Retraction Notice

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- ○ Journal owner (publisher)
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- ○ Other:

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History
Expression of Concern:
☐ yes, date: yyyy-mm-dd
× no

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Comment:

Free style text with summary of information from above and more details that can not be expressed by ticking boxes.

This article has been retracted to straighten the academic record. In making this decision the Editorial Board follows COPE's Retraction Guidelines. Aim is to promote the circulation of scientific research by offering an ideal research publication platform with due consideration of internationally accepted standards on publication ethics. The Editorial Board would like to extend its sincere apologies for any inconvenience this retraction may have caused.

Editor guiding this retraction: Prof. Vicente Milanés（EiC of JCC）

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Design and Development of a Personal Learning Environment for Corporate Self-Regulated Learning

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Abstract

As technology proliferates various facets of the society, cooperate trainers are not yet harnessing its full potential in empowering employees through self-regulated learning. Based on this researcher's several years of corporate training experience, most trainers are subject matter experts who use the Analyse, Design, Develop, Implement and Evaluate instructional design model to design and develop learning modules according to the training needs of the organisation. The modules are usually implemented through classroom setting training programmes that may take up to a week. With the ubiquitous nature of internet connectivity through mobile devices such as smartphones, tablets and laptops and the advancement of Web 2.0 applications, many organisations are realising that online corporate training is relatively cost effective and allows more time flexibility for the busy executive. Recent trends in online corporate training market predict that this mode of learning is expected to grow by 13% per year by 2017. This article explores related literature leading to the design and development of a personal learning environment made up of a combination of tools, communities, and services brought together, under the concept of openness for the training of corporate employees. It is expected that when implemented in an organisation, it will foster employee's self-regulated learning and cut down the already scarce budget spent annually on employee training.

Keywords

Design and Development, Web 2.0 Tools, Personal Learning Environment, Corporate Training, Self-Regulated Learning

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1. Introduction

As technology proliferates various facets of the society, cooperate trainers are not yet harnessing its full potential in employee training. As a corporate training company, our trainers are subject matter experts who use the Analyse, Design, Develop, Implement and Evaluate (ADDIE) instructional design model to design and develop learning modules according to the training needs of the contracting organisation. The modules are usually implemented through classroom setting training programmes that may take two days to a week to rollout.

The challenges of organising these training programmes are getting enough participants (due to the executives' busy workload) and keeping to the tight budget allocated for the purpose. With the ubiquitous nature of internet connectivity through mobile devices (smartphones, tablets and laptops) and the advancement of Web 2.0 applications, many organisations are realising that online corporate training is relatively cost effective and offers time flexibility for the busy employees. A review of some literatures related to the online corporate training market in the United States of America (USA) shows that it is expected to grow by 13% per year up to 2017 [1]. The study further indicates that at present, 77% of USA companies offer online corporate training to improve the professional development of their employees.

Drawing inspiration from these trends, our company anticipates a demand for online training courses from our clients in the future. The challenge to meet up with this new demand resides on the fact that our company training mode is essentially face-to-face. To align with this new demand, our firm has identified the learning need to equip our trainers with the latest knowledge and skills on educational technology, e-learning instructional design and development; e-learning industry resources and best practises. Based on a SWOT analysis, it was discovered that the best solution to this learning need is to set up a Personal Learning Environment (PLE) that will be centred on the learner (our company Trainers) to close their knowledge and skills gap within the domain of e-learning design and development. As our trainers are motivated and have perception of high self-efficacy, they are suitable for lifelong self-regulated learning which will occur in most learning environments. This paper explores related literature on how a variety of tools can be organised into a personal learning environment for the training of corporate employees.

