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The Application of Self-directed Learning in the Local Level Workplace

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<https://doi.org/10.12982/CMUJASR.2023.013>

Editor:

Yos Santasombat,
Chiang Mai University, Thailand

Article history:

Received: December 22, 2021;

Revised: September 30, 2022;

Accepted: October 4, 2022.

ABSTRACT

The knowledge economy has made the half-life of information shorter and shorter. People need to commit to lifelong learning in the workplace in order to cope with changing professional requirements. However, corporate training in China currently suffers from a low return on investment, unsatisfactory training outcomes, limited duration and poor coverage. To improve this, the purpose of this study is to investigate the implementation of self-directed learning (SDL) in the Chinese workplace, following an interpretivist research paradigm with qualitative methods, including interviews of company managers and staff. A Chinese company was used as the research subject and the article's three main points can assist similar companies make decisions on SDL. The three central contributions of the article are showing how to develop an SDL system in the workplace from the perspective of an organization; showing an elemental model of SDL in the workplace from the perspective of learning theory; and discussing an operational model of SDL program development in the workplace from the perspective of training managers. SDL should consider educational, psychological and sociological perspectives, but this article lacks a sociological perspective, leaving space for future research.

Keywords: Self-directed learning (SDL), Workplace learning, Training and development, Local governance and management.

INTRODUCTION

The contemporary era, characterized by its knowledge economy, has fundamentally changed our work and lives, making workplace learning increasingly obsolete. According to Sze-yeng & Hussain (2010), information has a decreasing half-life, and survival abilities have a shelf life of only a few years. Job contents and requirements change dramatically every five years (Bernard, 2018). Textbooks and courses can no longer sustain the pace of learning needs. This means that even after

leaving school, people need to be committed to lifelong learning. International companies with significant global competitive advantages provide workplace learning opportunities to their staff. For example, US companies have generated an annual training and development industry of over one billion US dollars in the last few years (Miller, 2013). Many Chinese companies also provide workplace learning opportunities and environments to improve the knowledge and skills of their employees. However, research has revealed the various shortcomings of traditional training (Holec, 1996). Companies sometimes devote large amounts of funds, materials, and human resources without achieving their anticipated results. Traditional approaches to implementing learning activities in Chinese workplaces need to become more flexible.

Research reveals that 80 percent of learning in the workplace takes place informally (Yeo, 2008). Organizations need to not only sponsor formal training but also focus more on activities at work (Billett, 2014). Employees should be provided with an environment that allows them to identify their learning gaps and learning plans, then conduct and evaluate their own learning on an ongoing basis. Ellinger (2004) suggests that learners need to take more responsibility for their own learning in the workplace. Self-directed learning (SDL) helps to fill the gaps in traditional training and is indispensable to workplace learning. In order to help the learning and development of Chinese companies, it is necessary to explore SDL in the workplace.

China's internet industry occupies a strong global position. It represents the current state of development of Chinese companies. The Chinese internet advertising industry is prominent, with its market size estimated at approximately 497 billion yuan in 2020 (Huaxia, 2021). Over the past decade, the internet advertising market has expanded at a double-digit annual growth rate (Thomala, 2021). Focusing on the SDL of the Internet advertising industry can also generate insights applicable to other Chinese markets.

This article investigates the implementation of SDL in the Chinese workplace. It presents a theoretical system, an elemental model, and an operational model in the workplace, leading to three research questions. First, "How does a company transfer from a traditional training system to an SDL system?", second, "What are the major factors to consider when implementing SDL in the workplace?", and third, "How should an SDL program be implemented in the workplace?". For relevance and wide applicability, a single Chinese internet advertising agency (referred to anonymously as X) was investigated for this study, with data generated from online interviews with company stakeholders.

SDL IN THE WORKPLACE

Explained from a psychological perspective, self-directed people tend to be responsible for their own attitudes and behavior, thus giving others the impression they are credible and trustworthy (Garcia et al., 2020). When this trait is placed in the context of learning, self-directed learners have a strong motivation to learn, the ability to specify their learning goals, a wealth of experience as a learning resource, and the capacity to take the initiative in their learning (Leminetty & Collin, 2020). Guglielmino et al. (2005) further explain the characteristics of a self-directed learner:

someone able to initiate and continue his or her own learning independently. They are convinced that they can complete their learning programs by using essential learning skills, organizing their learning process properly, and scheduling their time wisely (Guglielmino et al., 2005). In recent years, many similar concepts have emerged in relation to SDL, such as self-regulated learning (Pintrich, 2004), self-learning (Ha, 2008), and autonomous learning (Noe & Ellingson, 2017).

Merriam & Baumgartner (2020) summarize three aims of SDL. They point out that scholars who hold a humanistic philosophical view, such as Knowles (1975), Tough (1971), as well as Brockett & Hiemstra (2018), believe that the aim of SDL is to develop learners' self-directed abilities. On the other hand, Mezirow (1985), the originator of transformative learning, believes that the purpose of SDL is to foster transformative learning. He stresses that at the core of transformative learning is critical reflection: "Becoming critically aware of what has been taken for granted about one's own learning is the key to self-directedness" (Mezirow, 1985:17). There is also a view that SDL promotes emancipatory learning and social movements. Brookfield (1993) and Collins (1995) advocate for a critical and political analysis of SDL. They found that many people, particularly in disadvantaged groups, try to control change in their life world after SDL.

WHY SHOULD SDL BE IMPLEMENTED IN THE WORKPLACE?

Sze-yeng & Hussain (2010) suggest that knowledge acquired in formal learning institutions has a shelf life of only a few years due to the increasingly short half-life of knowledge. Therefore, individuals require lifelong learning, which is only possible if they are self-directed. Frequently companies strive to identify the most effective and efficient approaches to providing continuing education for their employees so that the employees are able to acquire the skills necessary to succeed.

