games and play for teaching, 32 were relative novices, and 21 were regular or expert users. This diversity of membership shaped the nature of planned activities, to engage all members and support all experience levels.

The initial survey invited interested members to form part of the CoP organising committee. Although there was a nominal CoP Lead, in general the workload and activity organisation was shared between all six committee members, and decisions reached through consensus during discussion. The role of the Lead was as an overall champion and enthusiast, keeping the momentum going, ensuring tasks, and agreed goals were achieved, and managing communication with the CoP membership and promotion to the wider TU Dublin community.

During the initial four months of the CoP's activities, the committee organised seven online events, starting with a launch meeting in early February and culminating in a week-long 'Celebration of Games for Learning' in mid-May. Meetings were conducted via MS Teams, and Teams channels were used to host special interest topics. Events included topic discussions, showcase presentations and demonstrations by members on their own implementation of gamification and play, workshops with invited experts, co-creation of digital resources, and the creation and maintenance of a supporting website and repository.

The IMPACT seed funding supported the establishment of the CoP and has been used to offer conference and workshop tickets for members, to fund website hosting, and to purchase books, digital resources and/or equipment towards a Gamification CoP library, made available to all members.

The current active CoP membership includes those with considerable experience in the use of games, as well as many who are new to the area but are keen to try such approaches. However, there is no obvious hierarchy in the structure of the CoP; all members participate with a common goal, to share, to learn, to collaborate, and to improve the experience and success of their students. The CoP is deliberately relaxed and informal to encourage communication and sharing of practices and 'work in progress' initiatives.

Through workshops, collaborative meetings, training sessions and sharing of a wide range of physical and digital resources, the Gamification CoP is already supporting the development of new skills and providing opportunities for collaboration and experimentation in these

exciting pedagogical strategies. The outputs from the initial phase of this initiative include a website (<http://gamestoteach.ie/home/cop>), a suite of online resources (available on Sharepoint), an interactive newsletter, and several co-created Padlet walls with practitioner examples.

The continuing activities of the Gamification CoP support three pillars of the TU Dublin Co-Create framework, namely: try new things; use all of our talents; and make our learning experience active, useful and related to the world. These goals apply to the learning and development of both staff and students, and the CoP facilitates the professional development of academic and non-teaching staff to support student success.

It is anticipated that the CoP will increase the exposure of members to game and play elements and their application in teaching, learning, assessment and engagement. It will continue to deliver workshops, conferences and collaborative opportunities, and continue to build a comprehensive digital and physical resource library. Through increasing awareness and sharing of gamification practices, members will be supported to develop their own approaches in the classroom. In the longer term, the CoP aims to continue growing its membership, to increase application of games elements across disciplines that would not traditionally use them, and to increase cross-campus engagement. When physical events are feasible, 'lunch and learn' workshops and talks will be hosted. Student membership will form an important goal of the CoP going forward, encouraging staff-student partnership and co-creation of gamification resources.

CoP Three: Authentic Assessment

An all-staff email call for expressions of interest in joining an Authentic Assessment CoP was circulated as part of a short online survey at the beginning of February 2021. A series of subsequent seminars and events were used to promote the work of the community and to expand membership. It was intended that the CoP would operate independently but alongside a number of community related activities, including:

- IMPACT Operation (Authentic Assessment) Transformation: Developing sustainable Authentic Assessments. A scheme in which Individuals (Scholars) were supported to undertake an agreed assessment transformation project conducted over a series of weeks under the guidance of a more experienced mentor (Supporters).
- TU Dublin Engineering and Built Environment Teaching Champions

- LTTC Assessment and Feedback for Student Learning CPD (Continuing Professional Development) module (5ECTS).

A private space was set up in MS Teams as a resource hub and an online space where members could exchange ideas, resources and/or practices, alongside an internal website for highlighting the work of scholars and supporters, and the development of a framework for authentic assessment (re)design. Members who had requested to join the CoP were added to the online group by the coordinators. As of beginning of Sept 2021, there are 62 AA CoP members and 2 coordinators. Of the members, 48 are AL/L with 9 senior teaching staff and 5 from professional services.

