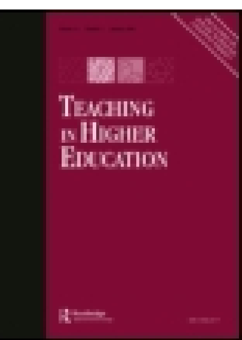

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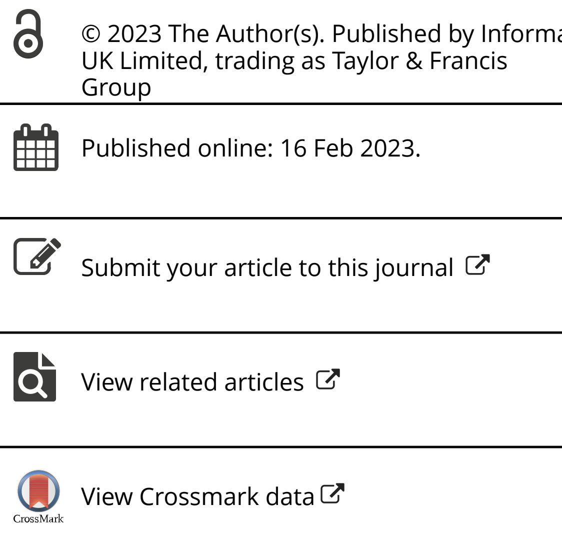

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Informal collaborative learning (ICL) – student perspectives on the role of informal collaborative learning ICL in higher education

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ABSTRACT
The Covid 19 pandemic requires critical re-evaluation of the way Higher Education can help students maximise their learning to adjust and adapt to a new reality. This requires a holistic approach which extends beyond consideration of student learning in formal settings to understanding the role informal learning can play. Whilst research exists on informal independent learning, less focus has been placed on how students collaborate informally as part of their learning process. In this study interviews with HE students in Spain and the UK offer insight into variable but beneficial informal collaborative learning (ICL) practices. The value attributed to ICL emphasises its potential contribution to the current educational landscape and the merit of recognising it as a distinct concept. Further, uneven access and the role of learner maturity signal the potential for universities to enhance learning and increase access by playing an active a role in developing ICL skills and personal networks.

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Introduction

Higher Education has a key role to play to enable successful navigation of an uncertain future. This will require harnessing learning in all its guises. In calling for critical appraisal of existing approaches to Higher Education, Mkhize et al. (2020, 5) draw on Bartunek and Moch's (1987) concepts of first, second and third order change to argue powerfully for the need to go beyond change based on existing understandings and for universities 'to reflect deeply on their epistemologies, their limits, their deeply-held beliefs and identities about ourselves and others'. This demands the ability to step back and consider the emerging landscape from a variety of angles. Whilst some of this reappraisal was already taking place (see e.g. Hase 2014; Bélanger 2011; Hoggan 2016), the pace of change in response to the pandemic has increased attention on the way HE designs and delivers learning experiences. Gillaspy and Vasilica (2021) claim there is a shift in HE pedagogy

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from teacher to student centred learning, characterised by more active and participative approaches to learning. However, this contrasts with many students' experiences of studying following a time which has seen a lot of HE courses delivered online. Similarly, in a recent review Børte, Nesje, and Lillejord (2020) found that traditional forms of teacher-centred learning were still predominant in Higher Education.

Whilst much recent literature has focused on the experiences and implications of the shift to online learning by students in formal learning environments as a result of the Coronavirus pandemic (Pokhrel and Chhetri 2021; Paideya n.d.), this presents only part of the picture. If our focus is student-centred rather than teacher-centred, there needs to be consideration of learning more broadly than formal curriculum so informal learning, and indeed the interface between formal and informal learning, is also needed. Watkins and Marsick (2021) have argued that informal and incidental learning outside formal settings has a key role to play in reinvention and renewal.

What do we know then of the role informal and collaborative learning play in students' approach to learning? The paper reports on a project designed to investigate how students engage with informal collaborative learning outside of the formal structure/curriculum/pedagogy, and their perceptions of its impact on student success. Placing learners at the centre of the process, the project captures the student voice, focusing on identifying and understanding lived student experiences and analysing examples of informal student led collaboration. Bringing together two existing theoretical concepts, informal learning and collaborative learning, the study aims to explore the potential contribution of informal collaborative learning within a shifting educational landscape.