Many organizations may invest plenty of funds and resources in developing formal training, but they still find that those employees who are promotable are the ones who have successfully enhanced their skill sets through SDL's efforts (Bernard, 2018). SDL is a career development process for employees in today's economy and a key factor for organizations (Ellinger, 2004). Although some scholars give more recognition to formal learning activities (Marsick & Watkins, 2001), a large part of adult learning focuses on the acquisition of skills, experiences and workplace understandings, which are usually gained outside the formal classroom (Bernard, 2018). Learning from mistakes, self-managed observation, training others and learning through interaction are all SDL activities (Gerber et al., 1995). Ellinger (2004) also emphasizes that learning at work is inherently self-directed, as learning itself is an indispensable part of the job. Watkins (1995) proposes that workplace learning encompasses not only the various formal learning activities that occur within an organization's human resource development (HRD) process, but also learner-led experiential learning and everyday learning activities. Much of the recent literature suggests that the majority of learning in the modern workplace takes place informally, with the level of informality ranging from 70-90 percent (Eraut, 2011; Noe et al., 2013). This learning occurs outside of formal learning environments and is primarily self-directed, conscious and site based (Cerasoli et al., 2018). Even after

continuing with formal education, employees use the competencies acquired through informal learning more frequently in the workplace (Tynjälä, 2013).

This article introduces the SDL framework into workplace learning and its many practices, a need long recognized by scholars and HRD professionals. Tobin (2000) sees this as an emerging research topic and Keirns (1999) suggests SDL can be a means of computer-based and hypermedia-driven development. A common view is that SDL should be an alternative form of corporate training because it offers the greatest flexibility (Holec, 1996). Although some critics argue that research on SDL in the workplace is too theoretical due to the lack of empirical evidence, Lee & Roth show that the introduction of SDL into the workplace has important practical implications (2006).

Many of these implications, for both employees and companies, are positive. For employees, SDL provides an opportunity to improve their work and increase their motivation to learn (Karatas & Arpacı, 2021). Those capable of deploying SDL's technological tools are not only able to apply the knowledge and skills they have learned in practical situations but also continue to improve their ability to learn new skills throughout their lives (Avdal, 2013). SDL helps to increase employee motivation, performance and academic achievement (Guglielmino & Toffler, 2013). Additional benefits include increased strategic thinking, self-confidence, work initiative and effective use of information (O'Shea, 2003).

For companies, an understanding of SDL can improve the quality and development of human resources (Ellinger, 2004). It is crucial for companies to be aware of how much professionals themselves can learn to individualize their teaching and overall curriculum strategy (Bernard, 2018). The development of employees' skills and competencies in this process contributes to the achievement of the organization's strategic goals (Gijbels et al., 2012). Specifically, SDL can be used as an adjunct to performance improvement interventions. For example, the results of a study on one US utility company showed a significant positive impact of self-directed learning readiness (SDLR) on job performance (Guglielmino et al., 1987). A study by Roberts (1986) found that managers within one Hong Kong telephone company that had higher SDLR scores than their peers had superior work performance. In addition, figures show that a growing number of leading US companies are successfully saving 20-50 percent of costs by applying SDL in the workplace (Guglielmino & Murdick, 1997).

HOW TO IMPLEMENT SDL IN THE WORKPLACE

A number of studies have explored concerns about how SDL is implemented in the workplace. Tough (1971) believes that the practice of SDL needs to be designed, embedded and controlled by learners themselves. Most research agrees that SDL is a process where the learner manages the learning from start to finish, including design implementation and assessment (Lemmetty & Colin, 2020). Candy (1991) questions whether the concept of SDL is too partial and exclusive. Brookfield notes however that whether alone or in a team, SDL can still be practiced in the workplace (1993). SDL is not always an isolated individual learning activity; it can also take place as a team (Bhandari et al., 2020). This is because SDL is influenced by the organizational context and collaborative relationships (Candy, 1991).

METHODS

RESEARCH AIMS AND QUESTIONS

The main aim of this study is to investigate the theoretical development of SDL in the Chinese context and its practical application in the workplace by focusing on a Chinese internet advertising company, anonymized as “X”. The study intends to develop a system of SDL, an elemental model of SDL, and an operational model of SDL, in the workplace. It asks: How does a company transfer from its traditional training system to an SDL system (RQ1)? What are the key factors to be considered when implementing SDL in the workplace (RQ2)? And how should an SDL program be implemented in the workplace (RQ3)?

The correlations between the research objectives and the research questions are shown in the table below. The first correlation regards the theoretical assumptions about what a system of SDL in the workplace should contain; the second is about the factors included and the interrelationships among them; and the third correlation is about how it is to be practically implemented.

Table 1. The connection between research objectives and questions.

Research Objectives	Connection	Research Questions
(1)	What	RQ1
(2)	Factors	RQ2
(3)	How	RQ3

This study used primarily qualitative rather than quantitative research methods. The aim of quantitative research is to quantify, measure and calculate data, and is often used in conjunction with statistical operations to obtain its final results (Hennink et al., 2020, pp. 16-17). When collecting and analyzing data, quantitative research involves numbers and statistics, while qualitative research involves words and meanings (Streefkerk, 2021). This study aims to explore the concepts, ideas and experiences of SDL in the Chinese workplace context to gather insights about implementing SDL. The results are displayed as theoretical systems and models as well as operational structures, presented in descriptive and explanatory texts.

This research follows an interpretivist philosophy. Interpretivism implies that the researcher interprets the elements of the study (Myers, 2019). Interpretivism emphasizes qualitative over quantitative analysis (Dudovskiy, 2016, p. 51). The data collection methods of the interpretive approach are naturalistic, including interviews and observation, and study of secondary data. Because of the different variables taken into account (Myers, 2019), data primarily depends on specific contexts, perspectives and values (Saunders et al., 2009), generating advanced validity. This study collected research data from one specific company and its findings are based on the actual situation.

DATA COLLECTION

This study was designed to explore SDL in one Chinese workplace with an eye to informing its future implementation in others. The study collected data from a company anonymized as "Company X. Employees' experiences were collected for qualitative analysis (Hennink et al., 2020, pp. 16-17). Semi-structured interviews with open-ended questions were used to find out how SDL was practiced in the company and how employees perceived it. In order to allow the respondents to complete the interview materials without any disruption, given the geographical borders and the epidemic, the interviews were performed online through e-mail, giving respondents enough time to think about the questions in depth.

Company X has only five managers and fewer than 100 employees, so the self-selected sample method was adopted to identify manager and employee interviewees (Hennink et al., 2020, pp. 16-17). The researcher interviewed a total of nineteen people, including two managers and seventeen employees. To improve the robustness of the data, the employees were spread across different company positions. Respondents were asked to respond to the interview questions from the perspective of training managers and learners respectively.

