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Online discussion forums as tools for developing students' soft skills: the mediating role of community knowledge

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ABSTRACT

Higher education institutions are now under pressure to produce graduates who, in addition to subject-specific knowledge, have mastered a range of cross-disciplinary skills — such as communication, critical thinking and collaboration — collectively referred to as ‘soft skills’. The widespread adoption of digital learning platforms, accelerated by the COVID-19 health crisis, has placed discussion forums at the

heart of the everyday student experience, yet their actual contribution to the development of these skills has not been sufficiently documented. This article examines the relationship between participation in a forum and the development of these three skills, positing the hypothesis that this relationship is not direct but mediated by the emergence of communal knowledge — that is, a collective construct negotiated within a learning community.

The study is based on a re-analysis of the corpus we compiled as part of doctoral research focusing on the ways in which knowledge is constructed and validated in digital environments. This corpus brings together three contrasting platforms: a university MOOC, a Moodle platform linked to a bachelor's degree module, and an informal Facebook group for learning French. The categories of discourse developed during the initial research were recoded as indicators of cross-curricular skills, and then compared across the different contexts.

The results show that participation does not automatically lead to the development of skills. In the informal, unmoderated setting, 76 per cent of contributions fall within the playful and socio-emotional register: sociability develops without the exercise of critical thinking. In the formal, lightly scripted setting, interactions remain declarative, and only the transition to a shared writing space triggers genuine collaboration. In the heavily scripted setting, all three skills are evident, but only amongst an active minority. The distinguishing factor is neither the technology nor the volume of exchanges, but the existence of a shared object of knowledge on which participants agree to negotiate.

Keywords: discussion forum; soft skills; community knowledge; collaborative learning; socio-cognitive conflict; socio-technical mediation.

Introduction

Contemporary universities face a paradoxical demand. They are simultaneously required to impart increasingly specialised disciplinary knowledge and to train individuals capable of communicating, cooperating, solving ill-defined problems and making independent judgements on abundant information of varying quality. This second requirement, long regarded as a welcome side-effect of academic education, has gradually become an explicit objective. International surveys on changes in the world of work now rank analytical thinking, creativity and the ability to collaborate at the top of the list of skills deemed crucial by employers, ahead of many technical skills whose lifespan has shortened considerably (World Economic Forum, 2023). In Morocco, Framework Law 51-17 on the education, training and scientific research system explicitly includes the development of cross-disciplinary skills and employability amongst the system's objectives.

This requirement is undergoing a second transformation, of a technical and cultural nature. The digital revolution has profoundly altered the ways in which knowledge is produced, circulated and validated: as Doueïhi (2011) points out, digital culture has its own language that demands different modes of

writing, reading and knowledge creation, and which challenges practices inherited from the culture of the printed book. The COVID-19 health crisis has dramatically accelerated this shift. This transformation has produced a little-discussed effect: it has brought widespread adoption, across entire cohorts, of a modest and long-standing technical tool – the asynchronous discussion forum.

The forum is, in fact, the common denominator of almost all digital learning environments. It can be found in institutional learning management systems, in massive open online courses (MOOCs), and in the informal support groups that students spontaneously form on social media. The forum is not an exceptional tool reserved for pilot schemes; it is a standard feature of the digital student experience. If the development of transferable skills is to take place anywhere within the digital university, it is likely to happen there.

The claim that forums foster communication, critical thinking and collaboration has, however, become a truism that is rarely questioned. It rests on a compelling but incomplete line of reasoning: since forums require writing, they foster expression; since they expose users to differing viewpoints, they foster critical judgement; since they connect peers, they foster cooperation. This reasoning overlooks a central question: by what mechanism does participation translate into competence? Writing a lot is not the same as communicating better; being exposed to differing opinions is not the same as exercising judgement; being in the same place as others is not the same as collaborating with them. There is a missing link between the act of participation and the development of a competence.

It is this missing link that the present research aims to identify. We hypothesise that the mediating variable is what we designated, following previous doctoral research, as 'community knowledge' (Eslifani, 2023): a collective and collaborative construct, in constant evolution, which takes on meaning through negotiated exchanges and cognitive activities within a mediated learning community, and whose epistemic scope remains relative in the absence of validation by the scientific community. We argue here that this community knowledge is not merely a product of interaction, but also acts as its regulator: it is because a group sets itself a common objective to develop that its members are compelled to articulate their ideas clearly, to argue their case, to evaluate others' contributions and to coordinate their inputs — that is to say, to exercise, precisely, the skills we are seeking to identify.

The research question can therefore be formulated as follows: how does participation in a discussion forum develop

communication, critical thinking and collaboration among students, and what role does the construction of collective knowledge play in this? Three sub-questions explore this further. What observable traces can legitimately be interpreted as indicators of these three skills? Are these traces distributed in the same way depending on whether the forum forms part of a formally scripted, loosely scripted or informal, unmoderated setting? Is the intensity of participation sufficient to account for the differences observed, or must the nature of the subject matter being negotiated also be taken into account? The article first establishes its theoretical framework, then sets out its methodology, presents its results by skill, and finally discusses the implications for the design of programmes and the assessment of skills.

1. Theoretical framework

1.1. Soft skills: from a vague concept to an observable phenomenon

The concept of soft skills suffers from a twofold weakness: it is defined negatively, in contrast to so-called 'hard' technical skills, and it encompasses a diverse range of realities, from relatively stable personality traits to skills that can be actively learnt. This lack of precision has fuelled a recurring criticism, which accuses the concept of naturalising socially constructed dispositions and of introducing managerial vocabulary into the field of education. The criticism is well-founded, but it does not obviate the need to address the pedagogical problem it highlights: a graduate may have a firm grasp of subject-specific content without knowing how to explain it, discuss it or apply it in collaboration with others.

The French-speaking tradition employs a more rigorous terminology, that of 'transversal competences', which Bertrand and Azrour (2004) define as abilities that can be drawn upon in a variety of situations and transferred from one field to another, in contrast to specific competences linked to a particular subject area. These authors emphasise a point of direct relevance to us: cross-curricular competence is not something that is simply imparted; it is constructed through action and manifests itself in the way an individual handles a situation. It is therefore observable only through its effects, via situated behaviours. This characteristic dictates our methodological choice: we will not measure self-reported competences, but will look for evidence of the behaviours that manifest them within the traces of activity.