2. Evolution of Web 2.0 Tools

As the internet evolves, new and improved tools emerge and can be used to enhance productivity and creativity as innovation continues to grow. These tools are referred to as Web 2.0 because of the possibility to read and write on them. They include social software, instant messaging, ubiquitous computing, and cloud computing. [2] postulate that, social software allow for connectivity and social rapport (social networking sites), collaborative information discovery and sharing (social bookmarking tools), content creation (blogs and wikis) and knowledge and information aggregation and content modification (RSS). These tools have brought great benefits to personal and organisational learning in a variety of ways. Traditionally, knowledge was achieved through reliance on hard copies of written documents such as books and journals, which might have been out-dated knowledge at the time of use. With the advent of the internet and the corresponding web 2.0 tools, current and relevant knowledge is at users' finger tips. Internet users are exposed to a myriad of tools such as YouTube, Google Tools, wikis, instant messaging tool and Skype through which they can acquire, develop and enhance their knowledge online. These tools can be organised in creative and innovative ways, to bring learners together with the ultimate aim of sharing and learning from each other. Learners can individually capitalise on their interactive nature to engage on self-regulated learning.

In [3] views as seen in **Figure 1**, "students can be described as self-regulated to the degree that they are metacognitively, motivationally, and behaviourally active participants in their own learning process". The self-regulated learning process model proposes the "plan", "learn" and "reflect" learner-centred phases in which: (i) learner profile information is defined or revised, (ii) learner finds and selects learning resources, (iii) learners work on selected learning resources, and (iv) learners reflect and react on strategies, achievements and usefulness.

A self-regulated learner will undertake learning activities that enable knowledge creation leading to comprehension and higher order learning by using processes such as monitoring, reflection, testing, questioning and self-evaluation [5]. Self-regulated learning is greatly fostered by Web 2.0 tools organised in an environment referred to as Personal Learning Environments.

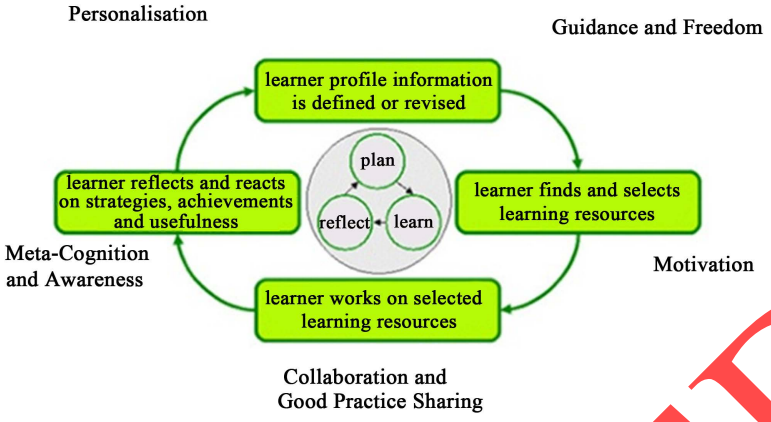

Figure 1. Self-regulated learning process model. Extracted from [4].

2.1. Personal Learning Environment

Web 2.0 tools have fostered the development of new ways through which people share, interact and learn from one another online. Learners are now better equipped to personalise their online learning space to suit their needs and lifestyles—one manner in which this can be done is via the use of Personal Learning Environment (PLE). A PLE emerged as a concept related to the collection of a variety of Web 2.0 applications that can be used to enhance learning outcomes through lifelong learning, informal learning and self-directed learning [6]. According to [7], PLE is:

> an emerging learning concept that allows learners to control and manage their own learning processes and provides support to (a) set their own learning goals (b) manage their learning (c) communicate with others in the process of learning.

Similarly, [8] and [9] add that a PLE is a self-regulated and evolving environment of tools, services and resources organised by a learner seeking a convenient means to create knowledge, connect with others of similar interests and cultivate lifelong learning goals. A PLE is a combination of tools, communities, and services brought together, under the concept of openness—the ability to work cohesively and collaboratively with the learners having full control over their own learning [10]. It embodies all the resources that learners use to solve problems, create and share resources and to undertake learning both individually and collectively.