Theoretical framework

Informal learning

Recognising the broad scope of informal learning (Jeong et al. 2018) it is important to define our understanding. Whilst such learning can be individual, it is the exploration of the collective which is of interest here, in particular the role of informal collaboration with others. With research carried out since the start of the pandemic revealing that interaction and co-studying networks have become less common, with negative impacts on mental health and personal effectiveness (Elmer, Mepham, and Stadtfeld 2020) we argue that understanding the role of informal student collaboration in learning effectiveness is of great current relevance. Research on informal learning in Higher Education settings specifically is limited, with recent authors recognising this gap and highlighting the importance of developing better understanding of student strategies for learning across varied contexts outside the classroom (Peters and Romero 2019; Valtonen et al. 2021).

In their integrative literature review of informal learning Jeong et al. (2018) recognise a lack of consensus in definition, but note a general agreement that informal learning is broad in scope, with Cerasoli et al. (2018) positioning this as a self-directed activity which takes place alone or with a group, and further distinguished from informal education or informal training where a mentor or peer may take responsibility for guiding the learner outside the constraints of a formal curriculum (Livingstone 2001; Schugurensky 2000).

As such, according to Hopkinson, Hughes, and Layer (2008, 439) informal learning is 'largely student directed, voluntary, open to all and non-credit bearing'.

Applying their previous work to the current Covid era, Watkins and Marsick (2021) argue powerfully for the role of informal and incidental learning in enabling people to renew and adapt to novel and chaotic situations, particularly highlighting the role of informal learning which occurs during the flow of work, emerging naturally in the moment as a response to emerging situations. With some parallels here with reflection in action (Schön 1983), this conceptualisation of informal learning is important, but potentially excludes consideration of planned informal learning and may, therefore, be limiting.

This surfaces differing perspectives about the extent to which informal learning is intentional or unintentional, planned or in the moment, and related to the role of tacit knowledge. Some writers argue that much self-directed informal learning is intentional being initiated and controlled by the learner, with Cerasoli et al. (2018) clearly distinguishing between incidental and implicit learning, and informal learning behaviours which are deliberate and self-directed. The latter might include individual objective setting or the collective pursuit of objectives by a group for example. Livingstone includes both intentional and more emergent learning in his definition: 'intentional or tacit learning in which we engage either individually or collectively without direct reliance on a teacher or externally organized curriculum' (2001, 2).

One potential way of viewing this is the development of a taxonomy of informal learning; Schugurensky (2000) uses intentionality and consciousness to distinguish between three forms of informal learning, providing examples to illustrate each form: self-directed, where individuals consciously and intentionally learn without the involvement of an educator such as a person wanting to learn about a historical event who then watches videos, reads books and visits museums to do so; incidental, where learning is the unintended by-product of an activity but where the learner is conscious that learning has taken place such as a toddler touching a hot iron and realising the error of their ways; and socialisation linked to tacit knowledge, referring to the unintended and unconscious acquisition of skills, values, attitudes and behaviours, such as unconscious gender or racial bias arising from social or cultural contexts.

Distinctions between different types of learning are often blurred. Czerkawski (2016) points to the expanding role of technology and online systems in further creating an increasingly integrated and holistic learning environment. Similarly, other recent researchers have focused on the impact of technology in integrating formal and informal learning in Higher Education settings (Chatterjee and Parra 2022; Peters and Romero 2019). This integrated view is echoed by Cook, Pachler, and Bradley (2008) whose positioning of informal and formal learning placed these along a continuum rather than being diametric opposites.

As the scope of informal learning is broad then, so is the range of activities considered to facilitate informal learning, with Moore and Klein (2020, 220–221) providing an extensive list of examples of informal learning activities identified from recent studies, ranging from individual reflection to working with others, for example, problem solving with peers or engagement with communities of practice.

Irrespective of the approach adopted, much research on informal learning has taken place within the workplace (Marsick and Watkins 1990; Moore and Klein 2020) as

opposed to educational or cultural environments. Further, Jeong et al. (2018) argue for the need to adopt a multilevel approach with further consideration of the interaction between the individual and context. Another critique of research undertaken is a bias towards consideration of the individual rather than the collective, with Livingstone (2001) claiming that research into the way adults learn informally in a collective sense is the least well researched aspect of informal adult learning.

