
LECTURER INDUCTION AND MENTORING PROGRAMME

Dr. V. Thanikachalam*

Synopsis

In technical education about 2,05,000 teachers join the colleges, mostly with bachelor's degree. As of now, they are not having any worth while pre-service professional training in technical education. Almost 90% of the technical institutions do not provide suitable induction programme with appropriate mentoring service. The quality of technical education depends on the well trained and well performing lecturers. Hence, a model for 6 weeks induction training in the first year and another 6 weeks in the second year has been suggested. In the first year instructional design, measurement and evaluation, and instructional materials and media are to be included. In the second year, industrial visits, curriculum, review and professional development, research and development, and publication are to be included. To provide continued professional development, appropriate mentoring service is suggested. Considering the long term development of professional faculty, appropriate inservice content updating programmes of master's and doctoral degree have been suggested. If the problem of non-availability of qualified faculty in technical education is not attended as an emergency measure, the country will be lagging behind needed human and knowledge capital.

INTRODUCTION

Now, India has more than 1,300 engineering colleges and 1,500 polytechnics. There is a minimum need for 1,30,000 lecturers for the engineering colleges and 75,000 lecturers for the polytechnics. But there is no proper induction and mentoring programme for these lecturers. Most of them possess less than two years of experience. About 50% of them join the polytechnics and engineering colleges immediately after completion of their bachelors degree. There is no mandatory pre-training for the lecturers. The total quality of technical education is highly dependent on the instruction provided by these lectures.

In early 60s Govt. of India offered 3 year quality improvement programme for the selected teacher trainees. They spent two years to get

their masters degree and one year they did "practice teaching" under the supervision of a Professor. After completion, they were absorbed as lecturers. After expiry of the scheme in 1970, there was no alternative scheme for pre-service training. The Technical Teachers Training Institutes were mandated to provide inservice training of the polytechnic teachers till 2000. Based on the Indiresan Committee recommendation the inservice short-term teacher training programmes were extended to the faculty members in the Engineering Colleges. The training programmes were free for the faculty from the government and government aided engineering colleges. The faculty of the self-financing colleges have to pay the fees besides the travel and per diem expenditure. But the management of self-financing colleges never showed any initiative for the reimbursement.

*Prof. & Head, Correspondence Course Dept. NITTTR, Taramani, Chennai - 600 113.

As more and more self-financing colleges were established, the demand for qualified faculty increased. The senior faculty and the retired faculty from the established engineering colleges were selected as senior faculty of the self-financing colleges. For junior faculty, the colleges opted for fresh graduates without any training. Most of the State Government Institutions could not recruit the faculty for want of funds. The fresh graduates usually are paid at a very low pay of Rs. 3,000/- to Rs. 5,000/- per month. Most of the private colleges employ them for 9 months. This made them to look for better colleges every year. Most of colleges in rural areas could not recruit qualified lecturers. The problem has become acute in the last five years. A few colleges in rural places, could not attract the students for want of qualified faculty. They become unviable and could be closed in the near future. Hence, there is a need for appropriate selection, provision of well designed induction programmes and appropriate mentoring system to develop these young lecturers.

OBJECTIVES

The objectives of this article are as follows :

1. To design appropriate in-house induction programme which will be spread over a maximum period of two years.
2. To develop suitable mentoring system for these new lecturers.
3. To suggest appropriate faculty development programmes for the faculty of technical institutions like polytechnics and colleges.
4. To formulate a scheme for life-long learning process for the faculty members of the technical institutions.

