CONCLUSIONS OF THE STUDY

Comparing the effect of F to F versus TAL mode

A. Finding:

When F to F mode is directly compared with TAL mode, it was found that the students who used TAL mode for learning performed better than F to F mode students and their satisfaction is higher in learning the contents with TAL mode.

When compared within the topics, it was found that students performed better in theory based topic than skill based topic.

Conclusion:
It is further concluded that students using TAL mode performed better than F to F mode. They performed better in theory based topic than skill based topic. In other words, F to F mode of learning is less effective than TAL mode.

Discussion:

The reasons could be that, student’s social intelligence, IQ, study habits, locality, prior academic achievements, access and practice to technology assisted learning, interest in self-learning and positive attitude towards success are shown to contribute to their performance. The understanding, attitude and interest of students in learning skill and theory may be different. These factors could have impacted that the students performed better in theory based topic than skill based topic. However, further research is required here to study the other factors responsible for better performance in theory based topic.

B. Finding:

One remarkable finding is that F to F mode of learning is less effective than TAL mode for the both the topics for SC, ST and Minority students. In other words, SC, ST and Minority students performed better in TAL mode than F to F mode for both the topics. There were nearly 50% of the students from Open category and 50% reserved category students of SC, ST, OBC and Minority involved in the research. But students from SC, ST and Minority category performed better than all other categories. It is an encouraging finding especially in the light of the facts that the sample of the study included students belonging to different faculties of graduation as students are involved from arts, commerce and science faculties.
It was also found that the majority of the SC, ST and Minority students involved in the research belonged to urban background where they could have received better learning environments and facilities than rural students. This fact may have impacted the research.

Conclusion:

It proved that if the appropriate environments for learning and suitable infrastructure are provided to reserved category students, they are higher capable to compete at all levels with others.

Discussion:

The other reasons could be social policies in India which encourage and motivate these students through marginal concessions for education and scholarships or freeships. As these students are termed as students from backward classes and enrolled under reservations, they may tend to prove their abilities and try to ascertain that though they are belonged to marginalized groups and there are reservations for the admission to B. Ed program, they are enrolled on the basis of merit of scores gained by them by facing open competitive entrance test. Hence, it can be motivational factor for reserved category students. This in turn may have enabled them to have greater self-confidence which may lead to more efforts and thereby better performance. However, further research is required here to study the other factors responsible for better performance of reserved category.

C. Finding:
It was also found that students of Marathi medium performed better in TAL in TBT whereas Hindi and English medium students performed better in SBT though these packages were prepared in English language.

Conclusion:

So it may be concluded that though these TAL packages were in English, the medium of instruction did not adversely impact the learning retention in case of students from Marathi and Hindi medium.

Discussion:

The above finding is notable. The reason could be that the classroom instructional practices and programs, learning facilities to the students, college culture i.e. students centred teaching learning process for regular classroom teaching, expectations at college, suitable and comfortable classroom and computer lab climate and teacher related variables such as guidance, feedback, teacher’s motivation, remedial coaching etc. could have contributed to the effectiveness of TAL mode.

Moreover, the variables such as students independent study habits and qualities, self-confidence, ambition to succeed, higher scoring competition among students are also some of the factors which could have contributed to this effect. The teacher’s motivation, praise has the positive impact on the student’s progress may lead the students to more efforts and thereby better performance.

It needs to be mentioned here that these are graduates students and 36% students among them involved in the research
were post graduates. This amplifies the possibility that post-graduates students may have dominated the research findings. However, this may be factor to be studied for further research whether higher educational level has more impact over the learning retention.

D. Finding:

Urban students performed better than rural students in both the modes of learning. In comparison between two modes of learning, Urban students performed better in TAL mode than F to F mode.

Conclusion:

Locality is an important factor for the improvement in learning retention of students. The locality may be developed and capable of providing required facilities for effective learning retention.

Discussion:

As per census 2011, the literacy rate of Urban area is 88.55% whereas it is only 70.60% of Rural area in Thane district. This is an important factor in relation to this finding.

One of the other reasons could be that though the sample selected from the Thane district which has rural background, it is the highly developed cosmopolitan city where plenty of opportunities are available for education including technology based learning facilities. These facilities are not available in remote...
rural areas as compared to city of Thane. It could have adversely impacted the performance of the students from rural areas.

