Vicarious Learning in a Digital Environment: A Case Study at a Big Four

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Abstract

In the United States, $162 billion was spent on corporate development in 2012. Yet, some studies unveil a "The Great Training Robbery", showing that no more than 10% of training expenses are effective. This research examines the misalignment between the investment in formal training settings and the actual learning behaviors which rely mostly on informal learning and digital tools (i.e. symbolic environment), empowered by an increasingly interconnected world. The research aims at understanding the emerging behaviors of learning in context among auditors and consultants from a French affiliate of a Big Four company. Based on Bandura's work on learning in an ultra-connected universe, we identify and develop four informal vicarious learning behaviors based on symbolic media. Our work has implications for Human Resources' value proposition, which shifts away from offering content-based training to developing learning capacity.

1. Introduction

"I'm fed up with being forced to train for useless training. [...] When I was told, I had to do BI [Business Intelligence] ... I do not need BI right now in my work. There I am forced to think about something I may need only in 5 years. [...] I think they [the HR services] like the face-to-face because we have a sign-up sheet for each training session and it's a way to control, that's why I also do not like necessarily asking for training [...] you think that normally everyone will be able to self-train and to know a little bit of his own gaps without having to sign. I do not like that principle at all." (Caroline, Senior Consultant, AuditFirm, Paris)

We are in this pivotal period where new ways of working and practices of employees are bumping into the walls of organizations that have not yet adapted to the new working practices, especially when it comes to learning. These walls are reflected especially by a misalignment between training proposals deemed in phase with the reality of the *field*. This misalignment is, therefore, the driver of digital informal learning modes that elude Human Resources (HR) services.

This is particularly important for organizations; companies in the US invested $162 billion in 2012 on corporate development[1]. In 2008, companies in the UK spent more than the entire 2012 UK budget for education for similar training and development.[2] Yet, some studies have shown that no more than 10% of training spending is effective, calling it the *Great Training Robbery*[3]. In 1996, a study of 200 executives of the Center for Creative Leadership[4] demonstrated that an individual learns throughout his life and in various ways. This study revealed traditional and formal learning account for only up to 10% of learning. 90% of learning time is spent in informal situations that are rooted in more instantaneous and disorganized training models.

Informal learning has become common in numerous occupations such as consultants or auditors, who face the struggles of interdependent work, acquiring knowledge that is less codified and identifiable ex-ante. Moreover, the knowledge economy is an increasingly challenging context [17]. Therefore, people learn from others' experiences to avoid failures and to improve performance. Learning from observing others or vicarious learning [2] focuses on the learner's ability to observe others and align his/her actions on the models' (i.e. an experienced individual at the workplace). Furthermore, the technological landscape has evolved to offer multiple flexible and adaptable avenues for vicarious learning. The increasing social nature of work calls for attention to vicarious learning through symbolic means, i.e. learning from digital artefacts widely available online (e.g. videos, pictures, articles, etc.).

The misalignment previously described between actual learning behaviors and HR policy stresses inability for adequate training provision. The aim of this research is to shed light on informal and self-directed learning enabled by open and networked environment. Therefore, our research question: How does vicarious learning unfold in digital environments?

We conducted an in-depth qualitative case study in one of the largest audit, consulting, and accounting

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[1] https://www.forbes.com/sites/hbsworkingknowledge/2016/07/25/companies-waste-billions-of-dollars-on-ineffective-corporate-training/#b3294054d222

[2] https://www.ft.com/content/697f3742-09a5-11e3-ad07-00144feabdc0

[3] http://www.hbs.edu/faculty/Publication%20Files/16-121_bc0f03ce-27de-4479-a90e-9d78b8da7b67.pdf

[4] Lombardo, Michael M., Eichinger, Robert W. (1996). The Career Architect Development Planner (1st ed.). Minneapolis: Lominger, p. iv. ISBN 0-9655712-1-1.

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firms, commonly termed to be part of the Big Four. Using an abductive logic, our exploratory approach identifies the vicarious behaviors of digital learning.

This paper aims to contribute to the literature on vicarious learning. Research has not specified the activities through which vicarious learning occurs [6], leaving undocumented the micro-processes of knowledge transfer [8]. Myers [16] notes that relational dynamics have been ignored from the studies on vicarious learning. Moreover, symbolic environment is still considered only in allowing a one-way vicarious learning (called independent vicarious learning), when the digital world enables relational interactions around an artefact (e.g. an article) (called coactive vicarious learning). Our research offers an integrated account of independent vicarious learning (IVL) and coactive vicarious learning (CVL), asserting their complementarity, and identifying both types of behaviors in a symbolic environment. Doing so, we shift our focus from learning to a developmental approach which enables us to articulate both types of vicarious learning behaviors. Our research offers a typology of four learning behaviors that can constitute a repertoire of behaviors to be rearranged for future learning situations.

The remainder of the paper is organized as follows. First, we introduce the literature on vicarious learning and communities of practice. This is followed by a description of our research methodology, and presentation of results. Finally, we discuss the implications of this empirical research.

2. Vicarious learning through symbolic means in communities of practices

Learning unfolds through multiple dimensions. Vicarious Learning has been developed by Bandura [2] to describe a learning situation where individuals learn from watching or hearing someone (i.e. they are not the recipients of direct training and do not interact with the observed person). Vicarious learning can be defined as a learning process where "an observer learns from the behavior and consequences experienced by a model rather than from outcomes stemming from his or her own performance attempts" [9] (p.528). Vicarious learning encompasses live observation and the symbolic environment of mass media [4].

