INNOVATIONS in TEACHER EDUCATION

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Abstract: Teacher education system is an important vehicle to improve the quality of school education. The revitalization and strengthening of the teacher education system is a powerful means for the upliftment of educational standards in the country. There are many issues that need urgent attention for improving the quality of teacher education programme. e.g: Integration of technology into teaching and learning, Demonstrate good command of the subject matter and the ability to teach a diverse student population, Provide open and responsive learning environments, and Using new innovative methods of teaching such as ,web-based development and delivering of the course materials, electronic presentations, Google Classrooms, Blended classrooms, Virtual laboratories, Free learning courses, Practice PBL (project-based learning) and STEM (science, technology, engineering, and mathematics) Within Community Partnerships, Engage in Purposeful Play, Provide Opportunities for Student-Centered Constructionism, delivering and submission of tests, quizzes, assignments, examination papers and surveys etc.

Key Words*:* Teacher Education, Professional development and ICT

INTRODUCTION

Teacher education system is an important vehicle to improve the quality of school education. The revitalization and strengthening of the teacher education system is a powerful means for the upliftment of educational standards in the country. There are many issues that need urgent attention for improving the quality of teacher education programme. One of them is the need of innovations in teacher education programme. Innovativeness means the ability to think beyond the boundaries and create something which is different from that which already exists. Without innovations, no progress is possible. Teachers have to be innovative and their grooming has to start from their training institutions. Teacher education has long been considered weak among higher education degree programs, one that lacks high standards and strong contacts with the field. Now, however, teacher education programs are being improved in many colleges and universities through a variety of efforts. These include: revised, challenging standards for accreditation of teacher education; the growth of professional development schools; and emphasis on a deeper knowledge base for prospective teachers as well as demonstration of competence. However, much remains to be done.

A sense of urgency accompanies these efforts because of the need to prepare more teachers in a shorter period than during any other time in our history. Currently, the more than 1,025 teacher education programs graduate about 100,000 potential teacher candidates each year, but the nation's schools will need to hire two million teachers within the decade to replace those retiring or to meet the needs of expanding enrollments. That means that these programs may supply only one-half of the teachers who will be needed. Even more important, critics of teacher education and reformers of public schooling agree that the preparation of teachers must be substantially stronger. If students are expected to know more and be able to apply their knowledge skillfully, then teachers must be models of such learning.

At the beginning of the 1990s, John Goodlad, head of the National Network for Educational Renewal, commented that teacher education had been an unstudied problem for three decades. That is not true anymore. His network engages two dozen institutions in restructuring teacher education. The Holmes Partnership, a consortium of research-based institutions, has proposed reforms of teacher preparation and emphasized links between universities and schools by using public schools as professional practice sites. It has chastised its own members for contributing to the problems of quality in teacher education by emphasizing research and graduate programs and neglecting the preparation of new teachers.

Accreditation by the National Council for the Accreditation of Teacher Education (NCATE) is one link in the continuum to bring about standards-based reform of the teaching profession. In 1995 the Council called for various approaches to create new rigorous standards: a coherent program of studies for each student rather than the typical hodgepodge; a firm foundation in the liberal arts and teaching disciplines; programs that prepare teachers for the higher content standards set for students; programs that prepare teachers for classroom diversity and for new technologies; and the use of performance-based standards rather than "seat time" in classes to determine the readiness of candidates to teach.

About 500 teacher education programs now seek NCATE approval. NCATE's standards correlate with those developed for the next check on quality by the Interstate Consortium for Licensing of Teachers (INTASC)--and with those for accomplished teaching as defined by the National Board for Professional Teaching Standards (NBPTS).

Professional development generally refers to ongoing learning opportunities available to teachers and other education personnel through their schools and districts. Effective professional development is often seen as vital to school success and teacher satisfaction, but it has also been criticized for its cost, often vaguely determined goals, and for the lack of data on resulting teacher and school improvement that characterizes many efforts.