E. Finding:

Male students performed better than Females in both the modes learning.

Conclusion:

In comparison between two modes of learning, Male students performed better in TAL mode than F to F mode.

Discussion:

The reason for male students performing better than female students is not due to a gender difference but because the majority of the female students came from rural areas and it is the rural location which was disadvantageous to them.

It be noted here that the literacy rate for Males is 91.31% whereas it is 85.35% of Females in Urban areas. Further, the literacy rate for Males is 79.27% whereas it is only 61.54% of Females in Rural areas. This is an important factor may have impacted that Males performed better than Females.

It is also found that 67% of the Females involved in the research to learn through TAL mode were from rural background (where TAL facilities may not be the same as urban areas) as compared to only 33% of the males from rural areas.
Hence, these Females may not have had the opportunity to be familiar with technology. This finding is congruent with the earlier conclusion that Urban students performed better than rural.

It could be argued that the B. Ed. students are bound to study hard and get success in B. Ed. program in first attempt as they will be becoming the teachers in the society which could be the ladder for higher social prestige and future success in life. They need to achieve higher academic achievement at B. Ed. Degree level to acquire admission for further post graduate degree of M. Ed. to become the Professor, which is a prestigious profession in the society. This makes them to study hard and perform the best at all levels of study.

Further, the research is limited to unaided B. Ed colleges. These colleges charge heavy fees from the students to enroll for B. Ed program as compared to aided colleges. Further, students enrolled from outstation have to pay extra charges for canteen and hostelling facilities. This resulted into heavy burden of expenditure to students for one year B. Ed. degree program. Hence, the strong ambition of the students to get success in first attempt itself arises and this may have an effect whether learning is through F to F mode or TAL mode.

It is also essential to observe one of the uncontrolled variables of the study. The study could not estimate the effect of prior studies done by students as a part of preparation to appear for Common Entrance Test for enrolment to B. Ed program in online mode. Many of the students in the study might have studied the subjects earlier and practiced online mode before. Besides, the present research does not take into account the earlier coaching taken by the students individually.
F. Finding:

The students are more satisfied with TAL mode than F to F mode for learning contents.

Conclusion:

It indicates that the student’s satisfaction in learning through TAL mode is higher than F to F mode. The students performed better in TAL mode than F to F mode. This finding is congruent to earlier findings.

- Observations of the opinion of the students obtained by Questionnaire on Satisfaction:

Among all the students, 17% of the students were interested and comfortable in face to face learning than TAL. They also felt that face to face learning is more helpful than TAL. 41% of the students thought that the teacher can be replaced with TAL. 43% of the students felt that all the subjects could be taught through TAL package. They also preferred to learn through TAL package in addition to F to F learning whereas 62% of the students look forward to learn more with TAL package. Only 4% of the students felt that learning with TAL is lonely and boring. 57% of the students felt that learning through TAL should be made compulsory in B. Ed. colleges. 54% students showed their desire to continue to learn through TAL even after their B. Ed gets over. Only 2% students felt that face to face mode of learning should be closed down. It was the opinion of only 7% of the students that they attend face to face learning because there is no alternative whereas 72% students wished that TAL is the best mode of learning. Further,
34% of the students wished to learn how to prepare TAL package for self-learning if training is provided. Among all the students, 31% of the students felt that they would have scored more in their earlier studies if learnt with TAL package before. 23% of the students expected to get good marks if they study all the subjects through TAL only. Further 33% desired that they would love to learn the same topic in both the modes of learning. Finally 81% of the students were satisfied with TAL mode than Face to Face mode of learning.

It is concluded that the students were satisfied and enjoyed learning with the TAL package. They preferred TAL package to learn both the topics.

Discussion:
The students are very satisfied with the TAL mode of learning. This could be due to the following reasons:

- TAL package prepared by the researcher had the facilities to present the text along with colorful graphics which helped the learners in understanding different concepts together.
- TAL was capable of providing remedial coaching when learners particularly do not have the clarity of basic concepts.
- TAL had provided three dimensional effects in colorful graphics which could have sustained interest and may have developed curiosity among the students.
- The TAL package included an audio commentary for guidance and motivation. The student learnt the contents by reading the text material and observing the graphic information which was
displayed in sequence. The students may have found it very interesting.