NEEDS OF THE FACULTY :

From an analysis of the jobs in various technical institutions, the needs of the technical faculty are synthesized below:

| CATEGORY | BROAD PROFESSIONAL ABILITIES EXPECTED |
|---|---|
| Administrative | Familiarity with the institute, Knowledge of office procedure, conduct rules, services & recruitment rules, knowledge of MoA, university rules, regulations and deadlines, State Board rules, regulations, AICTE Norms, National Policy, ISTE Norms, Financial management. |
| Educational Management | Budget preparation, preparation of specification, calling for quotations, tenders, procedure for opening, preparation of comparative statement, placement of orders and verification of supplies, passing the bills, stock verification, condemnation of worn out / unserviceable articles, personnel management, Institutional planning - Programme planning. |
| Psychological / Emotional Management | Managing stress, developing self-confidence, taking risk for undertaking projects, interpersonal relationships, counselling the students, self-motivation, conflict resolution, empathy, career guidance. |
| Curriculum and Instructional Management | Expertise in curriculum interpretation, balance of contents, relevance to the field practice, adequacy of contents, instructional design, instructional objectives, instruction delivery, measurement and evaluation of students' achievement, Instructional media preparation and utilization, student Evaluation. Student Records, Autonomy and Accountability; Performance; Cognitive abilities. |

| CATEGORY | BROAD PROFESSIONAL ABILITIES EXPECTED |
|-------------------------|---|
| Professional Management | Knowledge of advances in industrial practices, exposure / training in the current field practices, problem solving, team development, quality assurance, publication, participation in seminars and conferences. Memberships in professional organizations. Placement services, preparation of CVs. Participation in staff development programmes. Leadership development, consultancy works. |
| Social Relations | Developing rapport with students, technical and ministerial staff, colleagues, participants of various programmes, clients of consulting projects, and visitors - Participation in Co-curricular and extra curricular activities. |

ADVANTAGES OF WELL-DESIGNED INDUCTION PROGRAMME FOR THE LECTURERS

Considering above needs, the first professional development will be through induction programme. Such induction programmes are offered to the beginning teachers (Carol, 2005; Mc Donald & Healy, 1999, Richin & Bayon Stein & Bayon, 2003, Seeny 2001, and Cattani, 2002).

The advantages are as follows :

- Higher retention of beginning lecturers;
- Increased levels of professional efficiency and satisfaction;
- Improved performance in the institute;
- Earlier identification of professional needs;
- More consistent use of instructional strategies that lead to higher levels of student achievement;
- More varied and more innovative instructional practices being used by lecturers;
- Improved ability of new lecturers to engage

in reflective practices and critical examination of their work;

- Establishment of professional norms of collegiality and expectations for continued interdisciplinary learning.

These early years present an opportunity to shape practice in a way that leads to success for lecturers for their students (Benson, 2003). We owe it to our new lecturers and their students to put out time, energies, and resources to work supporting all of our new lecturers during this crucial entry period. Our efforts will pay off in the long run in retention and improved teacher performance in the technical institutions.

Teaching in technical institutions like polytechnic and engineering colleges is difficult and challenging work. Teaching so well that all student develop their full potential and experience success is even more challenging.

Lecturers coming into the profession today would expect that they will take the time to nurture and develop their intellectual skills, competencies and cognitive strategies to become expert in their field of specialization. (Bray, Lee, Smith & Yorks, 2,000, Cattani, 2002, Shulman, & Mesa-Bains, 1993, Benson, 2003, Darling-Hammond, 1997, Eby et al 2001 & Henderson, 1992).

SCHEME OF INDUCTION PROGRAMME

The initial years of service are generally considered to be the first one to two years of teaching. We have come to think of these years as the induction period, or the time in which the

novice becomes more familiar with their job responsibilities, the work setting, and professional norms and expectations.

The following scheme describes the proposed induction programme:

| | | | | | |
|----------------|-----------------------------|---------------------|-------------------------------------|--------------------|---|
| <i>I year</i> | <i>(2 week)</i> | <i>I Semester</i> | <i>(1 week)</i> | <i>II Semester</i> | <i>(3 weeks)</i> |
| | <i>Instructional Design</i> | | <i>Measurement & Evaluation</i> | | <i>Instructional Material and Media</i> |
| <i>II year</i> | <i>(2 week)</i> | <i>III Semester</i> | <i>(1 week)</i> | <i>IV Semester</i> | <i>(3 weeks)</i> |
| | <i>Industrial Visits</i> | | <i>Curriculum Review</i> | | <i>Professional Development & Research, Development & Publication</i> |

COURSES SUGGESTED FOR INDUCTION TRAINING

1. Instructional Design – 2 weeks
2. Measurement and Evaluation – 1 week
3. Instructional Materials & Media – 3 weeks
4. Industrial Visits – 2 weeks
5. Curriculum Review – 1 week
6. Professional Development and Research, Development and Publication – 3 weeks.

