A Critical Study of Employability of Pass out of Professional Institutes in Madhya Pradesh

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ABSTRACT
The current research attempts to analyze and compare the employability of the undergraduates and recent pass out engineering students across Madhya Pradesh with reference to the specific & generic skill level required in industry. The analysis is based on sample response from regional, national, global employers and engineering graduates' respondents drawn from Bhopal, Jabalpur & Vidisha region of Madhya Pradesh. The data was collected through a questionnaire survey in which thirteen attributes of general skills and fourteen attributes of specific skills were measured; using five point scale based on their importance levels. The study intends to analyze and measure the levels of employability and the variation there in as per gender, type of institute (Government or private), medium of schooling & city, and the expected employability level of the employers. The sample from students studying in final year & recent pass out group reveals that the employability of engineering graduates of M.P. is lower than the score required in industry. This low level of employability is seen on account of both generic skills & specific skills. This indicates that despite of increase in numbers of engineering colleges & efforts to increase the employability, the engineering graduate lacks in employability skills. The findings suggests that engineering institutes, should focus to improve the skill set of graduates, focus on the assessments and curricula in analyzing and solving engineering problems, as well as increased creativity and interact more with Industries to understand the particular demand for skills in that region and sector. It can be further enriched with the involvement of Industry in academics. After classifying all skills by factor analysis, it is found that the soft skills are very important specifically the communication skill. The analysis also confirms that the male and female respondent does not differ significantly on account of employability. Tools used for analysis are reliability test, factor analysis, cronbach's alpha test, mean score, standard deviation, t-test analysis, ANOVA and other statistical tools. The result of analysis reveals the low level of employability skills among the engineering undergraduates & pass-outs of M.P.

Keywords: Employability of Engineering graduates, employment, expectations of Industries, enhancing the employability, sustainable employability, Employability skills

I INTRODUCTION

The study is focused on the important issue i.e. "Employability of Engineering graduates", with a special emphasis on the undergraduates and fresher graduates from Technical Institutes of Madhya Pradesh. Two other questions which this study addresses are why it is important to address the issue of Employability, and how this might be achieved as per the expectations of Industries. The study also focuses on the best practices adopted worldwide to enhance the Employability & recommendations on how to adopt such practices in the various Institutes of Madhya Pradesh.

The World bank & other national surveys made on employability are of global & national perspective, which I think needs to be based on region wise as the undergraduates of Madhya Pradesh have different environment of learning like city, language, facilities at Institutes, family background, level of schooling etc. It has been seen from last few years that the Engineering graduates of Madhya Pradesh are facing difficulty in getting employment. There are several reasons of unemployment, but the fact is that the expectations of Industries are not met, there are job demand but our graduates are unemployed. My objective of this study is to bring awareness among stake holders about the issue of employability, so that the students, Institutes & policy makers can take corrective measures for enhancing the employability by providing the proper environment for nurturing the excellence among undergraduates.

This study was made by making the survey of students of Engineering Institutes of Bhopal, Jabalpur & Vidisha Districts of Madhya Pradesh. Approximately one lakh students acquire admissions every year in Engineering colleges, but since last three years the admission rate is reducing. This is also a matter of great concern. Professional and vocational Institutes runs various courses like ITI, Diploma, MBA, MCA, PGDCA, BE, Mtech, B.Pharma, M.Pharma etc & various other specific professional & vocational courses like Hotel Management, fashion designing etc. Earlier it was thought to consider all or most of such undergraduates for the survey, but looking into the reality and feasibility of task it was decided to make the study of engineering undergraduates whose employability is of major concern. The reason of choosing engineering undergraduates is the numbers, which are very high i.e. large

students; take admissions in Engineering Institutes, more numbers of Engineering Institutes & decrease in Employability of Engineering Graduates.