- Feedback on response was provided by TALP immediately. When the learners gave correct responses, the frame appeared on the screen and motivated them by praising their efforts.
- Similarly, when the learners gave incorrect response to the question, they were advised by another frame to study the content again.
- The learner was able to study the slide for any number of times till he/she understood it well.
- After the evaluation process for particular content is over, the learner could see his/her achievement score in the next frame.
- The TAL package could have helped the learners for self-pace and self-control learning of the subject.
- It provided one to one interaction in teaching learning process through reading, writing, listening, and speaking skills. It provides colorful figures, graphics, 3-D text, animation and also sound which make learning process interesting.

To summarize,
1. Overall, it was found that the students who were administered TAL mode for learning performed better than those who were taught in the F to F mode. Overall student's satisfaction of learning the contents is higher with TAL mode than F to F mode.
2. However, when compared between TBT and SBT,
   - In TAL mode,
     - ST and Open category students performed better in SBT rather than TBT.
• Hindi and English medium students performed better in SBT rather than TBT.
• Male students performed better than Females in SBT rather than TBT.

In F to F mode,
• Marathi medium students performed better in SBT rather than TBT.
• OBC and Minority category students performed better in SBT rather than TBT.
• Urban and rural locality students performed better SBT in rather than TBT.
• Female students performed better than Male students in SBT.

Overall, it was found that students performed better for theory based topic than the skill based topic.

3. Overall SC, ST and Minority students had higher learning retention in the TAL mode than in F to F mode for both TBT as well as SBT.
4. Students of Marathi medium had higher learning retention when taught TBT through TAL mode whereas Hindi and English Medium students performed better in SBT when taught through TAL. (The packages were prepared in English.)
5. Urban students performed better than rural students in both the modes of learning.
6. In comparison between the two modes of learning, Male urban students performed better than Female rural students in both the modes learning.

7. The students are very satisfied with the TAL mode of learning that F to F mode.

EDUCATIONAL IMPLICATIONS OF THE STUDY:

It was found that while learning retention improved in both the modes, the TAL mode has more positive effect than F to F mode for both the topics. Therefore, the education system needs to look at the following factors discussed below:

- The teaching environment needs teachers who will focus more on effective learning strategies. That may involve student centred learning activities such as assignments, skill developments projects, audio-visual based study work etc.
- The teacher should set achievable targets for the improvements in the students with the help of formative and summative learning and assessment methods as well.
- Responding to student’s queries as soon as possible will result in better improvement. So teacher should try to pay immediate attention to the queries raised by the students.
- The involvement of students may be considered for setting their learning targets. The students should be motivated time to time for self-learning. In case of difficulties in self-learning, they can be immediately attended by the teacher. It motivates the students that may lead to develop their study habits.
- The teachers need to work together with other teachers and take their assistance wherever needed. The team teaching can be imple-
mented so that skills and expertise of other teachers may benefit the students in their improvement. It may begin with proper planning to share the expertise of other teachers.

- For high quality of teaching, the teachers should enhance their skills of teaching by updating their knowledge time to time. It can be done by participating in orientation or refresher courses in their disciplines. Teacher can also be trained to prepare small self learning TAL packages to support their regular teaching.

- The teacher is responsible for effective learning environment. It includes well-equipped classroom with pleasant environment. The guidelines to the student’s behavior, timely supply of learning material, day to day progress card are the things to be maintained by the teacher. For the purpose, teacher may take the help of related man power or concerned sections of the management e.g. for learning material, the teacher may approach to librarian for the sufficient provision of books and other reading material.

- The teacher should adopt student-centred teaching-learning process based on specific learning goals. It should be structured with various activities within F to F mode in interactive way. The reinforcement, motivation and the constant feedback is also expected whenever necessary. The teaching is called successful when it is reached to fulfill specified objectives.

- Innovative thinking is required by the teacher at all levels of teaching to create best possible understanding of the contents by the students.