The expression of interest anonymised survey responses (N=28) revealed that 64% had joined the community through an interest in assessment and feedback strategies as well as a desire to learn new ways to assess their students; 82% were interested in opportunities to try out assessment and feedback methods. Ethics approval for the survey had been noted under the LTTC Generic Protocol and use of data agreed by respondents to the survey.

Initially, the CoP activities were structured around a series of centrally organised seminars. These sessions were organised as themed practice exchange sessions where guest practitioners were invited to contribute short case studies or resources. Additional materials and any follow-on discussion could be maintained within the Teams online space. However, this was limited and could perhaps have been encouraged more through guest moderators and contributors.

Latterly CoP sessions focussed on the *Operation Assessment Transformation* initiative. These sessions were successful in generating interest and promoting the work of the community. Nine CoP seminars attracted 699 staff from across the institution, with the guest speakers eliciting most interest. Case studies and Scholar profiles were promoted via social media and attracted staff to the website. Although early meetings with the community groups provided opportunities to shift operational responsibility of the community to the members, the more formal structuring of earlier activities and regular scheduling of seminars to mitigate against this shift. Delays in establishing the AA scholarships and associated site also caused difficulties in generating interest and a wider university engagement in the Initiative.

One of the intentions of establishing the CoP was the creation of a shared understanding of core institutional assessment and feedback principles/values. Linking into the work of the CoP, it was also hoped to develop a first draft of TU Dublin Authentic Assessment and

Feedback framework and to be piloted and then evaluated as part of the Operation Assessment Transformation initiative. It is anticipated that this work will be further developed as part of the National Forum funded Strategic Assessment, Teaching and Learning enhancement work stream two LEADER (TU Dublin feedback AND assessment fRamework) project and that the CoP will continue to support and enhance this initiative.

CoP Four: Sustainability

SDG Literacy is an embryonic CoP aimed at equipping faculty with the necessary learning resources and assessment tools to develop the sustainability literacy of their students. Sustainability literacy refers to the knowledge, skills and mindsets that allow individuals to become committed to building sustainable futures. The SDG literacy community is interdisciplinary comprising staff members from across the university with a shared interest in the sustainability domain. Cognisant of SDG 4.7² which focuses on ensuring all learners acquire knowledge and skills for sustainable development by 2030, this community comprises faculty who are keen to contribute to the scaffolding of Education for Sustainable Development in TU Dublin and to embed sustainability literacy in their curricula.

As with many innovations in teaching and learning, an injection of funding can be a key catalyst. IMPACT funding facilitated the hiring of a part-time project manager, the acquisition of the premium version of Sulitest and other software and training needed to develop the OERs. The team which comprises two team leaders, one technical lead, six work package leaders and a growing number of faculty members initially focussed on the roll-out of a sustainability literacy MCQ test Sulitest across a broad range of cohorts from across the university. Sulitest is a UN supported platform which allows for benchmarking of student cohorts for ASSHE-STARS recognition. We have used it to raise awareness of sustainability issues amongst students in their academic disciplines and personal lives. Since the beginning of the project in late 2020, over 2000 students have taken the test and over 50 faculty have joined the community, registering as Sulitest examiners. IMPACT seed funding was significant in supporting the community building its relationship with Sulitest. The work of

² By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development, <https://unstats.un.org/sdgs/metadata/>

this CoP has been celebrated in Accelerating Education for the SDGs in Universities an initiative of the UN SDSN³ and in Sulitest's report for the UN's Higher Level Political Forum for Sustainable Development⁴.