This study focuses at exploring the contemporary skills set required for sustainable employability of engineering graduates in Madhya Pradesh. In most of the engineering colleges, students are from different academic backgrounds coming from different native places having different mother tongue. So, there is an urgent need to provide them a common platform to make them competent enough to face the real challenges of today's corporate world. Madhya Pradesh being the Hindi speaking region and major population lives in rural part, the communication skill and specially the English is of major concern. English is a language which can be used as a tool to remove the lingual difference among them and give them a common platform to communicate. According to my findings, the students with skills like positive attitude, effective communication, problem solving, time management, team spirit, self-confidence, handling criticism, flexibility, which are also known as soft skills as a whole, have much better chances of survival in the tough corporate world compared to the students who are lacking in the mentioned soft skills. Employability skills are very essential in the current global job market. These skills can be termed as soft skills, which are given utmost importance in campus interview. At college level education, it will be a productive venture to incorporate these skills in the syllabus. This will certainly help students develop their employability portfolio and it will make them execute the assigned works efficiently in any institution after the selection process. This study tries to list the skills needed for the students to get employed and show how these skills are important for them to excel in a performance oriented work environment.

II OBJECTIVES & HYPOTHESIS

The aim of the research is to analyse and compare the skill need of Industry and the available skill level in engineering students across MP. The study will also examine, highlight and provide overview of possible options for students, institute, industry and government in relation to take appropriate measures to fill this skill gap. The study will also create awareness among Institutions for updating their resources for improvement in the standard of education.

(a) The main points for framing the objectives-

(i) To Identify issues / gaps between the need of Industries for technical / vocational skill set & the availability of manpower resources in the current system of technical education.

(ii) To understand the challenges being faced by the stakeholders of the system and lessons learnt for delivering favourable outcomes at various levels within the loop of the system.

(iii) To study the initiatives, current approaches and best practices being adopted worldwide in the current scenario, and suggest the best possible practices to be adopted in the current system.

(iv) To take an initiative to develop self interest in industries and corporate world by assuming responsibilities for fulfilling their need for educated skilled manpower.

(v) To suggest the possible options and workable measures to be adopted for Human Resources skill development in the current scenario.

(vi) To provide insight into how different stake-holders & policy makers can best support and work to improve the employability of engineering undergraduate.

(vii) Explore the issue of engineering graduate employability

(viii) To compare the employability skills.

(ix) Provide an overview of skills required for reducing the employability gaps.

(b) Specific objectives- The above objectives are further narrowed & made specific for the study purpose. Now reframed, narrowed & specific objectives are :

(i) To analyze and compare the skill requirement of Industry and the available skill level in the undergraduate & graduates engineering students across Madhya Pradesh

(ii) To identify the difference in the level of employability skill among private institutes and government institutes engineering students

(iii) To identify the difference in the level of engineering students employability skill among the genders

(iv) To identify the difference in the level of engineering students employability skill among the students coming from Hindi and English medium schools.

(v) To identify the difference in the level of engineering students employability skill based on the selected demographics

(c) Sub objectives- The following are secondary objectives of the study:

(i) To give suggestive measures/ possible solution to the institutions and other stake holders to bridge the employability skill gap.

(ii) Identify examples of best practices in regard to reforming engineering education to enhance the employability.

(d) Hypothesis- On the basis of observation and the available literature following Hypothesis has been taken in the present research:

(i) There is no significant difference in the Employability level of Private & Government college engineering graduates.
(ii) There is no significant difference in the Employability level of Female & Male engineering graduates.
(iii) There is no significant difference in the Employability level of engineering graduates coming from Hindi or English medium school
(iv) There is no significant difference in the Employability level of engineering graduates of Bhopal, Vidisha and Jabalpur districts of Madhya Pradesh.
(v) There is no significant difference in the existing Employability level and the expected (by Industries) Employability level of engineering graduates of M.P.

III RESEARCH METHODOLOGY

(a) Research Method- This research was conducted using a survey research method. The target and accessible populations were engineering graduates of Institutes of M.P. and employers.

The participants are evaluated under two main skill sets, which are very much important to justify themselves with their professions. These skills are classified in to two parts first is Generic skills, second is Specific skills, and these skills has various sub-skills.

(b) Population- The data has been collected from the questionnaire distributed among 500 undergraduates and graduates of different engineering institutes of Bhopal, Vidisha & Jabalpur city of Madhya Pradesh. Out of the total population 324 students have furnished the complete information.

The undergraduates were in the sixth, seventh, eights semester and fresher graduates

Questionnaires were distributed to 90 employers and 40 had responded.