Collaborative learning

The other key area of focus in our research is collaborative learning. Lee and Yang (2020) highlight empirical evidence linking collaborative learning with higher student performance outcomes, and the ability to work successfully with others is a basic requirement for effective learning and engagement within today's Higher Education system which is embedded in curricular and assessment requirements. With little evidence on collaboration within informal settings, much research exists on collaborative learning within formal educational systems and the different ways that students work together with varying perspectives on the nature of collaborative learning.

In their study of collaborative learning practices, Le, Janssen, and Wubbels (2018, 103) consider collaborative learning as a 'set of teaching and learning strategies promoting student collaboration in small groups', whilst extending the concept further, Laal and Ghodsi (2012, 486) define it as 'a philosophy of interaction and personal lifestyle, where individuals are responsible for their actions, including learning and respect the abilities and contributions of their peers'.

In common amongst these approaches is recognition of the interaction between individuals working together within a social context. In order to understand the processes underpinning successful group learning, consideration of both social and cognitive processes is needed. Van den Bossche et al. (2006) highlight the role of both group discourse and the context within which this takes place, as important prerequisites for successful collaborations. Functional team learning behaviours are not automatic, but need to arise from the engagement of individuals in collaboration, with such engagement being key to the development of group learning behaviours. The importance of individual motivation is also emphasised by recent studies. Lee and Yang (2020) highlight the importance of student motivation to engage in collaboration and the role of self-efficacy in facilitating this; together with the role that the nature of discussion, and balance between knowledge and opinion based interactions may have. Interestingly one finding suggested that in some situations students may prefer to have groups predetermined for them by the teacher.

Such findings which emerge from research on collaborative learning within formal settings, where structural issues such as group and task makeup are often guided if not controlled by tutors, highlight the role of teachers in scaffolding collaboration and raise interesting issues for consideration of informal collaboration where such interventions from outside the learning group are absent.

The value of collaborative learning is supported by a body of research identifying many benefits including increased academic achievement, better communication, increased engagement and greater openness to diversity (Loes, Culver, and Trolian 2018). Drawing on the work of Panitz (1997), Laal and Ghodsi (2012) identify four

categories of benefits of a collaborative learning approach. These are: social benefits, psychological benefits, academic benefits, and a broader range of options in terms of assessment techniques. As well as improved academic performance, the development of social support systems and learning communities, together with psychological benefits relating to increases in self-esteem and a reduction in anxiety, appear particularly relevant.

Collaborative learning is not always successful, however, and challenges are well documented, with Le, Janssen, and Wubbels (2018) identifying four main barriers to successful collaboration. These are: a lack of skills to collaborate, lack of contribution from some group members, perceived differences in social status impacting on contribution, and the role of friendship. Turning to the first of these, both students and their teachers felt that students were lacking the skills of collaboration with recognition from teachers that there was little focus on the development of such collaborative skills. Suggested skills included: the ability to seek and offer help, being willing and able to accept and discuss different perspectives, and being able to negotiate. Interestingly, friendship was also viewed as a barrier by some students who noted a negative impact on focus and willingness to be critical. Such findings again raise interesting issues for consideration of informal collaboration where friendship groups potentially provide a social context where collaboration may emerge.

Much focus has been given then to the study of collaboration in formal settings. This provides a backdrop against which the role of informal collaboration within student communities, including strategies for informal collaboration and its potential to enhance learning, can be considered.