We familiarized ourselves with the generated data before identifying its thematic framework, indexing the data based on topic, charting and rearranging the data through abstraction and synthesis, and then we mapped and interpreted the data. The interviews were launched only after the researchers received ethics approval. At the request of the company, private information about the company and its employees, such as names and positions, are not disclosed. The study was conducted on a completely voluntary basis. Respondents were required to read the Participant Information Sheet and sign a consent form prior to being interviewed. The results of the survey are confidential.

THE CONSTRUCTION OF SDL IN THE CHINESE WORKPLACE

SDL in China is structured around three main sections: Workplace Learning and SDL, Workplace Training and SDL, and Build an SDL System in The Workplace. Through the logical progression of these three sections, the assumption of a system for implementing SDL in the workplace for Company X is constructed.

WORKPLACE LEARNING AND SDL

The results of the interviews indicate that Company X does not have a separate training department to arrange intensive training courses for its employees. However, lack of training does not mean that learning is not required. We found it essential that SDL be implemented in Company X. We know that most learning in the workplace is by nature informal and self-directed. Therefore, this study focuses on the informal learning component in the workplace. Now we clarify the relationship between workplace learning and SDL.

A map of learning in the workplace is displayed in figure 1. The map shows that learning in the workplace includes both SDL and other learning. Other-directed learning is achieved through training courses, which are usually the responsibility of

the training manager in the HRM department. SDL occupies a considerable area and if organized and managed consciously, can be achieved through the forms in the square on the right (figure 1). These forms can be assigned to the acquisition of human and material resources.

A dotted line separates SDL from other-directed learning, indicating that the two are not in absolute opposition to each other. In other words, there can be individual SDL in a training course, and there can also be partly other-directed learning in SDL. In fact, there is a continuum between self-directed and other-directed learning that requires different stages to achieve the ultimately comprehensive SDL. The distinction between the two concepts is made here only to highlight the difference between them.

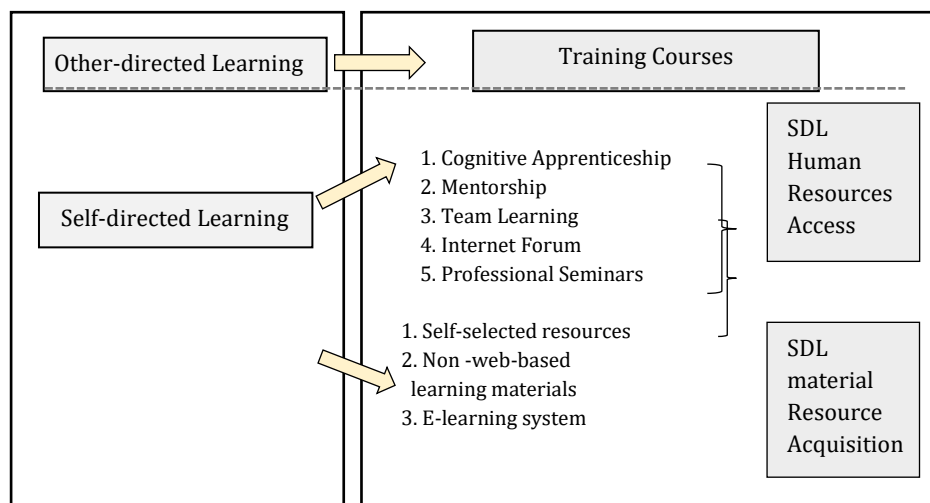


Figure 1. Workplace learning map.

The access to human resources and the acquisition of material resources are discussed in detail in table 2.

Table 2. The access to human resources.

Forms	Explanations	Notes
Cognitive Apprenticeship	New employees are assigned a mentor during their induction to help them adapt to the new environment and solve problems at work.	The mentors play an active role in guiding and educating the new employees. Otherwise, they may limit the learning of the new employees.
Mentorship	A learning mentor is allocated to each employee, mainly for communication, on difficult or unexpected situations at work. Mentors can be arranged across levels.	Take care of the embarrassment of cross-over snitching.
Team Learning	A group meeting where team members spend common time together discussing what they have learned, what is confusing or coming up, with new solutions, regarding their studies.	Someone needs to chair the big picture and guide everyone involved, rather than certain people always speaking.
Internet Forum	Go beyond small teams to include the internet resources of the entire company. A learning community is formed through the internet. Learners can discuss freely via the internet, including study, work and life.	A management team needs to be set up to monitor the forum to prevent anti-social comments.
Professional Seminars	Participation in seminars organized by professional institutions.	Giving more of the company's staff the opportunity to attend professional seminars.

Table 3. The acquisition of material resources.

Forms	Explanations	Notes
Self-selected resources	Employees choose their own books, learning materials or training. The training department is responsible for purchasing and managing them. The cost of books and training is reimbursed by the company.	Good management of resources is required.
Non-web-based learning materials	Materials in paper, audio and video for job requirements are developed by the training department.	Long development cycles and high update costs.
E-learning system	The training department develops an e-learning system. All learning materials are shared via the internet. Employees decide on their own when and where to study within a defined period for online learning, online exams and online assessments.	The development costs are high at the beginning, but the long-term return on investment is also high. Staff proficiency in internet skills is required. Requires a dedicated team to maintain and update the system.

Source: Authors construct, 2021

WORKPLACE TRAINING AND SDL

SDL is a form of workplace learning, but what is the relationship between training and SDL? Should it be integrated into the existing training system or will it become a relatively independent sub-system? This section explores this topic.

A training system is a collection of operational mechanisms and management systems that effectively use various training methods and HRD techniques to help companies achieve their strategic goals. The training system of Company X includes the following components, from a vertical perspective:

- Organizational Learning and Development System
- Training Needs and Course Management System
- Internal Trainer Training System
- Training Evaluation System
- Career Planning System
- Training Budget Control System

The organizational learning and development system consists of the components identified in figure 2.



Figure 2. The organizational learning and development system.