(c) Research Instruments- I have used a modified questionnaire "Employability Survey Questionnaire" which is based on employer satisfaction survey conducted by FICCI and World Bank survey from September to November, 2009.

The questionnaire has a list of skills 13 Generic skills & 14 Specific skills that engineering graduates are typically expected to possess at graduation.

Respondents were requested to rate on a scale from 1 (below average) to 5 (excellent) how they rates on this employability skill.

The "Employability Survey Questionnaire" comprised 27 items for assessing students' employability skills. The participants responded to each of the statements using five-point Likert scales.

(d) Data Analysis- Data is entered in SPSS & analyzed using the descriptive and inferential statistics. Descriptive analysis involves frequencies, percentages, mean and standard deviation whereas inferential analysis involves t-Test. ANOVA, percentage are used to explain the demographic items of students whereas mean and standard deviation are used to analyze level of employability skill of students. The t-test is conducted to identify the differences between employability skills with the demographic variables, type of institutes, gender & medium level education background.

Hypothesis raised were tested using t- test & ANOVA.

IV DATA ANALYSIS

The Statistical Packages for Social Sciences (SPSS) version 21.0 was used in analyzing the data. For Reliability analysis of Scale we used ALPHA Reliability Coefficients. The descriptive statistics to be used include mean and standard deviation. The inferential statistics used was the respondent's t- test of independent samples for testing equality of means and Analysis of Variance (ANOVA). , is used for testing differences within and between several group means. Few of the variable from the results of quantitative analysis are considered for qualitative assessment and analysis.

The data collected from the questionnaire survey were summarized and the SPSS outputs were interpreted.

Table 1

Attributes of Skills under Study

	Science & Engineering skills
1.	Ability to Identify, Formulate & solve Technical problems
2.	Ability to Design a System or Process to meet desired needs
3.	Technical Skills
4.	Basic Computer
5.	Advanced Computer
6.	Ability to Design and Conduct Experiments, as well as to Analyze & Interpret data
7.	Ability to use Appropriate and Modern tools, Equipment, and Technologies
8.	Ability to apply Knowledge of Mathematics, Science & Engineering
9.	Creativity
	Communication skills
10.	Communication in English
11.	Written Communication
12.	Verbal Communication
13.	Reading
	Enterprising skills
14.	Decision making
15.	Integrity
16.	Entrepreneurship Skills
17.	Customer Service Skills
	Intellectual skills
18.	Reliability
19.	Knowledge of Contemporary issues
20.	Teamwork
21.	Self-Motivated
	Socialite & Cognitive skills
22.	Empathy
23.	Accepts Responsibility for consequences of actions
24.	Flexibility
	Learning skills
25.	Willingness to Learn
26.	Understands & takes Directions for Work Assignments
27.	Self Discpline