The intersection between collaborative and informal learning

Although studies on informal collaborative learning are limited, many studies of informal learning reveal the importance of social connection and emphasise the social aspects of learning (see e.g. Woods, Mylopoulos, and Brydges 2011; Patel et al. 2015). So whilst little academic attention has been paid to informal collaborative learning in higher education, linkages could be conceptualised as an extension of existing findings around the importance of the social and collective elements of informal learning which are emerging from relevant studies. The emphasis on the social aspects of informal learning also emerges from a recent study on informal learning for sustainability, with Gramatakos and Lavau (2019, 385) concluding that 'student led learning emphasises learning as social, whether manifesting as peer learning, collective meaning making or shared identity'. In on online contexts this is further reinforced, with social support, collaboration and 'student directed community building' emerging as significant learning strategies adopted by students (Peters and Romero 2019, 1736). Parallels may also be drawn with concepts of Communities of Practice within professional settings (Lave and Wenger 1991) which recognise the power of informal learning emerging organically through shared identity and interaction in social contexts. Interesting linkages can also be noted here with sense of belonging, with Korhonen et al. (2019) emphasising the key role of collaboration and learning communities in student engagement in Higher Education, and with social capital (Mishra 2020; Grenfell 2014). Here the relationships between social networks including family and community, the development of social capital

and educational attainment are recognised, along with the associated inequities this may bring.

Perhaps the closest alignment to our investigation comes from Keren et al. (2020, 353) who introduced the term SSL (Social Studying and Learning), which they characterise as 'any independent, elective, self-directed and self-organised approach to learning that involves students working with their peers for the purposes of study, learning or revision'.

Approach and method

Semi-structured interviews

The project aimed to explore issues in depth from a student perspective using the guiding paradigm of interpretivism. Interviews were conducted with five HE students in the UK and five in Spain. The intention was to explore the experiences of participants through conversations about their approach to informal, collaborative learning; to elicit their perspectives and illustrations of effective approaches to independent, student-led collaborations. As such, exploratory interviews were used to explore, in their own terms, the ways students engaged with these unseen aspects of their learning experience. Although the participants are studying in the UK and Spain, this was a convenience sample and was not intended to be a comparative study. The intention was to gather experiences; further research would be required on a larger sample to investigate whether there are differences in approaches in different contexts or for different demographics.

Each of the four researchers undertook a literature review of the key concepts. These were then combined and compared to derive the initial interview questions and a proposed set of codes for analysis. A pilot interview was conducted with a student at a different university. This was used as a means of developing the questions and is not included in the findings. The transcript was coded using the initial template of themes identified from the literature. The team then met to review the findings. The interview questions were amended where they seemed ambiguous or repetitious and the codes were adapted. Prior to commencing the research, ethical approval was received from the researchers' universities. Interviews were audio recorded and transcribed, with the agreement of the participants. Those conducted in Spanish were translated into English. This was done by the Spanish researcher using translation software initially and then proof reading for any errors.

The participating students were drawn from a convenience sample of the researchers' contacts. Students were initially approached with an invitation to take part, and those who accepted were sent a participant information sheet and consent form.

First year students were excluded from the sample so that participants were able to reflect on experiences over time. Seven of the sample were in their final year of study (this was five from Spain in their fourth year, and two from the UK in their third year), the other three participants were at the end of their second year. They were studying a range of degrees including: management, food science and nutrition, interdisciplinary studies. Five were studying in Spain and five in the UK. Most were female, with two male (one studying in Spain and one in the UK). The intention was to hear their experiences not to generalise findings to other students; the sample size and demographics of

the students were not, therefore, intended to represent a wider body of students. The interviews were semi-structured to aid consistency but allow interesting issues to emerge. The interviewers followed a transcript of questions, and probed for further information in appropriate areas rather than being restricted by the pre-determined questions. This level of flexibility was appropriate, as the intention is not to compare practices across disciplines and cultures but to use the broad reach offered by working as a collaborative international team, to access as many varied positive practices as possible and enhance understanding. Data has been dissociated from personal data (in the informed consent) and was shared anonymously using a secure transfer system.

Analysis

Data analysis was undertaken using template analysis: 'a style of thematic analysis that balances a relatively high degree of structure … with the flexibility to adapt it to the needs of a particular study' (King 2012, 426). Template analysis was adopted rather than a more inductive form of thematic analysis so that all of the researchers were involved in developing the initial set of codes. Coding took place by using this set of a priori codes, derived from themes which emerged from the literature review, this produced a set of categories by which the data could be contextualised (Miles and Huberman 1994). This method of encoding the interview transcripts helps to organise the data into themes.

Following the pilot interview, the research team met to discuss a quality check on the initial template where members had coded the pilot transcript individually. This led to a reflexive conversation about the way we had interpreted comments due to our own understanding and pre-conceived ideas. This tested the reliability of the codes and the coding template was refined as part of this process. We also added some brief definitions of each code to make sure we had a common understanding amongst the research team.

