Integration of information and communication technologies in management education: a path for success

Integração das tecnologias da informação e da comunicação no ensino da gestão: um caminho para o sucesso

Ridhi Rani¹
Anita Sable²
Ved Srinivas³
KDV Prasad⁴

Abstract

We are in VUCA environment, a highly competitive environment, with distributed access to resources. The talented HR can give requisite services to organizations to flourish. This calls for producing business management graduates who could efficiently handle the next century challenges. To achieve this, revolutionary pedagogical changes have to be made in terms of ICT (Information and Communications Technology) that would come in handy for improving the quality of imparting of management education in general and learning in particular. Many surveys conducted by industry associations like FICCI, CII and Aspiring Minds has pointed out that employability of business management graduates is the major issue. Hence any initiative, such as ICT as a

¹ Doctor of Philosophy, Symbiosis Institute of Business Management (SIBM) – Hyderabad, Lavale, Mulshi, Pune, Maharashtra 412115, Índia. E-mail: ridhi.rani@sibmhyd.edu.in
Orcid: https://orcid.org/0000-0002-0960-0593

² Doctor of Philosophy, Symbiosis Law School - Hyderabad, Symbiosis International (Deemed University), Lavale, Mulshi, Pune, Maharashtra 412115, Índia. E-mail: anita.sable@sls.edu.in
Orcid: https://orcid.org/0000-0002-6537-9854

³ Doctor of Philosophy, Thiagarjnar School of Management (TSM) - Madhurai, Pamban Swamy Nagar, Thiruparankundram, Tamil Nadu 625005, Índia. E-mail: vedsrinivas@tsm.ac.in
Orcid: https://orcid.org/0000-0002-8190-1032

⁴ Doctor of Philosophy, Symbiosis Institute of Business Management (SIBM) - Hyderabad, Symbiosis International (Deemed University), Lavale, Mulshi, Pune, Maharashtra 412115, Índia.
E-mail: kvd.prasad@sibmhyd.edu.in Orcid: https://orcid.org/0000-0001-9921-476X
pedagogical change will go a long way in solving this problem apart from enabling the youngsters to contribute to the Gross Domestic product (GDP). This paper aims at examining the role of ICT in improving the quality of management education. It further explores to find whether ICT enabled education enhances the learning experience and provides new skill sets to the students. Design /methodology – This study critically examines the role of ICT in Management education which is based on literature and document review. It has covered educational reports, empirical and theoretical research and various articles. Originality/Value- This is mainly an analytical study by exploring the secondary sources and reviewing documents including the experience of few institutes in the field of management education to make out a case for effective use of ICT. 

**Keywords:** ICT. Management Education. Learning. Learning Outcomes. New Skillsets.

**Resumo**

Encontramo-nos num ambiente VUCA, um ambiente altamente competitivo, com acesso distribuído aos recursos. Os RH talentosos podem fornecer os requisitos necessários para que as organizações possam prosperar. Isto exige a produção de licenciados em gestão empresarial que possam lidar eficazmente com os desafios do próximo século. Para o conseguir, é necessário efetuar mudanças pedagógicas revolucionárias em termos de TIC (Tecnologias da Informação e da Comunicação) que seriam úteis para melhorar a qualidade da transmissão do ensino da gestão em geral e da aprendizagem em particular. Muitos inquéritos conduzidos por associações industriais como a FICCI, a CII e a Aspiring Minds indicaram que a empregabilidade dos licenciados em gestão empresarial é o principal problema. Por conseguinte, qualquer iniciativa como as TIC, enquanto mudança pedagógica, contribuirá muito para resolver este problema, para além de permitir que os jovens contribuam para o produto interno bruto (PIB). O presente documento tem por objetivo analisar o papel das TIC na melhoria da qualidade do ensino da gestão. Procura ainda determinar se o ensino com recurso às TIC melhora a experiência de aprendizagem e proporciona novas competências aos estudantes. Conceção /metodologia - Este estudo examina criticamente o papel das TIC no ensino da gestão, com base na revisão da literatura e dos documentos. Abrangeu relatórios educacionais, investigação empírica e teórica e vários artigos. Originalidade/Valor - Este é sobretudo um estudo analítico que explora as fontes secundárias e revê documentos, incluindo a experiência de alguns institutos no domínio do ensino da gestão, para defender a utilização efectiva das TIC.
Introduction