With schools today facing an array of complex challenges—from working with an increasingly diverse population of students, to integrating new technology in the classroom, to meeting rigorous academic standards and goals—observers continue to stress the need for teachers to be able to enhance and build on their instructional knowledge.

Parsing the strengths and weaknesses of the vast array of programs that purport to invest in teachers' knowledge and skills continues to be a challenge. Today, professional development activities include formal teacher induction, the credits or degrees teachers earn as part of recertification or to receive salary boosts, the national-board-certification process, and participation in subject-matter associations or informal networks. (Sawchuk, Nov. 10, 2010).

Historically, administrators have favored the workshop approach, in which a district or school brings in an outside consultant or curriculum expert on a staff-development day to give teachers a one-time training seminar on a garden-variety pedagogic or subject-area topic. Criticized for their lack of continuity and coherence, workshops have at least in theory fallen out of favor. The federal No Child Left Behind Act of 2001, for instance, defines all professional development funded through the law to include activities that "are not one-day or short-term workshops or conferences." There is little evidence to suggest that states and districts adhere to this directive.

Even so, many teachers still appear to receive much of their professional development through some form of the one-shot workshop. Survey data from the National Center for Education Statistics, the most recent publicly available, show that in the 1999-2000 school year, 95 percent of teachers took part in workshops or training in the previous 12 months, compared with 74 percent who reported working in an instructional group and 42 percent who participated in peer observation (Broughman, 2006). The NCES has since conducted two additional administrations of the SASS, but updated data on these questions have not yet been made public.

Beginning in the 1990s, qualitative literature began to support a roughly consistent alternative to the workshop model of professional development. This preferred approach holds that for teacher learning to truly matter, it needs to take place in a more active and coherent intellectual environment—one in which ideas can be exchanged and an explicit connection to the bigger picture of school improvement is made. This vision holds that professional development should be sustained, coherent, take place during the school day and become part of a teacher's professional responsibilities, and focus on student results (Wei, et al, 2009).

Many teaching professionals spend their entire careers in search of teaching excellence. This search may be even more important when students are underprepared adults. These students lack the foundation and skills required for rigorous college curriculum and many of them have adult responsibilities that place excessive demands on their time and other resources. These students present challenges to developmental educators that often far exceed those presented by traditional college students: "How to guide and teach students who are underprepared for traditional college level studies is the thorniest single problem for community colleges" (Cohen & Brawer, 1982, p. 236). This challenge extends throughout all levels of postsecondary education with developmental education serving as a gateway to postsecondary education for many students in this country. According to the National Center for Education Statistics (NCES), in 1999-2000, 32% of all freshmen in 4-year colleges and universities and 41% of community college freshmen required remedial education (NCES, 2001).

New Teaching Techniques

A glossary of teaching Techniques can help almost everyone involved in education. Experienced teachers need to learn about new techniques when renewing their certificates.In the pre-technology education context, the teacher is the sender or the source, the educational material is the information or message, and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the "chalk-and- talk" method and overhead projector (OHP) transparencies. This directed instruction model has its foundations embedded in the behavioral learning perspective and it is a popular technique, which has been used for decades as an educational strategy in all institutions of learning. Basically, the teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge. In other words, the teacher delivers the lecture content and the students listen to the lecture. Thus, the learning mode tends to be passive and the learners play little part in their learning process. It has been found in most universities by many teachers and students that the conventional lecture approach in classroom is of limited effectiveness in both teaching and learning. In such a lecture students assume a purely passive role and their concentration fades off after 15-20 minutes. Some limitations which may prevail in traditional teaching method are: Teaching in classroom using chalk and talk is "one way flow" of information.

SENDER (TEACHER) ⟶ **RECIEVER (STUDENT)**

MESSAGE MEDIUM

- Teachers often continuously talk for an hour without knowing students response and feedback.
- The material presented is only based on lecturer notes and textbooks.
- Teaching and learning are concentrated on "plug and play" method rather than practical aspects.
- The handwriting of the lecturer decides the fate of the subject.
- There is insufficient interaction with students in classroom.
- More emphasis has been given on theory without any practical and real life time situations.
- Learning from memorization but not understanding.
- Marks rather than result oriented.