The refined template was adopted, and each transcript was analysed using these codes in Nvivo. Codes were refined and additional codes were added through the analysis where a theme appeared in the transcript which had not been previously identified in the literature. A final template was then generated to reflect both the pre-determined and the emergent themes. In keeping with a small qualitative study, all instances relevant to the research questions were captured, not just those that were prevalent across a number of respondents.

The coding of the text in this way enabled the researchers to collate comments of a similar nature together. The data was then re-read to make further connections and identify themes. The uncoded text was also reviewed at this time to make sure the examples selected were not subject to confirmation bias where the researcher had discounted information that didn't fit their prior expectations (Crabtree and Miller 1999). Themes were then finalised from the coded (and uncoded) data. The final template is shown in table 1.

Findings

The concept

It was important to establish how students understood the concept. The most dominant response placed the concept outside of the classroom, both figuratively and literally. This

Table 1. Final ICL template.

Primary code	Secondary code	Description
The concept	DEFINING INFORMAL COLLABORATIVE LEARNING	Students explaining their understanding of informal collaborative learning
	EXAMPLES	Specific details of what students did
Characteristics of ICL	NATURE OF THE GROUP	The role the student is playing in the collaborative learning group, the characteristics of the group, features of the group, size, relationships, networks etc
	NATURE OF LEARNING	Sharing information, problem solving, working towards assignments, etc.
	TOOL(S)/TECHNOLOGY	Likely to be picked up in enablers and barriers but should also be listed
Engaging with ICL	EMERGENT	The code 'emergent' was added during the analysis as it arose in 8 of the interviews.
	ENABLERS	factors supporting the engagement and/or success of informal collaborative learning(process)
	BARRIERS	difficulties engaging or making informal collaborative learning work, also limitations (process)
	EMOTION	Emotions and feelings about collaboration; Impact of informal collaboration on emotions and feelings
	MATURITY	impact of maturity; degree of maturity as a leaner; learner dependence/ independence

is illustrated in the following quotes: 'It's just maybe any situation outside of university or outside of your work, where you're working with others',

> kind of getting a group of people together and maybe booking space in the library, and kind of all focusing on the same thing, or maybe working towards a project together and kind of just everyone helping each other out and working together really

'discussing ideas outside of a classroom', 'For me it would mean getting together with friends and asking each other about the syllabus, for example', 'Well, basically, collaboration between students, when it comes to learning, studying for an exam, for a subject; complementing the study that is done by oneself', 'Well, for example, how we studied outside of class'.

At times, it was very specific and perhaps brief, students talked about seeking advice from other students; one mentioned someone in a higher year of her course; others talked about group chats where they could ask questions or seek clarification on something they had not understood in the classroom. There were many examples of using this as a strategy to prepare for assessment: rehearsing presentations; discussing the structure of assignments; practicing exam questions; developing revision technique; learning formulas; and practising statistics. There was lots of knowledge sharing and problem solving, sometimes focused on specific assignments or exam preparation but others using this as a regular study strategy. One student on a nursing programme talked about the way they learn theory in the classroom and then informal collaboration with others occurred through their practice 'I was going to learn the same thing in practice as in class'.

There were some much broader examples though, trying to place their learning in a wider context or discussing politics and current affairs, this is illustrated by one student:

> I think most I speak with everybody about life, what we've learned in the classroom, I'll discuss it with someone else who might not be doing necessarily what I'm doing, to kind

of get an understanding of what they might think, you know, their kind of opinion or get their opinion on certain subjects.

Characteristics of ICL

In the main interviewees spoke of groups formed informally either with classmates or housemates, generally on the same or similar course; there were some examples of support from family members (an older brother, mum, dad, mother-in-law) or engaging with others such as work colleagues. The predominant theme was someone with a common interest, this meant in some cases the groups were homogeneous in terms of gender, age, and area of study. Students described studying together but also alongside one another in the library with opportunity for discussion; at times in pairs and threes but others mentioned groups of five or six.

