



**PROLEGOMENA TO BLENDED LEARNING: A NOVEL TOOL FOR DEVELOPING
SELF DIRECTED LEARNING (SDL) AND THE 70-20-10 MODEL LEARNING
FOR PHARMACY STUDENTS**

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ABSTRACT

The present article discusses the preparatory steps of the faculty members for the implementation of blended learning. It challenges to think about the possibilities of blended learning implementation in Pharmaceutical education. Gen Z students are expected more information from online even from their own faculty members rather than spending much time in classroom environment. The students are not interested in passive listening and doing class work in isolation. These challenges are prompting many colleges and universities to explore new approaches, especially blended learning, for delivering courses. Blended learning delivers higher levels of learning interactivity and collaboration. Blended learning leads to self-directed learning of the students as well as students' skill will enhance the 70-20-10 learning framework at the latter stage. This study also brings out the importance of Self Directed Learning (SDL) and the experience of 70-20-10 framework. Discussion is made on the various skills required for the blended learning, self-directed learning and skills which are to be imparted to the students of pharmacy.

KEY WORDS: Blended learning, Self-Directed Learning, SDL, 70-20-10 framework, 70-20-10 model.



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INTRODUCTION

The term blended learning is generally applied to the practice of using both online and in-person learning experiences when teaching students. In a blended-learning course, for example, students might attend a class taught by a teacher in a traditional classroom setting, while also independently completing online components of the course outside of the classroom. In this case, in-class time may be either replaced or supplemented by online learning experiences, and students would learn about the same topics online as they do in class i.e., the online and in-person learning experiences would parallel and complement one another. As defined by Knowles, self-directed learning is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, evaluating learning outcomes.¹ They take responsibility for control of their own learning. Self-directed learning is, any increase in knowledge, skill or performance pursued by any individual for personal reasons employing means in any place at any time at any age. Mobile technology has entered into the mainstream society, affecting the lives of many in recent years. Many terms have been used to define M-learning, in past web-based training computer based training, web-based learning, online-learning or e-learning. However M-learning or mobile learning may be defined as "learning across multiple contexts, through social and content interactions, using personal electronic devices." People expect to work, learn, and study wherever, whenever they want². Android is an open source mobile operating system that has been supported by Google Corporation, the world leading search Engine Company. One major reason for the pervasive adoption of android in the mobile market is that mobile applications developed through android development technology is more efficient and effective compared to the other technologies, such as mobile Window or Symbian operating systems, producing fast, user friendly and appealing applications. With this formidable mobile technology advancement, more and more students can now seek informal education³. Another benefit of these tools is that learning cost incurred unto students is drastically reduced as independent, and self-paced learning can be done outside the schools and campuses. It is evident that information and communication technologies (ICT) have transferred our lives and reshaped the nature of everyday activities and contemporary times are called the "Information age" and "Knowledge society". In today's day and age, education plays a big role in which we are and what we achieve in our life time. In present scenario the arrival of computer and internet has changed the procedure and pattern of learning for the students, educators, researchers and employees of the various organisations which has got an impact on the pharmaceutical industry also Morgan McCall and his colleagues working at the Centre for Creative Leadership (CCL) are the pioneers for originating the 70:20:10 ratios. The researchers were working to know the key developmental experience of the managers.

Two of McCall's colleagues, Michael M. Lombardo and Robert W. Exchanger, published data from one CCL study in their 1996 book *The Career Architect Development Planner* even though the model was created in 1980s.⁵ In this context now the Pharmacy Education has to play a vital role to train the students to meet the Pharmaceutical Industrial demands.

Blended learning

Blended learning is about effectively integrating ICTs into course design to enhance the teaching and learning experiences for students and teachers by enabling them to engage in ways that would not normally be available or effective in their usual environment, whether it is primarily face-to-face or distance mode. In many cases the act of "blending" achieves better student experiences and outcomes, and more efficient teaching and course management practices. It can involve a mix of delivery modes, teaching approaches and learning styles. Blended learning is basically used to gain benefits in terms of efficiency as well as of effectiveness.⁶

Skills required for the faculty members in introducing blended learning in Pharmacy Education

Ability to design courseware materials

The course were material must be based on the introduction of the Unit, genesis of the topic, glossary, definitions, important contributions made by eminent experts in the field of study, introduction of relevant and related literature, already available internet videos, share-ware slides and the video clippings and slides prepared by the concerned faculty. Planning practical laboratory assignment, discussion, feedback from the students, online provision to clear students questions.⁷

Technological knowledge

The faculty must have a sound knowledge on the technology involved in blended learning.