In the above figure, the words “Self-directed learning” do not appear in the organizational learning and training system. “Self-study”, which has a similar meaning, is however included in this system. Through discussions of SDL in the workplace, SDL can still be the main form for other types of learning methods, like on-the-job training, job coaching and online learning. According to figure 2, we can assume that SDL is a sub-concept of the parent learning and development system. Therefore, SDL is part of the training system or the organizational learning and development system in the training system. However, this reflects the fact that the training department considers the problem more from a training perspective than from a learning perspective. Thus, the systematization of SDL in the Chinese workplace needs to be further explored. Next, we are going to discuss the change from training to SDL.

Training is a type of short-term change designed to improve individual job performance by equipping employees with the knowledge, skills and attitudes to complete their work. It is driven by job requirements, expectations of managers and customers as well as other influential shareholders, whereas learning implies a process of change as individuals acquire instant information, skills and attitudes. In other words, learning emphasizes the processes and effects that take place inside the human brain. The process itself is invisible, only the results of learning emerge. It is more driven by the learners themselves.

The training practices in the workplace are generally from top to bottom. This means that only with the approval of senior management can employees engage in appropriate learning activities. However, learners can gain some choices and take initiative to a certain extent through participating in training needs assessments. Training is not enough to meet the high demand for learning on a daily basis, particularly for those who work in knowledge-intensive industries. Training is passive acceptance. Only when the learner is truly motivated to learn, when it really works in the learner's brain, can a person's knowledge, skills and attitudes be improved, therefore improving work performance. As such, the shift from training to learning in the workplace is a change from passivity to action. It is a progression in which control of learning is delegated from the training provider to the learners themselves.

As the result of the above discussion, if SDL were to be systematized in the Chinese workplace, a new and separate SDL system would emerge from the existing training system. The difference is manifested in the transfer of control and the learner's initiative in learning. In the SDL system, senior management places more emphasis on learning. They provide what is required irrespective of financial allocation or management, as long as it promotes staff learning. The formation of an SDL system facilitates the transformation of the organization into a learning organization. In a learning organization, leaders and managers will take a more prominent management role in guiding, assisting and facilitating others' learning; learners themselves will be more proactive also. The whole organization elevates learning to a higher importance.

The new SDL system is an inherited development from the original training system. In a theoretical sense, there is a qualitative leap from training to learning in terms of concept. In practice, however, the transformation remains an accumulation of quantitative changes, because it is a gradual empowering process in which employees gain more choice and autonomy in their learning and eventually become fully self-directed individuals.

BUILDING AN SDL SYSTEM IN THE WORKPLACE

To move from a training system to a learning system is to move from a single teacher-controlled process to one that offers multiple forms of learning. The following SDL system derives from Knowles' SDL theory (1975) and contains nine sub-systems.

1. **Learning atmosphere creation system:** Corporate leaders and managers should proactively create a positive and supportive learning environment.

2. **Learning guidance system:** Staff should understand themselves and participate in learning design. Multiple tools are provided to help them such as learning materials, SDL propensity tests, SDL perceptual level tests, self-efficacy tests, learning style tests, guidance on the ways to improve learning methods and learning strategies, etc.

3. **Career planning system:** This system helps learners engage in identifying learning objectives in the context of the workplace. Using career planning tools helps learners identify career aptitudes and strengths. In the career planning system, workers have access to job descriptions of all positions. They are able to discover the gaps between the requirements of jobs and their current competencies via a job competency test. Learning objectives are then defined and activities take place accordingly.

4. **Learning planning and counseling system:** Learners participate in the development of learning plans. This is achieved by signing a learning contract and finding a learning coach or partner to establish a partnership.

5. **Information and materials system:** Learners are allowed to choose their own learning methods. Corporate library or digital systems could be used for learning resources. Companies can also provide access to knowledge through indirect methods, such as issuing learning vouchers or providing learning products and reimbursing learning costs. When employees encounter a problem in the learning process that cannot be solved, they can turn to counselors in the learning planning and counseling system for help and advice. Training managers should be in charge of developing learning resources.

6. **Performance tracking system:** This system is designed to externally evaluate learning outcomes. Line managers take responsibility in observing how job performance improves after learning. Overall, it focuses on the assessment and transformation of learning results.

7. **Learning management system:** Training and development departments record learners' hours, content and test results. Line managers track and evaluate the learning of subordinates and establish manager assessment profiles, setting up a feedback box for learning management.

8. **Self-assessment system:** Staff record their learning experiences, results and then self-reflect. This can be private and facilitates the learner to develop a habit of reflection, which in turn promotes SDL.

9. **Knowledge management system:** This system targets the tacit knowledge and experience developed by employees conducting SDL. Specialists record and generate reports to build a company-specific knowledge base.

BUILDING AN ELEMENTAL MODEL TO IMPLEMENT SDL

In the previous discussion, SDL's suitability for the workplace was addressed at the theoretical level. The relationships between related concepts were analyzed and a system constructed. Now we focus on the practical perspective and developing a model that indicates what elements influence implementing SDL in the workplace.

LEARNERS AND THE ORGANIZATIONAL ENVIRONMENT

The environment can shape a person's character. Employees who are nurtured by different organizational cultures bear different imprints from these cultures. For example, staff at Microsoft are allowed to dress casually in the workplace, with t-shirts and jeans. They are dexterous and creative. IBM, on the other hand, requires neat and formal dress. Staff follow the rules and are responsible. To a large extent, differences are not attributed to individual variations, but rather to the working environment and culture of the company. In the workplace, the learner and the organizational environment are generally in a dynamic equilibrium. See figure 3 for detail.