[11] defines personal learning environment as "... one node in a web of content, connected to other nodes and content creation services used by other learners. It becomes not only an institutional or corporate application, but a personal learning centre where content is reused and remixed according to the learner's own needs and interests. A PLE is not a single application, but a collection of interoperating applications—an environment rather than a system" "the idea of the PLE purports to include and bring together all learning, including informal learning, workplace learning, learning from the home, learning driven by problem solving and learning motivated by personal interest as well as learning through engagement in formal educational programmes" [12]. Based on the flexibility and the advantages of a PLE, this paper seeks to address the following research question: ***How can a personal learning environment be designed and developed to foster organisational learning?***

2.2. Design Consideration for the Use of a PLE

The successful implementation of a PLE for organisational training requires caution in the selection of technologies, establishment of learning goals and personalisation [13]. The tools selected should be sufficiently robust that they can accommodate personalisation and give the learners some sense of control. Conversely, the learning goals must be clearly established so that, all users are fully aware of their duties and responsibilities. It is important to note that a PLE is not just about the technology employed but is also about the ability to personalise the learning, the organisation of the platform and the establishment of clear goals. In this regards, [14] upholds that that PLEs allow learners to gather information, to plan how to learn, to reflect on it, and to learn with other learners in addition to setting their own learning goals, as well as manage, retrieve, and share learning resources. As part of planning, the following should be considered:

- a learning theory should be identified to guide the instructional process;
- the goals of the PLE must be well mapped out;
- the design model must be well conceived;
- members' duties and responsibilities must be clearly defined;
- the desired learning outcomes should be established along with the learning activities.

Careful thought must be given to the platform; as this can either make or mar the learning process. The chosen platform has to fit for the purpose, since it can impact the learners' extrinsic motivation. If the platform is not user-friendly, easy to navigate or broken down frequently, learners may be discouraged in using it which may result in them refusing to engage and can eventually drop out [14].

Many of the web 2.0 technologies that facilitate or enable the design and setting up of PLEs are free. However, there are some that charge a fee for hosting, support and maintenance. When engaging in such forms of learning, the learners have to be at the centre of the learning process with support and guidance from a facilitator. PLEs enable learners to actively take part in the learning process since they are encouraged to share in a collective knowledge creation and in all activities undertaken in the environment.

Setting up a PLE recognises the role of the individual in organising their own learning. As a learner-centred environment, the learner selects a great number of learning resources such as online and offline tools and services [12]. Content can also be obtained from a wide variety of sources such as social networking sites, communities of practice and communities of interest with other training and e-learning professionals globally. [12] suggests that a good PLE should enable learners to:

- plan and control their learning journey by setting their own learning goals and monitoring their progress towards achieving these goals;
- manage both content and process of learning by enabling learners to aggregate resources and personalise their learning environment through recommendations about resources from peers;
- collaborate with other learners in the process of learning by providing support for community building and collaborative activities through a shared learning experience.

Through the PLE, our company trainers will be joining learning communities and communities of practice that include other professionals and experts. They will consequently not only engage in "legitimate peripheral participation" [15] to develop their own mastery of knowledge and skills, but also have a responsibility to play a part in the continued advancement of the community's existing body of knowledge.

3. Methodology

Knowledge creation is a process. It is said that explicit knowledge can contribute to one's tacit knowledge and tacit knowledge can be codified and organised into explicit knowledge. Through the use of a PLE that incorporates various Web 2.0 tools and applications, the corporate employees will be able to engage in the process of knowledge creation. By engaging in the platform, they would be able to generate and engage in discussions, create projects collaboratively, and share resources in various forms. For the process to be effective, there must be conversion of knowledge through the activities undertaken by the trainees. Based on these ideas, this PLE design was based on the Nonaka and Takeuchi **S**ocialisation, **E**xternalisation, **C**ombination and **I**nternalisation (SECI) model [16] which proposed four ways that knowledge types can be combined and converted and how it can be created and shared in the organisation. Nonaka and Takeuchi's SECI model of knowledge creation as seen in **Figure 2** upholds that knowledge can be tacit or explicit, with the interaction of the two resulting in new knowledge [16]. The SECI model describes four modes of knowledge creation:

- **Socialisation (tacit knowledge to tacit knowledge)** is the "process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills" [16]. During socialisation with others, an individual's tacit knowledge is converted. It should be noted that tacit knowledge does not have to be acquired through language alone but also by interacting with socialisation tools, observation, imitation and practice. In the case of a PLE, socialisation can be done synchronously or asynchronously using tools like Facebook, Twitter, and Skype as detailed in the **Table 1**.
- **Externalisation (tacit knowledge to explicit knowledge)** is "typically seen in the process of concept creation and is triggered by dialogue or collective reflection" [16]. This is achieved when an individual's tacit knowledge goes out of its boundaries and becomes group or collective knowledge. For example, when individuals in the workplace share their knowledge with other colleagues to solve process related problems. In the case of a PLE, externalisation can be achieved by blogging using reflection tools like WordPress or Blogger, Gmail, and Google Docs as detailed in **Table 1**.