The nature of learning included sharing particular expertise (working with someone from another course using a similar research methodology) or sharing research tasks 'hey, look, you make an outline of this, I make an outline of that' or 'we'll collect about five, six books each, and try and find references … so kind of cuts out the workload in half almost'. Some students also used this as a way to develop their learning strategies, so not just focusing on the topic but considering the way that they learned and recognising the value of different approaches: 'We can share our way of studying and doing it … so that it can be useful for both of us, because it's true that everyone has their own way of doing things'. One student described the different approaches students adopted as complimenting each other: 'Yes, because maybe there is another person who has another way and you say "hey, I'm going to try to do it this way", and maybe you realise that this is the way that fulfils you the most'.

As much of the research around collaborative learning focuses on an online context, we felt it was important to explore the role of technology in informal collaborative learning. Students regularly mentioned WhatsApp or Facebook groups, but whilst there was some mention of using online networks, they were mainly referred to as a means of making arrangements to meet face to face, or on an instrumental level seeking answers to specific questions.

Engaging with ICL

We sought answers about how engagement with this type of learning took place, but the overriding impression was of something emerging rather than being created. It often began organically from someone suggesting going to the library together or housemates discussing their work; in one case someone else suggested a good person to work with. This is illustrated in the following quotes: 'I wouldn't say I've been seeking informal collaborative learning, but it's just happened due to the opportunities I've taken', 'I'm not sure about doing this presentation … let's get together in the library'. 'At the beginning of the grade, because I was sitting nearby, we made a group of four or five girls'.

This theme of emergence came from the final analysis rather than the a priori codes and perhaps links closely to one of the themes added after the pilot, that of 'maturity'. We felt there was something interesting about the way students talked about developing strategies and relationships for ICL over time. This theme highlighted that students

didn't necessarily recognise the value of ICL at the beginning of their degree. Some started with a focus on individual learning, articulated by the view of this student:

> The first year I was only studying at home and I never went to the library, not even when I was asked to study with other people. I never went because I thought it was much more suitable and more beneficial to study at home individually.

This experience was shared by other participants: 'at the beginning I was quite used to studying on my own', 'I feel in first year I was very much like alone', 'it didn't really happen much in first year', 'It was just me reading and reading the syllabus'. But they described how they developed a recognition of the value of informal collaborative learning over time 'It's true that it hadn't occurred to us until we heard from people around us that they were doing it', 'you make studying a much more efficient practice than at the beginning'. 'But because somebody made me be do collaborative learning. Before in another year … I would never have done this'. This suggestion that students weren't aware of ICL as an effective strategy until they tried it or saw others doing it was noteworthy and is clearly articulated by the following student:

> but we had heard that people were doing it, that it was going very well. Well, I'm telling you: from people we knew who had got good marks in exams, etc … that they were doing well, basically. So, we started to try it to see how it went. And … it's true that I noticed a difference with that way of studying.

The increased engagement with ICL over time was perhaps also linked to making friends and growing in confidence to establish these relationships. Students expressed that they liked working with others 'I always prefer to be working with a group of people', 'It's just you get more ideas', 'more motivation to get the work done', 'it's just because it's nice to work with someone else'. They also recognised the value of working with others for problem solving and exploring different learning strategies, asking for help from classmates, sharing information and creating opportunities to discuss learning. It was also seen as a way of overcoming some issues with individual learning (lack of focus, distractions, gaps in knowledge, getting stuck on a problem, difficult topics.) ICL gave them the chance to hear different perspectives, to reinforce learning and increased their motivation. They also commented that the feedback and opportunity to practice (for example, presentations or exam questions) helped build confidence.

Whilst the impact was overwhelmingly positive, some students commented on a few barriers and downsides to working collaboratively; one student noted 'I'm not really a fan of collaborative learning because I'm very independent' and felt it required compromise 'you have to compromise because it's not just about you it's about other people'. Others noted time pressures, getting distracted by social conversations and the workload of formal learning preventing students engaging with informal learning. Some comments identified that helping others can take time, you could learn the wrong thing from someone else or feel under pressure by hearing about what others are doing or picking up on their stress.

