Chapter 1: Introduction
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**Background**

Today, we are on the cusp of a new era. Technology can change the world and empower people and organizations to do amazing things. The next decade will witness an increasingly software powered world, with technology becoming even more cognizant, sentient and ubiquitous – an inextricable part of not only our environment, but ourselves. The changing world brings about changes in the aspirations of individuals in terms of careers, jobs and skills as well.

According to the 2007-08 Economic Survey 64.8% of India’s population would be in the working age of 15-64 years in 2026. That means this latent talent pool of young population shall necessarily desire and demand skills relevant to work place.

India has a target of creating 500 million skilled workers by 2022. (National Skill Development Policy Mar 09, Govt of India) At present the capacity of skill development in India is around 3.1 million persons per year. The 11th Five Year Plan envisions an increase in that capacity to 15 million annually.

Large scale designing and implementation of skill development programs is, therefore, an imminent imperative. Various schemes initiated by Ministry of Labor, Ministry of Human Resource Development, Ministry of Skill Development and Entrepreneurship, Government of India, such as National Skill Development Initiative - Skill Development Initiative Scheme (SDIS), Apprenticeship Training Scheme (ATS) etc. clearly indicate the need and significance of skill development programs. (GOI, Ministry of Labour, Government of India), (GOI, Apprenticeship Act), (GOI, Ministry of Human Resource Development, Government of India)

This research closely inspects an educational model devised and implemented by Maharashtra Knowledge Corporation Limited (MKCL) with a potential to transform education in India and can be trend setting for skill development.

It is *Role Based and Work & Performance Centric* model of education being implemented by MKCL in form of a degree program for Service Sector Industry in collaboration with Yashwantrao Chavan Maharashtra Open University and Industry partner companies.
Challenges
As per National Skill Development Policy (Government of India, Mar 2009), some of the major challenges for skill development on a mass scale are:

- Large population with various diversities to be addressed
- High quality of relevance and applicability in life and work
- Low cost

In view of key stake holders of higher education, i.e. Students, Industry, University and Government as well as Society, there are certain key challenges that need to be addressed.

The concerns or challenges of each of key stake holders has a direct impact in designing of skill development programs, as they are interdependent.

For students the challenges are:

- How to acquire relevant skills, knowledge and attitude for workplace?
- How to build a career that would lead to self-growth and happiness through socially useful learning?

For industry, the challenges are:

- How to reduce attrition rate?
- How to develop workforce by continuous training and re-training?

For University, the challenge is:

- How to design and implement degree programs to match industry requirements?

For Government and Society, the challenge is:

- How to reduce youth unemployment?

In order to address these challenges simultaneously a platform for strong industry-academia linkages is required.

Traditional methods for organizing may not be helpful to achieve this crucial task of addressing these challenges.
Skill Development through apprenticeships

There have been successful models of Apprenticeships and Traineeships implemented for years’ world wide – especially in European countries like Germany.

In India as well, through Industrial Training Institutes - ITI s, apprenticeship models have been implemented, which are governed by Apprenticeship Act. (GOI, Apprenticeship Act). Through these channels, students are being developed for skills related to different trades catering to manufacturing industry such as: welding, electric fittings, plumbing etc.

During first fifteen years of 21st century, however, new sectors have emerged that includes primarily the Service Sector, because of the mega trend of automation.

Service Industry: Business Process Management Sector

The Strategic Review 2014 document published by National Association of Software and Services Companies (NASSCOM) for the IT – BPM Sector (Business Process Management Sector) in India, states some interesting facts regarding IT-BPM sector.

The last few years have been a challenging period for the technology and services industry. A period of rapid change, technology and business disruptions have created a whirl of uncertainty. Socio economic, business and technology megatrends are disrupting existing opportunities, at the same time creating new ones.

In financial year 2014, the Indian IT-BPM industry is estimated to account for revenues of USD 118 billion, cementing its leadership position in the global sourcing arena, and highlighting its increasing importance in the domestic market. With a large, multicultural and highly aspirational workforce of over 3.1 million employees, the industry today is the largest private sector employer in India.