- The role of teachers involves various dimensions such as commitment, professionalism and to be a guide.
TAL has changed the role of the teacher but does not eliminate the need for a teacher altogether. Teacher’s presence is very important to students when doing TAL activities. Instead of mere delivery of knowledge to students and being the centre of students’ attention, the teacher has to become guide and help the students to complete the assigned tasks. In other words, the teacher has to interact with student’s activity and motivate them to perform assigned tasks.

Teachers should be familiar enough with the resources to be used to anticipate technical problems and limitations. They are required to conduct review sessions and to reinforce what was learned. Most students prefer to do work in a lab with a teacher’s presence rather than completely on their own. Teachers are also needed to document student’s progress and guide wherever necessary.

- The role of students is also important to make the learning successful. Students should be prepared enough to participate in the class in order to use TAL effectively. They should have minimum computer skills required to learn through TAL.

Rather than passively absorbing information, students must exchange meaning and assimilate new information through interaction and collaboration with others. Students are also expected to invest more time engaging in learning activities.

Students must also learn to interpret new information and experiences on their own terms. They should take guidance wherever necessary instead of skipping the contents if not understood as many of the students tend to skip when they found it difficult to understand.
In networked computer environments, students have a conscious feeling of being members of a real community. In these situations students feel less stressed and more confident in a learning situation. Moreover, quiet students can feel free in their own student-centred environment. This will raise their confidence and their ability for learning retention will be improved.

- In addition to independent study, the use of conference-type group study as well as different types of seminars/workshops can be used to facilitate learning by students. A combination of traditional, distance and conference-type study may be used to bring diversity in learning and sustain interest among the students for a particular course or program.

- E-learning is naturally suited to distance learning and flexible learning, but can also be used in conjunction with face-to-face teaching. This facility can be made available to students by the college management so that students may receive additional and supporting learning material. E-Learning lessons are generally designed to guide students through information or to help students perform in specific tasks. Teacher here has an additional responsibility to prepare e-learning material and ensure the smooth delivery of it in online or offline mode.

- Teachers should review the computer program or the online activity to understand the context of the lessons and determine which ones fit the needs of their students and how they may enhance instruction. Teachers should also review all relevant web sites and links before directing students to them as the disturbance in online mode in terms of failure of connectivity may lessen the interest of students in learning.
• The infrastructure at college level is also an important factor. This will include well equipped library, classroom, computer labs and proper sanitation facilities as well. The management of the institution has the responsibility to make it available as per the requirement.

SUGGESTIONS FOR IMPLEMENTATION

Any research study should be able to provide recommendations for application in any discipline. Educational research should be able to provide suggestions for implementation in the field of education.

The present investigation is providing feedback to the B. Ed. colleges to use TAL package in their regular teaching. It is helpful to prove effectiveness of the use of TAL package in the field of education. The result of the present study projected that learning through TAL package facilitated the learning and understanding of the students about the contents. The study also proved that learning with TAL package is suitable for the students for theory based or skill based topic.

This study is now helpful to B. Ed. teachers to devise new techniques such as development of TAL package to teach B. Ed. syllabus effectively and also to understand the importance of self-learning in their subjects for more effective results of teaching-learning activities in better manner. The process of learning with TAL package is helpful to develop the interest facilitating the achievement of the objectives in the process. So this study is significant to teachers in making one more method for teaching of the educational psychology. Teachers will be assisted to develop new method of teaching by this research.
Teacher should prepare TAL package in his / her subject containing the particular topic and try to motivate students for self-learning. The teacher should try to solve the difficulties of the students in their self-learning. The suitable timetable should be planned by the teacher if necessary so that all the students should get an equal opportunity of self-learning. The teacher himself should learn some innovative techniques for the preparation of these learning modules and utilize it in the classroom. The students should be guided well for the use of technology in their study.

The students should prepare themselves for self-learning. The students should ask their difficulties faced by them while self-learning with the help of TAL package to their teachers. The students should concentrate to the contents of the TAL package and follow all the instructions while self-learning without skipping any of the contents.

Thus, this successful study will motivate B. Ed. colleges to adopt the teaching-learning methods through TAL. This is possible only through collaborative efforts of the students, parents, teachers, experts and principal.
SUGGESTIONS FOR CURRICULUM PLANNERS

- The data and concepts related to advance techniques in technology to be utilized for learning can be involved in curriculum.