Among the many available taxonomies, we have selected three competences, due to their frequent appearance in reference frameworks and their relevance to the system under study. Communication refers to the ability to express a

thought in a way that is intelligible to a specific audience, to adapt one's style to the situation, and to paraphrase what others have said. Critical thinking refers to the ability to withhold immediate acceptance, to question the source and validity of information, to identify the assumptions underlying a line of reasoning, and to revise one's position in response to an argument. Collaboration refers to the ability to contribute to a collective endeavour, to coordinate one's actions with those of others, and to share responsibility for the outcome. These three skills are not independent: collaboration requires communication, and critical thinking is difficult to practise in isolation, as it necessitates engagement with a different perspective. It is this interdependence that makes the forum interesting, as it provides a setting where all three skills are potentially called upon simultaneously.

Finally, a terminological clarification is in order. Cristol (2016) distinguishes, within the digital environment, three families of skills: those related to self-directed learning, which refer to the ability to set intermediate goals, to organise oneself and to sustain one's own motivation; information skills, which aim at the intelligent management of information in a context of information overload; and, finally, socio-digital skills, which concern working with groups and the ability to cooperate remotely. These categories are not to be confused with our three soft skills: they constitute the prerequisite for exercising them. We shall see that this distinction is not merely analytical, as the data show that a lack of prior socio-digital skills constitutes a massive obstacle to the development of the targeted cross-cutting skills.

1.2. The discussion forum as a socio-technical system

Treating the forum as a mere communication tool would lead to an analytical impasse. A forum is not a neutral channel: it is a system, in the sense that Peraya (1999) uses the term, that is to say, an instance, a social space for interaction and cooperation with its own intentions, its material and symbolic functioning, and its own modes of interaction, whose dynamics rely on the structured organisation of material, technological, symbolic and relational resources that shape the social, cognitive and communicative behaviours and conduct of the participants. The technical properties of the forum are therefore not external to the behaviours observed there: they shape them.

Four properties are worth highlighting. Asynchrony allows time for drafting and proofreading, which oral debate does not provide; this deferred temporality is theoretically conducive to reflective elaboration. The written nature of the medium compels participants to spell out what, in oral communication, might otherwise be conveyed through prosody and gestures;

Marcoccia (2000) observes in this regard that whilst the code used is indeed written, the exchanges take on a dialogical structure made possible by the speed of composition and transmission — a hybrid configuration that produces a specific form of conversational writing. Traceability ensures that everything that is said is recorded, time-stamped, attributed and accessible retrospectively: it underpins the very possibility of our research, but also influences behaviour, as participants are aware that their contributions are permanent and visible. Finally, the thread-based structure makes the relationship between responses visible and thus reveals the argumentative structure of the exchange.

However, these properties only produce their effects through a process of mediation. Granjon and Denouël (2013) point out that mediation is both technical — as the tool structures the practice — and social — as the motivations, forms of use and meaning attributed to the practice are drawn from the social body. The distinction between mediation and mediatisation is crucial here: mediatisation refers to the process of scripting content, whilst mediation supports the relational dimension and promotes mutualisation. A forum may be technically and identical across two systems yet produce radically different behaviours depending on the mediation work that accompanies it — an observation that may seem trivial but which is in fact one of the keys to our findings. The approach we adopt is described as ethno-technological: drawing on the work of Perriault (2008) on the logic of the use of communication machines and that of Faroult and Gaudin (2010), it focuses on the interaction between technology, the user and society, rejecting both technical determinism and social determinism in favour of a co-production process, the traces of which constitute the primary focus of our observation.

1.3. From knowledge to community knowledge

The concept of community knowledge requires a clear distinction to be made between data, information, knowledge and wisdom. Data is raw material, devoid of meaning outside a framework of interpretation. Information is data that has been organised and placed within a context: it is communicable. Knowledge results from an individual's assimilation of information, which they integrate into their cognitive structure; it is individual and requires effort. Knowledge possesses a collective and normative dimension: it is that which, within a community, is deemed valid following a validation process. In this sense, Nonaka and Takeuchi (1995) define knowledge as a dynamic human process of justifying personal beliefs that tend towards the truth, always associated with a specific context: taken out of context, it is merely information.

The knowledge conversion model developed by these authors sheds light on what takes place in a forum. Socialisation transfers tacit knowledge through the sharing of experiences. Externalisation transforms tacit knowledge into explicit knowledge, with discussion and language serving as the primary tools, as the aim is to express, in the form of concepts, metaphors or analogies, what had not previously been articulated. Combination assembles explicit knowledge into a systematic whole. Internalisation reconverts explicit knowledge into embodied know-how. This model highlights an important feature of the forum: by requiring written articulation, it facilitates a process of externalisation that would not otherwise take place.

The concept of community knowledge, which we developed following our analysis of three systems (Eslifani, 2023), refers to the specific outcome of this dynamic within a mediated environment. It has four characteristics. It is collective and collaborative: it cannot be reduced to the sum of individual contributions, but results from their interconnection. It is constantly evolving: it does not solidify into a static corpus, but reconfigures itself with each new contribution. It acquires meaning through negotiated exchanges, which implies that negotiation is not an incidental aspect of the process but its very condition. Finally, its epistemic scope remains relative, in the absence of validation by the scientific community, which alone is authorised to confer such status following a process of critical debate aimed at assessing its validity and limitations.

This last characteristic is often interpreted as a pejorative reservation. We propose here to interpret it differently. The fact that community-based knowledge is not scientific knowledge does not disqualify it as a means of developing skills; on the contrary, it is precisely because its validity is not guaranteed by an external authority that participants are compelled to assess it themselves. Knowledge whose validity were guaranteed by the teacher would require no critical judgement on the part of students: it would suffice simply to take it on board. Knowledge whose validity must be established by the community that produces it compels each of its members to evaluate, compare and raise objections. The epistemic uncertainty of community-based knowledge is, from the perspective of soft skills development, an educational resource. This concept is related to, whilst distinct from, the 'knowledge building' of Scardamalia and Bereiter (2006), the 'virtual community' of Rheingold (1995) and the 'collective intelligence' of Lévy (1994); it differs from these in its emphasis on the issue of validation, which it treats as the central problem rather than a consequence.