Domestic IT-BPM services revenue is expected to grow at 9 to 12 per cent in financial year 2015.

As rightly mentioned by R Chandrashekhar, President, NASSCOM, germination of new service offerings, shift from a globalized to glocalised delivery model, existence and acceptance of a differentiated pricing regime, focus on talent quality over quantity, and transformational outsourcing (value, technology, innovation and cost) will drive client spending.
A clear but complex transformative agenda for stakeholders is set when the current scenario is connected to future projections.

**Transformative agenda**

The traditional teaching—learning methods being followed by ITIs and private vocational institutions to deliver vocational education and training have few limitations. The current process comprise of classroom sessions, print material for reference, hands-on-sessions in the lab followed by apprenticeship or industrial training whichever is applicable depending upon the type of vocation etc.

The limitations to this traditional teaching-learning method are in the form of consistency of quality of teaching across different institutions at different places, availability of world class infrastructure, scope for activities and interactivities, opportunities for attainment of skill by exploration and experimentation, feedbacks, assessments as a learning experience, capacity building for skill upgradation, constraints of local conditions and context, etc.

Appropriate and innovative use of Information Technology can overcome these limitations.

Further, limitations for large scale implementation of skill development programs are in the form of weak or no tie ups between college and industry for internship or apprenticeship opportunities for students, relevant and context specific projects and passive community participation.

Building strong public-private-community partnerships using collaboration platforms can overcome these limitations.

A new model of education that would harness industry—academia linkages is, therefore, needed.

Transformative agenda for industries and students is as follows:

- **Industries/enterprises and service sector organizations**
  - To become Educational Environments by offering internship opportunities to students
  - To perform a developmental role

- **Students**
- To get actual work experience and mentoring
- To contribute to the development of socially useful and productive outputs

It is in this context, current research study has been undertaken wherein an innovative Role Based and Work & Performance Centric model of Education is being implemented by MKCL in form of Work based degree programs in collaboration with industry and University.

About MKCL and its Role Based and Work & Performance Centric Model

Maharashtra Knowledge Corporation Ltd – MKCL, is a public limited company promoted by the Government of Maharashtra, India for propagation of the new education paradigm based on universalization and integration of Information Technology in Education. A Mass IT Literacy Movement has been successfully propagated by MKCL in the State of Maharashtra by making more than 9 million learners (especially students) IT literate in a self-sustainable manner in a span of about 12 years by creating a self-replicable model based on public-private-community-partnership (PPCP) with the involvement of the Government of Maharashtra, almost all Universities in the State, large number of educational institutions and thousands of small and medium IT enterprises and entrepreneurs.

MKCL aims to develop a high quality skilled manpower in niche areas/sectors through diversified degree and post-graduate degree programs to meet the requirements of the industries in various sectors and to instill self-employment skills in people and make them employable through a large number of role based and work and performance centric courses.

MKCL, therefore, under its program, MKCL Finishing Schools (MFS) is now imparting series of Role Based and Work and Performance Centric distance education degree and post-graduate degree programs to address the manpower demands of the industry not just at the differential skill-based entry level but at an integral role-based and directly deployable levels, by forging partnerships with various organizations having domain expertise and who can offer real workplaces as a Work Lab for the learners to gain and practice practical skills required at the workplace.

MKCL has designed the programs under MKCL Finishing Schools (MFS) so as to give an intensive exposure, expertise and experience in an eLearning supported Work Lab in form of
real-life work environments of the industries and set up an innovative learning through working paradigm and thereby attempt to seek a blend of the work environment and learning environment, as a result of which there is a proper match between the skilled manpower required and skilled manpower available. MKCL is implementing courses under MFS by forging partnerships with the Industry Partner / Work Lab Partner (IP/WP) having Work Lab opportunities for learners at real life workplace.

The researcher has been working with MKCL for more than 13 years and has been involved in designing, devising and setting up various eLearning frameworks, educational offerings. In view of the strong potential impact – in terms of education as well as society at large, it is felt essential to study in detail the effectiveness of the unique and innovative Role based and Performance Centric (RoWPeC) Model of education being implemented by MKCL.