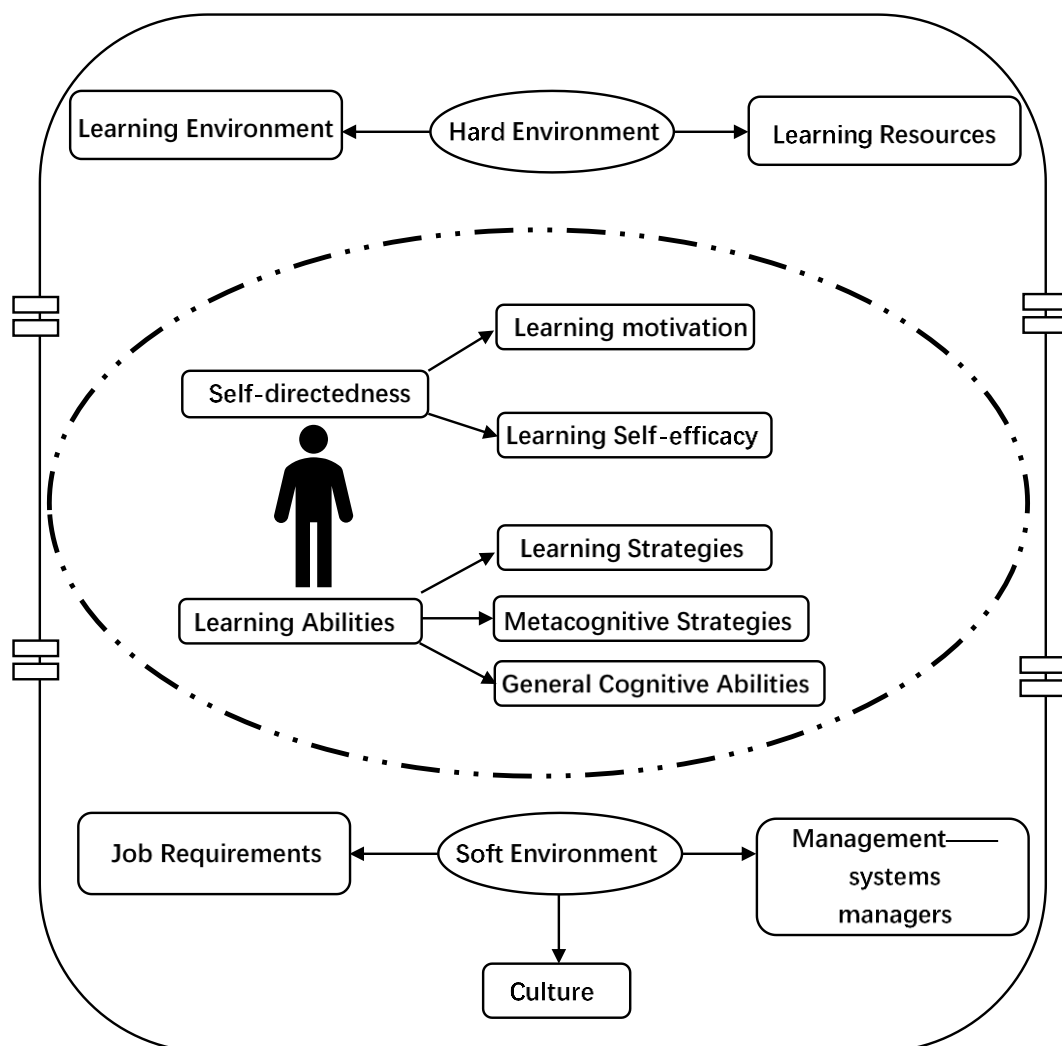


Figure 3. Learners and the organizational environment.

The oval dashed box represents the learner and the outer part represents the organizational environment. In a learning organization, the learner and the organizational environment are in dynamic equilibrium. When there is no learning climate for an organization, the organization is unable to meet the learning needs of

individuals, but learners still have a strong desire to learn. This equilibrium is then disturbed. This equilibrium is visualized in the figure by the dotted circle, suggesting that there are uncertainties in this equilibrium. The four equal signs on both sides of the rectangle signify the disruption of the equilibrium, which express the learners' struggle against the organizational environment.

Creating a learning environment is significant, since most people are extremely vulnerable to the limitations and influences of the external environment. Only when the needs of learners are aligned with that of the organization can the SDL be maximized, thus generating educational progress.

ORGANIZATIONAL ENVIRONMENTS

Basically, environments consist of hard and soft elements. The hard environment refers to the hardware facilities associated with learning, including the learning environment and learning resources. The soft environment refers to job requirements, culture and management.

Table 4. The elements of the organizational environment.

Organizational environment	Hard	Learning environment (office environment)		
		Learning resources		
	Soft	Job Requirements		
		Culture	Banners	
			Communication platforms	
		Management	Systems	Training system Management system Incentive mechanism
Managers	Top managers-Advocates Middle managers-Facilitators Training department-Planners			

THE HARD ENVIRONMENT

Creating an environment for SDL in the workplace refers primarily to the office environment. The creation of the office environment takes into account many factors such as the facilities of the building, the choice and the arrangement of office furniture, the color palette of the office environment, the size of the office space, illumination and noise.

For example, Microsoft's Shanghai branch uses relatively self-contained cubicle desks. These desks allow employees to concentrate on their own work without being distracted. However, these desks are not completely enclosed and employees can stand up and see other colleagues at any time. In addition, the departments that have closely linked functions are arranged to work on the same floor. There are no walls separating departments, making it easy for staff to communicate face-to-face with colleagues from all departments. At the same time, they can also connect using internet tools such as WeChat. In this case, the office environment design benefits communications and knowledge sharing as well as encouraging staff to learn from each other.

The issue of departmental privacy may be raised, but this can be solved by setting up small soundproof meeting rooms within the office. Such rooms can be used to discuss private or separate matters, or for team learning and communication, without interrupting the work of others.

Another hard environment that influences the implementation of SDL in the workplace is learning resources, here referring to physical resources like facilities and learning materials, not human resources. The richness, accessibility, timeliness and effectiveness of learning materials are the most crucial factors in ensuring employee-led learning.

One hard environment of note is that of Huawei University, which has nearly 9,000 square meters of computer rooms, more than 100 classrooms and over 500 office seats, and can accommodate more than 2,000 customers and employees for training at the same time. It employs over 200 full-time and 1,000 part-time lecturers. There are six departments involved in training, including internal, external, skills, technology, and culture. The University has rebuilt its digital learning platform and is leading a company-wide digital learning transformation. It provides a steady stream of people with excellent skills and cohesive cultural identity.

THE SOFT ENVIRONMENT

A soft environment is an atmosphere that cannot be seen but can be felt, I.e., job requirements, culture and management.

1. Job Requirements: The job itself is the center of the soft environment in which people work. It includes the use of equipment, the process of work, the hours of work and the requirements of the worker. There are also work team styles, hierarchies and relationships with colleagues that arise from the position. A sense of identity is formed through the recognition of all people, events and things related to the work. This perception of positions is a process of SDL and identification with the job influences an individual's SDL.