Technological advances have enabled a range of new opportunities to observe and learn. Nowadays, autonomous and informal learning are part of everyday life. One's immediate environment is not the boundary to model behavior patterns anymore. Technological advances have largely contributed to the expansion of social environments that individuals can participate in. Furthermore, Web 2.0 technologies offer a range of possibilities for learning due to

synchronous and asynchronous interactions. Even though online interactions do not enable the direct observation of a model as in the case of work situations, learners can observe multiple interactions such that direct participation is not necessary for learners in the online realm. People can take the lead and become active in their learning. Self-directed learning implies that people are responsible for their choices of how, when, and where they learn [5]. Nevertheless, information and communication technologies (ICTs) raise new challenges for learners to find trusted sources and support to learn. Internet and Web 2.0. enable access to information and to learn from others beyond spatial limitation and outside of traditional learning spaces. The online realm as a symbolic environment has assumed increasing importance in social life. For example, online interactions shape beliefs, values and behaviors, among which learning behaviors develop [4]. The open and networked environment provides opportunities for self-directed and vicarious learning.

2.1. Independent and Coactive Vicarious Learning

Following the definition of Gioia and Manz [9] and subsequent research, Myers [16] judiciously points out that research on vicarious learning has erected an independent, one-way learning model where the learner knows how to identify and reproduce observed behaviors. This approach removes the learner from a socially interactive and embedded working environment. This is why Myers [16] distinguishes between independent vicarious learning (IVL – Figure 1) and coactive vicarious learning (CVL – Figure 2).
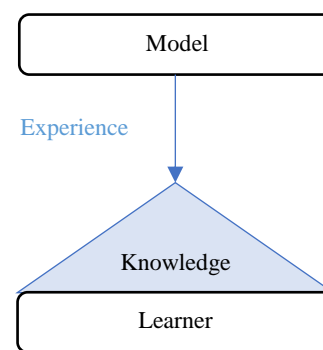
Figure 1. Independent vicarious learning (inspired from Myers, 2017)

CVL covers the "discursive learning process where individuals (i.e., a model and learner) intentionally share and jointly process a model's work experience(s) in interpersonal interactions to co-construct an emergent, situated understanding of the experience(s)." ([16], p.9).

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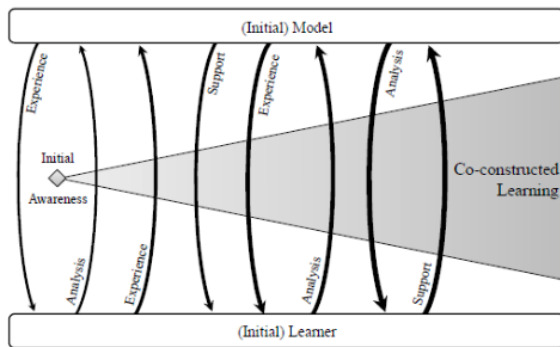
Figure 2 Coactive Vicarious Learning Interactions (Myers, 2017)

Despite Myers' [16] acknowledgement that learning can be done within a community, he conceptualizes learning within dyads (two individuals including the learner and the model). This conceptual argument based on the dyad is too restrictive in the integration of insights brought to us by the literature on communities of practice. This is especially useful for informing future analysis anchored in symbolic processes of learning. The digital world offers opportunities to explore the complexity of learning within networks [10].

2.2. Communities of practice

Research on communities of practice [12] highlights the interpersonal dimension of learning among experienced peers. By looking at situated learning, Lave and Wenger [12] adopt a broader perspective than the cognitive and intrapersonal nature of learning that emerges from Bandura's work. Training cripples learning because it does not make practitioners' actions observable [7] and relegates the models to a more passive role [1]. Nevertheless, group learning research has studied learning at a collective-level [19]. Communities of practice literature assumes that learning is situated in the levels of engagement within a community. Learning in a community implies interactions based on a common occupational identity and intention to give and take knowledge.

This perspective emphasizes the role of interpersonal interactions in vicarious learning. Shared identity has been shown to be a factor of the effectiveness of learning activity [11]. Learning from other skilled practitioners of one's field emerges from the socialization process and contributions to the community. Another dimension is intentionality: individuals are intentionally contributing to learning interactions. Learners intentionally seek missing knowledge and skills through various cues, whereas researchers often assume weak or no intentionality in these communities [1]. Interpersonal relations and intentionality are two key features to learn contents that cannot be identified and prescribed beforehand.

3. Research design

3.1. A single qualitative case study in a big four consulting firm

This exploratory research was based on an in-depth single case study in a French affiliate of a Big Four company specializing in Audit, Advisory and Accounting. In-depth single case study design has been advocated to generate new theoretical insights, as it offers a unique opportunity to document, analyze and inform more common processes [20]. The context of an Audit Firm is a fitting opportunity to identify less obvious elements in other companies since consultants are known to evolve in knowledge intensive environment and be less commonly studied.