The above courses could be offered in-house in consultation with professional teacher training institutions. In addition, a few could be from senior faculty members of the local institution who were trained earlier.

The induction training is a crucial time in the development of lecturers. Idea, approaches, and practice learned during the induction programme will often be those that the teacher continues. We can assist teachers to struggle or get by as

best they can during this period by structuring the courses and guiding them through local mentors so that it is a period of rich continued learning and development that leads to success and expert practice. The above induction courses have been developed as a way to effectively and thoughtfully introduce new teachers to their responsibilities and bring newcomers into the profession. The goal of systematically planned programme of induction is to help new teachers not to just survive, but to succeed and thrive.

Some of the professional institutions conduct 1 week course considering the selected needs. This is not linked to continuous development through mentoring. In addition there is no evaluation on the impact. It is very difficult and uneconomical to provide 12 weeks course by the external institutions. The best way is to train the trainers and provide courseware for implementation. Other alternative will be to provide online course followed by mentoring.

LEVELS OF TEACHING EXPERTISE IN TECHNICAL EDUCATION

Considering the over all needs of the technical faculty, the following five levels are proposed:

| LEVEL | STAGE | DESCRIPTION | TRAINING |
|---|---|---|---|
| Novice (First two Years) | Limited to the field of specialization Theoretical Knowledge | Learning to teach basics, capable of transferring basics to field application and simple and standard designs of creative products. | Induction Training; Industrial Visits |
| Beginner (three to five years) | Learning field practices, Application of theories, materials for product design and fabrication | Learning to teach analysis, design, and estimation; Capable of running the lab. classes and drawing classes, Knowledge of standards; creative; and Need to do masters degree in part-time or under AICTE sponsorship / on deputation / flexible credit based program / on institute's sponsorship. | Content updating through Master degree; Summer and Winter Schools; and Industrial exposure / short-term training |
| Competent (with masters degree and eight years of experience) | Capable of solving routine problems in Engineering / Technology / Management | Capable of guiding students to solve field problems; Interpretation of investigation reports, selection of cost effective materials; Need to do Ph. D. in part-time / or under AICTE sponsorship / on deputation. | Specialization through Ph.D. Advanced programmes, seminars and conferences |
| Advance / professional (with Ph.D.) and 15 years of experience) | Capable of complicated analysis, design of field problems; knows value engineering | Capable of taking complicated field projects. Ensures problem free products. Capable of maintaining the equipment; Capable of optimizing the operations; Capable of developing appropriate cases; Taking classes at master's degree level. | Advanced training through visits; Post Doctoral research work; Orientation to consultancy |
| Expert (“Star with Ph. D. and about 25 years to 30 years of experience) | Capable of providing creative solutions; Innovations in product development / implementation | Expert knowledge in product design; principles of innovation; Applies to creative production process; Specialized in interdisciplinary approach; Synthesize the processes used in various disciplines; Guiding and evaluating Ph. D. candidates. | Self-evaluation; Professional contribution; under Sabatical leave |

For beginner to expert, there is a need for the faculty to explore for available opportunities and utilize them. The Institutional administrators could provide positive consideration with a view to develop long-term expert members to create human capital.