Given the competitive environment we are in today and the cutting edge that is being provided by the talented Human resources for the organization to flourish, it is all the more important that pedagogical changes in terms of ICT are used for enhancing the quality of management education in general and learning in particular. To upgrade the skills of their students, few management institutions have already started using ICT. Many industry associations like FICCI and CII and Aspiring Minds survey reports have pointed out that employability of business management graduates is the major issue. So it becomes quite important to examine the role of ICT in improving the quality of management education and to explore the impact of ICT enabled education on the learning experience of students. It’s also important to find out whether ICT has contributed in upgrading the skill sets of students to make them employable or not. An initiative, like ICT as a pedagogical change will go a long way in solving the employability problem and enables the youngsters to contribute to the GDP right from the day one.

1.1 Scope of the Study

There is a significant impact of ICT in the field of education, which has made it a very useful pedagogical tool used for enhancing the quality of higher education. Further, it has totally transformed the role of an instructor from the teacher to the facilitator who is helping the students by making their learning more participative/interactive.

The orientation of present generation is more towards getting information from the web based learning. Moreover, the easy availability and accessibility of Internet had completely changed the methodology of classrooms learning which in turn impacted the learning methods of business management graduates. (Went worth and Middletown, 2014).

The study envisions further research in the fields of role of ICT contributing to not only management education but also other kinds of Education, Research and Training. We believe that by incorporating an interdisciplinary approach and a fine blend of the pedagogical innovations this field will open up new vistas of knowledge exploration and dissemination.
Literature Review

The higher education institutions in India got benefitted due to ICT which is considered as a modern day techno management tool. (Ashish Kumar, 2005). Many Spanish universities along with universities of India have been transformed due the advancements of ICT. (Gumala Suri, 2005). It has been claimed by National Institute of Multimedia Education of Japan that the integration of ICT in the curriculum has positively impacted the achievements of students. In addition to it, the exposure of the student to technology is directly related to their improved knowledge, innovation, creativity, presentation skills.

But there are many issues involved in its effective implementation. Lavi & Gallupe, (2003) in their research of five Business College in Queensland have found that to efficiently implement the technology-mediated learning programs, a complete change in the organization’s culture and a huge amount of organizational resources are required. Moreover, the impact of ICT in improving the learning of students requires time. Further they felt that its impact can be felt only gradually. On the other hand, Ganesh (2017), on the use of technology in management education has claimed that the use of ICT in management education will increase overtime. ICT ensures equity in disseminating knowledge and there are several of ways of incorporating ICT tools in education but the use of some among others is comparatively more effective. It has been also found in the study conducted by Ashley Joseph in the globe and Mail that using video for explaining concepts has saved a lot of class time which allowed the instructor to explore more practical applications. According to Leidner & Jarvenpaa, (1995) ICT only involves automation instead of any real transformation in management education. Mendez, Fernandez & Joaquin, (2012) in their study found that for effective use of ICT in higher education students and teachers must be suitably equipped.

The studies conducted in the past tried to analyze the impact of ICT on students learning. But very few studies were done to explore its impact on the development of specific skills required for making management students employable. In addition to it, there is a dearth of studies in management education. There is also a need for exploring the real contribution of ICT in various management colleges who have incorporated the ICT in their pedagogies so that the effective ways of communicating to students via ICT will be find out.
Problem Statement

There are gaps between the adoption of ICT in education and its implementation in the management institutions for enhancing the quality of management education.

3.1 Objectives

1. To understand how ICT will be a game changer to meet the contemporary challenges in management education.
2. To look at few case lets of management institutions in implementing ICT as pedagogy and results reaped in the process.
3. To delve in detail, the important facets of ICT enabled education with specific reference to learning experience and acquisition of new skill sets.
4. To make suggestions for as to how ICT could be effectively used for bringing the desired change.

3.2 Research Questions

To keep the aforementioned objectives in mind we delved upon the following questions.

1. What is the relationship between introduction of ICT as pedagogy to the improvement in quality of education?
2. Are there any new ways of communicating to the students through ICT which makes learning effective?
3. Does ICT facilitate learning?
4. Does ICT enhance the learning experience and provides with new skill sets?
5. Does ICT enabled education makes learning environment easily manageable where the information delivery becomes smoother and the learning easier?