1.4. The mechanisms of transition and analytical model

It remains to be identified through which mechanisms interaction brings about development. Three classic theoretical contributions provide convergent answers to this question. The first concerns socio-cognitive conflict: Doise and Mugny demonstrated that learners, regardless of their level, make greater progress in interactive situations than when working individually; the mechanism at work is not the imitation of a more competent model but the confrontation of divergent responses, which creates an imbalance whose resolution requires a shift in perspective. Buchs and his colleagues (2008) clarified the conditions under which this conflict is fruitful: it is productive only if it is regulated epistemically – centred on the task and the validity of responses – rather than relationally, centred on comparing individuals' competences. This distinction is essential: a disagreement in a forum may just as easily lead to cognitive elaboration as to a clash of status, and nothing in the framework guarantees the former outcome a priori.

The second contribution comes from Vygotsky, through the zone of proximal development, defined as the distance between the current level of development — determined by how the learner solves problems independently — and the potential level — determined by how they solve them with the assistance of an adult or by collaborating with more advanced peers. Applied to the forum, this concept suggests that the heterogeneity of participants is not a flaw in the system but its main strength. The third contribution, from Bruner, specifies the form that this assistance takes: scaffolding, a set of behaviours through which a more experienced partner reduces the degree of freedom in the task, maintains focus on the goal and highlights deviations. In a student forum, scaffolding is not necessarily provided by the teacher: it can be shared amongst peers, as our data will confirm.

What these three mechanisms have in common is that they make interaction not merely a pleasant addition to individual learning, but its driving force. They also share certain conditions: socio-cognitive conflict requires that positions genuinely diverge and that the divergence relates to a specific subject; the zone of proximal development requires a gap that is neither non-existent nor excessive; and scaffolding requires a shared focus on a goal. These three conditions boil down to a single one: the existence of a shared object of knowledge on which the participants agree to work. The general research hypothesis can therefore be formulated as follows: participation in a forum does not directly develop soft skills; rather, it develops them to the extent that it gives rise to the formation of a community of knowledge, which acts as a mediator.

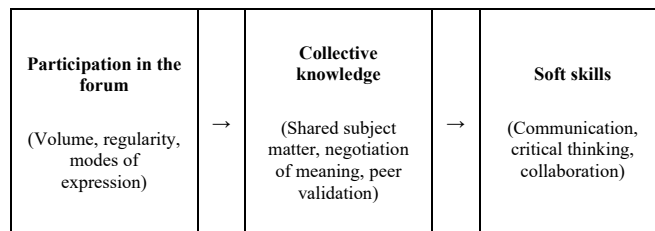


Figure 1. Proposed mediation model.

The direct arrow between the first and third terms is assumed to be weak or non-existent: this is the hypothesis being tested.

— H1. The level of participation alone does not predict the presence of indicators of soft skills: very active forums may have a low density of indicators, and vice versa.

— H2. The presence of indicators of critical thinking and collaboration is associated with the existence of an explicitly defined shared object of knowledge, and not solely with the density of interpersonal exchanges.

— H3. The three skills do not develop at the same pace or under the same conditions: communication, which requires less planning, appears in all settings, whilst critical thinking and collaboration require a higher degree of structure.

These hypotheses do not claim to be statistically validated, as the qualitative nature of the corpus would not permit this. They serve as analytical guidelines, intended to organise the interpretation of the data and to ensure the approach remains open to challenge.

2. Methodology

2.1. Epistemological stance and status of the data

This article re-analyses the corpus we compiled as part of our doctoral research, which focused on mediated learning and new ways of constructing and validating knowledge on French-language platforms (Eslifani, 2023). The central question guiding that work concerned the transformation of the relationship with knowledge in the digital age; the focus of this article is on the development of cross-curricular skills. The same data are therefore re-examined from a different angle to that which guided their compilation, which constitutes both the value and the main limitation of the approach: value, because the corpus was not constructed to establish the result it enables us to reach, thereby dispelling any suspicion of circularity; a limitation, because the initial categories of analysis were not designed for this purpose and must be explicitly recoded.

The approach remains ethno-technological and qualitative. It prioritises understanding the mechanisms over measuring their frequency, which does not preclude the use of numerical data but assigns them the role of an indicator rather than proof. As Mangenot (2000) points out, the questions raised by the integration of technologies can only be answered by developing complex models, whilst avoiding the search for direct cause-and-effect relationships, as the variables are numerous and rarely isolable. This caution leads us to formulate our results in terms of configurations rather than causal relationships.

2.2. The three research sites and data collection methods

The corpus comprises three programmes that differ systematically in terms of their degree of institutional formalisation, their support mechanisms and their stated objectives. This controlled variation constitutes the main point of interest for our research. The first programme is the MOOC ‘Organisational Communication’, the first session of which took place from 8 April to 20 May 2020, in the immediate context of the first lockdown. Comprising six modules, each containing two video clips, a forum, downloadable documents, hyperlinks and quizzes, it attracted 767 participants, and its forum recorded 1,189 messages from 146 certified learners. The second case study is the Moodle platform for the ‘Language Teaching’ module, designed for 331 sixth-semester students on the French Studies programme at the Faculty of Arts and Humanities in Agadir, following a blended learning programme; it offers a forum, a messaging service, a chat function, a collaborative wiki, a glossary and a file-sharing area, organised around four thematic areas. The third research site is a closed Facebook group dedicated to learning French, created on 21 August 2020 without any involvement from teachers and with 453,000 members, which was observed from 1 September to 1 October 2021.

Table 1. Comparison of the characteristics of the three research sites.