TEACHER CAREER STAGES IN ENGINEERING / TECHNOLOGY :

The following seven stages are identified for the professional faculty members in technical education:

| Sl. No. | CATEGORY | BROAD PROFESSIONAL ABILITIES EXPECTED |
|---------|--|--|
| 1. | Pre-service | The initial professional preparation to teach, by undergoing B.Ed., or B.Tech.Ed., or Dip. T.T., or QIP, or Distance education programmes, or Self-learning, or Short-term courses. Exposure to Instructional Design and Delivery, Instructional Media preparation, Measurement and Evaluation, Curriculum Review, Evaluation and Improvement. |
| 2. | Induction | Practice teaching, micro-teaching, preparation of instructional materials, and instructional media. Preparation of test items, model question papers. Instructional planning. |
| 3. | Inservice competency building | In-house training programmes. QIP of AICTE, ISTE, NITTTRs, Technical Universities, Overseas programmes of MHRD, Bilateral programmes, UNESCO, CPSC programmes. Deputation to Masters / Doctoral programmes, part-time programmes, online programmes. |
| 4. | Career Development | Applying for advanced programmes which will provide competencies for senior posts, career advancement as per AICTE norms, preparation of technical proposals for undertaking consultancy projects offering ISTE / AICTE sponsored programmes, undertaking R&D projects under Post Doctoral Research Work, CSIR / UGC / AICTE sponsorship. Planning emerging technology programmes. |
| 5. | Job enrichment | Process Improvement, Interdisciplinary programmes, Institutional development; Technical Education Sector development. |
| 6. | Senior Administrative positions in Educational | Educational Planning with the advancement of technology, publications, networking with industries, R&D Labs., National Laboratories, International Consultancy. |
| 7. | Emeritus Status | Consultant to Colleges, Industries, R&D Labs., Development Projects. |

In technical education preservice training is not all there in India. Hence, these training programmes are combined with the induction programme. For developing centers of excellence, there is a need to provide opportunities for job enrichment, selecting faculty for senior administrative positions in educational management. Star performers could be retained

on emeritus status so that their expertise can be shared by other senior faculty members.

An analysis of achievement of stages two and three shows that majority of administrators of technical education institutions are not willing to depute teachers for inservice training programmes for want of adequate number of faculty. Many government institutions are running

with 30% of the faculty. In the future, the growth of industries in this country will be affected for want of appropriate specialist consultants. Unless corrective measures are taken, the collapse of R & D in technical education will be felt soon. Development of emerging technology programmes will be very much affected.

MENTORING STRATEGIES IN TECHNICAL INSTITUTIONS

Mentoring plays an important role in most teacher development. Mentors are most effective if they accept responsibilities and render their mentoring service. Mentors are senior colleagues who can play a crucial role in helping younger faculty to succeed in their career. (Scherer, 1999, Sweeny 2001, Villani, 2001, Darnesh 2003, Jonson, 2002, Odell and Huling 2000, Portner, 2002). Mentoring can occur naturally without a planned program. It occurs when the novice lecturer learns to rely on the senior faculty in the department who will listen, given practical tips to the new lecturer. Many senior members do not voluntarily undertake such activities. The heads of the institutions could prepare a plan for mentoring the young faculty members through other senior faculty members. In most of the institutions, many lecturers report that their senior colleagues seem to be absorbed by their own responsibilities and do not want to share ideas, materials and other resources. Some, in fact, are quite proprietary, and are unwilling to share what they have spent a career developing and refining.

MENTORING PROCESS:

The term mentor has become associated with the role of the more experienced senior faculty who guides and supports the protégé (young new lecturer). Mentors provide support to and watch over the progress of younger, or less experienced faculty. Mentors listen, advise, promote, nurture, suggest, guide, respond, encourage and seek to develop the skills and abilities of their protégés. They are role models

for novices, living and practicing what they advocate. (Rowley & Hart, 1999)

It is only in the last two decades that mentoring has gradually found a more formal role in the teacher-development continuum. In India, it is more prevalent in legal education, medical education and art education. Mentoring has become a powerful tool and resource in helping to retain and acculturate lecturers to their roles and to the profession.