2. Culture: A good organizational culture should be one in which individual values are aligned with organizational values. It is not the content of the values that is most important, but that each member shares those values. Banners and communication platforms can help create organizational cultures.

Taiwan Semiconductor Manufacturing Company is a good example of banner usage. In every cubicle in the toilets of its electronic equipment production plant, employees can see a slogan of the organization's culture at eye level as they squat on the toilet. These slogans can also be found throughout the company. This gives the impression that they strive to inspire and promote a sense of continuous learning among their employees. This cumulative effect makes effective use of people's leisure time and facilitates learning.

Communication platforms are another means of creating an organizational culture. Communication platforms include face-to-face communication and online communication. Face-to-face communication involves regular meetings and learning sessions. On these occasions, staff can exchange knowledge and discuss problems.

IBM has a global online forum where employees can post on various topics such as company management, world events, politics and economics. An online

forum at Fudan University provides a variety of information services, helping individuals connect with and learn from each other. The internet has become the spiritual home of modern life and is an additional approach for organizations to promote their cultures.

3. Management: The implementation of SDL in the workplace requires the attention of management: concept and strategy requires management systems and appropriate people in management roles.

SYSTEMS

The development of a company and its implementation of strategy requires well-developed systems. Systems are, to some extent, the standard for people's behavior. SDL in the workplace requires action in training systems, management systems and an incentives mechanism.

SDL needs to be explicitly highlighted in the training system to draw attention. One problem in Company X hindering SDL implementation is that many employees are unfamiliar with SDL or have a narrow view of it. If SDL is to be encouraged and achieved, the concept should be explained and elaborated in the training system. This will help employees become conscious and aware of their own learning and help them carry out SDL correctly and effectively.

Making concern for employee learning a part of managers' job responsibilities. Managers play an essential role in creating an organizational environment. Having them take responsibility for helping subordinates' learning can contribute significantly to an increase in employee learning initiatives. At the company Xerox, every supervisor is required to develop their subordinates. Only when a supervisor has trained a subordinate well enough to take a supervisory position does the supervisor have the opportunity to move up to a higher level.

One interviewee mentioned prior experience at Microsoft. One of the responsibilities of the department manager there was to identify the learning needs of the department, collect relevant learning materials and facilitate learning within and across departments. The line manager emailed learning content from head office to everyone in the department and was concerned about completion of the training program and made his own suggestions.

SDL combined with incentives. Organizations must use incentives to motivate learners. Based on our interviews, two main areas are compensation incentives and career development. At the company Saturn, five percent of employee's variable base salaries is directly linked to the completion of individual training programs. As the variable percentage increases, so do the salary levels. One of the key factors in successfully establishing a culture of continuous learning is clearly defining regulations for variable salaries and bonuses and providing employees with opportunities to achieve their learning goals.

On the other hand, career development is also an ambition for employees. At 3M, if an employee is involved in new product development, his or her position and salary will naturally change in line with the success of the product. Even if beginning as a production engineer, the employee can be promoted to product engineer if the product reaches the market, and to product line manager if the

product reaches five million dollars in annual sales. This mechanism is a great incentive for employees to commit to innovation.

MANAGERS

Good systems need good managers to implement them. Senior leaders need to be advocates. They should recognize the relevance of SDL and give employees opportunities to learn. It is then the line managers to act as facilitators. They need to communicate with their subordinates, establish individual learning plans, observe and supervise their learning, and help staff when they have problems. Further, they should do these things:

- Introducing staff to SDL.
- Observe employee learning and performance.
- Assess learning packages and projects.
- Evaluate learning outcomes.

The training department is the planner. In developing SDL they must develop highly specialized, understandable training programs, ensure that SDL projects run smoothly, give learners more responsibility, provide effective and timely help; and avoid the notion that learning is always planned.

LEARNERS

Although SDL is influenced by the environment, the real impact of learning is felt by learners themselves. The first thing learners need to do is to know themselves. This can be achieved through SDL measurement scales or by reflecting on past learning experiences. It is also useful to take advice from others. Some influential factors affecting staff learning about themselves can be seen in figure 4.

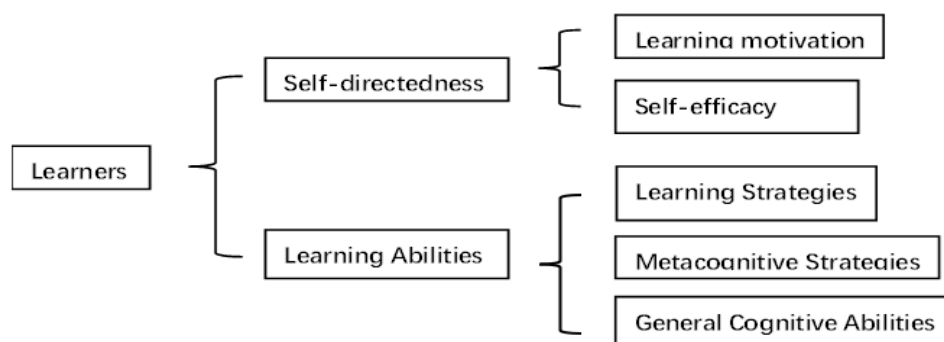


Figure 4. The influential factors of learners.

People who are highly motivated and self-efficacious tend to be self-directed learners. People who have well-organized learning strategies, strong metacognitive skills and general cognitive skills produce good learning outcomes and thus enhance their learning self-efficacy for SDL.

BUILDING AN OPERATIONAL MODEL TO IMPLEMENT SDL

There are four main phases to an operational model for implementing SDL projects in the Chinese workplace: start-up, development, implementation, and evaluation/assessment. Each phase has its own emphasis. The details are shown in figure 5.