ICT tools used by Management Colleges

ICT has brought many changes in educational institutions but these developments are not properly incorporated within the institutions itself. Although these developments aimed at improving the teaching and learning process. But these are not included with thorough
assessment of the learning process. For example, setting high expectation without clearing stating the objectives and realistic goals will lead to the development of such facilities which are impressive yet intimidating. Therefore, there is a need of conducting researches in the area of leaning improvements which are facilitated with ICT.

There are various kinds of Information and Communication tools used by business schools for improving their teaching and learning processes. Some of them are mentioned below.

A. Tools used for disseminating information

Different kinds of tools are used for disseminating information among students and faculties like using text, audio, videos and graphics. These tools are considered as a repository of information which includes the tools and information resources of multimedia encyclopedia of the Internet. (Chen & Hsu, 1999)

Business graduates, faculties and research scholars consider the Internet as the most important instrument for accessing huge amount of database. The students consider the Internet as a reference library, virtual textbook, virtual educator for studying shortcuts (McNeely, 2005).

B. Tools used for Simulation

These devices are used at the places where the context and the occurrence of a situation are involved. For example, virtual reality, simulation and multi user domain. Various software tools such as CD-ROM and other hypermedia applications are giving opportunities to teachers for enhancing the learning environment. Various kinds of hypermedia applications such as audio, graphic images, animation and video clips are used enhancing student’s autonomy and thinking. (Cheung & Lim, 2000). Business students are also required to give presentations on range of topics to get an idea of the real world. It improves the conceptual understanding of students which makes learning more interactive, dynamic, engaging and collaborative.

C. Tools used for Construction

These general purpose devices are used for enhancing students understanding, constructing knowledge and presenting information. For e.g., MS words and Power Points are used for making reports, notices, official letters and business presentations for educational and administrative purpose. The MS Power point presentation is a graphic program used for creating presentations for business. It is quite useful for enhancing creativity among students. Other word processing program’s such as spreadsheet is very important in analyzing data and interpreting it for management researches and live projects. Students are also exposed to
analysis of statistical data using the MS Excel program that can be automated through the formula.

### D. Tools used for Communication

The tools which are used for facilitating communication between teachers and students or among students breaking the physical barrier of class. It includes e-mails used for formal communication, electronic bulletin boards for displaying notices, teleconferences and electronic white boards used in the classes and discussion rooms. The tools which are used for real time communication like video conferencing which enables real time communication are known as synchronous communicative tools. The other tools which are used for exchange of information which is not required live are termed as asynchronous communicative tools. These tools are more appropriate in such activities where the receiver has more time to respond. The use of E-mail is becoming quite important these days as all formal communications are supposed to happen over it. Institutes creates the ID for their faculties, staff and students so that they can communicate with each other beyond the physical barrier of classes.

### E. Tools used for collaborating virtually

In order to collaborate virtually over projects and other assignments, various collaborative tools are being developed. Academicians, researchers and students are using internet and collaborating over different platforms. People are also participating in various discussions, working on different documents, disseminating information and some other tasks over online platforms. Management teachers are also making use of Electronic whiteboards to interact with students. It is becoming quite popular and used in conjunction with the computers and video projectors. These interactive electronic white boards are become quite popular among teachers, which are not only used for training and development purpose, but for various other activities.

It saves time and efforts of teachers by reducing the crowd over few computers. It can also respond to human interaction with the computer’s command and instruction given on touch screen. Students can also be linked over different geographic location exceeding the class boundaries via Wireless Application Protocol and GPRS embedded computers or in micro-browser equipped mobile phones.

In addition to it, these smart phones have made exchange of information with lesser time. It has also provided the scope for online discussion in larger group. (Lim & Lee, 2002)
4.1 ICT and Management Education

Information and Communications Technologies (ICT) is playing a significant role in education. It is considered as a very useful pedagogical tool by academicians of different universities worldwide. Even after creating and acquiring knowledge by the universities, they are not applying the same to their own activities (Garvin, 1993). In fact, most of the academic institutions are lagging behind in the adoption of information technology. It is quite true in terms of applying IT into the process of learning. Many business schools still use blackboard and chalk as the primary technology even after knowing the benefits of Information and Technology.