Dimension	‘Organisational Communication’ MOOC	Moodle ‘Language Teaching’	Facebook group ‘Learning French’
Status	Formal, open and massive	Formal, institutional, hybrid	Informal, community-based
Membership	767 enrolled; 146 certified (19 per cent)	331 students	453,000 members

Volume of activity	1,189 forum posts	Data generated by the statistics plugin; wiki contributions	404 resources (220 photos, 183 texts, 1 video)
Support	Teaching team (2 per cent of users), facilitation support	Designated teacher-tutor, explicit teaching agreement	No active moderators
Subject area	Defined subject content, pre-set objectives	Programme structured around four themes	Fluid subject matter, defined on a case-by-case basis
Assessment	Automated quizzes, peer assessment, self-assessment	60 per cent platform participation + 40 per cent oral examination	None, apart from spontaneous regulation
Co-writing	Not applicable	Collaborative wiki and glossary	Not applicable

The study combines three methods. Participant observation is the primary method; our role in the three settings — as a member of the MOOC design team and as a participant observer in the other two — provides access to contextual information that would not be available from analysing digital traces alone, albeit at the cost of a risk of bias that must be acknowledged. The analysis of digital traces constitutes the second technique: messages and metadata for the MOOC; indicators of attendance, performance and usage generated by a statistical plugin for Moodle; and manual counting followed by analysis of traces for Facebook. Two semi-structured interviews, conducted with the teacher-tutor and the technical designer of the Moodle platform, complement the methodology by producing, according to Van der Maren’s (1995) distinction, elicited data that shed light on dimensions not revealed by the digital traces: design intentions, the pedagogical contract, and anticipated difficulties.

2.3. Recoding grid: from enunciative categories to competence indicators

The central operation of our approach consists of recoding the enunciative and pragmatic categories developed during the initial research — which were then intended to characterise cognitive processes involved in knowledge production — into indicators of cross-curricular competences. The guiding principle is as follows: an enunciative category constitutes an

indicator of a competence if the utterance it describes cannot be produced without that competence being exercised. Thus, rephrasing another person's statement cannot be achieved without an effort to understand and adapt to the recipient, which falls within the realm of communication; an interpretative proposal presented as a hypothesis to be verified by peers presupposes a distancing from one's own certainty, which falls within the realm of critical thinking; a supportive statement offering a solution to a problem encountered by a peer implies a focus on the needs of others, which falls under the category of collaborative. This principle provides a criterion without eliminating the element of interpretation: certain categories are ambivalent and have been assigned to two skills, as indicated in the table.

Table 2. Recoding grid for transforming interactional categories into soft skills indicators.

Interactional category	Competence indicated	Justification for recoding
Informative questions	Communication	It involves identifying an information need and formulating it in a way that is clear to a third party.
Thought-provoking questions	Communication / Collaboration	Aims to put others in an active role: facilitating group-oriented activities.
In-depth questions	Communication / Critical thinking	Encourages the development of another person's idea; requires analytical listening to the initial statement.
Quality (reflective) questions	Critical thinking	Aims to clarify ambiguities and inconsistencies, to examine concepts in depth, and to engage in critical reasoning.
Technical questions	Social-digital competence (prerequisite)	Indicates an instrumental obstacle, not a cognitive process: treated as a contextual variable.
Responses to requests for clarification	Communication	Involves rephrasing content according to the recipient's presumed level of understanding.
Interpretative proposals	Critical thinking	Formulates hypotheses that are explicitly subject to peer review: suspension of judgement.

Epistemic interpretation	Critical thinking	An argumentative statement producing reasoned inferences and explicit arguments.
Accompanying statement	Collaboration	Proposal of a solution to another person's problem: focus on the peer's needs.
Consolidation statement	Collaboration	Confirms and reinforces peers' perceptions: maintaining the group's cognitive bond.
Reformulation / synthesis	Communication / Collaboration	Reproduces the content whilst preserving its meaning, for the benefit of the group.
Assessment criteria	Critical thinking / Collaboration	Takes a critical look at others' work: peer assessment.
Socialisation messages	Communication (relational dimension)	Establishes and maintains relationships that facilitate further cognitive exchange.

In addition to this framework, there are three higher-level indicators, relating not to isolated statements but to sequences of exchange: the presence of regulated socio-cognitive conflicts, that is, confrontations of viewpoints leading to a revision of position; the presence of negotiations of meaning, sequences leading to a shared interpretation accepted by the participants; and the presence of shared cognitive outputs, co-authored or co-validated content. In our model, these three indicators constitute the markers of the effective formation of communal knowledge.

2.4. Limitations of the protocol

Four limitations must be stated from the outset. The first relates to retrospective recoding: as the original categories were devised for a different research question, their conversion into competence indicators is based on a reasoned inference but has not been validated through an inter-coder procedure. The second relates to the absence of pre-test and post-test measurements: we observe behaviours, not acquired knowledge, and there is no guarantee that a student producing assessment statements in a forum possesses a competence that is transferable to other situations — a limitation inherent in research based on digital traces. The third relates to the heterogeneity of the three research settings, which gives the corpus its comparative value but complicates its interpretation, as the settings differ simultaneously across several variables; our conclusions are therefore formulated in

terms of configurations. The fourth relates to the exceptional context in which data was collected for the first setting, as the MOOC took place during the first lockdown, a situation which may have affected both the participants' motivation and their practical circumstances for taking part.

3. Results

3.1. Communication: a skill required everywhere, but developed to varying degrees

Analysis of the 1,189 messages on the MOOC forum reveals two dominant modes of expression, the coexistence of which constitutes the first finding. The interrogative mode expresses a request for explanations or information addressed to other participants; the assertive mode encompasses statements, replies, thanks, information, comments and opinions. This coexistence is significant: a forum in which only the assertive mode were present would amount to a juxtaposition of monologues; a forum in which only the interrogative mode were present would amount to one-sided requests. The joint presence of both attests to an effective dialogical structure.

Within the interrogative modality, the typology of questions reveals a gradation in communicative demands. Informative questions, which relate directly to the course content, require the learner to identify their own gap in understanding and to formulate it with sufficient precision for a third party to answer: this seemingly simple operation requires converting a private state of confusion into an intelligible public request. Stimulating questions and questions designed to explore the subject in greater depth require a further step, as they no longer aim to fill a personal gap but to elicit a response from others – a behaviour that already falls within the scope of facilitation skills. As for the assertive approach, responses to requests for clarification require the speaker to assess the recipient's level of knowledge and adapt their remarks accordingly – the very definition of communicative competence – whilst rephrasing, whereby a participant restates the content whilst retaining its meaning, demonstrates a sufficiently confident understanding to allow the content to be restated in other words.