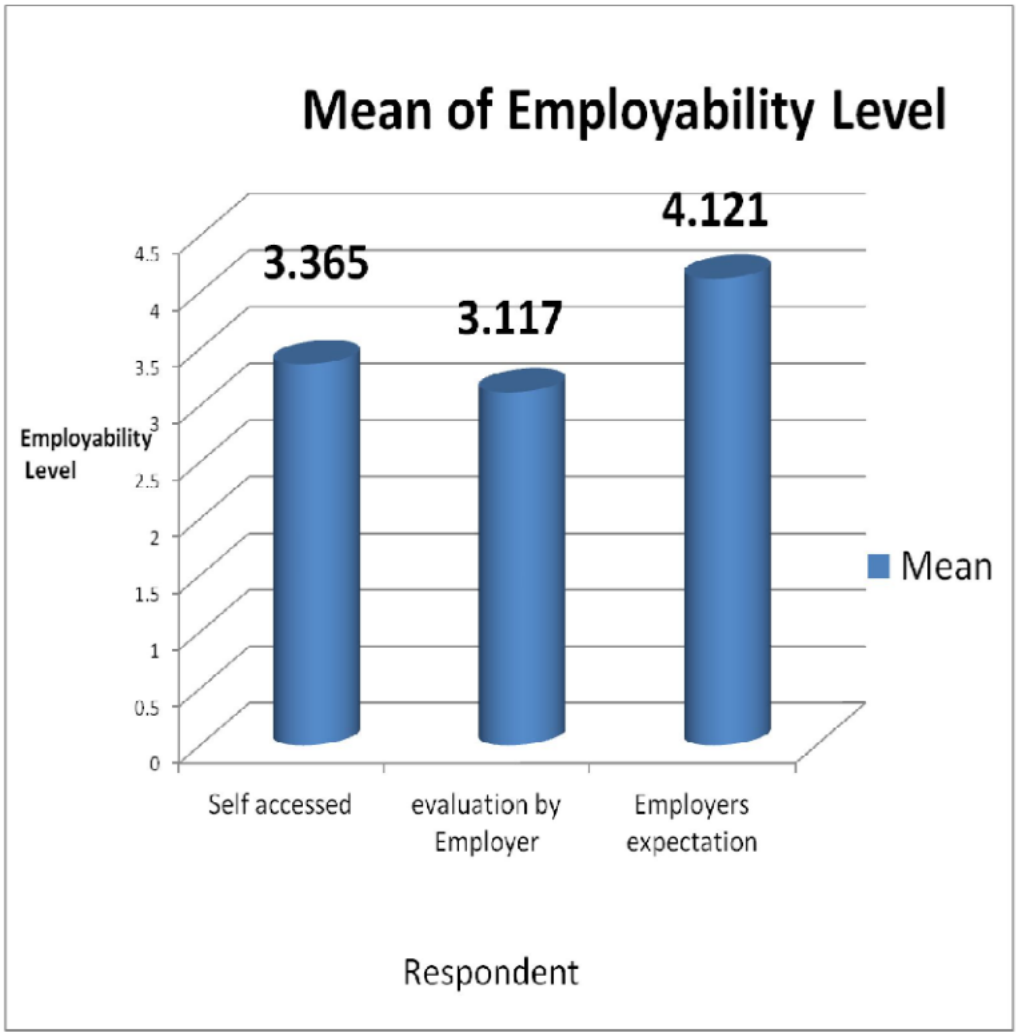

Fig 1. Mean of Employability

(a) Gap in available level & expected level of employability skills- The above table shows the mean of employability level of engineering graduates by their self assessment, assessment by employers and expected level by employer. Survey is done to find the expected skill set and its employability level. The result of survey and analysis reveals that on and average industry expect the employability level of 4.12, and the existing employability level is 3.12. The comparison reveals the gap in available level & expected level of employability skills. The engineering graduates of Madhya Pradesh are lagging in employability level

V RESULTS AND DISCUSSIONS

The statistics reveal that the existing employability level of engineering graduates and expected employability level by industry was obtained significant. The mean value has been observed higher for expectation by industries compared to existing employability level of engineering graduates assessed by employer and hence the Hypothesis is rejected.

(a) The attributes contributing to the low employability are:

(i) Engineering graduates are less adaptable to change
(ii) They are less creative in identifying innovative approaches to solving problems
(iii) They are less empathetic to others feeling
(iv) They are less dependable in carrying out a defined task
(v) They have less confidence in decision making
(vi) They are Lagging in ability to handle & operate modern tools, equipment, and technologies, specific to the job which they intend taking up

(vii) They are very average in ability to Identify, Formulate & solve Technical problems & breakdowns. And have difficulty in providing appropriate solutions

(viii) They are less capable in Designing a System or Process to meet desired needs.

(ix) They are not at par to Design and Conduct Experiments, as well as to Analyze & Interpret data.

(x) There competency is low in Advanced Computing and working on database;

(xi) Not having in depth and up to date domain knowledge of their branch of study

(xii) They are not so perfect in Written Communication;

(xiii) They are lagging in Verbal Communication, especially in English.

(xiv) They are not so perfect at reading & comprehending the technical drawings or written communication of clients

(xv) They are lagging in Entrepreneurship skill

(xvi) Less or no exposure to industries, less institute industry interaction. They have less exposure to authentic-practical working atmosphere.

(b) Expected skill set and its employability level

Modern workplace need flexible and responsible employees, who go beyond narrow task requirements and who approach work proactively. The tables mean of employability shows the mean of employability level of engineering graduates by their self assessment, assessment by employer and expected employability level by employer. The result of survey made reveals that on and average industry expect the employability level of 4.12, and the employability level of engineering graduates of M.P. is 3.12. The comparison reveals the gap in available level & expected level of employability skills. The engineering graduates of Madhya Pradesh are lagging in employability level.