Now Multimedia is the combination of various digital media types such as text, images, audio and video, into an integrated multi-sensory interactive application or presentation to convey information to an audience. Traditional educational approaches have resulted in a mismatch between what is taught to the students and what the industry needs. As such, many institutions are moving towards problem based learning as a solution to producing graduates who are creative; think critically and analytically, to solve problems. In this paper, we focus on using multimedia technology as an innovative teaching and learning strategy in a problem-based learning environment by giving the students a multimedia project to train them in this skill set.

Currently, many institutions are moving towards problem-based learning as a solution to producing graduates who are creative and can think critically, analytically, and solve problems. Since knowledge is no longer an end but a means to creating better problem solvers and encourage lifelong learning. Problem-based learning is becoming increasingly popular in educational institutions as a tool to address the inadequacies of traditional teaching. Since these traditional approaches do not encourage students to question what they have learnt or to associate with previously acquired knowledge (Teo & Wong, 2000), problem-based learning is seen as an innovative measure to encourage students to *learn how to learn via real-life problems.* (Boud & Feletti, 1999).

The teacher uses multimedia to modify the contents of the material. It will help the teacher to represent in a more meaningful way, using different media elements. These media elements can be converted into digital form, modified and customized for the final presentation. By incorporating digital media elements into the project, the students are able to learn better since they use multiple sensory modalities, which would make them more motivated to pay more attention to the information presented and retain the information better.

Volkwein and Cabrera (1998) suggest that the single most important factor in affecting multiple aspects of student growth and satisfaction is the classroom experience. The key to teaching for developing students successfully is to assure that teaching practices are consistent with the characteristics of successful programs and the techniques and strategies of effective teaching. The new teaching techniques for effective teaching and their subsequent explanations are offered as a tool to help educators in their search for teaching excellence. Additionally, institutions may find these techniques helpful as they employ and train teachers to build successful developmental and mainstream education programs.

Integration of technology into teaching and learning

Today, educators realize that computer literacy is an important part of a student's education. Integrating technology into a course curriculum when appropriate is proving to be valuable for enhancing and extending the learning experience for faculty and students. Many faculties have found electronic mail to be a useful way to promote student/student or faculty/student communication between class meetings. Others use list serves or on-line notes to extend topic discussions and explore critical issues with students and colleagues, or discipline- specific software to increase student understanding of difficult concepts.

Currently, our students come to us with varying degrees of computer literacy. Faculties who use technology regularly often find it necessary to provide some basic skill level instruction during the first week of class. In the future, we expect that need to decline. For help in integrating technology into a course curriculum contact the Program in Support of Teaching and Learning or the Instructional Development Office (IDO) at 703-993-3141. In addition, watch for information throughout the year about workshops and faculty conversations on the integration of technology, teaching and learning.

ICT used to facilitate professional development and networking. Whereas the use of ICT as core technology for delivering teacher raining can be found in limited contexts, there are many examples of ICT, particularly Internet and Web-based communication technologies, being used to support teachers' on-going professional development and networking. Many countries have developed a website or websites to provide online resources for teachers and facilitate teachers' networking based on the assumption that professional development should be an integral part of daily practice for all teachers and the use of the Internet would enhance continuous professional development activities of teachers, connecting teachers to larger teaching communities and allowing for interaction with expert groups.

On-going teacher training and support is critical to the successful utilization of ICTs in education Teacher training and professional development is seen as the key driver for the successful usage of ICTs in education. Effective ICT use in education increases teachers' training and professional development needs. However, ICTs can be important tools to help meet such increased needs, by helping to provide access to more and better educational content, aid in routine administrative tasks, provide models and simulations of effective teaching practices, and enable learner support networks, both in face to face and distance learning environments, and in real time or asynchronously.