Due to competitive pressure, some business schools have now started building their infrastructure for introducing ICT in the hope of improving the process of learning and teaching. Information and Communication technology is benefitting the management teachers in many ways. It has facilitated the access of information for the use by just one click of mouse and has made the learning more constructive, where the role of a teacher is more of a facilitator than of information provider. It becomes quite easy for teachers to interact with the students beyond the physical barrier of their classes, where they can give assignments and directions to the students, even after the classes. They are supposed to submit their assignments, PPTs for presentations and for the cases to be discussed in the classes in advance to their faculties.

The faculty members are making use of ICT to demonstrate, explore and clarify different concepts, which makes learning effective for the students. They are also supplementing their lectures with Illustrative, Introductory and Case Videos. Illustrative videos are extracted from films, documentaries or advertisements and are used for connecting the topics to the ground realities. Management teachers provide the hyperlinks of the same in their slides.

It is an attempt to make learning participative for the students where they can become an active recipient of knowledge. It also helps to bridge the gap between teaching pedagogy and the real world (Nunan, 1989). Moreover, faculties are making use of different kind of videos for introducing the topic in their classes which is facilitating better understanding of concepts. This way management graduates are made to read the concepts, reflect upon them and relate to the ground realities having witnessed the kind of changes that are taking place in the business environment (through videos/ case studies). The case studies and the videos shown in the classroom exposes the students to what is happening outside and whereby prepare them to face the eventual challenges once they get into corporates. In other words,
this new pedagogical change makes students capable of identifying, distinguishing and understating the work environment of a firm.

They can also get an access to variety of information and opportunities for learning via digital sources like internet, video clips, database vocabulary and CD-ROM. These digital recourses can be used at one’s own pace which improves learning. It also gives an access to authentic study material and provides communication with universities via video conferencing and email discussion form. This interaction makes students aware of each other’s culture. They can offer instant feedback to each other for improving their performance.

ICT has made enough contribution in the improvement of pedagogy by including student’s feedback, which can be easily obtained via online in lesser time. The students can easily give the feedback of their courses and its results would be taken as a basis to assess the degree of acceptance of the different courses taught, as well as the students' perceptions and self assessment of the development of their skills and competences.

4.1.1 Case of business school

4.1.1.1 Case of ABC Business School in Gurgaon

ABC Business School is a Private Business School established in the year of 2006 in Gurgaon to provide management education. This institute has been using technology in providing management education which has increased the productivity and efficiency of the system. The academicians of this business school are encouraged to incorporate ICT tools into their teaching. They are asked to take different initiatives of pedagogical innovations which involve the active participation of all agents including faculties, students and the institution in the educational process.

The institute is one of the early adopters for digital transactions at the campus and the first campus in North India to be a Paytm Campus, where all daily transactions are done via e-cash only. The college has adopted an Android-based App Learning Management System. The delivery of lectures and management of attendance is done through this app only. It has provided a common platform to the faculty members and students where they can receive presentations submit their assignments, course material, getting status of attendance, discussing queries, etc.

In addition to it, the college is carving the edge for the future leaders by exposing them business technology, trends, and the environment. It is offering practical know-how of the latest technology trends and concepts. The institute has created a blended learning ecosystem.
They are also providing the practical know-how of the latest tech trends and business concepts in order to amplify the experience of learning and augmenting the learning curve.

The use of ICT has provided a collaborative ecosystem resulting in the growth of the institute at all levels. The college has gained an edge over other business schools because of their well connected Alumni, Academia Relations, Industry anchored learning curve and the ICT tools adopted by the institute.

4.1.2 Case of XYZ Business School in Hyderabad

In addition to the above B school, the authors looked at another reputed Business School in Hyderabad where some new initiatives including ICT focussed were being implemented to assess whether it is yielding the desired results. A brief note on the observations of the initiatives taken and the impact it has created.

Technology enabled evaluation. Earlier multiple choice questions used to be prepared as a paper and pencil test for the continuous evaluation of the students. This process used to take lot of time of the teachers, thereby denying them of the opportunity to spend their quality time to utilize their higher order cognitive skills such as thinking, problem solving and coming up with innovative ideas that generate trailblazing research given their expertise in their respective subject matter. With this view, the institute started the online system of conducting examination and through the learning management system (LMS) the teachers uploaded their multiple choice questions online which can be answered by students anywhere either in the classroom or in their hostels at a particular point of time. So it’s an integration of IT tools with the examination department of the university. Another beauty of this is students will know their marks immediately. In talent management recognition and reward and most importantly appreciation is highlighted and this process is the right step in that direction as it is transparent and objective.