Hence the current research has been undertaken wherein the role of the researcher is to implement the aforesaid model of education as an experiment by designing and development processes and tools - academic as well as research tools, required to conduct the same.

**Research Topic**

Analytical study of effectiveness of eLearning in Role based and Work & Performance Centric model for educational program implemented by MKCL

**Educational model and program under study**

As stated earlier, the RoWPeC model is designed so as to give an intensive exposure, expertise and experience in an eLearning supported Work Lab in form of real-life work environments of the industries and set up an innovative learning through working paradigm and thereby attempt to seek a blend of the work environment and learning environment, as a result of which there is a proper match between the skilled manpower required and skilled manpower available. MKCL is implementing courses under MFS by forging partnerships with the Industry Partner / Work Lab Partner (IP/WP) having Work Lab opportunities for learners at real life workplace.

Courses, and therefore the partnerships, are for different sectors that demand continuous man power and are facing a challenge of attrition. Sectors such as: service sector i.e. Business Process Management (BPM) industry, Hardware and Networking sector, IT sector, Creative digital arts,
livelihoods and sustainable development sector etc., are being addressed and different programs are being designed.

The current research is for the program implemented under RoWPeC viz: B.A. in Services Administration for service sector.

The Role based and Work & Performance Centric model is elaborated in Chapter 4: Educational Model and Program under study. The sub chapters cover different aspects of this unique model. They are: Learning Environment (i.e. eLearning), Mentoring, Evaluation and Technology.

**Significance of the research**

This research closely inspects an educational model with a potential to transform education in India and can be trend setting. The model under study has a multi-dimensional span of innovation.

It is an Educational Innovation, as it offers an innovative ‘Learning through working environment.’ It presents an upward spiral of work – knowledge – more profound work. It integrates all stakeholders involved in higher education – industry, university, and student.

It is a Business Innovation, as it addresses key concerns of industries - attrition and to have trained and committed manpower, by ensuring uninterrupted educational association. It encourages partnerships on the basis of strengths, wherein Industry has the competitive factor where the performance matters and Education brings in ‘purpose to perform’.

It is a Technology Innovation, as it requires complex state-of-the-art technology environments catering to the needs of monitoring learning performances in a personalized manner with huge learner analytics, cloud computing.

Moreover, it is a Social Innovation, as it empowers youth at large leading them to identify their strengths and be on their own. It is also a social responsibility for industry.

Findings, conclusions and recommendations emerged through this research, therefore, may have strong impact on

1) Policies related to strategies of design, development, implementation of higher education programs for skill development

2) Transforming and humanizing industry environment (specially service sector industry environment involved in the program under study)
3) Technology development in terms of its wider accessibility and reach  
4) Policies related to empowerment of youth and social responsibility of industries.

It is in this context of potential transformation in different aspects of education and its impact on various sections of society, this research has a strong significance. Further, as envisioned by MKCL and stated earlier, the model shall be implemented for different sectors such as Hardware and Networking, IT, Creative Digital Arts, Livelihoods and sustainable development etc. It is, therefore extremely important to ascertain its effectiveness in terms of skill attainment and knowledge gain, at the early stage of its implementation. Hence, for very first program being implemented under RoWPeC model by MKCL, the research has been undertaken.

Research objectives

General objective
The educational model under study is unique and innovative. It is therefore required to first finalize and set general objectives that encompass overall probable impact of the research and then fine tune and convert general objectives into specific ones.

General objective of the research is

1. To assess if ‘Learning through Working’ is evident through implementation of Role based and Work & Performance centric model of education

2. To analyze the Role based and Work & Performance centric model of education in terms of its effectiveness for skill attainment by considering different aspects such as: pedagogy based on working through learning paradigm, eLearning component, mentor’s role, relevance of such methodology to address industry issues on one hand and employability issues on the other.
3. To identify areas of improvement and recommend suggestions for effectiveness in terms of eLearning component – instructional designing and learning experience designing, mentor mediation.

**Specific Objectives**

In line with the general objectives stated above, from the focus of education, specific objectives are framed.

Specific objectives of the research are to analyze critically various processes involved in the Role based and work centric education model.