Effective teacher professional development should approximate the classroom environment as much as possible. "Hands-on" instruction on ICT use is necessary where ICT is deemed to be a vital component of the teaching and learning process. In addition, professional development activities should model effective practices and behaviors and encourage and support collaboration between teachers. On-going professional development at the school level, using available ICT facilities, is seen as a key driver for success, especially when focused on the resources and skills directly relevant to teachers' everyday needs and practices.
Professional development should include methods for evaluating and modifying pedagogical practices and expose teachers to a variety of assessment methods.

A needs assessment should precede the creation of and participation in teacher professional development activities, regular monitoring and evaluation should occur of these activities, and feedback loops should be established, if professional development is to be effective and targeted to the needs of teachers. On-going and regular support is essential to support teacher professional development and can be facilitated through the use of ICTs (in the form of web sites, discussion groups, e-mail communities, radio or television broadcasts).

Teacher usage of ICTs

Teachers most commonly use ICTs for administrative tasks. Teachers more knowledgeable in ICTs use utilize computer assisted instruction less than other teachers who use ICTs, but utilize ICTs more overall. Types of usage of ICTs correlate with teacher pedagogical philosophies. Teachers who use ICTs the most and the most effectively are less likely to use traditional 'transmission-method' pedagogies. Teachers who use more types of software tend to practice more "constructivist" pedagogies Introducing and using ICTs to support teaching and learning is time consuming for teachers, both as they attempt to shift pedagogical practices and strategies and when such strategies are used regularly. Simply put: Teaching with ICTs takes more time (estimates vary on how much extra time is required to cover the same material; 10% is a common estimate).

Demonstrate Good Command of the Subject Matter and the Ability to Teach a Diverse Student Population

Proficiency in subject matter is critical for education teachers. Since students have generally been unsuccessful with traditional instructional methods and materials, effective teachers must be able to present the subject matter in different ways, requiring teachers to have in-depth knowledge of the concepts and skills they're teaching as well as higher level content knowledge in the field.

When selecting teachers, it is important to follow the credential standards set forth by the college's accrediting agent for all teachers including education instructors. For example, the Southern Association of Colleges and Schools, Commission on Colleges (SACS; 1998) requires, Faculty members who teach in remedial programs must hold a baccalaureate degree in a discipline related to their assignment and have either teaching experience in a discipline related to their assignment or graduate training in remedial education.

Although subject matter knowledge that is documented by professional credentials is critical, it is not enough for effective developmental education teachers. The ability to convey that knowledge to students who lack the subject matter foundation is the major challenge. Unfortunately, many new teachers try to employ the same teaching techniques their graduate professors used successfully, since this is their most recent experience with the teaching/learning environment. This is one of the biggest mistakes teachers can make, especially with students who may have had little academic success.

First, when working with at-risk students, teaching and learning activities must be highly structured, with all requirements and standards clearly stated (Boylan & Bonham, 1998). The students need to know exactly what is expected of them and when it is due. Teaching students how to pace their work is one of the most important things a teacher can do. Students often underestimate the amount of work required and the time required to complete it, so teachers need to help students develop specific plans. A helpful strategy is to require students to turn in drafts or small segments of their work as they proceed toward the final product. Second, many students require a lot of time-on-task. Scheduled and supervised activities in class, in labs, and with tutors facilitate the "pacing skills" often lacking for at-risk students. Third, students perform better when the curriculum they are studying relates to the real world and their specific interests (Cross, 2000). Fourth, information should be presented in small chunks that allow students to link new material to something they already know. Fifth, since education is providing the foundation for more advanced learning, mastery of the content is important. If students fail to master one set of skills, concepts, or knowledge before they move on to the next level, gaps similar to the problems the students are already experiencing are created. Finally, frequent testing and immediate feedback are critical for students. Wambach, Brothen, and Dikel (2000) report that many developmental students lack the ability to provide their own feedback. These authors note, "Highly skilled students are better able to know they have understood what they have read, to know whether they are prepared for an exam, and to evaluate how well they have done on exams. They know the difference between simply doing and actually learning assignments" (p. 8). Therefore, early, frequent, meaningful, and clear feedback is a major factor in helping students hone their metacognitive skills.