Socialisation messages are present in all three formats, but their relative prominence differs considerably. In the MOOC, they constitute one category amongst others, enabling social and cultural bonds to be forged within the virtual community. In the Facebook group, they become dominant: comments of a social nature account for 65 per cent of all exchanges. This difference calls for a nuanced interpretation. Sociability is not a by-product of learning: it constitutes the relational condition that makes it possible to admit one's ignorance, raise an

objection or accept a correction. A forum devoid of sociability would be one where no one would dare to ask a question. But sociability alone is not enough: when it dominates the space rather than paving the way for it, it results in communication without purpose.

The case of the Facebook group illustrates this shift precisely. The categorisation of the 404 posts into five types — epistemic, socio-affective, informative, playful and off-topic — reveals that playful and socio-affective content accounts for 76 per cent of the posts, epistemic and informative content for 20 per cent, and off-topic posts for 4 per cent. Communication within the group is intense, but it focuses primarily on the group itself. There is also a massive predominance of visual content: 220 photographs compared with 183 text-based posts and a single video. This predominance has mixed effects: it facilitates access and engagement, as visual content elicits faster and more numerous reactions, but it reduces the demand for writing skills, as sharing a photograph of a grammar rule requires no effort on the part of the author to formulate the text.

3.2. Critical thinking: a demonstrated skill, yet one that is in the minority and conditional

Critical thinking is the skill whose indicators are distributed most unevenly. In the MOOC forum, several categories demonstrate its application. Quality-related questions, known as reflective questions, are posed intentionally with the aim of seeking further understanding, making sense of the content and engaging in critical reasoning; they aim to gain an in-depth understanding of concepts, to resolve ambiguities and to propose metacognitive strategies. Interpretative proposals put forward hypotheses explicitly intended to be verified by peers: the wording is crucial, since what is produced is not an assertion but a statement whose validity the author themselves suspends pending scrutiny by others — a fundamental operation of critical thinking. Epistemic interpretations represent a higher level, embedded in an argumentative discourse proceeding by reasoned inferences; finally, evaluative statements take a critical look at the work of others.

One particularly illuminating finding concerns the three levels of information processing observed in the forum extracts. At the first level, the learner processes affective information: they make sense of a concept based on their own life experiences, linking their personal experience to the new information. At the second level, they process cognitive information, relating the course content to their prior knowledge and referring to bibliographical resources. At the third level, they process metacognitive information, reflecting on their own learning and proposing strategies for verifying their answers. This

progression shows that critical thinking does not emerge immediately: it requires first relating the content to oneself, then to other areas of knowledge, before one can turn one's attention to the process itself. The forum provides the space for this progression, but does not guarantee it.

The methods of knowledge assessment observed in the MOOC also shed light on the issue. Three mechanisms coexist: automated assessment via multiple-choice quizzes marked without human intervention; peer assessment, where users evaluate one another; and self-assessment, whereby the learner judges what they have learnt. Only the latter two require critical thinking — the first merely requires the learner to reproduce the information. Yet it is the automated assessment that determines whether a certificate of completion is awarded. There is therefore, within this system, a disconnect between what develops competence and what is institutionally recognised. Peer assessment, moreover, has both a benefit and a limitation: its benefit lies in the fact that it places the learner in the role of assessor, forcing them to articulate criteria and thus to form a judgement; its limitation lies in the fact that it does not provide a meaningful explanation of success and carries a risk, as some information produced by learners may be incorrect, making the tutor's intervention necessary. Community validation is therefore not self-sufficient.

At the opposite end of the spectrum, the Facebook group offers an instructive counter-example. The group is characterised by the absence of supervision: there is no moderator present to regulate discussions, validate content or support learning. This absence has a paradoxical effect: it encourages users to take on an active role in collective discussions, the sharing and evaluation of information, transforming the user from a mere recipient into an individual actively participating in the construction of their own knowledge. Validation is therefore carried out by the community itself, through comments and private messages aimed at verifying and correcting errors and the information shared. However, this self-regulation remains limited and fragile, for two reasons. The first is the nature of the contributions: with 76 per cent of content being light-hearted and socio-emotional in nature, there is little scope for reasoned debate. The second is information overload: the constant stream of posts, fuelled by the ease of sharing and the notification system, does not foster genuine knowledge-building and makes it essential to strengthen information evaluation skills. This creates a vicious circle: the critical evaluation of information requires skills that the overabundance of information prevents from being developed.

3.3. Collaboration: the decisive threshold between exchanging ideas and producing work together

The clearest finding of this research concerns collaboration, and the Moodle platform highlights this with particular clarity. A comparative analysis of the forum and the wiki on the 'Language Teaching' platform leads to an unambiguous conclusion: the use of chat and the forum allow for limited declarative interactions, whilst the collaborative wiki provides a space for the co-construction of community knowledge. In this context, the forum is limited to providing answers and information; the wiki and glossary, on the other hand, enable participants to take an active role in content production, as any participant can become an editor.

This finding leads to the process being modelled in three hierarchical phases. The first is access to mediated content: the use of resources places the learner in a receptive role, following a transmissive model. The second phase involves building an interactive exchange network via the forum and chat: these interactions lead the learner to reorganise their prior knowledge and integrate new concepts introduced by the techno-pedagogical environment; however, they remain limited, as they permit only the exchange of existing information and knowledge. The third phase involves accessing the collaborative space of the wiki and glossary: carrying out cognitive activities there requires solid skills — digital, communicative, cognitive and metacognitive — and demands a cycle of planning, action and adjustment based on reasoning and the comparison of representations, that is to say, on socio-cognitive conflict, which enables the construction of new collective knowledge.

This hierarchy calls for a re-evaluation of a common misconception. A forum is not, in itself, a collaborative tool: it is a tool for exchange. The difference lies in the presence or absence of a shared output to be produced. In a forum, each participant retains ownership of their own messages; the exchange can be rich, cordial and useful without anyone ever having to modify another's contribution or accept that their own might be modified. In a wiki, there is a single text for which responsibility is shared, and any edit made by one person affects the work of others. It is this constraint that gives rise to collaboration in the strict sense; by requiring coordination, the justification of edits and the acceptance of revisions to one's own contributions.