Table 2
Summary of Hypothesis

#	Hypothesis	Stat Results	Significance	Remark
H1	There is no significant difference in the Employability level of Private & Government college engineering graduates.	$P > 0.05$	No Significant Difference	Hypothesis Accepted
H2	There is significant difference in the Employability level of Female & Male engineering graduates.	$P < 0.05$	Significant Difference	Hypothesis Rejected
H3	There is significant difference in the Employability level of engineering graduates who had done schooling from Hindi or English medium.	$P < 0.05$	Significant Difference	Hypothesis Rejected
H4	There is significant difference in the Employability level of engineering graduates of Bhopal, Vidisha and Jabalpur Districts of Madhya Pradesh.	$P < 0.01$	Significant Difference	Hypothesis Rejected
H5	There is significant difference in the existing Employability level and the expected (by Employers) Employability level of engineering graduates of M.P.	$P < 0.05$	Significant Difference	Hypothesis Rejected

VI FINDINGS

The study was set out to access the employability level of engineering graduates of Madhya Pradesh, the study has identified and measured the attributes contributing to the employability skills. The study has also sought to know the difference in the level of employability skills among engineering graduates with respect to gender, private / government institutes, city of institute, medium of schooling and the difference in employability level of engineering graduates accessed by self and accessed by Employers. The study sought to answer the following questions:

(a) What is the level of employability skills of engineering graduates of Madhya Pradesh?

(b) Does medium of schooling has any impact on employability skill?

(c) Does gender has any impact on employability skill?

(d) Is there any difference in employability skill of engineering graduates of private and government institutes?

Based on conclusions the set of recommendations are made with overview of possible options for students, institute, industry and government in relation to taking appropriate measures to fill this skill gap. In addition to this, suggestions for future research are highlighted and the limitation of research study is mentioned followed by the overall conclusion of the entire research project.

The sample from engineering graduates of Bhopal, Jabalpur & Vidisha districts reveals that the employability level is lower than the requirement of industry. This lower level of employability is seen on account of both technical and soft skills. This indicates that despite of huge job requirements from industries, high percentages of graduate engineers from Madhya Pradesh are unemployed.

With reference to the objectives, hypothesis and data analysis the conclusion is that the employability level of engineering graduates from Madhya Pradesh is low.

VII RECOMMENDATIONS

Engineering graduate's employability is a major concern of all stake holders of technical education system. Based on the finding of the study, the following recommendations are made for the betterment of the system and ultimately address the employability problem by enhancing the level of employability skills.

(a) Both Government and private institutes & university need to focus on the improvement of machine, equipments & infrastructure, redesign of curricula, upgradation of teaching-learning methods and employing well qualified & experienced teachers.

(b) There is need to establish stronger links between :

(i) institutes and industries,
(ii) Knowledge, skills and attitude,
(iii) education and skills,
(iv) theory and practice,
(v) supply and demand.

Appropriately structured mechanisms are needed at all levels to impart skills which will make India's demography more employable. Different set of recommendations are made according to the stake holders and beneficiaries, their roles and initiatives to bridge the skill gap of engineering graduates

(c) Recommended Model- A model is recommended to the Institutes for enhancing the employability. Basically it is a 11 step model, which emphasis on the things in control of institutes.

(d) The model recommends various steps, which include modification in the existing system, establishment of new system, M&E, redefine learning system, reforms inputs, bench mark global standard and use of web based system for effectiveness in the system.

(e) SASC (Self Assessment Score Card) & SMQAS (Self Monitoring Quality Assurance System) quality improvement system is recommended based on best practices adopted worldwide.

CONCLUSION

The present study clearly reveals that the employability level of engineering graduates of M.P. is lower than the requirement of global industry. This low level of employability is seen on account of both technical and soft skills. This also indicates that despite of huge job requirements from industries, high percentages of graduate engineers from Madhya Pradesh are unemployed. Finally it may be concluded that the employability level of engineering graduates from Madhya Pradesh is low to get placement in the industries.