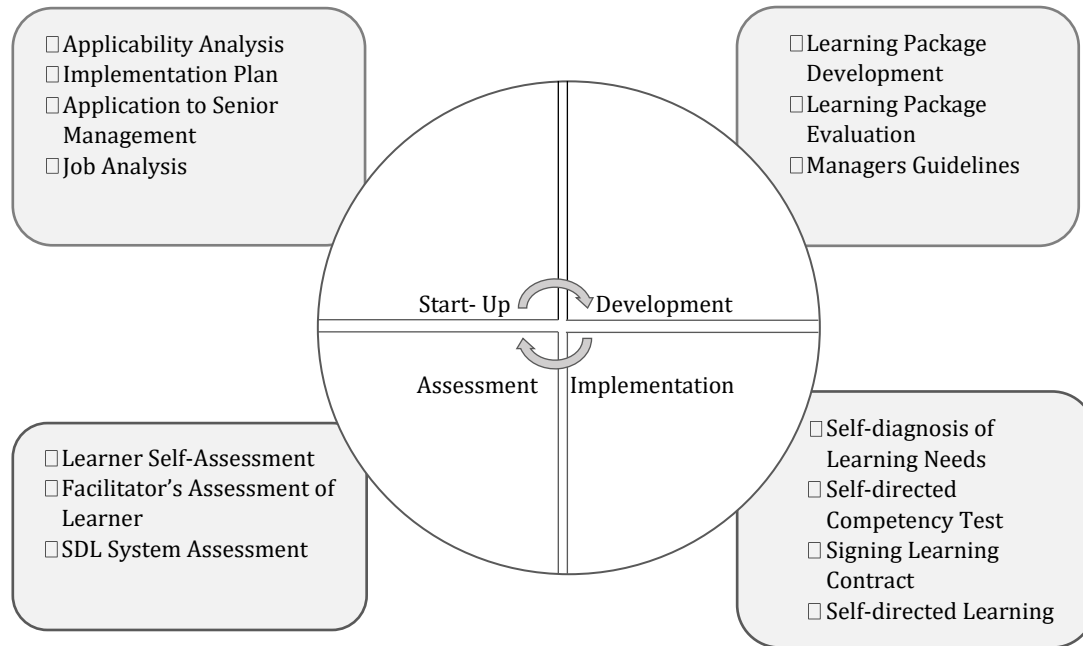


Figure 5. The operational model of implementing SDL in the Chinese workplace.

START-UP

Before launching an SDL project, the human resources developer needs to analyze whether the project is suitable to be delivered in a self-directed manner. Pitzkrech, combining his 18 years of experience in the field of training, provides conclusions shown in figure 6.

When to use SDL?

When a company encounters a problem, training managers or other senior managers should consider whether the problem can be solved by training. If it can be solved by training, what kind of training is needed? When can SDL design be used?

- High frequency of the same training.
- Many training locations, small number of people per site, shortage of trainer resources.
- High cost of trainers.
- Standardised training, same requirements for everyone, high level of consistency, relatively stable training content.

Negative aspects of SDL design:

- SDL design is time consuming. This is because it takes two to three times longer to develop an SDL learning package rather than a traditional one.
- If the training content is emotionally focused or performance-oriented, it is difficult to develop into an SDL format and, more importantly, difficult to assess.
- Changes in the external environment cause information to frequently update, leading to difficulties for SDL design.
- Without the necessary equipment and expertise, publishing a learning package can be difficult.
- Learners may be unaccustomed to the absence of oral instruction.
- There is no suitable facilitator, or the facilitator is unable to provide feedback when necessary.

Figure 6. Elements of SDL applicability analysis to be considered.

IMPLEMENTATION PLAN

If a training program lends itself to an SDL approach, the training manager can outline the entire implementation plan. This may include the time taken to develop the training program, the developer, the method to evaluate the training package and the distribution of the package. There is also the cost of SDL training and its comparison with regular classroom training. Regular training may include the cost of renting a classroom, the cost of the trainer's transport and travel, the cost to the trainee and the loss for the company while the trainee is away from work.

APPLICATION TO SENIOR MANAGEMENT

The training department needs to apply to senior management for most approvals. Training managers should aim to promote the concept of SDL at all meetings and make brief reports to senior management explaining the benefits of SDL training and the responsibilities expected of all levels of management in its implementation. Once the training package has been developed, training managers do not sell the senior management an abstract SDL concept, but rather present a specific project and systematic implementation plan. The training managers must inform line managers what trainees will obtain during training and what they can do to support the training department. This raises the priority of SDL for line managers and helps them take on responsibility for employee learning.

JOB ANALYSIS

SDL project development focuses on the knowledge, skills and attitudes required for the job. A good job analysis of target jobs is the basis for SDL development. Employees and line managers are asked to brainstorm together and the training developer takes notes. The training developer then organizes the key points into categories to produce a preliminary job analysis report, which is then fed back to the employee and line manager for revision.

DEVELOPMENT

In the development of a SDL package, it is not only the user's learning package but also the facilitator's learning package that must be considered. The training department must be prepared to work on how to teach managers to act as good facilitators.

LEARNING PACKAGE DEVELOPMENT

It is crucial to make SDL learning packages efficient, effective and easy for learners to read and understand. Factors to be considered include employees' knowledge background, learning ability, computer proficiency, user experience, and comfort with SDL. Printed and online materials are the main learning delivery methods.

When using printed materials, it is advisable to add some graphics. When presenting real-life situations, photographs, slides or videos are recommended. When the material is less readable, use a video. When behavior needs to be described, use a video. Multimedia technology is used when interactivity between the user and the learning material is required. When interactivity between the user and the learning material is required, use multimedia technology. In sum, the following elements should be included in a complete SDL package:

- User guidance (showing the user how to use the learning package);
- Supply list (machines, equipment, people, teaching materials etc.);
- List of content;
- List of objectives;
- User assessment (quizzes after each module).

LEARNING PACKAGE EVALUATION

Once the learning package has been developed, content and design need to be evaluated. The project leader should ensure that the contents of the learning package follows the statement of work. It is best to have evaluation specialists who have been involved in the project from the beginning, as they will understand the framework and the thinking behind it. However, it is better not to choose content developers to do the review, as they are overly familiar with the content and find it difficult to see the flaws. It is preferable to ask specialists who helped develop the job analysis but were not directly involved in the package development. Seeking advice from issue

experts or experts in media layout is also beneficial. Then, a small trial run is required before the learning package can be officially used.