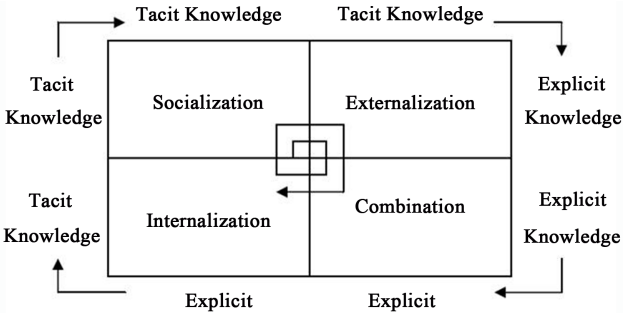

Figure 2. The engine of knowledge creation adapted from [16].

Table 1. Personal learning environment design based on SECI model.

Socialization	Externalization
• synchronous and asynchronous communication discussions, brainstorming, expert interview • engaging with the learning community through Facebook, Twitter, Skype, Google Hangout, webinar and video conferencing, Learning Management System (Edmodo, Ning, Moodle) • Interacting with discussion through LMS (Edmodo, Ning, Moodle)	• reflecting on learning through blogging with WordPress or Blogger • commenting on related blogs • creating and curating content on YouTube, Pinterest, Slideshare using online tools like Gmail, Google Docs, Drive, Translate, Evernote, Mindoro (mindmap), Adobe and Prezi
Internalization	**Combination**
• Searching information and academic papers on Google Search and Google Scholar, Wikipedia, Wikibooks, Wikispaces • Interacting with formal course content through LMS (Edmodo, Ning, Moodle) • Reading blogs of industry experts	• Sharing content through Facebook, Youtube and Pinterest • Social bookmarking of resources through delicious or edutech.net • RSS for blogs • Liking Facebook or Retweet on Twitter

- **Combination (explicit knowledge to explicit knowledge)** "involves combining different bodies of explicit knowledge" [16]. Example, explicit knowledge is compiled from different departments in an organisation in order to generate an annual report. Computerised databases are used in the report generation by sorting, adding and categorising the various contents that make up the report. In the case of a PLE, the content can be sharing through Facebook, Youtube and Pinterest as detailed in **Table 1**.
- **Internalisation (explicit knowledge to tacit knowledge)** "[knowledge] is internalized in individuals' tacit knowledge bases through shared mental models or technical knowhow" [17], and it is closely related to learning by doing [16]. When this form of knowledge is used by individuals in the organisation the learning spiral of knowledge creation is enhanced. This is achieved through socialisation and can be used for innovative and learning purposes. In the case of a PLE, tools such as Google Search and Google Scholar can be used to search information and academic papers as detailed in **Table 1**.

4. Findings and Discussion

Based on the four modes presented in the SECI model, a Personal Learning Environment design is shown in detail in **Table 1**.

The key importance of a PLE is that, it allows the leaner to select and develop a learning environment to suit and enable their style of learning. For the identified learning need (as discussed above), a Facebook page is created for all the trainers as a learning community where a company's employees can share their learning resources and engage in discussions. To show a practical example of the concepts explained above, this researcher showcases the development of an applicable PLE as the lead Trainer of a company using Symbaloo. Symbaloo is a social visual bookmarking tool that supports learners by making it easy for them to access, organize and share resources.

The tool functions in the same principles of "e-learning 2.0" which signifies the shift in web-based learning from read-only to read-write learning [11]. Creating an account with Symbaloo EDU is free. The application has

a grid layout, with color icons (called tiles) within each space. A search box located at the top of the grid allows users to quickly search for specific resources or add them to their Symbaloo EDU webmix. The platform offers corporate employees the opportunity to easily customise the tiles which are connected to Universal Relocator Links (URLs) of online resources as they like [18]. It offers great opportunities for corporate trainers to encourage employee-to-employee or employee-to-trainer interaction via social networking sites in an online setting. Once each corporate employee has created a grid of tiles or webmix, it can be shared with others via email with each other.