Build a classroom with and without walls

The student must have a face to face learning and online learning using various M-learning tools and techniques to make the blended learning a successful venture. In some cases, online discussions were used. Course management software offer tools that promote communication with students in the ways that are more natural for them – things like sending instant messages, online chat, email notifications of new content being available, etc. There must be a system in the blended learning to a small group of students to clear their doubts by themselves.⁸

Build strategy for tutoring and on line support

There may be some problem even for the quick learners also in shifting over to the blended learning due to the fact that quick learning depends on good

comprehension and breaking down information into small, easily digestible chunks. While not everyone is blessed with the capacity to grasp information and comprehend it quickly, but all capable of following a routine that enables to learn quickly when needed. It is not something that will necessarily work in all situations as complexity of information will sometimes require more reflection but the following suggestions will apply initially to new learning.

- Disruptive home life or work environment
- Disinterest in topic
- Environmental factors such as noise, light, air quality, etc.
- Over anxiety

The faculty must discuss with the individual students to assess their difficulty in adapting to the blended learning. The hurdles must be removed from the minds of the students to have a better performance from the students.⁹

Create a balance between face to face teaching and on-line teaching

It is the bounden duty of every faculty member to participate in the blended learning strategy of the pharmaceutical Education to improve the various skills needed for the students to fully acquire the benefits of blended learning. They must design the lesson plans in such a way that it balances the face to face teaching and on-line teaching. There must be equal share between the face to face teaching and online – teaching. The fusion between the two strategies must be so swift that student will show enthusiasm and interest in the learning process. The lesson plan has to be planned in such way that substantial proportion of lesson unit must be delivered on-line using on-line discussion also. The considerable portion of lesson unit must be typically delivered face-to face.¹⁰

Engage every student of your class

Blended learning will be a successful learning model if every student actively participates in attending online assignments and face to face explanations given by faculty members. Faculty members must develop a mechanism by which every student's feedback is scrutinised to assess the understanding capacity of the individuals.¹¹ Provide sufficient out of class support; and Assess every student to know their interest in the blended learning. The blended learning makes a road map for the students to improve their self-directed learning skills and later on to adapt to the new pharmaceutical industrial environment.

Systematically embed the blended learning in the School of Pharmaceutical Sciences

Faculty members must have an informed understanding of the conceptual implications of the blending learning in curricula. Faculty staff must be competent in documenting and explaining the applications of blended learning in course and program design to which a workshop has to be conducted to shift from traditional methods of lecturers to blended learning strategy.¹² Create and maintain appropriate structures and forums to support ongoing staff development in

relation to blended learning. Provide both physical and virtual environments for collaborative and individual blended learning. Ensure that all students have access to skills training in information handling and the use of technologies within their disciplinary and program contexts. Develop and incorporate quality assurance mechanisms and measures related to blended learning to be included as an integral part of the School of Pharmaceutical Sciences' learning and teaching quality assurance framework.¹² If necessary develop and trial new quality assurance mechanisms

Blended learning enhances the following

Improves personalised learning Improves the potential skills of the individuals. Motivates students to participate in the learning process Student skills may be developed to take on-line tests. Stretches to wide range of information sources Student teacher relation improves due to extension of on line time limit, Students will be quickly adapting to the new Information and Communication Technology and various source locations. Participation of all types of learners is possible which encourages the faculty member. Commitment and students' self-directed with the use of educational materials based on a platform has an influence on final results and assures a convenient way of current improvement control of the students, Blended learning - teaching method with the usage of the ICT assures the possibility of gaining new skills by the students, they are respected on the labour market, such as tele-work and work in virtual teams.¹³ Blended learning is a method that has proven to be not only effective in terms of learning outcomes, but ranks high on ratings of satisfaction with students and instructors which latter on leads to self-directed learning. Increases the amount and quality of faculty-to-student and student-to-student interaction; Increases opportunities for active and collaborative learning and assessment before, during and after lectures; Helps students prepare for class discussions or lab work; Facilitates more varied and engaging media for presenting course content. Addresses learning bottlenecks via new types of interactive and independent learning activities; Allows class time to be spent on active learning activities by shifting background or foundational content to the online environment; Helps to create a sense of community in large classes; Allow students to access course materials when and where they want, at their own pace.