This finding does not mean that the forum lacks a collaborative function. The accompanying comments, which offer solutions to problems encountered by peers, constitute a form of effective mutual support. The MOOC data is revealing: 67 questions regarding the platform's operation and

technical use were asked during the course, highlighting two types of difficulty — interface issues, with some learners unsure how to proceed with the course, and problems accessing content and completing activities. These difficulties gave rise to peer-to-peer support that was not provided for in the teaching scenario: it emerged out of necessity. It constitutes genuine collaboration, albeit focusing on the tool rather than the subject matter.

A second finding concerns the structure of the support system. In the MOOC, learners account for 98 per cent of those enrolled and the teaching team for 2 per cent, meaning that tutors cannot monitor every learner. Far from merely creating a shortfall, this arrangement encourages learners to take responsibility for their own learning and makes the forum learner-centred, with the community expected to be largely self-sufficient with minimal facilitation from tutors. The diversity of ability levels then becomes a resource: some higher-achieving learners act as assessors and ensure the validity of novice participants' knowledge. Here we recognise the mechanism of the zone of proximal development and peer scaffolding, also observed on the Moodle platform, where the novice student requires the help of a more advanced student, with mutual support often proving more appropriate than the teacher's intervention. The teacher's role is consequently transformed: on the Moodle platform, the teacher-tutor acts as a facilitator and mediator, monitoring progress, sustaining motivation, helping to resolve technical issues and providing formative assessment. The transfer of responsibility to the learners is therefore not a case of neglect: it requires preparatory planning — presentation of the programme, a learning agreement, clarification of objectives and expected behaviours — which the semi-structured interviews document in detail.

Table 3. Distribution of soft skills indicators across the three field sites.

Indicator	MOOC	Moodle	Facebook
Communication			
Public articulation of an information need	Certified	Verified (under 'General' category)	Certified
Tailored to the recipient	Certified	Limited to the declarative register	Low

Rephrasing and summarisation	Certified	Verified in the wiki only	Not attested
Interpersonal sociability	Present, but not dominant	Present	Dominant (65 per cent of comments)
CRITICAL THINKING			
Reflective questions on concepts	Certified	Rarely observed in the forum	Marginal
Hypotheses subject to verification	Certified	Attested in the wiki	Not attested
Argumentation by explicit inferences	Certified	Attested in the wiki	Not attested
Critical evaluation of others' work	Certified	Certified (peer review)	Ad hoc (correction of errors)
Metacognitive processing	Certified (Level 3)	Certified (required by the wiki)	Not attested
COLLABORATION			
Mutual support with technical difficulties	Strong (67 technical questions)	Certified	Certified
Support between peers of different levels	Certified	Certified (beginner / advanced)	Low
Production of a shared artefact	No (no co-authoring tool)	Verified (wiki, glossary)	No
Shared responsibility for the outcome	Low	Verified (60% of the mark)	None

3.4. Community knowledge as a mediating variable

The three preceding sections all point to the same conclusion, which constitutes the central finding of this research: indicators of soft skills are not distributed according to the level of participation, but according to the presence of an explicitly defined shared body of knowledge. A comparison of participation levels clearly demonstrates this. The Facebook group has 453,000 members and produced 404 resources in one month; the MOOC forum has 767 registered users and produced 1,189 posts in six weeks. In relation to the number of participants, the latter is incomparably denser, but above all, the qualitative distribution differs radically: the cognitively demanding categories — epistemic interpretation, interpretative propositions, evaluative statements — are evident in the former and absent or marginal in the latter. Hypothesis H1 is therefore corroborated: volume does not predict quality.

The distinguishing factor is identifiable. In the MOOC, the subject matter is defined a priori: the course took place over a fixed period of six weeks and the objectives were set in advance, with participants invited to consult the resources, acquire the knowledge, and then discuss it collectively in the forum. There is therefore a shared frame of reference within which divergence is both possible and productive. In the Facebook group, no such object of knowledge is established: each participant assigns meaning to and interprets posts according to their own interests, expectations and frames of reference, which explains the appearance of off-topic posts. In the absence of a common frame of reference, divergence is not a socio-cognitive conflict: it is simply a juxtaposition of spheres of relevance.

This underpins the mediating role of community knowledge. The process of knowledge construction in a MOOC indeed involves six elements: a cultural context; a community of at least two negotiators engaged in a discussion to achieve a common goal; content constituting the object of knowledge; an initial state comprising prior knowledge; a phase of socio-cognitive conflict and negotiation of meaning, producing a decentring conducive to restructuring; and a final state in which learners arrive at a shared interpretation that satisfies all participants. Each of these elements is also a prerequisite for the exercise of a soft skill. The shared objective necessitates coordination, and therefore collaboration. The clash of viewpoints necessitates argumentation, and thus critical thinking. The search for an interpretation acceptable to all necessitates clarification, and thus communication. Collective knowledge is not merely the product of these skills: it is the mechanism that makes them essential.

This line of reasoning helps to explain the case of the wiki. The transition from a forum to a wiki is not merely a change of tool; it involves transforming a space where the object of knowledge remains distributed across individual posts into a space where it is embodied in a single artefact. It is this embodiment that triggers collaboration in the strict sense, and it also explains why the skills required are of a higher order. The wiki is communal knowledge made visible, and therefore enforceable. Hypothesis H2 is thus corroborated. Hypothesis H3 is also corroborated, but with a nuance: communication does indeed occur in all three systems, confirming that it requires the least planning, whilst critical thinking and collaboration do indeed demand a higher degree of structure; however, critical thinking is occasionally evident in the Facebook group, precisely where the absence of a moderator forces users to take responsibility for validation themselves. It is therefore not supervision as such that fosters critical thinking, but the need for the community to decide on the validity of what it produces. A system that is too heavily supervised, where the teacher validates everything, can stifle this need just as surely as a system lacking a common purpose.

Table 4. Comparative summary: three modes of participation.