In the main though, students commented on a range of benefits and positive outcomes from ICL. Academic and affective outcomes were often connected ' it ends up being positive, both for the qualifications and the results, as well as for the personal experience', 'I

think it has helped to improve my grades and to make studying a bit more enjoyable' and 'feel more engaged in the educational setting and not feel so isolated and alone'. Some key benefits are identified here and a quote is selected for each area as an illustration: greater motivation to study 'overall I think it gives more motivation to get the work done'; increased self-confidence 'Above all, it increases confidence'; connecting with others 'it's been a great experience just interacting with these people'; improved time management 'managing time has been a huge thing. think is a really key skill as a student'; learning to work with different people 'the soft skills, just being able to work with other people, different types of people as well'; learning from a range of perspectives 'Understanding other perspectives also helps you to clarify ideas and issues clearly, too'; a way to make friends 'informal learning is also a way to make friends'; reduction in workload 'kind of cuts out the workload in half almost'; improved focus and, therefore, productivity

> I think productivity is the main one because I know I personally can get really distracted with things going on and having just someone sitting there and getting the work done with you. I think it does make you more productive.

They also noted positive outcomes including: better performance on exams and presentations 'If I had done all that on my own, I don't think I would have these results'; improved understanding 'many concepts that I felt lost or that I didn't understand very well became clear to me'.

A further impact was reported as psychological benefits, such as reducing stress through support, recognising others don't know everything as well and having someone to share concerns. As one student said, 'you need somebody else to understand what you're going through'. They commented on a more relaxed approach, reduced pressure, increased confidence, enjoying the learning more and feeling happier, positive affect and the importance of emotional support. These two quotes exemplify this:

> After you had done it, you felt very fulfilled. When you got home, you got into bed and thought: OK, that's it, I've got the concepts clear; I'm going to sleep peacefully.

> I don't think I would have could have done learning without the group connection. Okay. I would have felt very isolated.

Discussion

Developing the concept

It is interesting that student understanding of the concept of collaborative learning was consistent with that of Watkins and Marsick (2021) in their conceptualisation of informal collaborative learning as learning taking place outside the classroom, both in a literal and figurative sense. This supports research in organisational settings, conceptualising informal learning as a non-curricular activity (Cerasoli et al. 2018). Adopting a holistic perspective, we propose that informal as well as formal learning collaborations are an important part of the overall climate for student learning, and that greater understanding is needed of informal, often unseen collaboration between students and the role this plays in their learning. This is consistent with the approach taken by Watkins and Marsick (2021) who argue for the need for organisations to take a complexity perspective increasing the focus on meeting learning needs relating to developing the skills for effective

informal learning, as well as meeting formal learning needs. This, they argue is critical in enabling ongoing adaption and renewal in current changing environments. Such complexity is also recognised by limited studies in Higher Education settings which recognise the need for more interconnected approaches, and for understanding of student experiences across varied complex contexts (Korhonen et al. 2019; Tight 2020).

In common with previous studies of informal self-regulated learning (Woods, Mylopoulos, and Brydges 2011), there was some evidence of students engaging with more experienced others such as family members, consistent with socio cultural theory and specifically the concept of a more experienced or skilled individual helping students navigate their own learning path (Vygotsky 1978; cited in Bruner 1985). Here though such contacts arose from students' existing social and cultural locations. These are not, therefore, evenly spread amongst students in terms of their ability to access such advice, which highlights inequity in social and cultural capital and subsequent impacts on academic attainment (see e.g. Grenfell 2014; Mishra 2020).

With parallels to our study, recent research by Keren et al. (2020) identified a gap in the literature relating to understanding how students interact with their peers in their free time and introduced the concept of Social Studying and Learning (SSL). Consistent with our study, their findings also point to the fact that students learning together socially usually do so with groups of people they already know, either through friendship or classroom relationships. These are thereby more accessible to students with higher social capital and social acumen, potentially inhibiting participation and access for students without these advantages. Stadtfeld et al. (2019) also point to the role of integration in social networks and the positive impact which this has in terms academic success. They emphasise friendship as an antecedent to collaboration which aligned with our findings that engagement with ICL developed over time as the relationships with other students formed.