The study has identified attributes contributing to low employability among selected groups i.e; both Government and private institutes need to focus on improvement of their resources. There is significant difference in the employability level of male and female engineering graduates. The students who had done schooling from Hindi medium need to focus more on communication skill. Engineering graduates need to improve on their employability skill i.e; they should be multi skilled to gain and sustain employment.

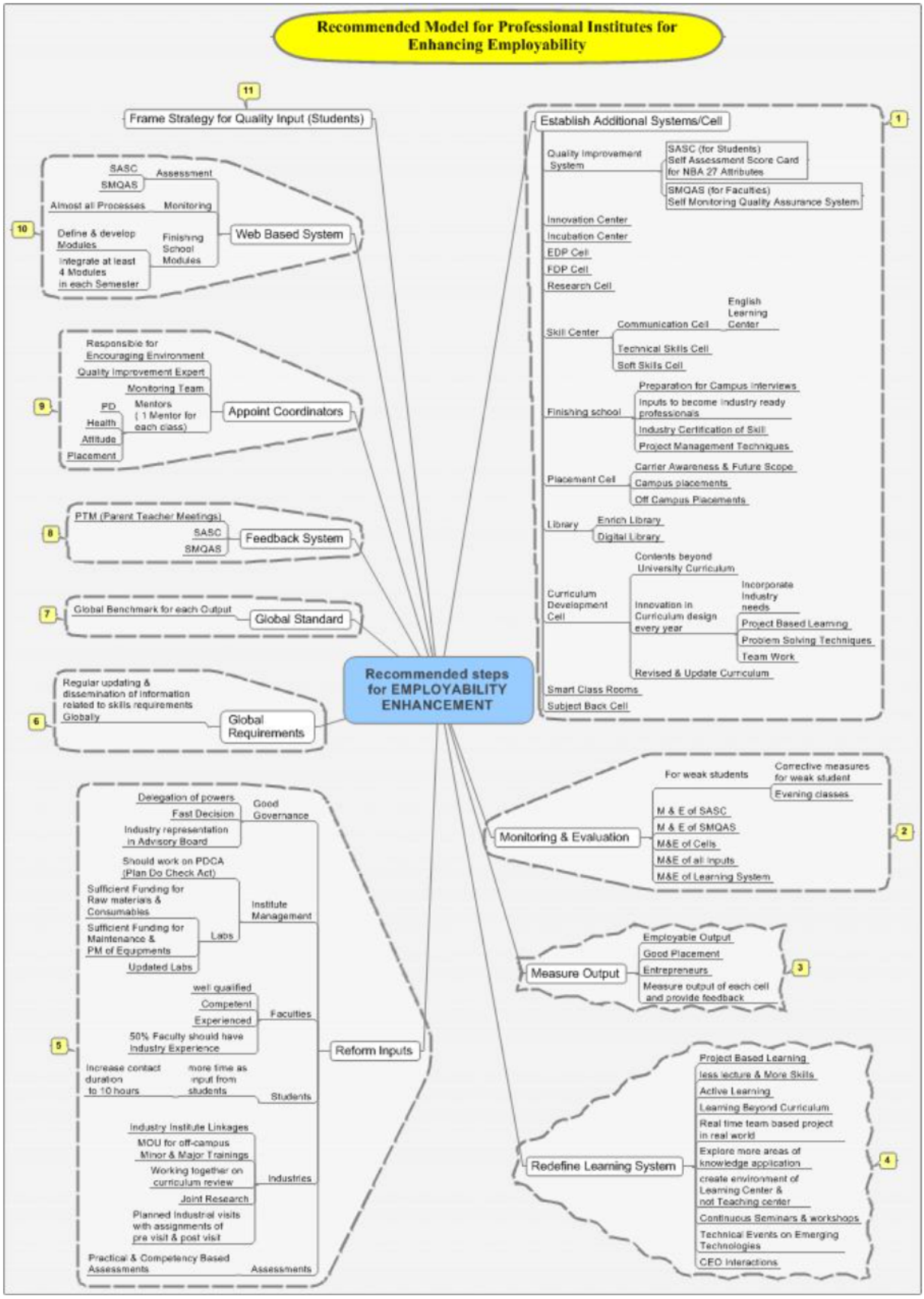

Fig 2 : Recommended model

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