Several modes of data collection were used (Table 1). These documents enabled us to identify the firm's investment in training actions (€25 million) and the taken actions to manage demand for jobs and skills. The context needed to be deeply analyzed to understand the controversy between the HRM investment and actions and the real learning self-practices from the auditors and consultants. They were selected from a contacts database only composed of consultants and auditors.

Table 1. Data collection

Data Sources	Details	Use in analysis
22 semi-structured interviews	9 auditors and 13 consultants (75 minutes each on average) About work context, content of learning, learning behaviors, environment, tools, usefulness and perceived easiness of digital tools	To identify situations, needs and learning behaviors.
83 Documents	2 Social Reports, 12 HR Newsletters, 5 training plans, 5 evaluation reporting, 19 AuditFirm Academy documents, 15 emails, exchanges, 3 resignation letters, 1 logbook, 21 reports missions	To understand the organizational context, the human resource management and their objectives.
Observation	10 days of observation at Audit Firm and shadowing during informal events (e.g. phone, LinkedIn, after work, e-mails, screenshots, journals) recorded in researcher's diary with text, pictures	To observe online and offline modes of interactions, which and how digital tools to are used.

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	and screenshots for online observation.	

3.2. Data analysis

We gather and organize qualitative data to code and to provide an interpretation of a phenomenon (description, explanation, configuration) related to our research problem: what are the vicarious learning behaviors through symbolic means? To answer this question, we conducted a thematic analysis [15]. We detected which topics and themes emerged and converged. The construction of a coding dictionary allowed us to classify common concepts and ideas using NVivo11 Pro. From there, we identified three types of findings from our analyses:

First, the set of illustrations highlighting *The Great Training Robbery* which includes a general diagnosis of friction areas between auditors/consultants and HR services. These illustrations are reflected in the context of the field, and the operational and self-sufficient development of employees' own informal learning mode. This misalignment, therefore, is the initiator of digital informal learning that eludes HR services.

Second, we connected and classified the different characteristics of learning in the context of AuditFirm. We identify four characteristics which are described in detailed in the results section.

Third, we identified four learning behaviors classified according two dimensions: (1) the role of the learner in his learning and (2) the gap in learning that the learner expects to fill.

3.3. Context of research: AuditFirm

"*AuditFirm is successful through the commitment, behavior and excellence of our people. To maintain this success, it's important that we keep our people challenged and supported through their AuditFirm career.*" – Message from the CEO of AuditFirm International.

These four largest auditing, consulting and accounting firms are highly demanding and strict, with the HR policy based on a meritocratic system, exemplified by selective recruitment and a promotion system and orchestrated by a system of regular performance evaluation. *"Recruitment is very selective with four steps and tests. We are looking for a number of qualities. [...] They must be curious, radiate and have a great capacity of adaptation. It is important that they are pleasant in their exchanges to favor the atmosphere of work in house and the relations with our customers. Rigor is also an essential quality for our business combined with a sense of responsibility, listening and a taste for support. "* (HR Director, 09/27/2011). The elitist

culture of AuditFirm, thus presents a form of paradox. AuditFirm is socially coveted by candidates and values the image of its consultants and auditors; yet, when rewards are not perceived at the level of the contribution, some consultants denounce this system as this excerpt of resignation letter shows; *"[...] I spent 3 seasons [...] to finish at midnight every night on a mission under staffed with thank you for shitty evaluations (made by a first e *****) compared to the work provided. [...]"*

AuditFirm performance and skills management represents intangible capital at the heart of all strategies for the group: *"In fact, it's like continuing education after school, it's a consultant."* (Iw_3). AuditFirm is an unusual case because it represents a very specific population in the knowledge-intensive economy. This does not preclude the results from being useful to other occupations and sectors of activity. In relation to the studied phenomenon, the influence of transformations in the context on learning behaviors in a consulting firm remains undocumented. This exploration observes behaviors in a demanding, rhythmic, and very competitive context. In this occupation, the boundaries between personal and professional time are blurred: *"[...] When we come back from vacation for example we are full of good intentions, we say we will follow such and such training, but soon when we return, we realize the number of emergencies, the lack of staff. We would almost be more willing to learn during the holidays because I know that we will not expect anything from us at that time, we are not stressed, and we are better prepared. "* (Iw_10). This in-depth case study aims to be profoundly comprehensive in terms of contextual impacts on vicarious learning through symbolic means.

4. Results

This research focuses on vicarious learning in the symbolic environment. First, we explain how *The Great Training Robbery* is reflected at AuditFirm. Second, we identify four learning characteristics. Finally, we offer a matrix to synthesize four learning behaviors we have observed; two IVL-oriented, and two CVL-oriented.