Sharing of information. In the beginning of the twentieth century, lot of research and practices emphasized on Intelligence quotient, but in late Eighties the ability of an individual to handle their and other’s emotions that is emotional quotient gained wide currency, the late nineties also started exploring the concept of spiritual quotient. But, when the twenty-first century began, lot of employers began emphasizing on the Information bandwidth of an individual, higher the which increases the chances of employability. Twenty-first century’s IQ is Information Quotient. The ability of any individual to consume, understand and digest the available information in an ever changing disruptive and dynamic business environment
plays a key role in the employability of any business management graduate. ICT helps in sharing the information quicker, faster and easier. Apart from prescribing reference material and online resources which the faculty uses in terms of latest articles could be instantly shared with the students. This serves the purpose of empowering and enriching the students.

4.1.2.1 Facilitating industry institute interaction

Every management institute wishes to have an intensive institute industry interaction, given the necessity to equip the students with the nitty-gritties of the corporation’s functioning. This institute too wishes to ensure constant interaction with the captains of the industry so that students are well informed and simultaneously well prepared for the future challenges, both short and long term. However, because of their busy schedule and logistics problems, many a times, despite committing few of them had difficulty in keeping them. Now, thanks to ICT, students are periodically exposed by providing an opportunity to interact with them through webinar, videoconferencing, Skype video calls and other ICT tools.

To sum up, it can be safely concluded that these initiatives did help the management in equipping their students adequately for facing the interviews successfully and in the process bringing name and fame to the institute apart from safeguarding the stakeholder’s interests.

4.2 Obstacles and Challenges using ICT among Teachers

Although the ICT has provided several benefits to the colleges, but its integration into the curriculum without proper groundwork for its implementation may involve many challenges. Let’s look at some of them:

4.2.1 Cost of operation

The introduction of ICT for teaching has a high opportunity cost due to heavy investment of resources in its installation. Further, it is quite expensive to acquire, install, operate, maintain and replace ICTs. Moreover; integrating ICT into teaching is more expensive in developing counties than developed nations the cost of alternative investments (e.g. buildings) is relatively low. Due to its heavy cost, only some of the management colleges are able to effectively utilise it.
4.2.2 Difficulty in implementation

The implementation of ICT is not an easy process as it involves different areas of the curriculum. It requires through review of needs of students and the content availability. The process of implementation involves not only IT but an effective pedagogy, readiness of institutions, competencies of their teachers and sufficient financing. (Haddad et al, 2002).

4.2.3 Teachers’ attitude

The use of technology in the courses demands positive attitude of teachers towards it, as the teacher’s attitude toward the technology and expertise is identified as the key factor associated with their use of technology (Smerdon et al, 2000; Zhao & Conway, 1999). Imposing technology from the top to bottom without involving the needs of faculties and students may not solve the real purpose.

4.2.4 Continuous changes in technology

The nature of the constant changes in technology makes it difficult for teachers to stay alert with the latest technology. Every day new software and hardware gets ready. And, teachers, who fought for their time and effort, it is difficult and discouraging to keep chasing this elusive beast. Further, all teachers are not experts with ICT and they may be lax in updating the course content online which may slow down the learning among students.

4.2.5 Digital divide

It may create a digital divide within class, as students who are more familiar with ICT will reap more benefits and learn faster than those who are not as technology savvy. It may shift the attention from the primary goal of the learning process to developing ICT skills, which is the secondary goal.
4.2.6 No personal touch

The excessive use of ICT can also affect the bond of teacher and the student as it overtakes the face to face conversation which is the foundation of career counselling and other healthy discussions between students and their mentors.

4.2.7 Chances of plagiarism

There are possibilities that the students will start copying the information instead of learning and developing their skills.

4.3 How ICT Could be of Help?

Having discussed the various tools, and the challenges being faced in the process, let’s look at some effective ways of utilizing ICT.

4.3.1 Effective ways for utilising ICT

A. Alignment of technology with teaching pedagogy.

There is a need of proper alignment of technology with the teaching pedagogy along with the efficiency of teacher imparting it. It is also required that the teachers and students are sufficiently acquainted with the ICT tools and equipments for its better use.