These are as follows:

1. To analyze effectiveness of eLearning Content (eContent)

2. To study effectiveness of technology (eLearning framework)

3. To study effectiveness of assessment methodology in terms of skill attainment and theoretical knowledge

4. To analyze and assess importance of mentor’s role in the learning process

**Hypothesis**

MKCL conducts Role Based career oriented diploma programs in collaboration with Yashwantrao Chavan Maharashtra Open University through eLearning. The results of these role based diploma programs are considered as a base for setting research objectives and formulation of hypothesis for current research. Out of randomly selected 1000 students who have passed in final exam for role based diploma programs, it has been observed that more than 60% students have scored more than 60% marks. This forms the basis for forming hypothesis for current research as follows.
H₁:

eLearning is effective for learning in Work Lab as per Role based and Performance Centric model for educational program, in terms of skill attainment and theoretical knowledge gain with 60 percent mastery by 60 percent students.

Null hypothesis: H₀:

eLearning is not effective for learning in Work Lab as per Role based and Performance Centric model for educational program, in terms of skill attainment and theoretical knowledge gain with 60 percent mastery by 60 percent students.

Assumptions

- Assumptions are in terms of availability of learning environment for implementing Role Based and Work & Performance Centric Model.

1. Students of the program under study get a Work Lab and exposure to real life work situations every day

2. Students of the program under study get an access to eLearning through eLearning framework

3. Students of the program under study are associated with mentor and get an opportunity to reflect on their actions at the Work Lab

- Assumptions are also in terms of availability of mechanism ensuring outcome of hypothesis, i.e. skill attainment and theoretical knowledge gain

4. Industry partner company providing Work Lab has a performance appraisal system monitoring performance of the student associated with them
5. University, as an academic authority has stipulated curriculum, conducts interim assignments and term end examination for assessing theoretical knowledge gain and has a passing criteria set

**Scope and delimitation**

- This research includes students of work based degree program for service sector implemented by MKCL in collaboration with Yashwantrao Chavan Maharashtra Open University and industry partner companies, viz: B.A. in Services Administration

- The research is delimited to Students of First Year (FY) and Second Year (SY) of the program under study

This innovative program has been launched by MKCL in Academic Year 2013-14. i.e. the first batch of the program under study has begun in Year 2013-14. Hence the students of first batch have passed first and second year for which the University records are available. Students enrolled for batch 2 have passed their first year for which University records are available. Third year of students of batch 1 is ongoing and hence only partial records can be available.

Hence the research is delimited to Students of FY and SY. This has enabled researcher to consider 4 exam events for analysis which is found to be sufficient for testing hypothesis and interpretations for future.

Moreover continuous observations and close interactions with students as well as industry partners have proved to be crucial to arrive at conclusions.

- Out of the entire curriculum prescribed by the University for FY and SY of the program under study, selected courses are considered for testing hypothesis.

Justification for this delimitation is based on two aspects. First is the general objective and second is the assumption stated earlier. The general objective for the current program under study is to assess if ‘Learning through Working’ is evident through implementation of Role based and Work & Performance centric model of education. This clearly states a pre-
requisite of having a Work Environment available and then the effectiveness of eLearning is to be assessed.

Further, as per hypothesis, eLearning effectiveness is to be assessed in terms of skill attainment and knowledge gain with specific mastery level.

In view of all the above aspects, it is found essential to identify and ensure mapping of work lab domains and courses of curriculum in order to sharpen the scope of the research and to test hypothesis appropriately.

Therefore, it is found appropriate to test hypothesis only for those courses from the curriculum for which the work environment has been made available to the students so that the skill attainment and theoretical knowledge gain can be assessed with specific mastery level.

For example, performance of student can be assessed in ‘Back Office Management’ course in terms of knowledge gain if and only if s/he has got an exposure to Back Office processes at the Work Lab.

On the contrary, performance of the student may not be assessed in a fare manner in ‘Business Communication’ in English, if s/he is not at all required to do business communication in English at the Work Lab.