	Informal, unmoderated model	Formal, loosely scripted model	Highly scripted, large-scale model
Common learning objective	Absent or fluid	Present but external to the forum	Present and explicitly addressed
Community knowledge	Not established (juxtaposition)	Constituted in the wiki, not in the forum	Constituted amongst the active minority
Communication	Intense, predominantly relational	Effective, declarative register	Effective, argumentative style
Critical thinking	Occasional, driven by the need for validation	Weak in the forum, effective in the wiki	Observed in a minority
Collaboration	Mutual support without joint production	Exchange followed by co-production on the wiki	Peer support, instrumental mutual aid

Indicator of scope	76 per cent of content is recreational and socio-emotional	Activity logs focused on the 'general' category	146 certified out of 767 registered (19 per cent)
Limiting factor	Lack of purpose and regulation	Lack of co-writing requirements	The sheer scale and digital prerequisites

4. Discussion

4.1. The forum does not develop soft skills: it creates the opportunity for them

The first finding of this research is of a negative nature, and it is important to state this clearly. The common assertion that participation in a forum develops communication, critical thinking and collaboration is not false, but it is so incomplete as to be misleading. The forum creates the conditions that make these skills possible; it does not produce them. Between possibility and actuality, there is a set of conditions, the main one of which our analysis has identified: the existence of a shared object of knowledge on which participants agree to negotiate.

This conclusion echoes, via a different route, a well-established finding in the literature on online learning communities. Garrison, Anderson and Archer (2000) demonstrated, through the 'community of inquiry' model, that deep learning in an asynchronous text-based environment requires the combination of three forms of presence: social presence, which enables participants to present themselves as individuals; a cognitive presence, the capacity to construct meaning through sustained communication; and a teaching presence, which encompasses the design of the experience, the facilitation of discourse and direct guidance. Our three case studies illustrate precisely what happens when one of these forms of presence is absent. The Facebook group has a strong social presence, a weak cognitive presence and no teaching presence: it fosters social interaction. The Moodle forum possesses all three forms of presence, but the cognitive presence is only weakly stimulated by the scenario: it generates declarative exchange. The MOOC has a strong cognitive presence and a teaching presence diluted by its massive scale: it produces in-depth learning amongst a minority who have been able to compensate for this dilution through peer support. What our analysis adds to this framework is the specific function of community knowledge as a catalyst for transition: whereas cognitive presence describes a state, community knowledge describes a process

and its outcome, and helps us understand why this presence emerges in certain systems and not in others — it emerges when the group is placed in a situation where it must produce something for which it is collectively responsible and whose validity is not guaranteed in advance.

4.2. The threshold of co-authoring: linking the forum and the shared artefact

The most practical outcome of this research concerns the distinction between exchange and co-production. The forum organises a flow of contributions, each of which remains attributed to its author; the wiki organises the production of an artefact for which responsibility is shared equally. This structural difference explains the disparity observed on the Moodle platform between limited declarative interactions in the forum and genuine co-construction in the wiki.

We must be careful not to conclude from this that the wiki should replace the forum. The three phases identified form a progression, not a hierarchy of value: each prepares the way for the next. A wiki offered to students who have not first exchanged ideas in a forum would encounter a predictable difficulty, as co-writing presupposes a level of trust and mutual understanding that is built up during the exchange phase. Conversely, a forum that never leads to a collaborative output would leave students in a mode of exchange which, however useful it may be, does not require coordination. The resulting recommendation is therefore one of integration rather than substitution: a scenario aimed at developing cross-disciplinary skills would benefit from explicitly organising the transition from one phase to the next, by making the forum instrumental to a subsequent collaborative output. This organisation transforms the status of the messages, which are no longer stand-alone contributions but the building blocks of a collective endeavour; this alters the criteria for their relevance and, consequently, the skills they require.

4.3. Scale, supervision and cumulative dynamics

The 98 per cent to 2 per cent ratio between the number of learners and that of the teaching team creates an ambivalent situation. On the one hand, the dilution of supervision fosters autonomy and makes the forum a learner-centred space where the community must be largely self-sufficient: this constraint is pedagogically fruitful, as it creates the necessity that drives the exercise of skills. On the other hand, it results in a selection process, the extent of which is illustrated by the 19 per cent certification rate.

This result must be considered alongside that relating to socio-digital prerequisites. A well-documented cumulative dynamic

can be observed in the sociology of education: systems with minimal supervision benefit those who already possess the instrumental, linguistic and methodological resources necessary to make the most of them, whilst penalising others. The self-directed learning skills identified by Cristol (2016) are precisely those whose prior mastery determines the benefit derived from the programme. The online forum therefore develops the cross-curricular skills of those who already possess the necessary prerequisites. This observation is particularly significant in the Moroccan context, where the issue of access still largely determines that of usage: a programme designed without taking this inequality into account risks turning a policy of openness into a mechanism for selection. The practical implication is not to abandon lightly supervised systems, but to supplement them with explicit work on the prerequisites — practical support at the start of the programme, a clear explanation of expectations, and remedial support for students facing barriers to access. The interview conducted with the teacher-tutor on the Moodle platform documents a practice of this kind, as he presented the programme and the learning agreement, identified the objectives and expected behaviours, and explained how to access resources and use the tools before the course began.

4.4. What is developed and what is recognised: the issue of assessment

A point of tension emerges across the three research areas and warrants further discussion: the gap between what the programme develops and what it recognises. In the MOOC, certification is based on automatically marked quizzes – that is, on the method that places the least demand on cross-disciplinary skills. A learner can obtain the certificate without having posted a single message; conversely, a learner who has put forward a remarkable argument in the forum receives no formal recognition for it. This disconnect is not a design flaw but a consequence of the programme's large scale, as formative assessment is particularly difficult to implement when the number of participants precludes individual monitoring. It does, however, have a knock-on effect on behaviour, signalling to learners what matters.

The Moodle system provides a partial solution by basing 60 per cent of the assessment on participation on the platform, including interactions in forums and contributions to the wiki. This weighting aligns recognition with what the system aims to develop, but raises a specific difficulty: assessing participation carries the risk of prioritising quantity over quality, and thus of producing precisely the confusion that our results suggest we should avoid. A student may post frequently without ever presenting a reasoned argument. The recoding grid presented in Table 2 could, in this respect, be

put to use beyond the scope of research: its categories provide observable criteria for distinguishing between a contribution that demonstrates competence and one that does not. A formative assessment grid based on these distinctions would make the expected behaviours explicit to the students themselves — which would in itself constitute a mechanism for developing the targeted competences, as the clarification of criteria is a prerequisite for their acquisition. The appendix proposes an adaptation of the grid for this purpose.