A second collaborative element to the CoP has been the creation of open education resources (OERs) which will be developed using Articulate Rise, an eLearning authoring tool used to create responsive learning content. These learning resources are mapped and digitally badged to the five sustainable development goal (SDG) clusters identified by Elsevier: [1] basic rights, [2] equal opportunity, [3] human potential, [4] environmental sustainability and [5] organisations. Additionally, the CoP has facilitated several awareness-building events, such as world water day, fashion revolution week and a sustainable finance symposium. As the use of our OERs and Sulitest gains traction, we plan to activate further demand and supply for the Sulitest and supplemental OERs, reaching a logical conclusion in which sustainability literacy is inherent in all TU Dublin education and research programmes. By publishing our OERs and event guide on www.sdgliteracy.ie, we plan to inaugurate a movement in which the academic community across Ireland's HE sector could collaborate on sustainability literacy initiatives.

To date, the CoP has been focussed on achieving roll-out of Sulitest, hosting of guest seminars and the establishment of the OERS on [SDG Literacy.ie](http://SDGLiteracy.ie). Wenger-Trayner and Wenger-Trayner (2020) describe categories of CoP participation including core group members, active participants, occasional participants, peripheral participants, and transactional participants. The SDG Literacy CoP comprises all of the above and this seems appropriate for a university-wide CoP with a long-term agenda around embedding SDG literacy into the curriculum. We have yet to hold any in-person meetings due to restrictions but have utilised MS Teams and social media channels including Twitter and Linked-In to communicate. Given the extent to which our members are spread across all three campuses it is envisaged that we will remain a largely online community, however, we also look forward to an in-person symposium event to facilitate face to face interactions and promote further connections.

³ <https://blogs.upm.es/education4sdg/2021/07/26/building-a-community-of-practice-for-sustainability-literacy-at-tu-dublin/>

⁴ <https://www.sulitest.org/HLPF2021.pdf>

As the education for sustainability agenda, encapsulated by SDG 4.7, evolves, it is intended that TU Dublin's sustainability literacy data would be systematically benchmarked and used to inform institutional priorities for new innovative programmes. With European HE systems adopting sustainability literacy as a core graduate competency, our CoP can contribute to a culture of teaching and learning in which sustainability is at the forefront of our review and enhancement processes.

Discussion

A small tranche of funding from a sizeable institutional project enabled four new CoPs to be established. The Lave and Wenger theoretical model (1991) proposes that CoPs are naturally occurring groups of individuals with a common passion or interest, that can be supported to evolve and develop through a shared purpose or need. In the context of current funding ceasing, we now reflect on the viability of a CoP as a sustainable cross-disciplinary model of professional development to encourage and support pedagogical enhancement and innovation.

Establishment, Development and Maintenance of the CoP

Funding appeared to have been a catalyst in the establishment of each of the CoPs reported in this paper. A successful application also helped to legitimise the work at an institutional level and make explicit a commitment to achieve a set of agreed goals as a collaborative enterprise. In addition, funding helped to raise community profile by enabling the involvement of external experts or partners, the recruitment of research assistants and/or the purchase of software. The importance of having a dedicated online CoP space was emphasised by all case study groups. For three of the CoPs, these websites functioned independently to the main TU Dublin website.

Each of CoPs reported in this paper were established and then led by a core team of staff who had either studied, worked together or knew each other previously. This prior shared experience and knowledge enabled the CoPs to be able to function and be productive almost immediately after receipt of funding. It was felt that the membership and activities of the CoPs had benefited from the 2020-21 working context and a rapid shift online. Some staff had noted feelings of isolation and perhaps felt more of a need to connect to others with shared interests. As the communities became more active in organising high profile events,

perhaps a sense of missing out and a desire to be part of what was perceived to be a vibrant community might have also initiated a wider interest from staff and a resultant increase in CoP membership? Online events and meetings functioned to bring people from three different campuses together and helped them to get to know each other. It was felt to be unlikely that on-campus events would have attracted such a cross-institutional mix of staff.