Detailed mapping of curricular courses and work lab domains is explained in the Chapter 4: Educational Model and Program under study – Section: Structure of the program under study

This selection of courses is based on following criteria:

- Such courses where the course objectives are related to skill attainment or theoretical knowledge gain and
- Such courses for which the exposure to functional skills / domain area is available in real life work place related to respective skill attainment or theoretical knowledge gain.
Limitations

1. **No. of formal instances available for analysis for validating set objectives:**
   Implementation time of the program and the educational model under study is driven by the University. i.e. the frequency of occurrence of assessment event is limited.

   This has limited the current study to analyze limited number of term end exam events required to validate one of the research objectives. Four exam events have been analyzed.

2. **Explicit assessment and record of attitudinal transformation beyond professional life**
   This study does not explicitly reflect on the attitudinal aspect of students’ learning through this model. It does implicitly touch upon the change in terms of behavior at Work Lab, with an assumption that it is an integral part of the performance appraisal system of industry partner companies; however, behavioral change/ transformation in personal and social life of the student are not captured explicitly.

3. **Natural personalized record of derivation of theory from practice**
   The ability of group of students to derive theory and knowledge from the practice at workplace can be witnessed to some extent through eLearning environment; however individual’s capability is not captured in personalized manner at all probable instances naturally.

**Operational definitions**

1) **Effectiveness:**
   - Evidence in form of post test results as acceptable by the certifying authority of program under study – University proving thereby the objectives set for the research are met.

2) **eLearning:** eLearning is operationally defined herewith as:
   The method of presentation of learning resources and enabling opportunities for learning, wherein
   - Learning resources are in form of
     - content created by domain experts,
○ content co-created by students through peer interactions and under the guidance of mentors during reflections,
○ content compiled in form of real life work situations from work labs, that is made available to the students of program under study using electronic media and through eLearning frameworks
and
- Learning opportunities are in form of synchronous and asynchronous interaction with mentors, peers, seniors using electronic media and through eLearning frameworks with a record

3) **Role based and Work & Performance Centric (RoWPeC) model:**
- Role Based and Work & Performance Centric Model, is a model of education implemented by Maharashtra Knowledge Corporation Ltd (MKCL), a public limited company established for transformation of education.

4) **MKCL and MFS:**
- MKCL Finishing Schools is a program of Maharashtra Knowledge Corporation Limited, offering series of role based and work & performance centric degree programs for various sectors such as Service Sector i.e. BPM – Business Process Management sector, Hardware & Networking i.e. Computer System Administration Sector etc.

5) **Educational Program (educational program under study):**
- Role Based and Work & Performance Centric Degree Program for service sector i.e. Business Process Management industry viz: B.A. in Services Administration implemented by MKCL in collaboration with Yashwantrao Chavan Maharashtra Open University (YCMOU) and industry partner companies through RoWPeC model.

6) **Work Lab:**
- It is a necessary aspect of RoWPeC in form of real life workplace being provided by the industry partner company to the students of the program under study.
- It is a place where students are exposed to real life work situations, have to work in capacity of some role and perform as per the norms set by the Work Lab provider company.
- It is a place where students’ performance of practical implementation of skills is assessed by appraisers as per the norms set by the Work Lab provider company.

7) **Skills:**
   - Demonstrable and verifiable capabilities of an individual required by the industry partner company, (i.e. service sector company associated with MKCL offering Work Lab to the students) using which the individual student can face real life work situations in a specific role

8) **Skill attainment:**
   - Demonstrable and verifiable evidence of students’ performance at Work Lab i.e. of facing real life work situation in a specific role

9) **Theoretical knowledge:**
   - Concepts as prescribed in the curriculum stipulated by the University to be understood by the students of program under study that may be required for performing better practical at Work Lab

10) **eLearning framework:**
    - eLearning frameworks designed and developed by MKCL which are deployed for the students of program under study for eLearning. The framework is MKCL’s SuperCampus suite comprising of MKCL’s ERA (eLearning Revolution for All) with Learning Content Management System, Online Evaluation System, Assignment Management System, Work Forum, Work Update, Situation repository

11) **Mentor:**
    - A mentor who is a service industry professional conducting reflection sessions for the students of program under study
12) **Reflections:**

- Process of expression of individuals under the observation of professional senior around actions performed at the work lab that comprises of opinions, views, significance and non-significance of actions, consequences etc. with an objective of improvement in action

**Chapters**

Further chapters of this thesis and their details are as follows:

2  Review of related literature

This chapter explains in detail extensive review of literature covering different aspects as follows: Work based learning, Nai Talim, Role based learning, Curriculum, Situated learning, Scaffolding, Constructivism, Mentoring, Evaluation, Technology in Education, Policy, Apprenticeship, and Education.