Effective teachers use knowledge of their students' varied learning styles as they plan their instruction. Boylan and Bonham (1998) report that developmental students learn in ways not generally accommodated through traditional instruction. However, many teachers still teach the way they were taught. This pattern is likely to be least effective in the developmental classroom where most students failed to learn the course content in traditional high school classes; it is unlikely that they'll learn via the same instructional methods in college. Knowledge of whether students are visual, auditory, or tactile learners and whether they prefer to work individually or in groups should shape the instructional delivery system and learning materials offered. Boylan and Bonham (1998) cite several studies which reveal that many developmental students are hands-on learners. Research indicates that collaborative learning, when well-structured as part of the learning activities, is helpful in getting students actively involved. Cross (2000) reports, "There is strong support from neuroanatomy and from cognitive science for the thesis that students must actively involve themselves in their own learning" (p. 28). Moreover, she reports that students are well-motivated to get involved in learning when they are faced with peers who depend on them and, in turn, nurture them in challenging learning tasks. Research from Casazza and Silverman (1996) shows that students in remedial courses are more likely to be successful when a variety of instructional methods are used.

Provide Open and Responsive Learning Environments

Cross (2000) reports, "Research clearly shows that students who are most likely to drop out of college are students who are not connected with the people and events of the college" She notes that the connections need not always be face-to-face. They can be electronic via email or chat rooms, telephone calls, or letters, but humans need some way to feel that they belong. It is easy for the students to convince themselves that they are so far behind that the teacher would not want them back in class. A phone call or letter can be all it takes to assure most students that they still belong in the class and they will receive support to help them catch up. It is important for teachers to obtain local telephone numbers, addresses, and e-mail addresses from students on the first day of class. Tinto (1993) reports that being connected to the classroom and college has a significant effect on retention.

Students need to know that teachers recognize them as individuals. Goodman (2001) has found those simply calling students' names aloud when checking attendance has a positive effect on attendance. He has concluded that teachers could enhance retention and attendance by orally calling the class roll and making individual comments when returning papers to students.

Another strategy to promote feelings of belonging is for the teacher to arrange to meet with individual students during office hours. Although office hours are posted and announced, many students will not take the initiative to go to the teacher's office without a personal invitation or appointment. Ironically, teachers often feel rejected when students don't respond to their open announcement of office hours. This feeling of rejection may create a barrier between the teacher and student. Pascarella and Terenzini (1991) report, "The educational impact of a college's faculty is enhanced when their contacts with students extend beyond the formal classroom to informal non-classroom settings" Such interaction gives the teacher the opportunity to get to know students better, and it helps students learn the value of using office hours that teachers set aside for them.

Using new innovative methods of teaching

Technology has become an important instrument in education. Computer based technologies hold great promise both for increasing access to knowledge and as a means of promoting learning. Technology can help in establishing effective learning environments by: bringing real-world problems into classrooms through the use of videos, demonstrations, simulations, and Internet; increasing opportunities for learners to receive feedback from software tutors, teachers, and peers; to engage in reflection on their own learning processes; and to receive guidance toward progressive revisions that improve their learning and reasoning.

Technology has placed new demands on higher education. Institutions are challenged today with factors that include shifting demographics, rising student expectations, overburdened faculty resources, government mandates, and increased competition. Technology-enabled learning has opened a new world of opportunities. With the right strategy, advanced pedagogical tools, and technological framework, institutions can actually capitalize on this paradigm shift in higher education.

Various innovative teaching techniques can be used to improve the quality of the learning environment: Integration of technology into teaching and learning, Demonstrate good command of the subject matter and the ability to teach a diverse student population, Provide open and responsive learning environments, and Using new innovative methods of teaching such as ,web-based development and delivering of the course materials, electronic presentations, Google Classrooms, Blended classrooms, Virtual laboratories, Free learning courses, Practice PBL (project-based learning) and STEM (science, technology, engineering, and mathematics) Within Community Partnerships, Engage in Purposeful Play, Provide Opportunities for Student-Centered Constructionism, delivering and submission of tests, quizzes, assignments, examination papers and surveys etc.