4.1. Why do we speak about *The Great Training Robbery*? The diagnosis at a Big Four

AuditFirm is committed to high quality training plans, calling on specialists, such as the tax experts Hoche law firm in Paris for example. This strong investment is also seen in technical support (e-learning platforms, training rooms, seminar organizations, in France or abroad, etc.): *"The training is very dense, led by experts, lawyers and financial consultants, who for many have participated in the financial adjustments of large companies, but unfortunately we have something else to do. We have our manager waiting for his documents before the end of the day,*

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but our training finishes at best at 6pm. And for us, our workday begins at 6pm then. And all day we must answer urgent emails, otherwise we block all the teams for which we work, it is unbearable. I have had to leave the training several times to have reports signed. I warned though that I was in a training session ... " (Iw_9)

Each auditor has about three weeks of training per year, excluding e-learning. *"I'm supposed to do four in the year and six / seven more e-learning. But it's stuff besides your work, we do not plan any time for that. So, everyone comes to do "next-following" until the end for the training department to say that we have followed these trainings and send us no stimulus. But recently, in order to encourage people to follow the training, they added quizzes at the end of each sequence, and we have to validate all the quizzes to validate the module [...] And if we do not do them, the BU [Business Unit] Director sends us the reminder email."* (Iw_5) *"I also have a problem, I ask [...] already a year and a half, management training in crisis, so my manager tells me it's legitimate, I know you need it, but the problem is that 'is reserved from a grade manager."* (Iw_3)

These quotes illustrate our point of departure. On the one hand, we observe an investment of the firm for the training of the auditors. On the other side, we identify challenged, overloaded, learners, who work on several missions simultaneously.

"Due to pressure on results and the handling multiple clients with different timeline, some cannot benefit from the content of these interesting trainings: "In order not to be bothered, I came in the morning to sign the training sheet and I left at the break or in front of everyone saying that unfortunately I had things to do for the job. All the trainers did not necessarily appreciate, but I was called by a partner for example to make him sign accounts and the partner sometimes does not wait and did not care that we were training. Which made the training completely useless because I could not follow it." (Iw_28). So, auditors adopt spontaneously behaviors that allow them to keep up with the organizational context, i.e. the use of simple online knowledge acquisition solutions and the creation of a learning and collaborative network. These networks are not valued within HR. Auditors mention *"the lack of time and support of the approach, unrecognized and unrecognized by managers or the organization"* (Iw_8). The auditors, thus, refocus on their occupational identity to form communities of practice. There is a strong sense of business belonging here, bringing legitimate selection to these communities of practice. These, along with an entrepreneurial culture in personal development strategies: *"I often buy personal development books to be organized. There are different coaches that we can follow on these topics."* (Iw_14).

4.2. Characteristics of learning in the context of consulting

As noted earlier, learning behaviors developed in this intense context of coping with knowledge gaps show four characteristics.

First, they heavily rely on digital tools *"Internet has facilitated and accelerated many things like the capacity of reaction. Now with Internet, you are hyper reactive"* (Iw_20) as (1) a self-directed approach. In fact, each auditor and consultant takes initiative in diagnosing their learning needs, formulating learning goals, and identifying human and material resources for learning.

"As for managers, I believe that everyone must be able to self-train and fill in gaps." (Iw_3) *"This is the LinkedIn site where you can find a lot of PowerPoint presentations and other professional documents. [...] Otherwise, I also self-taught on internal auditor certifications. And there are classes that I could also find on the internet. There, for example, I am asked to improve the WCR in 28 countries where the client is present, that's all I have for information. So afterwards, it's up to me to see the methodology and try to get inspired by what has been done in other societies [...]. I'm going to find the information for myself [...] Without internet we would be clearly lost."* (Iw_17)

Second, learning follows the business rhythms punctuated by emergencies and heterogeneous requests: *"During a working meeting, if we need specific knowledge to move the project forward, we can obtain it almost instantaneously either by consulting sites or by asking our online network"* (Iw_20) as (2) a diffuse and continuous learning. Continuous learning and mobility learning (thanks to smartphones, tablets and laptops), make learning possible everywhere: *"Train time is also precious to take time to get informed, to train, to keep watch on what is going on. It allows us to read specialized magazines, web news, go to specialized sites, etc."* (Iw_8). The use of training tools at all times empowers consultants to learn in a desired and non-imposed approach of assimilation: *"When we choose to do it, we are sure to be in good mood with the mind available, unprepared and willing to learn when we select times when we have no urgency to deal with. It is therefore absolutely not seen as a constraint."* (Iw_13)

Thirdly, consultants, like auditors, learn in broader, sometimes fragmented, spatio-temporal schema. The learning is flexible and the relationship to knowledge has become a polycentric relationship. Therefore, (3) the boundary between personal and professional time fades away, especially when it comes to learning. *"It may be silly, but in my case, before I sleep, that's when I'll read my LinkedIn news, articles posted, inform me more in depth..."* (Iw_3) *"during the holidays, we are more willing to learn*

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because I know that nothing will be expected from us at that time, we are not stressed" (Iw_3)". "In commute, I continue to process my files and if I'm not finished, I'll finish at home in the evening and the next day tomorrow." (Iw_1) Learners acquire a "versatile" thought designed to better manage unforeseen events and do not dedicate specific time to learning.

Fourth, the use of source or learning resources by proceeding to a (4) constant perceived utility/ease-of-access ratio calculus: *"too much information kills the news More seriously, there are so many sources of information today that one knows where to look between the newsletter, internet, intranet, etc. We must look for the info at the right place and if we have to validate the legitimacy of the source, in short ... we lose time." (Iw_13).* This verbatim evokes the trade-off made between trustworthy sources and interesting information from lesser known sources. This calculation leads learners to turn towards micro-learning, i.e. learning resources that require between 30 seconds to 5 minutes of attention. This is reflected in particular by ease-of-access and use of these resources. It can be interactive in different formats (e.g. videos, audio podcasts, etc.) Micro-learning is characterized by interactions with micro content in online learning structures, but also by its ease of access.