These aspects have direct as well as indirect impact on different factors of educational model under study.

3  Research methodology

This chapter explains the Research Methodology adopted for conducting the current research. It includes

3.1 Basis of Research Design
3.2 Research Design: Experimental Method
3.3 Sample
3.4 Variables
3.5 Tools used for the study

4  Program under study: Role Based and Work & Performance Centric Model of Education by MKCL (RoWPeC)
This chapter is crucial and of utmost importance as it presents entire program under study. The model under study devised and being implemented by MKCL is first presented as stipulated by MKCL, in the first section of the chapter.

Later sections discuss in detail the analysis of different factors of the unique and innovative model from educational perspective, by applying different theories of education – teaching, learning and assessment, in order to validate specific objectives set for the current study.

The sections, i.e. sub chapters are as follows:

**Sub Chapter: 4.1: Educational Model at a glance**

This chapter presents the model under study. It covers the key challenges addressed, objectives, mechanism, partnerships, academic approach including learning and assessment methodology, structure of the program under study. The analysis of this model is elaborated in later chapters.

**Sub Chapter: 4.2: Environment for Learning through Working**

The model under study offers a unique environment for Learning through Working. It has different components active in this environment. i.e. eLearning environment comprising of different eLearning frameworks, Work based learning environment in form of real life work place provided in form of Work Lab by industry partner companies. This sub chapter discusses in detail various educational theories applicable to the model under study.

The eLearning content development is also crucial and situated learning theories are discussed and validated in detail for the model under study.

**Sub Chapter: 4.3: Mentoring through reflections**

‘Reflections sessions’ is one of the key elements of model under study. Hence theories of scaffolding, reflecting practices are discussed and validated for the model under study in this sub chapter.
Sub Chapter: 4.4: Evaluation Methodology

Evaluation methodology has been stipulated by University for the program under study. This methodology involves participation of industry partners for assessing skill attainment as well as University for assessing knowledge gain through online examination conducted by University. Applications of Blooms taxonomy, performance monitoring criteria at industry workplace are discussed in the sub chapter of Evaluation Methodology.

Sub Chapter: 4.5: Technology Framework

Specific objectives of current research are directly linked to Technology Frameworks being used for conduct of program under study. Hence, this sub chapter presents details of various technology frameworks used for the conduct of program under study. These technology frameworks are designed, developed and deployed by MKCL. Key features along with screen snapshots are presented in this sub chapter.

5 Data analysis and interpretations

The chapter, as the title suggests, presents data analysis, findings and interpretations. Graphical analysis is presented along with in detail descriptive interpretations leading to conclusions and recommendations.

6 Conclusions, Recommendations and Contribution to the field of education

The last chapter of the thesis presents conclusions from the research and offers recommendations to the model under study. This chapter also elaborates further scope for research. Moreover, it focuses on contribution of this research to the field of education. Deep involvement of the researcher in the program and model implementation itself has got reflected in documentation of multifold conclusions through continuous observations, personalized interactions with the students supported by strong and evident data analysis.
Last section of the thesis includes the following:
- Bibliography
- List of Tables
- List of Figures
- List of Images
- List of Appendices
- Appendices:
  Appendices include:
  1. Questionnaire: eLearning content and framework
  2. Post Test: Performance Monitoring System: Work Ratings
  3. Student Daily Worksheet
  4. Post Test: TEE
  5. Post Test: Assignments
  6. Curriculum Details: Courses – Units
  7. Prospectus of B.A. in Services Administration published on YCMOU Website
  8. No objection certificate for conducting research