Content evaluation is based on four principles: necessity, accuracy, timeliness, and sufficient detail. Evaluators must not only review the content but also provide feedback. The design evaluation needs to be conducted like so:

- Analyze the alignment between training objectives and content;
- Ensure the usability of the learning package (not only in terms of readability, but also in terms of module size, logic, clarity, etc.);
- Check the media;
- Perform a design review (preferably with a list of all items).

MANAGERS GUIDANCE

In addition to developing learning packages for learners, training departments need to consider the training of managers. It cannot be assumed that one or two presentations at a managers' meeting will be enough for managers to fully understand what SDL is – they usually miss something. Therefore, the training department needs to produce good guidance materials for managers. It is important that these materials are brief and concise. See figure 7.

<p>Example: Study SDL. The performance targets for this self- directed learning package are: When you have completed this learning package you will be able to:</p> <ol style="list-style-type: none"> 1. State the definition of SDL; 2. Discuss when it is appropriate to use SDL and when it is not; 3. List the elements included in SDL; 4. Know the manager's responsibilities in implementing SDL. 	<p>When is it appropriate to use a learning package?</p> <p>Any time a trainee wants to learn a particular massage, fact, principle, concept or skill.</p>
<p>What is suitable for SDL learning packages?</p> <ol style="list-style-type: none"> 1. Constant repetition; 2. Little change over time; 3. Factualness. 	<p>For example:</p> <ol style="list-style-type: none"> 1. Safety regulations; 2. Norms and requirements; 3. Staff policy.

Figure 7. An example of a manager guidance manual.

IMPLEMENTATION

Once the SDL package has been developed, it is ready to be provided to users. Certain procedures are used: self-diagnosis of learning needs; self-directed competency tests; signing a learning contract; and then self-directed learning.

The first three steps are significant and ensure that SDL goes in the right direction. Learners conduct their SDL competency by using the Self-Directed Learning Readiness Scale. The learning contract requires several elements: learning

objectives, strategies and resources, target completion dates, evidence of target completion, and validation of learning outcomes.

ASSESSMENT

Post-training assessment is the most important part of training assessment as it evaluates the final results of the training. The aim is to enable the organization to identify the strengths and weaknesses of the training program selected, to understand the extent to which objectives have been achieved, and to provide useful assistance in the development and implementation of training plans and training programs at a later stage. For the entire program of SDL, the assessment consists of three levels of assessment. They are learner self-assessment, facilitator's assessment of the learner and SDL system assessment.

Learner self-assessment focuses on cognitive assessment and performance assessment. Learning outcomes can be assessed through test questions. Performance can be assessed by going back to the workplace. Learners need to continually analyze the effects of their learning as they progress. Individuals need to be reflective, to feel their learning, to evaluate themselves and to correct themselves. The training department can offer a learning self-assessment form for learners to record this. When it comes to facilitators' assessment of learners, they assess and record the effectiveness of the learner's SDL, like the example shown in figure 8.

Facilitator's Assessment of Learner: Advertising Designer
(Guidance for Managers)

Learners start here: Have the learner make a poster reading 'Job Aid'. Tell them that you will use this sheet to assess their actual work and that they can ask you when encountering problems.

As an observer: Have learners perform the task following the Job Aid poster. The learner is expected to answer questions promptly, allowing for minor mistakes but stopping when a major mistake is made. As soon as the trainee completes an item, you will tick it off the list. If you are satisfied with the learner's performance, sign below. Then mark the SDL completion record and hand it to the Training Department.

List of tasks: Complete a beautiful poster.

Sign here.

Figure 8. An example of a facilitator's assessment of a learner.

The SDL system is assessed after the whole learning package has been used. The model is evaluated at every step to find out where there are problems and to address them in a targeted way. Problems can be found in any part of the learning process, for example, a lack of job analysis, problems with the implementation of the

learning package, facilitators not taking responsibility for the package, problems with the preparation of the materials, etc.

DISCUSSION AND CONCLUSION

In investigating the implementation of SDL in the Chinese workplace, three main contributions have been made. The first is the construction of a theoretical system for SDL in the Chinese workplace, answering RQ1. This section discusses the relationship between workplace learning and SDL, the relationship between workplace training and SDL and finally builds an SDL system in the workplace. It is about the “what” of the problem (what a system of SDL in the workplace should contain).

We identify SDL as one of the key practices of workplace learning and provide methods for implementing SDL in the workplace to obtain human and material resources. We then assessed the current state of training in Company X and compared the differences between the traditional training system and the SDL system. We claim the SDL system should be a new and separate system that emerges from the existing training system. Finally, an SDL system in the workplace was constructed.

The second contribution is the construction of the elemental model of SDL in the Chinese workplace, answering RQ2. From this section onwards, the research switches from a theoretical to a practical perspective. This section investigates the elements of the SDL system, including learners and environments, how they influence SDL and how to promote SDL in the workplace. This is about the “factors” of the problem.

We emphasize the huge impact of the organizational environment on employees. Organizational environments encompass both the hard environment (learning environment and learning resources) and soft environment (job requirements, culture and management). As for learners themselves, their self-directedness and learning abilities are crucial factors. The learner and the organizational environment are in dynamic equilibrium.

The final contribution of our article is the construction of an operational model of SDL in the Chinese workplace, answering RQ3. This addresses the “How” of the problem. This section builds an operational model, including four phases: start-up, development, implementation and evaluation. After the four phases, the SDL project is ready for operation. During the process, new issues may still arise. The SDL project needs to be adjusted and updated repeatedly to adapt to the changes and requirements of the learners and the company, therefore, these phrases spiral in a circular fashion.

The articles’ three contributions not only provide concrete and feasible SDL solutions for Company X, but also provide important inspiration and lessons for other Chinese companies and management. Even so, SDL should consider educational, psychological and sociological perspectives. This study mainly takes the perspectives of education and psychology but lacks a sociological perspective. The lack of the authors’ direct experience in participating in and operating SDL processes leaves the article’s findings open to further validation and refinement.

According to these limitations, we recommend future researchers apply the system and models presented in this study in an enterprise to examine the barriers to the specific implementation of SDL. They can choose appropriate qualitative or quantitative research methods to further study the motivation, learning psychology and learning dynamic mechanisms of SDL in the Chinese workplace, and researching SDL in the Chinese workplace from a sociological perspective would also be a significant contribution.

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