B. Professional Development of Teachers

The successful implementation of ICT depends upon the competencies of teachers which require their continuous development (ICC, 2003). It is also important that teachers should have faith in the effectiveness of technology and believe that it will not cause any disruption. Moreover, they should have full control over the use of technology (Zhao & Cziko, 2001).

C. Infrastructure & Facilities

Although there is a rapid increase in the IT facilities provided by the colleges and universities in India. But there has not been a corresponding increase in ICT integrated classrooms activities. Moreover, the non availability of sufficient number of computers has compelled the management teachers to deliver lectures by using printed material from the courseware. It also becomes difficult for them to provide study material to the students in its
soft form. Most of the colleges have not ensured that their smart classrooms to function properly which in turn lead to inefficiency

D. ICT Courses & Training

The biggest challenge before our teachers is to acquire the necessary knowledge and competence for using ICT in the classrooms. Most of the teachers feel that there is lack of training for using new media. Moreover, there is no emphasis given on the aspects like attitudinal and ideological contents. This leads to the development of critical and non-responsible attitudes towards ICT.

The increase in the number of equipments in the educational centers and sufficient training programs would not suffice for bringing significant transformation in teaching and learning processes. (Cabero et al, 1997)

There is a need of sufficient change in the competencies of teachers using ICT as they are supposed to handle complex situations in their heterogeneous classrooms. The students mix is quite complex who are familiar with the different communication means.

Therefore, the institutions won’t be able to handle the complexities and challenges of ICT enabled learning without providing sufficient training to the users (Correa, 1999). These training programmes should aim for developing pedagogical renewal which will integrate multimedia materials with the curriculum.

E. ICT Usage & Skills

The role of a teacher has been transformed from being an information provider to a facilitator in the classrooms due to the advent of ICT. It is required that they develop skills related to learning contexts. The role of a teacher role has been multiplied and shifted from being a transmitter of knowledge to facilitator and guide of the learning process. She is considered as the integrator of new ICT media, researcher and creator of suitable learning scenarios, collaborator (with other teachers and students), learner and evaluator. An effective teacher should have knowledge of pedagogy.

The effective utilization of ICT tools is only possible if teachers have adequate knowledge of ICT and skills for using it. It had been found that more than 50% of the respondent rated computer usage as significant (summer, 1998). But maximum numbers of teachers are unclear about efficient computer usage. It has been found that most of the teachers of their survey accept the significance of computer users but they don’t have adequate knowledge and skills for using it. This deficiency has negatively impacted the efficient implementation of ICT into the classrooms.
Findings and Suggestions

The study has found out that ICT is playing a significant role in improving the quality of management education. It facilitates learning when it is combined with other teaching pedagogies and made it interesting for the students, to understand, comprehend, analyze and finally apply it to solve their day to day problems and make good decisions. It also enhances the learning experience and provides them with a chance to learn new skill sets which are highly desired in the VUCA world of today. ICT enabled education creates an environment where the information delivery is quite smooth which in turn makes the learning easier.

But it demands the teachers and the students must acquire the proper knowledge and develop their skills for its effective implementation. The ICT enables classrooms will only help management students if there is a proper alignment of pedagogy of teachers and their efficient with technology. Moreover, there is a need for proper digital infrastructure for the implementation of ICT mediated learning initiatives in business management schools. In other words, it calls for a different mindset which focuses on continuous improvement and enhances learnability among the students.

Conclusion

The ICT enabled education has positive impact on the development of skill sets of students and helps in the employability of the business management graduates. But without reviewing the needs of students and availability of the content in excess might lead to wastage of resources only. Sometimes institutions incorporate content without customizing it for their students’ cognitive capabilities which lead to improper alignment of their learning needs and in the process hinders skill-building.

In a volatile, uncertain, complex and ambiguous (VUCA) world of today, with continuous disruption taking place across the businesses, use of ICT definitely helps in making the student's industry-ready. However, there are challenges too in making the use of this fantastic tool. We have suggested a few steps for effective use of ICT, apart from sharing the experiences of both the B-Schools which immensely got benefited using this technology. While ICT helps in honing the skillsets of the students at the spectrum end and enabling the teachers as facilitators at the other end. Lastly, both teachers and students should be positively oriented towards its usage by developing the required skills.
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