Self –Directed Learning

The concept of self-directed learning was first discussed in educational literature as early as 1926 (Brookfield, 1984). Self-directed learning (SDL) has been identified as an important skill for medical graduates and pharmaceutical graduates.⁶ In SDL, control gradually shifts from teachers to learners. Learners exercise a great deal of independence in setting learning goals and deciding what is worthwhile learning as well as how to approach the learning task within a given framework. Self-directed learning can be challenging, even for the brightest and most motivated students. As a means of better understanding the processes involved in this mode of study, there are four

key components of independent learning – being ready to learn, setting learning goals, engaging in the learning process, and evaluating learning. Many skills and attitudes towards learning are required for success in an independent study environment. According to experts in education, among the best methods of generating student interest and enthusiasm are to spark students' curiosity, increase their appetite for success, gradually build the complexity and challenge level of tasks, and maintain an atmosphere of enthusiasm and mutual respect.¹⁴ Self-directed and social learning will undoubtedly be at the core of any sort of future learning—both near and far future. To improve learning in both self-directed and teacher-centred learning environments, a fundamental point raised is that to get effective on-the-job implementation of skills then it is necessary to make our syllabus to provide training far more relevant to reach the pharmaceutical industry. Self-directed learning skills involve the ability to manage learning tasks without having them directed by others. Many skills are necessary for effective lifelong learning and these skills are expected to be learnt and developed by the students during their college days.¹⁵ The expected outcome is that students will become self-directed learners as they mature and gain content knowledge. It is high time to include information literacy programmes in the syllabus of pharmacy education and the students must be taught to learn various search techniques, various search engines and their strength and weakness, their coverage etc., They must be aware of various academic social networks like Research-Gate, Academia, Epernicus, etc.,. SDL involves initiating personal challenge activities and developing the personal qualities to pursue them successfully. 70:20:10 frame work The 70:20:10 principles is in fact just a version of the Pareto Law or the 80:20 principles. In 1906 economist Wilfred Pareto showed that 80% of the land in Italy was owned by 20% of the population. The Pareto principle (also known as the 80–20 rule, the law of the vital few, and the principle of factor sparsity) states that, for many events, roughly 80% of the effects come from 20% of the causes. The reason this 70-20-10 framework works is that it is more or less reflects what's actually true for employees in the typical workplace. Formal education has its place in preparing people for the workplace.⁹ Once those people become employees, they have a job to get done. People aren't hired to learn, they're hired to increase productivity or capability. There are productivity expectations and organizational needs to be met. Employees learn the nooks and corner of their jobs, often informally from others. They apply the knowledge they have and they learn from mistakes, as well as from successes. For them to become productive for their organizations and more valuable as employees, they must become more skilled and knowledgeable in their role. In a majority of workplaces, most skills and knowledge can't be learned anywhere other than from the working place. The 70:20:10 Model for Learning and Development is a commonly used formula within the training profession to describe the optimal sources of learning by successful managers. It holds that individuals obtain 70 percent of their knowledge from job-related experiences, 20 percent from interactions with others, and 10 percent from formal educational events. 70% of learning is

experiential. A pharmaceutical professional learns through the happenings on daily tough jobs, tasks, challenges observations and practices. Experiential learning occurs through on-the-job experience, practice, conversations and reflection as it is delivered face to face or using technology, both via computer and mobile devices. Experiential learning, or on-the-job performance support, is available the moment a need arises. Experiential learning tends to be the least expensive of all three types and can act as a standalone offering or as a complement to other types of instruction and support.⁷ 20% of learning is social. Pharmaceutical professionals learn from his/her boss and through other people, like co-workers and senior colleagues. Informal social learning involves drawing information from co-workers, either directly or remotely, via telecommunications or online peer-to-peer networking. It is typically well focused on business needs, accessible on demand and relatively low cost compared to formal learning. In recent years, a number of dedicated 'social learning platforms' have emerged. These vary in approach, but most incorporate YouTube-like features that support individual content sharing, peer-ranking and analysis of social capital. But this 20% learning mostly depends on the organizational climate of the pharmaceutical industry in which the young pharmacy professional is employed.¹¹ The concept blended learning – as a combination of e-learning and classroom teaching – is meanwhile quite commonly used in employee and management development. In most of the pharmaceutical industries the skills are not shared by the senior colleagues, top managers and co-workers due to the possessiveness of their skills and non-sharing attitude of the senior employees and colleagues. 10% of learning is formal. It happens through structured training courses and programs especially through the pharmacy education at the pharmacy colleges and initiative training given by the Pharmaceutical Industry. Formal learning refers to structured coursework or traditional classroom training. Many companies still invest primarily in traditional classroom training, which is costly, logistically challenging and restricted to a small number of employees. Yet today it is rarely argued that bringing people together into classrooms for knowledge and skills development has inherent benefits over learning at a distance. The problem with traditional classroom training is that it doesn't allow for the immediate, practical application of new learning.¹⁶ In addition, it is often broadly designed and doesn't address business-specific situations, so employees may not learn how to apply what they learn in a formal classroom setting to typical business scenarios, even when the curriculum is business focused, the teacher's time per student is limited. In contrast, cloud-based, self-paced or blended virtual formal learning allows employees to work through a consistent yet customizable formal learning path at a much lower cost, with greater relevance and flexibility, at their own pace. The model's creators hold that hands-on experience (the 70 percent) is the most beneficial for employees because it enables them to discover and refine their job-related skills, make decisions, address challenges and interact with influential people such as bosses and mentors within work settings.¹⁷ They also learn from their mistakes and receive immediate feedback on their