Figure 3 shows where Symbaloo EDU users can arrange all their learning materials for easy access, **Figure 4** shows a screen capture of our corporate customised PLE for the training of employees while **Figure 5** shows the groupings of the various tools and their role.

Figure 3. Uncustomised symbaloo EDU for users to arrange all their learning materials for easy access.

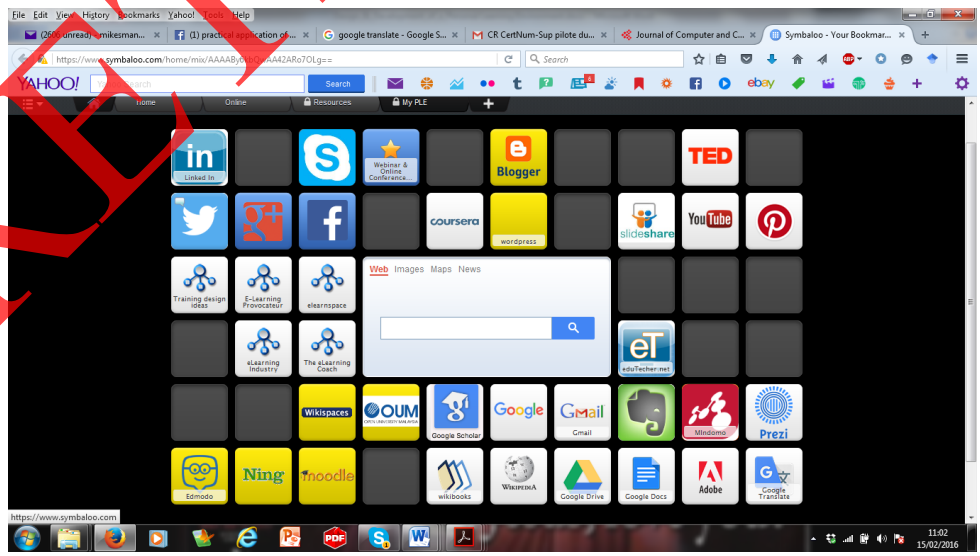

Figure 4. Customised personal learning environment for the training of corporate employees.