The fact informal collaborations emerged organically with classmates or housemates with whom students already interacted aligns with existing conceptualisations of informal learning as an emergent process (Watkins and Marsick 2021). However, the learning was not entirely incidental, when students recognised the value of ICL (either through their own experience or from observation of others) they began to plan for these events. A related theme emerging from our study is that of learner maturity, with students commonly not engaging with informal collaborative learning at the beginning of their studies or recognising the value until later in their university experience. Developing recognition of value, combined with a more deliberative approach where students demonstrate more conscious control of their learning strategies as maturity increases, is consistent with conceptions from a primarily pedagogically based school system to one where the locus of control shifts to the student. This aligns with perspectives (such as Blaschke 2012; Canning and Callan 2010) which view moves from pedagogy to andragogy and heutagogy as a continuum on which learners develop in maturity and autonomy as they progress. Positioned as a process model (Knowles, Holton, and Swanson 2014) andragogy places the learner in partnership with educators to enable them to become self-directed in terms of their learning. Drawing on humanism and constructionism, Hase and Kenyon (2013) outline the concept of heutagogy which takes learner control a step further, arguing that whilst andragogy gives learners control over contextual factors, control of the process too needs to be relinquished, with learners

deciding what, when and how to learn, and how success should be measured. The role of informal and collaborative learning is particularly emphasised here, with recognition of the importance of the interplay between the individual and their environment, including other people, with teams and communities of practice being important. Demonstrating agency with conscious and deliberate attention paid to learning strategies, is also an important part of self-directed learning as conceptualised by Zimmerman with high correlations claimed between the ability to be self-directed and academic performance (Zimmerman and Pons 1986).

Turning finally to the benefits experienced by students from their engagement with informal collaboration, the wide range of benefits reported are consistent with those previously identified relating to more formal collaboration within higher education curricular and settings (Laal and Ghodsi 2012). The high value attributed to these suggests that informal collaborative learning has a valuable role to play in enhancing student learning more widely.

Implications for universities

We suggest that there is scope through more conscious intervention, to deliberately harness the University, and indeed the Course, as a community within which to facilitate informal collaboration amongst students. If we recognise the value of ICL we should introduce students to the concept and help them develop relationships and strategies for engaging in the same way we develop other study skills. Research on formal collaboration reveals a lack of skills to collaborate (Le, Janssen, and Wubbels 2018) and suggests that such training could help maximise the effectiveness of collaborative relationships. This is important for new students as our findings suggest this does not always happen early in a course, and because the benefits could support new students in their learning and with more affective aspects of settling at university. It could, therefore, impact on student engagement and success, with recent studies (Ahn and Davis 2020; Korhonen et al. 2019) emphasising the role of collaboration and social engagement as key factors in student engagement. There could also be differential impact for international students which would be worth exploring in future research.

The nature of relationships for ICL also raises important considerations. The fact that students have perhaps selected homogeneous, often friendship based relationships suggests it may be worth supporting natural groups forming (not forcing new associations) for formal collaboration and assignments. However, more also needs to be done to address the inequality of access to ICL relationships. Opportunities should be created to enable students to engage in a wider range of personal networks which could facilitate and stimulate ICL.

Theoretical implications

There has been increasing attention paid to developing belonging and community amongst HE students. It has been linked to retention, engagement, and success. What has been less explicit is the value of ICL relationships to the learning process. Whilst informal or non-formal learning is often viewed as something separate to formal learning, it is the inter-connectedness of the concepts that is relevant to our study. Learning

outside of the classroom is related to, and supportive of, the formal learning which is taking place within universities. ICL is student-led and outside the classroom but contributes to students' learning of the formal curriculum as well as wider issues such as psychological benefits which underpin student success. We support Timmis and Muñoz-Chereau's (2019, 3) assertion that 'academic and social practices are intertwined'. We propose, therefore, that informal collaborative learning should be recognised as a unique concept rather than being seen merely as an extension of the social and collective elements of informal learning theory. This would enable universities to help students develop appropriate strategies and clearly articulate the benefits of this approach. Supporting this approach to learning, and creating opportunities to develop these types of relationships, could also be a way of facilitating more inclusive teaching and learning practice. Inclusive pedagogy within the classroom may have limitations (Gibbs et al. 2021) and learning beyond the classroom may, therefore, have something to contribute to a diverse student population.

We propose the following definition for informal collaborative learning in education:

Voluntary student-led learning with others, outside of, or at the interface with, a formal programme.

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