Nature of participation within the group/sense of community

All the IMPACT supported CoPs currently exist as cross-campus, subject discipline independent communities. Two of the communities involve students. The level of participation and the nature of engagement between members varied both within and across communities. It was evident that these interactions have changed as the communities have evolved and members became aware of individual skills and experience. This appeared to be through an organic rather than through a planned process or any project plan. The fluidity of the CoP model was attractive in enabling individuals to join and leave at will, although this meant that membership numbers became difficult to quantify. Membership for one CoP was an email list and for another, all those people who had requested to join the MS Teams shared space.

Overall community activity appears to have been time-dependent rather than based on interest or experience. Rather than classifying members as experts or assigning designated project orientated roles, all CoPs favoured the flexibility of being to take on and learn from different active roles across the semester. However, having a core team of active members was key to building and maintaining the community. Involving members in sharing ideas, planning events and making decisions strengthened the links between individuals and socially orientated opportunities where members could explore their shared interests and exchange practices helped to build a sense of community. Social media was used to promote the CoPs and increase membership.

Benefits of participation to members and impact upon practice

Anecdotally, core members felt that staff joining their CoP saw a personal benefit of being a member or becoming more actively involved. For those taking a leadership role, the intention might be to raise their academic profile by achieving a personal or professional goal but for others just being part of a group or supporting the work of others appeared sufficient. Some members expressed an interest in taking a leadership role at a later stage

Other community building activities, in one case the organisation of a week-long series of events helped to both utilise, exchange and develop the skills of their community as well as a wider university community. Drawing upon the shared experiences and feedback from community members, another worked to refine an institutional framework and by changing the language within the associated definitions helped to develop a shared understanding of the framework and clarify potential future applications. Towards the end of the funded period three cross-CoP workshops and events were organised to explore potential future synergies. All CoPs undertook a period of reflection and review in relation to future sustainability of the communities. It was noted that all CoPs activities aligned to specific strategic priorities of the university and would therefore be important for getting buy-in and support from management as well as staff within any future CPD framework.

Use of the CoP model as a professional development strategy

Wenger, McDermott and Snyder (2002) have suggested that the success of a CoP, in any organisation, is dependent on it delivering value both to its members and to their organisations (Wenger et al., 2002, p. 17). In addition to helping universities to build organisational capabilities and deliver on strategic initiatives, successful CoPs create value for their members by allowing them to contribute meaningfully to a joint enterprise which provides them with access to support and mentorship, a sense of belonging, opportunities for sharing and workshopping practice, and a forum for enhancing professional skills, expertise, and identity. CoPs have been described as a useful model for “developing inclusive and sustainable professional development” opportunities for university staff (Carroll & Mallon, 2021), where knowledge can be shared participatively in a ‘regular, localised and supportive environment’ in contrast to traditional course-based development activities sometimes “conceived as something that one ‘does’, or that is ‘provided’, or ‘done to’” academics (McDonald & Cater-Steel, 2017, p. 1).

It appeared that the experience of establishing and supporting an IMPACT CoP had provided a range of variously formal and informal professional development opportunities for their community membership. These ranged from formal training sessions and seminars, to less formal opportunities to work with staff and students with diverse skills and knowledge, share practice with their peers, or undertake various leadership roles and responsibilities. Two of the CoPs reported that the prior professional development experience of their core members

had been instrumental in determining the success of the subsequent output of their community as OERs.