PROCESS OF MENTORING TOWARDS A VISION :

Considering the successful programmes (Rowley & Hart, 1999, Rudney & Guillaume, 2003, Zachary, 2000) the following process are suggested in mentoring:

1. Observing and analyzing the practice of novices (young / new lecturers) with emphasis on professional standards based teaching in engineering and technology.
2. AICTE / ISTE initiatives to enhance teaching as expected
3. Conducting laboratory classes and providing testing services.
4. Guiding project works, seminar presentations.
5. Assisting instructional planning and delivery.
6. Preparing question papers and conducting tests, examinations and evaluating the students.
7. Assisting in preparing project proposals, research and development activities.
8. Assisting in publications.
9. Assisting in seminar presentation.
10. Assisting in the conduct of professional activities,

11. Advising in career development activities.

MENTORING SKILLS

The following are the essential mentoring skills which are based on the synthesis of existing literature (Carol, 2005, Warner & Bryon, 1995, Scherer, 1999):

A primary goal of the senior faculty members is to help the lecturers (protégés) become reflective about their own professional activities and take responsibility for their own growth.

I. Building and Maintaining Relationships

- i) Goal setting
- ii) Communicating
 - a) Listening
 - b) Providing and receiving feedback
 - c) Reflecting
- iii) Guiding
- iv) Facilitating
- v) Encouraging
- vi) Coaching
- vii) Managing conflict
- viii) Problem solving

Mentors have to understand that some new teachers are more receptive to help than others. Many new lecturers struggle more than others. Some mentors want to intervene too quickly and solve the problem for the new lecturer. Many others avoid giving any suggestions for fear of sounding too critical. Mentors need to be coaches, guides and facilitators. Successful mentors display appropriate skills that are

associated with effective mentoring.

SUCCESSFUL MENTORS DISPLAY THE FOLLOWING CHARACTERISTICS :

From the study of western mentoring process, the following characteristics are listed (Carol, 2005, Villani, 2001, Darnesh, 2003, Jonson, 2002).

Professional Expertise :

1. Competent instructional designers
2. Creative thinkers
3. Committed professionals
4. Star performers
5. Display of inter personal characteristics
 - Approachability
 - Willingness to listen
 - Willingness to spend time
 - Trust worthyness
 - Receptivity
 - Openness
 - Cooperativeness
 - Flexibility
6. Personal characteristics
 - Integrity
 - Sincerity
 - Confident
 - Enthusiastic
 - Positive outlook

- Tactfulness

American National Commission on Professional Development and Support of Novice Teachers suggest that the selection criteria be published so that every one is clear about the mentor selection process. (Carol, 2005) As per this, mentors should be

- ◆ Committed to self-evaluating and developing their own practice;
 - ◆ Able to model the standards based teaching that the programme is attempting the foster;
 - ◆ Able to work with lecturers from diverse backgrounds;
 - ◆ Sensitive to the viewpoints of specialists
 - ◆ Informed about mentor responsibilities and willing to make the necessary commitment to carryout these responsibilities, including a substantial time commitment;
 - ◆ Committed to ethical practice;
 - ◆ Committed to providing both professional and emotional support and challenge;
 - ◆ Have completed the previously agreed-upon required number of years of teaching (Odell & Huling, 2000, P. 20).
 - ◆ However, such initiatives have not been taken by any commission in Technical Education in this country. Hence, the administrators can take efforts to select some outstanding senior faculty to becomes mentors.
- i) Knowledge of beginning teacher development (new lecturer development).
 - ii) Knowledge of the university prescribed academic content standards and performance levels for students, state board prescribed curriculum frameworks, and the State Standards for the teaching profession;
 - iii) Willingness to participate in professional training to acquire the knowledge and skills Willingness to participate in professional training to acquire the knowledge and skills need to be an effective support provider;
 - iv) Willingness to engage in formative assessment processes, including nonevaluative reflective conversations about formative assessment evidence with participating teachers;
 - v) Willingness to share instructional ideas and materials with participating teachers;
 - vi) Willingness to deepen understanding of cultural, ethnic, cognitive, linguistic, and gender diversity;
 - vii) Effective interpersonal and communication skills;
 - viii) Willingness to work with participating teachers;
 - ix) Demonstrated commitment to personal growth and learning; and
 - x) Willingness and ability to be an excellent role model.