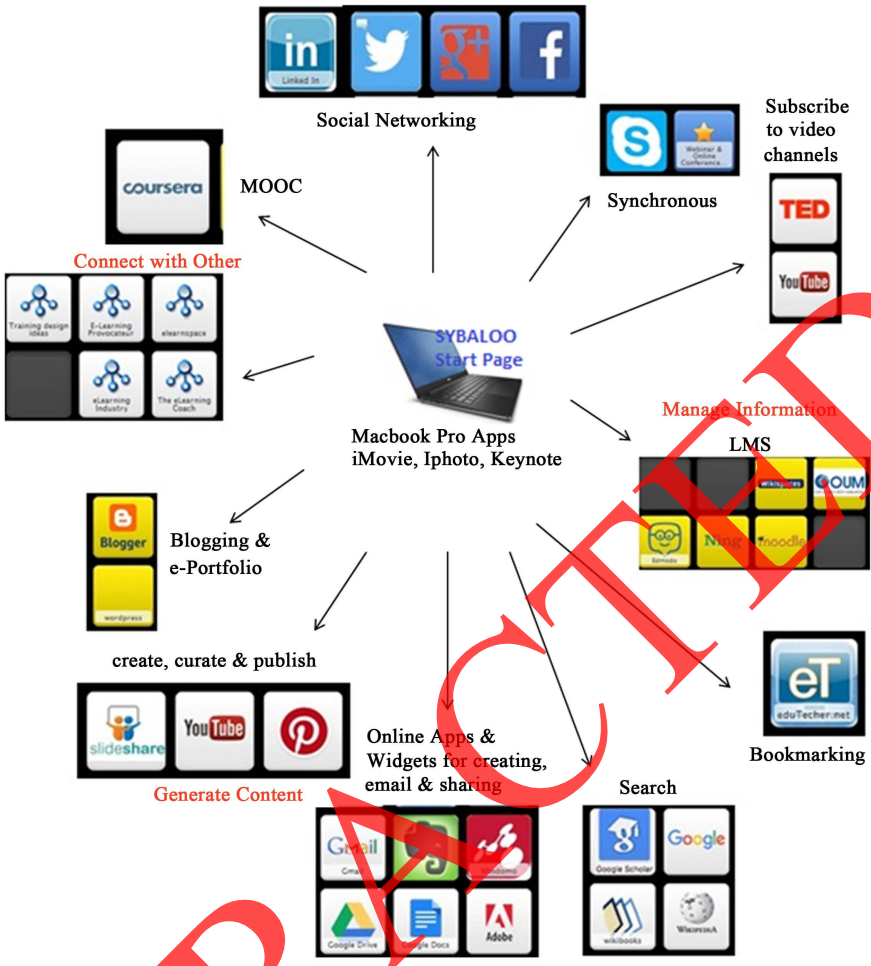

Figure 5. Personal learning environment for the training of corporate employees.

4.1. Characteristics of the PLE Functions

In this section, the components of our corporate platform are presented.

4.1.1. Connect with Others

In connecting with others, the following tools facilitate the process:

- Facebook Page as learning community among Trainers
- Facebook, Google+, Twitter & Linked In for social networking
- Blogs to reflect on learning and as e-portfolio
- MOOC for connecting with other learners
- RSS to top e-learning blogs for expert views
- Skype & Webinar for video conferencing

4.1.2. Manage Information

Managing information in a PLE is very strategic. The following tools can be used to achieve the process:

- Google Search, Google Scholar, Wikipedia &Wikibooks for knowledge resources;
- edutech.n et as bookmarking site for all educational technology sites;
- Slideshare, Pinterest, Youtube & TED for getting information.

4.1.3. Generate Content

Generating content in a PLE is paramount. This can be achieved by using:

• Offline Macbook Pro apps -iMovie, iPhotos& Keynote
• Online productivity and creation tools and applications - Google Docs, Adobe, Prezi
• File sharing and Cloud-Google Drive
• Learning Management System (LMS)
• Wordpress, Blogger, Slideshare, Pinterest & Youtube for publishing content

Our corporate PLE start page can be accessed using the following URL or by copying and pasting in a web browser: https://www.symbaloo.com/home/mix/AAAABy6kbQwAA42ARo7OLg==

• Some learning content in Slideshare, Pinterest & Youtube (linked from PLE) have also been included
• A linked to a MOOC "E-learning and Digital Cultures" in Coursera have been included
• A Facebook Page (E-learning Design) as a learning community, have been created
• Google + to connect with other communities
• Wordpress Blog—https://elearningdesignsite.wordpress.com for reflection of learning are all linked from the PLE

5. Conclusions

The design and development of a PLE for corporate employees training is a great approach that can bring much benefit to each member. Corporate training goals can easily be achieved if the PLE design takes into consideration corporate training goals. The adoption of the PLE will bring about great benefits to both individuals and organisations. Individuals will be better equipped with tools to share and learn from each other both formally and informally. On the other hand, organisations can use PLEs as an online learning platform for employees to come together and undertake professional development activities while providing support to each other. As a cost effective platform that can rapidly enhance employees' knowledge and skills, it will provide them with a wide variety of tools and applications that foster personal and professional development.

Symbaloo Edu application offers one of the best options for the development of a PLE because it is visually very attractive and simple to customise, organise and share information. User with minimal Information and Communication Technology skills can easily create an effective compilation of resources mixed in a way they believe is most useful. This allows corporate trainers and employees to co-construct PLEs, which should provide support for learners to set their own learning goals, manage their learning, manage both content and process, and communicate with others in the earning process.

In order to fully reap the benefits of a PLE, learners should be encouraged to communicate and share information, ideas, knowledge and resources using social media. Corporate trainers should embed social learning opportunities into training packages to facilitate peer learning and allow the PLE to evolve with the learners' needs and use. This can be better achieved by using corporate blogs and Facebook pages to help employees develop reflective practice or constructive feedback skills and provide them with opportunities for informal peer learning. Our employees have started exploring the platform and commented on its relevance to them as they undertake to improve on their skills.

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