4.3. Typology of learning behaviors: vicarious learning in symbolic environment

Our research shows that the vicarious dimension of interviewees' learning is reflected in the day-to-day business as informal, i.e. self-prescribed outside of HR services. The symbolic dimension of this learning is strongly present through the digital artifacts mobilized, within an ultra-connected universe. We have identified four vicarious behaviors relying on symbolic means (Figure 3).
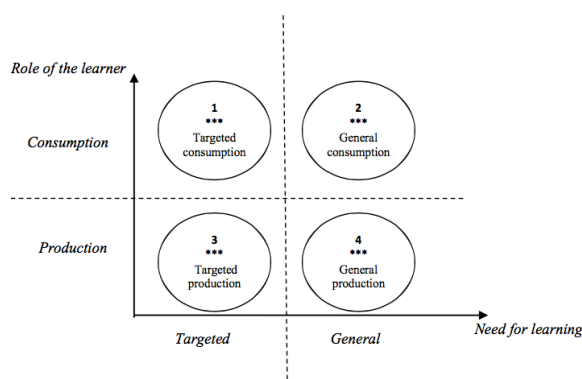
Figure 2. Typology of vicarious learning behaviors

Our analysis reveals two roles of the learner in his learning, as a consumer and as a producer; That is the attitude and impact that the learner has on his learning. The learner is a consumer when (s)he engages in independent vicarious learning. (S)He learns by copying a practice, by reading a document, observing,

and watching a video without interacting with the model. The learner is a producer when (s)he engages in a coactive vicarious learning process. The producer influences the content (s)he is learning. (S)He turns to his/her peers. The producers' objective is to be acknowledged among experts of the field, and to boost their reputation and their employability

Our analysis also reveals two needs for learning. When learning is targeted, the learner is in an active knowledge search approach. The learner can seek to fill a specific knowledge or skill gap. When learning is general, the learner is in a process of monitoring and upgrading her/his broad knowledge related to work, environment or missions' requirements. The learner can seek sources of learning without knowing ex ante what will be put to use: *"going from links to links according to the subjects of interest"* (Iw_19). In the following, we detail each of the behaviors.

4.3.1. Targeted consumption

Targeted consumption results in the consultation of knowledge within an existing targeted set produced before and by others. By definition, the learner does not participate in the construction of the exploited content. Part of the tools mobilized are learning applications, which are more or less user-friendly. *"I know that for learning English, I really like to use Babel. It's fun, super ergonomic and fun."* (Iw_18) *"This allows us to go at our pace, not to be dependent on a group, (...) and not to be embarrassed by the gaze of others. (...) which is also advantageous is the application on iPhone, so accessible everywhere and at all times."* (Iw_6). This consumption approach refers to the IVL through symbolic media which consists of not soliciting and interacting with the model. Then, individuals also turn to internal or external databases that guarantee the quality of the knowledge acquired. We will cite the example of auditors, who in case of need of specific knowledge, solicit search engine, or the official databases specializing in taxation for example. *"My first reflex is to look on Google and I type keywords to get knowledge on the subject."* (Iw_4). Targeted consumption behavior is appropriate for those who precisely know what they are looking for as knowledge.

4.3.2. General consumption

While targeted consumption shows a search for precise knowledge within known resources, general consumers do not know which content they will find, but go on their regular websites, which they trust. *"Also, do not hesitate to read e-books on new trends, watch videos on business sectors. I will go and get books on Amazon on topics of interest for me."* (Iw_3)

This behavior aims at updating current state of knowledge, for example on a trade, a sector of activities or a technique. We take as an example, the consultation of walls on social networks. This

behavior is accompanied by an organization of sources to consult, such as specialized sites, by putting them in favorites, downloading their application and triggering an alert system with notifications as soon as new content is available on the site: *"I will check articles from my LinkedIn groups for example when I receive notifications."* (Iw_10). These platforms can be professional, dedicated to the transmission of knowledge, or maintained by peers and / or volunteer experts. *"I also try every week to look at the legal, economic and financial news to update myself."* (Iw_10) The symbolic environment through digital artifacts promotes and strengthens IVL.

4.3.3. Targeted production

This behavior is defined as the use of means of rapid communication and thus asking questions to the people likely to help in a given problem. The behavior is that of producer as an initiator because it will generate content and participate to feed something existing.

These learning networks can be intra-organizational, i.e. composed of AuditFirm employees: *"For example, if you have questions about the client, you can ask them to someone who knows the file well or who worked on it last year."* (Iw_11). These networks can be inter-organizational, as a community of practice: *"We try to learn from each other, sometimes we ask for clarification on a particular standard and as soon as possible as we can. These device returns are done naturally."* (Iw_5) or as Alumni networks: *"I have a friend that I know since the Master, hewas already a little geek of the band, (...)it was him for example who was busy automating the documents on Excel (...) I cannot tell my client or my manager (who incidentally evaluates me with all the consequences that we know), I have a problem with your Excel spreadsheets, let me ask for a training in our HR and eventually correct the problems then, in a few weeks (laugh)"* (Iw_4). These networks have been highlighted as a critical go-to learning source: *"I do not know what I would do if I could not use my network to carry out from A to Z all the missions, there is so much information to know, on the client, on tools, standards, only one, cannot get out."* (Iw_4), more in line with new ways of working, such as remote work and missions. This learning behavior also meets the requirements of responsiveness and sustained work pace.