performance and the problem with this knowledge is it is not documented and recorded knowledge. NASA also faced this problem when the scientist because of aging factor retired their tacit knowledge also went along with them. To overcome this situation NASA thought of recording or documenting this knowledge to take it to the new generation. The prepared course material was overcrowding for the individuals to identify their needs and find their knowledge which is useful for solving the present problem. In the same way pharmaceutical industry is also facing the problem. After their pharmacy education, people gain work on experience only through their hands on practice and they develop their skills, refine them and use it in their work environment.¹⁸ But when they walk out of the Industry their knowledge also crosses the door steps. As a result it is realised that it is high time to develop a more powerful system capable of delivering the right knowledge to the right person at their moment of need. This was one of the first "learning content management systems" "*The problem is IT systems don't address the critical need for the most experienced people to mentor and train others or to share tacit knowledge from one mission to another*" (Jeanne Holm, Chief Knowledge Architect, NASA).¹⁶ This is not only applicable to IT professionals but it is applicable in the pharmaceutical Industry also. Employees learn from others (the 20 percent) through a variety of activities that include attending meeting of the senior managers (senior colleagues) attending workshops and by attending installation procedures of various machines and equipment monitoring, collaborative learning and other methods of interaction with their co-workers. The formula holds that only 10 percent of professional development optimally comes from formal traditional courseware instruction and other educational events and doing research in the pharmaceutical industrial on Process Analytical Technology (Process and Design) based on the ICH quality control measures and based on the guidelines of FID. Encouragement and feedback are prime benefits of this valuable learning approach.⁶ But one should not forget that this 10% (documents and course materials) basic knowledge helps the individual managers to develop and convert their knowledge to 100% which leads to be successful managers also in the pharmaceutical industry. One misconception is that the 70:20:10 is anti-training. This is false. However, since formal training makes up the 10% at many organizations, you want be sure that it's quality training. Think of formal learning as the foundation and starting point from which experiential and social learning can develop. If your formal learning foundation is solid, the experiential and social learning that follows will likely also be more active and successful. These different forms of experience can occur in parallel, and it is possible that learning in one form of experience can complement and build on learning in another form of experience.⁸ The young professionals of pharmaceutical industry must possess or teach and train him to gain the workplace knowledge based on the education they had in the pharmacy colleges. The young professional employees ought to keep in contact with the retired employees of the organisation to learn from them, what they gathered through years of experience, about the industrial or laboratory activity. Practice is the hardest part of

learning, and training is the essence of transformation with individual talents. So, the 70:20:10 models predict that 90% of the operational knowledge in the pharmaceutical industry comes from informal learning in the workplace.

How relevant is the 70:20:10 model in the Internet age?