4.5. Limitations of the study and future directions

The limitations of this study stem primarily from its methodology, as already outlined: retrospective recoding, the absence of pre- and post-test measurements, the heterogeneity of the research settings, and the exceptional context in which data were collected for one of them. They also stem from the very nature of the subject matter. We observed behaviours that demonstrated, in a given situation, the exercise of skills; we did not establish that these skills are transferable to other situations. Yet it is precisely this transferability that defines a cross-curricular skill. A comprehensive demonstration would require a longitudinal protocol comparing the behaviours of the same students in different situations.

A second limitation relates to the treatment of the temporal variable: the development of a competence is a process, and our data provide only snapshots of it. The three levels of information processing observed suggest a progression, but there is no evidence to show that a single learner progresses through them successively, rather than different learners occupying different positions over time. An analysis of individual trajectories, tracking the evolution of a single participant's modes of expression over the course of several weeks, would provide decisive clarification on this point.

A third limitation concerns the linguistic dimension, which, paradoxically, has been little explored despite the fact that two of the three research areas focus on learning French. The skills examined are exercised in and through the language, and their written expression depends on the participants' linguistic proficiency: a student may possess critical judgement but be unable to articulate it in academic French. This issue is particularly sensitive in the Moroccan context, where French is the language of schooling rather than a first language for the majority of learners, and where the Facebook group studied explicitly bases its learning strategy on the Arabic mother tongue. Further research should examine how code-switching in the forums affects the expression of transversal skills.

Three avenues for further research emerge. The first would involve developing and validating an assessment tool for soft

skills based on the analysis of user posts, whilst testing the inter-rater reliability of the proposed scoring grid. The second would involve experimentally testing the mediation hypothesis by comparing two groups exposed to the same content: one in a forum without collaborative output, the other in a forum linked to a collective artefact. The third would involve extending the analysis to conversational systems based on generative artificial intelligence, the use of which by students has become widespread since the corpus was compiled, and which raise the central question of this research in a fresh light.

Conclusion

This article began with a widely accepted pedagogical premise — that discussion forums foster communication, critical thinking and collaboration — and sought to test its validity using an empirical corpus comprising three contrasting mediated learning systems. The results lead us to replace this widely held assumption with a more demanding and useful proposition: the forum develops these skills to the extent that it gives rise to the formation of communal knowledge, that is, a body of knowledge for which a collective recognises itself as collectively responsible and whose validity must be established by that collective.

Three lessons emerge from this. The first is that the volume of participation is not an indicator of skills development: a group of several hundred thousand members producing daily contributions may not exercise any of the targeted skills, whilst a forum with a few hundred registered members, structured around a defined subject, demonstrates all of these skills amongst a proportion of its participants. The qualitative depth of the exchanges — hypotheses open to verification, clearly articulated arguments, and reasoned assessments of others' contributions — matters more than their frequency.

The second point is that the three skills do not develop at the same pace or under the same conditions. Communication features in all the systems observed, making it the most accessible skill but also the one most likely to be confined to an interpersonal sphere without any cognitive dimension. Critical thinking emerges where the community is placed in a situation where it must decide for itself on the validity of what it produces — a condition met as readily by a scripted system organising peer assessment as by an unmoderated system where the absence of authority compels users to take on this role. Collaboration requires an additional threshold: that of producing a shared artefact. As long as each contribution remains the property of its author, the exchange can be rich without any coordination being necessary. The third finding is that this development is contingent upon unevenly distributed

prerequisites: instrumental mastery of the platform and self-directed learning skills determine access to situations where cross-disciplinary skills are practised.

These findings point towards a design recommendation. Developing soft skills through the forum means not limiting oneself to the forum alone. It involves organising a pathway: a socialisation phase that builds a sense of belonging and trust; an exchange phase that facilitates the flow of information and knowledge; a co-production phase that brings a shared objective to fruition and necessitates coordination; and an assessment method whose criteria make the expected behaviours explicit. It is not the tool that develops the skill; it is the scenario that makes the skill necessary. The discussion forum serves as the ideal platform for this, provided we stop expecting it to do this work on its own.

One question remains, which this research raises without addressing it. Community knowledge derives its educational value from its epistemic uncertainty: it is precisely because its validity is not guaranteed by any external authority that participants must establish it themselves, and it is this obligation that drives them to work. However, conversational technologies based on generative artificial intelligence — the use of which has become widespread in universities since this corpus was compiled — provide an immediate, articulate and plausible answer to any question. If the answer precedes the negotiation, what becomes of the community that produced it? This question, which goes to the heart of our relationship with knowledge in the digital age, is undoubtedly the most urgent area for further research following this study.

Appendix: Operational observation grid for soft skills in a forum

The grid below is an adaptation, for educational purposes, of the analysis grid presented in Table 2. It is intended to make explicit, for both students and teaching, the behaviours expected in a learning-oriented forum, and can be used as a self-assessment tool, as a basis for peer assessment or as a framework for formative assessment.

Competence	Observable behaviour	Formulation of the criterion
Communication	Asking a specific question about a point that has not been understood	The question identifies the specific point of misunderstanding and allows for a targeted response
Communication	Responding whilst taking into account what the recipient already knows	The answer uses the same terms as the question and does not assume any unstated prior knowledge
Communication	Rephrase or summarise the content discussed	The rephrasing preserves the meaning whilst changing the wording; it can be understood by a third party
Critical thinking	Distinguish between what is established and what is assumed	The contribution indicates the status of what it puts forward (hypothesis, opinion, sourced fact)
Critical thinking	Support a position with an argument or a source	The statement is accompanied by a reason or an identifiable reference
Critical thinking	Raise an objection relating to the content, not the person	The objection addresses the argument in question and explains why it is unconvincing
Critical thinking	Revising one's position following a discussion	The revision is explained and justified by a point raised by a peer
Collaboration	Addressing a difficulty encountered by a peer	The response proposes a workable solution and checks that it has resolved the problem
Collaboration	Contributing to a joint project	The contribution ties in with existing contributions without duplicating them or contradicting them without justification
Collaboration	Accepting changes to one's own contribution	Changes made by a peer are discussed on their merits rather than defended on principle

Collaboration	Taking on a coordinating role	The contribution organises the collective work: progress summaries, task allocation, and reminders of the objective
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