This behavior is the closest one to the Myers' model (2017) of CVL. During synchronous symbolic interactions, we find between the learner and the model interactions based on feedback and confrontations of analyzes. An important dimension is time. The urgency of the need for knowledge paces the interactions in the search for an answer. For example, the space in Webinars also called web seminar dedicated to Q&A can greatly influence the content of webinars. These interactions are then maintained

through different information and communication technologies (e.g. e-mail, social networks sites such as Facebook, Twitter and LinkedIn or exchanges via instant messengers Lync or Messenger) such as the network is personalized throughout the course of study and career: *"For each category of problems, I know who to solicit and when. It is really very practical and effective."* (Iw_11). This learning network gets organized to meet the instant and urgent need. This network is reactive as they rely on each other.

4.3.4. General production

This form of learning is based on creating content and creating excitement and proliferation of interactions around one or more themes via two different contributions by participating and belonging to a community.

It can be the creation and administration of a discussion area (e.g. blog, forum, or social network page) of a learning network. What distinguishes it from the previous targeted production behavior is the participation in interactions to bring out the various feeds (e.g. newsfeed) around a content. The interactions are asynchronous, the participations are of different nature (e.g. creation of contents, setting up webinar and web conference, moderations of the site, etc.). It is important, within these learning networks, to cultivate exchange, informal "tutoring" so that the person who receives the learning assimilates knowledge and / or educated solutions: *"I use a lot of LinkedIn in, Twitter or Facebook groups to share articles that I find interesting. I sometimes send them directly by mail to groups and if possible, if I have the link of the article for example, I sometimes send it via the groups iMessage or WhatsApp"* (Iw_15). These learning networks are animated, informally so as not to solicit interlocutors only when needed. Some auditors and consultants also used serious game platforms because they found that these courses were motivating, by the playful side *: "The platform was on the Intranet and it was just ... you had riddles to solve and it was really a game where there were scenarios, characters, sounds and music, and big your answers to you varied the results of the game and when you had some answers that gave you a certain number of points and you had to find the answer in a minimum of attempts and so finally you try to understand how the person because the game reacted to your answers and you know what kind of people do you have to do so you tried to gauge your answers."* (Iw_12) This involves participation and benevolence towards his members. These networks develop themselves throughout careers.

4.3.5. Complementarity between behaviors

We observe that the content of the generalist or specialized press houses, webinars, or online tutorials of experts – for example – used by consultants in consumption, turn into production behaviors within "comment" sections. Therefore, consultants switch to

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a "production" mode by confronting opinions with other learners. These articles, videos or other artefacts supplemented by discussion spaces demonstrate a complementarity between the independent and coactive vicarious learning almost in a non-dissociative fashion.

For example (Figure 4), at the end of an article about an accounting practice, the discussion space serves to reformulate, complete, specify and integrate the elements of the article in a more precise context. This article is the artefact between the Model 1 and Learner 1. In this example (Figure 4), people comment on an article about an accounting standard. The Model 1, through an IVL process, makes his experience available to different readers who need this knowledge. First, Learner 1 thanks the author of the article (Model 1). This form of gratitude is similar to the support dimension identified in the Myers' model (2017). Then, Learner 1 asks for a reformulation of this accounting practice to check her understanding. This approach is an analysis of the experience of Model 1 from her background. It's not the author of the content who responds, Model 1, but Model 2, who replicates a dimension (here about taxes in accounting) of the Model 1's article to help Learner 1. The responder is more experienced than the Learner 1 so he is here an intermediate layer and here is a Model for the Learner 1 but he is also Learner 2 because he turned to the same article to learn. So, Model 2 and Learner 2 are the same person. He completes his answer by sending Learner 1 a link to another article written by a Model 3. Model 2 offers his analysis to Learner 1, and his experience by guiding him to an article he has already used. In support, Learner 1, expresses his gratitude to Model 2 for his explanations. In sum, Learner 1 has learnt from three different models. Model 1 was an expert in the accounting standard, Model 2, is an operational, a peer, who has mobilized this accounting standard, and here helps Learner 1 by suggesting the content created by the expert Model 3.
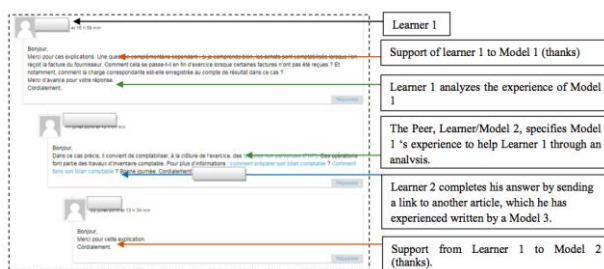
Figure 3. IVL through article completed by CVL

These behaviors are associated with a clear and unique digital organization i.e. learning presents an organization based on different sources and resources of knowledge.

Therefore, learning is progressing but not in a linear manner depending on the contribution of each model

(based on experience, analysis, and support). We also stress the process of complementarity of independent vicarious learning (via one or several artefacts) and coactive vicarious learning (via several models).

The purpose of the Figure 5 is to synthesize the process of vicarious learning through symbolic means illustrated by an example such as related in Figure 5. It resumes the example of a Learner and Models 1, 2 and 3. This Figure 5 is read from left to right.