- The curriculum should also be updated as per the requirement of the society and relevance of the societal issues and related with the needs and interest of the students.

- The curriculum planners can focus on involving technological aspects in the curriculum for effective classroom instructional practices. They need to make the resources available to learn the contents in both the modes of learning.

- Special efforts can be made by the curriculum planners to remove gender differences in the development of student’s academic performances.

- While updating the curriculum, the rural needs and interests can be considered first. The preference will be given to involve the technological aspects which will be useful for rural development.

- The curriculum should also focus on professional development of students. It should also involve hands on activity providing real experiences for personality development of the students.

- It should provide new and high quality of knowledge relevant to individual development with ethics and values. It should develop professionalism and inbuilt skills among the students.

- The day to day technological aspects to be useful for effective teaching learning process can be updated after every two years.

- The curriculum planners can focus on innovative programs to be utilized in classroom settings to make teaching learning process more effective.
• As proved by the present study, the curriculum planers should plan the curriculum involving the use of technology in teaching-learning process and motivate the students and the teachers to use innovative methods and techniques so as to develop student’s interest towards study.

To conclude,

Everyone associated with learning is responsible to ensure adequate supply of learning material, suitable and comfortable learning environment, goal specific and student centred teaching learning process, development of study habits and personality development of the students whether student is learning with F to F mode or TAL mode.

TAL has definitely changed the role of teachers but it cannot replace the teacher though it has provided supportive hand to the teacher. Teacher’s skill, motivation, comfort, personal care, remedial coaching, guidance on demand are some of the skills of teacher better than ICT. The lesson planning and delivery of contents, regular follow up of progress of the students, individual feedback, personal visits wherever needed, communication with parents are some of the essential services offered by teacher which ICT is unable to deliver at any cost. ICT can only assist the teachers but cannot possess or replace teachers’ qualities. ICT can be used to reinforce existing pedagogical practices as well as to change the direction of interaction between teachers and students. It is unable to evaluate students’ performance qualitatively. It may provide quantitative data related to individual progress of the student but qualitative support such as praise, motivation, rewards and supervision is far below the capacity of ICT. It may use the
resources for the student’s benefit but cannot select the proper tool for development of student. It is inadequate device without teacher’s assistance. It constantly needs teacher’s support without which it is inoperative.

Teachers mostly use technology for record keeping related to students and sometimes for power-point presentation during their regular teaching. However, use of ICT is very essential where the students are unable to get adequate clarification of abstract concepts. It is also convenient to save time and energy of both i.e. teacher and the student. It is suitable to provide easy access to the content and make the teaching learning session student centred. It is useful to stimulate human senses as it can provide learning process through viewing, reading and writing, listening and speaking skills. It can be more useful when teacher is helpless to make the concept clear and when there is need to provide additional information about the concept. It’s not that the teacher would instruct the students to use the ICT and leave them to do it individually on their own. Teacher’s presence is very vital as and when the use of ICT is being in process by the students.

At the end of this research, researcher would like to say that the most important thing one must possess is positive attitude. The technology may not solve all problems, but will definitely prove a very powerful and effective way to successfully deal with reality.

SUGGESTIONS FOR FURTHER STUDY

Following are few suggestions for further study.

• A study of the impact of technology based learning modules on
academic achievement of B. Ed. students.

- Comparative study of online and offline learning modes for B. Ed program.
- A study of academic achievement of college students in relation to their learning styles.
- A study of the relationship between learning styles of students and teaching styles of teachers while using technology in learning.
- A comparative study of the academic achievement of reserved category and open category students while using TAL and F to F modes of learning.
- A comparative study of the factors responsible for academic achievement of reserved category and open category students while using TAL and F to F mode of learning.
- A comparative study of the academic achievement of urban and rural students while using TAL and F to F mode of learning.
- A study of the factors influencing study habits of students while learning through F to F mode and TAL mode.
- A study of the effects of online learning on the academic achievement of students of B. Ed program.
- A comparative study of the academic achievement of the students in regular versus online B. Ed program.
- A study of the attitude of the B. Ed. students towards learning through online and offline mode.
- A comparative study of the academic achievement of graduate and post graduates students while learning with F to F and TAL mode in the B.Ed. program.