Even very simple mail based agents can be of great help to enhance the faculty-student contacts and cooperation among students. Many software systems exist promoting innovative teaching tools. Some of them provide tools useful just for a particular part of the teaching process, for example assignments and homework delivering, like WebAssign (http:// webassign.net) that offers increased opportunity to practice skills, and the immediate feedback encouraging students to monitor their own progress and adjust the focus of their study accordingly. Other systems offer tools for creating an integrated learning environment suitable for on-line and distance education like WEBCT designed to address the needs of the entire educational enterprise - from administrators serving the needs of a broader student demographic, to students and faculty looking for ways to enhance teaching and learning. Applying modern IT techniques to the course design and development makes them suitable for distance learning education purposes also. This is extremely important nowadays taking into account the existing and foreseen budget cut constraints. The latest achievements in the information technologies and communications create new opportunities and at the same time great challenges both for the educators and student.

Web development is a broad term for the work involved in developing a web site for the Internet (World Wide Web) Web development broadly refers to the tasks associated with developing websites for hosting via intranet or Internet. The Web development process includes Web design, Web content development, client-side/server-side scripting and network security configuration, among other tasks.

Normally means a presentation using multimedia of voice, images, and electronic files (such as Microsoft Word, Excel, or PowerPoint), with a computer, transmitted via the internet or phone, as opposed to being present in person and handing out a paper copy to the audience.

Blended learning is a formal education program in which a student learns at least in part through delivery of content and instruction via digital and online media with some element of student control over time, place, path, or pace. Remedial teaching programs can be done by blended classrooms.

Google Classroom is a free web service developed by Google for schools that aim to simplify creating, distributing and grading assignments in a paperless way. Students can be invited to join a class through a private code, or automatically imported from a school/College domains.

The Virtual Laboratory is an interactive environment for creating and conducting simulated experiments: a playground for experimentation.. It consists of domain-dependent simulation programs, experimental units called objects that encompass data files, tools that operate on these objects.

Free and open learning is hardly a new concept to create an affordable way for any motivated student to take courses.

Suggestions:

The innovative techniques for effective teaching presented in this paper apply to all instructors and all students. The analysis reveals some of the suggestions that the teaching community can practice in the classrooms. Ultimately the teaching people are satisfied when he could reach the students community with his ideas and views. So, teaching depends upon successful mode of communication and Innovation though we mean the changes that we propose to be included in our medium of communication or even inclusion of some other elements in communicating information. The researchers recommend that the teaching would be highly effective if the teacher start to use the recent multimedia technologies like usage of computers extensively or some modifications in the conventional mode of teaching.

Teachers can use and apply these innovative techniques : Integration of technology into teaching and learning, Demonstrate good command of the subject matter and the ability to teach a diverse student population, Provide open and responsive learning environments , Engage in ongoing evaluation and professional development, web-based development and delivering of the course materials, electronic presentations, Blended classrooms, Virtual laboratories, Free learning courses, Practice PBL (project-based learning) and STEM (science, technology, engineering, and mathematics) Within Community Partnerships, Engage in Purposeful Play, Provide Opportunities for Student-Centered Constructionism, delivering and submission of tests, quizzes, assignments, examination papers and surveys to make their teaching effective which can improve the quality of teacher education.

CONCLUSION

In order to serve the needs of our general population, quality teaching in higher education is imperative. Faculty at secondary institutions must recognize and embrace the importance of teaching skills that enhance learning for all types of students in tandem with continuing development of their content-area knowledge. The application of innovative techniques for effective teaching will help better prepare teachers in their quest to assist students in meeting their goals. So, successful education programs and innovative techniques of effective practice in teaching offer a strong foundation in the search for teaching excellence.

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