First, Model 1 provides his knowledge online in the format of an article without further interaction. In an ultra-connected world, we find an artifact, (diamond), as the connector between Model 1 and Learner 1. They do not interact. Different artefacts can be source of learning (e.g. article, podcast, video, etc.). Model 1 and Learner 1 do not need to know each other, and the model can be a source of learning to several learners at a time. Likewise, the learner can in other circumstances be model, and the model become learner. In the Myers' [16] model, within the IVL the behavior consists of looking, reading and copying. Model 1 offers one of his creations, here an article. There is an intention to transfer knowledge in writing the article or making a video. There is therefore an intentionality in the symbolic world to make knowledge available, which is not necessary in the physical environment. Model 1 shares his experience. In return, Learner 1 presents his gratitude in support. Then Learner 1 shares his analysis, rephrasing with his own words to Model 1. Learner 1 is trying to reach out to Model 1 for more explanations, but it is Model 2 who answers. Indeed, since Model 1 does not respond, the interaction is deviated to Model 2 (for Learner 1) who completes the answer with his experience and analysis. At this stage, the IVL process is then completed by a CVL process through the intervention of one or more Models, here Learner 2. A peer joined to learn, he read the article either because the subject interested him or because he needed it. This Learner 2 is a peer learner. However, learners sometimes move between the role of model and learner in online forums. Here, Learner 2, for Model 1 takes the role of model, and turns into Model 2 for Learner 1 because he is familiar with the subject and presents here an experience to share on the topic. The Model 2 is a peer, providing more information about Model 1, providing additional analysis to Learner 1. There is therefore an intermediate layer of interactions via the peer network. Model 2 can then guide Learner 1 to Model 3, who will transmit another learning through his experience.

The returned triangle in the Myers model represents the growth of the IVL and CVL, often asymmetrically, thanks to four stakeholders (1 learner and 3 Models) in favor of a learner. Each experience of learning in symbolic environment can be analyzed through this same logic. This helps to understand the learning, the stakeholders and the artifacts.

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Vicarious learning in an interconnected and digital world has several layers of learners, such as within the community of practice between people who do the same job, and those who seize and translate the knowledge of an expert to offer an application in the daily lives of auditors.

Figure 4. Vicarious learning through symbolic means processes

5. Discussion

This empirical research sought to shed light on vicarious learning through symbolic means, investigating the learning context and identifying four learning behaviors. Our research delves into the symbolic environment of Web 2.0.

5.1. Theoretical Contributions

The contributions of this research are threefold.

First, we answer Myers's [16] call to explore the role of context on vicarious learning at work. We show that vicarious learning through symbolic means is mostly informal and digital. We identify four characteristics of learning in interconnected work– a self-directed approach, a diffuse and continuous learning, the boundary between personal and professional time fades away and a constant perceived utility/ease-of-access ratio calculus – which highlight the benefits of vicarious learning. These characteristics highlight high intentionality and pervasiveness of learning beyond dedicated time or prescriptions. Our research delves into the symbolic environment of Web 2.0. [4]. This focus is valuable to give a proper account of the importance that online realm has taken in people's life and thus, in learning.

Second, we identified four learning behaviors that highlight the need to shift our focus from learning to capacity for learning. The context of the knowledge economy [17] highlighted in the consulting and auditing occupations and by technological advances enable individuals to reclaim what need to be learnt and how it needs to be learnt. We answer Bresman's [6] call about identifying learning in practices: "organizational learning research using the term vicarious learning has been agnostic about the activities by which it occurs" (p.95). Shifting away from understanding learning, we offer a developmental perspective on individual capacity for learning. Rather than focusing on knowledge transfer in the present, our study aims at developing future knowledge transfer situations. Vicarious learning through digital means is critical in the learning process for individual and organizational success in an interconnected world. We show the complementarity of IVL and CVL and the proactive role of the learner (Figure 4 and Figure 5), and consequently, the importance of looking at the development of capacities for learning.

Thirdly, we answer a call for "a greater understanding of the micro processes underlying the transfer of knowledge" [8, p.1761]. Despite Myers' [16] assertion that "that workplace learning interactions occur most often among dyads, rather than alone or in group settings, at least among communities of engineers [1], rather than treating learning as a group-level property." (p.34), we show the role of the collective as a network (not the dyad) in providing support in processing information. This implies that interactions providing support build on individuals' self-efficacy to (1) keep engaging in learning and to (2) develop relational capability to enhance one's network [3, 18]. Furthermore, we nuance the balanced and symmetrical role proposed in the Myers' model, between the learner and the model. In-between independent learning of IVL and symmetrical interactions of CVL, singular to learning in a symbolic environment that complements the current insights on vicarious learning, is the systematic non-reciprocity by the analysis or the feedback of experience and sometimes not thorough in micro-learning due to the climate of urgency.

Our findings highlight the presence of several models by virtue of opportunities of symbolic environment afforded by multiple digital sources, as opposed to the principle of dyad, presented by Myers (Figure 2). Myers [16] conceptualizes vicarious learning as a dyadic interaction, i.e. a two-way exchange between a learner and a model, and consequently, conceptualizes a community as composed of dyads. In this context, the dyad is not always necessary, we perceive a collective learning, where one learner can have several models and become a model for other learners. Moreover, here models are not always the sources and creators of knowledge. Further, the learner is learning from several people at once from content that does not emerge formally from the model.