Definitely the model was good before the introduction of computers and internet to pharmaceutical industrial employees in the yester years. The arrival of the internet and various applications of information retrieval techniques and mobile learning have considerably changed this environment to definitely certain extent which leads to the question whether there is a need to change this model if so what will be the model now? In the present scenario arrival of computer and internet in the field of education has changed the procedures and patterns of learning. Today's learning methods comes home to the learners. Online education has evolved and grown as well. The Self Directed Learning (SDL) plays a vital role. allowing learners to select one or more courses from a curriculum, or, in cases of structured on-the-job training, allowing employees to choose what pre-designed modules (e.g., a video tape, workbook, special reading, etc.) to complete. It is high time in the computer age to introduce self-directed learning to the learners, teach inquiry skills, decision making and self-evaluation of work i.e. learner's transition from "reactive" to "proactive" in using various skills of using computer technology.⁶

Paradigm shift in the Pharmacy Education

Self-direction can be learned and it can be taught. Members of faculty of pharmacy education can use the spectrum of approaches to SDL in various ways. Regan (2003) recommends that it is necessary to examine what motivates students towards self-directed learning. Students need specific guidance and feedback to motivate them towards SDL, which is not consistent with the philosophical basis of SDL and may lead to inconsistency amongst teachers in the facilitation of this process.⁷ Now the responsibility and role of faculty members of pharmacy education are also changing drastically in preparing their students and research scholars towards self-directed learning and to adapt M-learning technology in the learning process and to fulfil the 70-20-10 model for the needs pharmaceutical Industry. Apart from teaching pharmacy educational syllabus, the faculty members must impart intrinsic knowledge of the subject in theoretical, practical and research aspects to the students and scholars, and must try to develop the various skills like Communication, Discussion, Scientific writing, Drafting, Time Management, Stress management, Warehouse management, Laboratory management, Animal house management, Maintaining the animals as per ethical committee recommendations, Finance and accountancy management, Information Literacy Skills— including the abilities to identify questions, Internet search techniques, Critical thinking and problem-solving, Collaboration across networks and leading by influence, Agility and adaptability, Ability to attend

aptitude tests, Initiative, Accessing and analysing information if necessary statistically also, Logic or Reasoning Skills—including the abilities to draw, Quantitative Reasoning Skills—including the abilities to estimate; Evaluation Skills including the abilities to evaluate the validity, Self-management Skills including the abilities to manage one's, Creativity, Marketing, Presentation, Technical including the abilities to recognize appropriate tools for specific tasks.^{6,7,9} These skills can be taught to the students only through collaborative teaching method since specialising all the skills by a single faculty is almost impractical. In the collaborative teaching method a group of faculty joined together can develop various skills of the students by identifying their strength and weakness. Collaborative teaching is a model that emphasizes cooperation and communication among all members of a team to meet the needs of all students.¹³

CONCLUSION

Blended courses do not follow a single formula. Some use the online environment for content or lecture delivery and the classroom for active learning opportunities (sometimes known as the flipped classroom), whereas others use the face-to-face time for lectures and the online environment for discussions, assessments or other learning activities. Some use a combination of these two approaches. Many of the new developments in education put a heavy responsibility on the learners to take a good deal of initiative in their own learning. To meet the challenges in today's pharmaceutical industrial environment, self-directed learning is most essential.¹⁹ Pharmacy educators have an important role to play in assisting students to acquire the skills for self-directed learning, and to achieve this they need to understand the concept of self-directed learning. In addition, the obsolescence of knowledge means that much of what is important today may be irrelevant tomorrow.¹⁹ Given this, teaching today's facts

seems less important than ensuring that students have the skills to learn and relearn as knowledge develops. This has led to an emphasis on self-directed learning skills. In pharmacy education members of faculty are concerned about helping students in a self-directed learning process, so that the student develops an interest in further learning and provide base for concepts and skills that will facilitate further learning and thinking. Pharmacy education members of faculty need to provide a variety of learning experiences for students.² Thus the 70:20:10 model is considered to be of greatest value as a general guideline for pharmaceutical industry seeking to maximize the effectiveness of their learning, and development programs through other activities and inputs on how to employ various developmental experiences.⁶ The model continues to be widely employed by organizations throughout the world. It is high time to conduct a serious managerial research to know the development experience of the successful managers of pharmaceutical industry in the present age. One frequent observation is that while the model's specific ratios do not reflect current learning opportunities, it remains generally consistent with the developmental experiences of many individuals.²⁰ Pharmacy teaching is moving toward a paradigm in which the student's skills and attitude are developed along with the knowledge that is typically converged in pharmacy education. The driving force behind this phase of pharmacy education evolution is the movement toward an ability based approach to pharmacy education. Now the question is what will be the percentage of information has to be delivered on-line and face to face. Many educationists differ in their opinion.³ Finally members of faculty need to frame learning strategies such as predicting, questioning clarifying and summarizing, so that pharmacy student will develop the ability to use these strategies on their own in their life time to become a successful pharmaceutical professionals.

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