CoPs support Professional Development	CoPs result in Innovative Teaching & Learning Practices	Characteristics of Funded CoPs
<ul style="list-style-type: none"> • Leadership and team-building skills • Formal Training sessions/seminars • Guest events • Access to diverse university-wide collaborators • Conference and workshop participation • International outreach • Cross-campus connections established • Facilitation of meaningful discussion of Institutional strategic goals • Research output documenting work of CoPs 	<ul style="list-style-type: none"> • Shared enterprise resulted in Tangible and Measurable Outputs • Cocreation of tailored resources • High level of student engagement • International recognition of CoP activity within the University • Transferability of the CoP model across the university 	<ul style="list-style-type: none"> • Work legitimised at institutional level • Strong community profile • Dedicated online space • Active core group creates shared focus and momentum • Wider membership energises CoP through diversity of contribution • Collaborative online working spaces are vital • Social media plays a key role in terms of outreach and strengthening community bonds

Figure 2: Summary of Key Findings

Conclusions

This study provides evidence to suggest that the CoP activities described in this paper enabled new professional development opportunities not otherwise currently available within the University. Organised and tailored by colleagues with a shared interest and passion, these new CoP opportunities were more likely to be perceived as relevant and meaningful to members. Individuals felt more motivated to engage and support sessions organised by staff/students for staff/student for mutual benefit. A shared purpose of developing new resources aligned to strategic goals from which the whole institution might benefit enabled staff and students to learn on the job and encouraged additional membership to the CoPs. These introduced new expertise, thereby increasing the overall impact of the deliverables. Emergent strong cross-campus connections were facilitated through advanced technology provision, including MS Teams and dedicated online spaces. Project funding also facilitated external engagement including conference and workshop attendance as well as the ability to invite external experts into the university for guest lectures and seminars.

Teaching and Learning practice benefitted in multiple ways. All CoPs detailed above, reported tangible, innovative learning and/or teaching practice outputs from their

communities. Innovation was clearly a shared enterprise where a core group played a key role in encouraging others to join early in the establishment of the CoPs detailed here. The development of shared language and understanding within the community encouraged engagement and helped to better tailor resources to meet specific individual, group and institutional needs. These co-created outputs included new open educational materials, conference papers, newsletters, guidelines and/or multimedia resources.

Whilst initially benefiting individuals within the CoPs, the use and impact of the work began to extend to have a wider institutional impact. It is worth noting that the CoP model has become more widely recognised as a TU Dublin approach to working together with several new communities emerging over the past several months. These range from the *Internationalisation at Home* CoP to the *Electronic Quiz Tools for Assessment and Feedback* and the *Sustainable Labs* CoP. Interestingly, although some of these new COPs might align with more established CoPs, each have sought their own identities as separate independently functioning communities.

Recommendations

All the case study CoPs reported in this paper began with a small group of enthusiastic individuals with a shared interest. An active core team is key to the establishment of a productive CoP with a shared purpose. Early engagement between members to talk about their shared interests, exchange ideas, agree ways of working, think about potential future activities helps to bring individuals together as a functioning CoP as well as build community identity. It is helpful, from the outset, to spend time exploring the needs, expectations and aspirations of community members. This helps contextualise their contributions to, and participation in the CoP and increases community diversity. Flexibility in the way the CoP is established and how and which events are organised enables a greater diversity of members to join and participate.

A balance of informal and formal activities during the initial stages of community development builds a sense of identity and purpose. The creation of resources of mutual benefit helps to evolve a shared understanding and language around the needs of the CoP. Subsequently curated resources as an OER collection within, for example, the TU Dublin TOTAL repository (<https://tudublinimpact.wordpress.com/total/>) or equivalent, develops a

CoP standard and brand whilst promoting the work of the group to wider internal and external audiences.

It is important to have a tangible online working space to enable members to connect, build resources and share research outputs. However, when using asynchronous communications tools (such as Microsoft Teams) as a platform for establishing a virtual Community of Practice (vCoP), ‘voluntariness of participation’, the dynamic needs and commitments of members, and the challenges of motivating active and continuous engagement, suggest that a clear strategy for engaged facilitation be developed in advance (Ergan, Vold, & Nilsen, 2014, p. 309), in which guest moderators and contributors are invited to promote and model participation in the virtual space, rather than these activities being undertaken predominantly by CoP coordinators.

Finally, alignment of CoP outputs to institutional targets can support more meaningful engagement between members and encourage involvement from within wider internal and external communities.

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