SELECTION CRITERIA FOR MENTORS:

Selection criteria, according to Carol (2005), are consistent with the support provider's specified roles and responsibilities, including, but not limited to, the following;

Even though such selection criteria were not framed in technical education, the technical institutions where a separate dean for faculty and staff has been instituted, he can initiate appropriate steps for mentoring.

He may plan and conduct induction programmes. He may get data on performance

appraisal and analyse the strength and weakness of the lecturers. He may arrange for counseling the lecturers for their growth and development. He may review the output periodically and suggest advance increments, promotions as per AICTE criteria, provide letters of recommendation for getting travel grants for presenting papers and evaluate and provide letters of reference for applying for advanced programmes under Government of India Schemes.

Growth and development of institutions depend on the growth and development of the faculty. Hence, every effort should be taken for planning appropriate induction programmes and assisting the faculty with appropriate mentoring services.

IMPLICATION FOR IMPLEMENTATIONS

Till today there is no effort by the administrators of technical institutions on creating mentoring services in technical education. The administrative style of the technical education is too bureaucratic. This is one of the basic obstructions for implementation. Many people rely on "Conduct rules" which will not be considering mentoring service. However, if the institutes plan for appropriate climate which will enable the faculty to become high-performers the following suggestions will be very helpful:

1. Mentoring is professional practice that occurs in the context of teaching, research, development of new technical and extension services whenever an experienced senior faculty like Professor, Dean, Head of the Department, Vice-Principal support, challenge and guide novice lecturers in their professional activities.
2. Mentoring is most effective when it is guided by a vision of creating excellent centers for human capital and knowledge and capital development.

3. Mentors should be recognized appropriately for their efforts and contribution.
4. The technical institutes should prepare appropriate growth plan which help the mentors to guide the faculty.

Institutes should create and nurture sufficient numbers of high-quality mentors with adequate resources.

SUMMARY

A review of the current status of technical institutions reveals that there is a paucity of trained lecturers. The new graduates enter into teaching profession. To improve the performance of the new lecturers, a model induction programme is suggested. Considering the long-term needs of these lecturers, it is recommended to implement mentoring services. To enhance the professional competencies, graduate programmes could be offered on flexible mode utilizing various schemes of Government of India and AICTE.

REFERENCES

1. Benson, B.P. (2003) – How to meet standards, motivate, students, and still enjoy teaching – Thousand Oaks, CA: Corwin.
2. Bray, J. N. Loe, J., Smith, L.L. & Yorks, L. (2000) – Collaborative inquiry in practice : Action, reflection, and making meaning – Thousand Oaks, CA: Sage.
3. Carol A. Bartell (2005) – Cultivating High-Quality Teaching through Induction and Mentoring – Thousand Oaks; California: Corwin Press (A Sage Publication Company).
4. Cattani, D.H. (2002) – A classroom of her own: How new teachers develop instructional professional, and cultural competence – Thousand Oaks: Corwin.