5.2. Managerial contributions

As a reminder, according to the well-known study of 200 executives, Lombardo and Eichinger [13] demonstrate that informal learning accounts for 90% of practitioners' learning moments. Naturally, in the

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hands of learners, and not recognized or measured by organizations [14], the informal learning behaviors introduced in this research can be leveraged by organizations, particularly through training and HR services as well as managers.

We offer managers and HR departments of all occupations a reverse, bottom-up view of the reality of the field in terms of accessing, learning, ownership and mobilization of knowledge. To promote an effective link between HR training departments and teams, consultants and auditors, we first suggest identifying the degree of "self-prescription" in terms of learning content of their employees. This self-prescription can be measured by the manager concerned based on the degree of achievement of the expected results. If a consultant or auditor encounters hurdles in, completions of the missions, a more in-depth diagnosis can be put in place to fill the gap of knowledge. For the others, and for the optimization of learning situations, it is necessary to trust and to let go by refusing a constraining approach, perceived as infantilizing.

In all cases, to pilot the content acquired by their employees, the HR department must position itself as a facilitator in accessing learning opportunities, not to be bypassed. To do so, we suggest two axes on which they can act: the agile formats, and in steering learning. Therefore, it would also be relevant to check by Information System Department and an operational expert, that each learner optimizes their use of digital tools in favor of learning. Within this dimension, the IS department is a partner to unlock access, including databases and to promote the digital ergonomics for the learner.

5.3 Limitations and future research

Our research has several limitations. First, this is a single case study that needs further investigation. Moreover, this research is specific to knowledge intensive context and needs to be confirmed in other contexts. Second, the analysis of vicarious learning in a symbolic environment has been observed at the individual level through online observations and still needs to be evaluated towards the objectives that were aimed to be achieved. Finally, our work brings a trail of evidence supporting a developmental perspective of learning, but the process and mechanisms of this theoretical perspective still need to be identified.

6. References

[1] D.E. Bailey, S.R. Barley, Teaching-Learning Ecologies: Mapping the Environment to Structure Through Action, Organization Science, 22 (2011) 262-285.
[2] A. Bandura, Social learning through imitation, in: M.R. Jones (Ed.) Nebraska symposium of motivation, University of Nebraska Press, Lincoln, 1962, pp. 211-269.
[3] A. Bandura, Self-efficacy: toward a unifying theory of behavioral change, Psychological review, 84 (1977) 191.

[4] A. Bandura, Social cognitive theory of mass communication, Media Psychology, 3 (2001) 265-299.
[5] P. Bouchard, Self-directed Learning and Learner Autonomy, in: N.M. Seel (Ed.) Encyclopedia of the Sciences of Learning, Springer US, Boston, MA, 2012, pp. 2997-3000.
[6] H. Bresman, External learning activities and team performance: A multimethod field study, Organization Science, 21 (2010) 81-96.
[7] J. Brown, P. Duguid, Organizational learning and communities of practice: Toward a unified view of working, learning, and innovation, Organization Science, 2 (2000) 40-57.
[8] E.D. Darr, L. Argote, D. Epple, The acquisition, transfer, and depreciation of knowledge in service organizations: Productivity in franchises, Management science, 41 (1995) 1750-1762.
[9] D.A. Gioia, C.C. Manz, Linking cognition and behavior: A script processing interpretation of vicarious learning, Academy of Management Review, 10 (1985) 527-539.
[10] P.J. Hinds, D.E. Bailey, Out of sight, out of sync: Understanding conflict in distributed teams, Organization Science, 14 (2003) 615-632.
[11] A.A. Kane, Unlocking knowledge transfer potential: Knowledge demonstrability and superordinate social identity, Organization Science, 21 (2010) 643-660.
[12] J. Lave, E. Wenger, Situated learning: Legitimate peripheral participation, Cambridge University Press New York, 1991.
[13] M.M. Lombardo, R.W. Eichinger, The career architect development planner, Lominger p. iv, 1st ed. Minneapolis, (1996).
[14] V.J. Marsick, K.E. Watkins, Informal and incidental learning, New directions for adult and continuing education, 2001 (2001) 25-34.
[15] M.B. Miles, A.M. Huberman, J. Saldana, Qualitative Data Analysis: A Methods Sourcebook, 3rd ed., SAGE Publications2014.
[16] C.G. Myers, Coactive vicarious learning: Towards a relational theory of vicarious learning in organizations, Academy of Management Review, Pubished Online (2017).
[17] W.W. Powell, K. Snellman, The knowledge economy, Annu. Rev. Sociol., 30 (2004) 199-220.
[18] S.B. Sitkin, K.M. Sutcliffe, K.E. Weick, Organizational Learning, in: R.C. Dorf (Ed.) The technology management handbook, CRC Press and IEEE Press., Boca Raton, FL., 1998, pp. 70-76.
[19] D. Vashdi, P. Bamberger, M. Erez, Can surgical teams ever learn? Towards a theory of transitive team learning in action teams, Academy of Management Journal, 56 (2013) 945-971.
[20] R.K. Yin, Case Study Research: Design and Methods, 5th ed., Sage Publications2014.