5. Carr, J.F. & Harris, D. E., (2000) – Succeeding with standards : Linking Curriculum, Assessment and Action Planning – Alexandria, V.A.: Association for Supervision and Curriculum Development.
6. Daresh, J. D. (2003) – Teachers Mentoring Teachers : A Practical Approach to helping new and experienced staff – Thousand Oaks, C.A.: Corwin.
7. Darling – Hammond, L. (1997) – The right to learn : A blue print for creating schools that work – San Francisco : Jossey – Bass.
8. Eby, J. W., herrell, A. L. Hicks, J. & Hicks, J.L. (2001) – Reflective Planning, Teaching and Evaluation – K-12, 3rd ed. Englewood Cliffs, N.J.: Prentice Hall.
9. Glatthorn, A.A., (1999) – Performance Standards authentic Learning – Larchmont N.Y.: Eye on Education.
10. Graham, P., Hudson – Ross, S., Adkin, D., McWhorter, P., and Stewart, J.M. (Eds) (1999) – Teacher / Mentor : a Dialogue for Collaborative Learning, New York: Teachers College Press.
11. Henderson, J.G. (1992) – Reflective teaching : Becoming an Inquiring Educator – New York : Macmillan.
12. Jonson, K.F. (2002) – Being an Effective Mentor: How to help beginning teachers succeed – Thousand Oaks, CA: Corwin.
13. Mc Donald, R.E., & Healy, S. (1999) – A Handbook for Beginning Teachers (2nd Ed.) – Boston, M.A.: Addison – Wiely.
14. Odell, S.J., & Huling, L. (Eds.) (2000) – Quality Mentoring for Novice Teachers – Indiana Polis, IN: Kappa Delta Pi
15. Portner, H. (2001) – Training Mentors is not enough: Everything else schools and districts need to do – Thousand Oaks, CA: Corwin Press.
16. Portner, H. (2002) – Being Mentored: A Guide for Proteges – Thousand Oaks – CA: Corwin Press.
17. Portner, H. (2002) – Mentoring New Teachers – Thousand Oaks, CA: Corwin.
18. Richin, R., Banyon, R., Stein, R. P., & Banyon, F. (2003) – Induction: Connecting teachers recruitment to retention. Thousand Oaks, CA: Corwin.
19. Rowley J.R., & Hart, P.M. (1999) – High – Performance Mentoring Kit : A Multimedia Program for training mentor teachers – Thousand Oaks, CA: Corwin.
20. Rudney, G.L. & Guillaume, A.M. (2003) – Maximum Mentoring : An action guide for teacher trainers and cooperating teachers – Thousand Oaks, CA: Corwin Press.
21. Scherer, M. (Ed.) (1999) – A better beginning: Supporting and Mentoring New Teachers – Alexandria, VA: Association for Supervision and Curriculum Development.
22. Schmuck, R.A. (1997) – Practical Action Research for Change – Arlington Heights, IL: Skylight Training and Publishing;
23. Shulman, J.H. & Mesa – Bains A. (Eds.) (1993) – Diversity in the classroom: a Casebook for Teachers and Teacher Educators – San Francisco: West Ed.
24. Sweeny. B.W. (2001) – Leading the Teacher Induction and Mentoring Program – Arligton Height, IL: Skylight Training and Publishing.
25. Villani, (2001) – Mentoring Programs for New Teachers : Models of induction and support – Thousand Oaks, C.A.: Corwin

26. Zachary, L.J. (2000) – The Mentor’s guide : Facilitating effective learning relationships – San Francisco: Jossey – Bass.
27. Warner, J., & Brayan, C. (1995) – The Unauthorized Teacher’s Survival Guide – Indianan polis, In: Park Avenue Publications.

| | | |
|--------|---|--|
| ISTE | : | Indian Society of Technical Education |
| MHRD | : | Ministry of Human Resource Development |
| MoA | : | Memorandum of Association |
| NITTTR | : | National Institute of Technical Teacher’s Training & Research (Formerly, TTTI) |
| QIP | : | Quality Improvement Programme) |
| R&D | : | Research and Development |
| TTTI | : | Technical Teachers Training Institute (Now renamed as NITTTR) |
| UGC | : | University Grants Commission |
| UNESCO | : | United Nations Education & Scientific Organization |

ABBREVIATIONS

| | | |
|-------------|---|---|
| AICTE | : | All India Council for Technical Education |
| B.Ed. | : | Bachelor of Education |
| B.Tech. Ed. | : | Bachelor of Technical Education |
| CPSC | : | Colombo Plan Staff College |
| CSIR | : | Council of Scientific and Industrial Research |
| CV | : | Curriculum Vitae |
| Dip. T.T. | : | Diploma in Technical Teaching |

