

## Developing and Using Blends: Evaluating a Hybrid Micro-Skill for New Teaching Paradigm

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### Abstract

The Teacher Education Institutions plays a crucial role in improving the system of education by training, educating and inspiring the future student teachers. A teacher requires understanding and mastering of skills to make his classroom interactive. For this purpose the exercise of instructional designing or lesson planning becomes very essential. Although innovative lesson plans based on behaviourist, cognitive and constructivist approaches are introduced in teacher education, the learner today, who is more ICT-enabled requires modern 21<sup>st</sup> century skills and competencies. The classroom interactive process, used by student-teacher during the professional experience programme, needs a critical analysis and the recent trends in education need to be explored to modify the age old traditional approaches to meet the challenges of the present. This evaluative study explored, developed and ascertained the effectiveness of a hybrid micro-skill called developing and using blends. A number of skills, instructional designs and blended learning literature have been critically analyzed to finalize the components of skills. After conducting primary and secondary data analysis, the effectiveness of the developed skill was checked on high school students selected for this purpose. It was found that in science and social sciences, there is a significant effect of developed micro skill on the academic achievement of high school students, but no significant difference is found in teaching effectiveness of student teachers teaching with and without hybrid micro skill.

**Keywords:** Blends, teaching skills, instructional design, 5E constructivist approach, blended learning, on line learning.

### Introduction

Modern technological advancements and their impact on education have changed the focus of educators to entirely new systems of instruction where all psycho-social theories and instructional models can be mixed effectively. The educators are finding it hard to adapt to one best pedagogical strategy having elements of expertise from any one specific discipline. Moreover challenges emerge from Interactive Communication Technology, Localization, Privatization and Globalization (LPG) and culture and civilization, making this process a little more complicated for educational planners to make pedagogical endeavours functional and practical for teachers. We have great diversity of learners in our classrooms. Their needs, aspirations, challenges, goals are altogether different and vary a great deal. National Curricular Framework (2005) affirms that complex cultural diversity in the Indian classrooms should be addressed effectively. The children

from different strata with diverse socio-economic conditions, with variations in cognitive and psychological attributes should enjoy equality in educational opportunities in classes. The disparities arising from religion, caste, culture, colour and gender should be handled directly at base level and not only at the level of policy framework. As a result, educators are facing problems regarding maintenance of quality in pedagogical instructions and learner engagement in the inclusive classroom. So, much of the responsibilities lies with the teacher training institutions in terms of teachers they are producing. The need is to train teachers in new skills and competencies that will enable them to deal effectively with diverse needs and demands of the learners. For this, it is necessary to practice the concept of critical and constructive pedagogy in all dimensions of school education (NCF, 2005). Each learner is a unique individual with unique needs, backgrounds and is also seen as complex and multidimensional. The need is to utilize this uniqueness to bring social context in the learning process. We have learnt all this by various methods such as imitation, experience, trial and error, insight, reflection and many others. A good teacher provides desired information to the learners in a well-organized form. However, good teaching is not merely imparting information to the students, but it is also to stimulate curiosity, to arouse the reflective thinking and the will of self-learning. Most of this depends upon the quality of instruction or on planning of instruction. In Indian context, Herbartian approach based on the psychology of Herbert (1776-1841) is still a dominating approach in instruction development. Later Dale (1946), Skinner (1954), Mager (1962), Bloom (1956), Glaser (1962), Gagne (1965) influenced the process of instructional designing to some extent but still focus was on transaction and not on construction. In 1990s the constructivist approach influenced the education and revolutionized the process of instruction.

### **Hybrid Micro Skill**

A skill constitutes a series of interconnected teaching acts or behaviours with an objective to attain desirable learning outcomes. Passi (1981) further emphasized that these behaviours should be definable, trainable, observable and measurable. Teaching skill constitutes teaching acts which occur one after another in coordination to facilitate the learning in students whereas a micro-teaching skill is a brief encounter with a skill for a period of 3-5 minutes in a controlled condition. Some times teaching skills are referred to as micro-teaching skills. Allen and Ryan (1969) at Stanford University identified around fourteen skills of teaching. The Asian Institute of Teacher Education (1972) identified teaching skills with respect to educational objectives. They have given teaching skills under areas of social, emotional, mental, aesthetic, and psychomotor and health development. Flanders (1973) conceptualized skills on the basis of verbal mode of classroom interaction under responsive and initiative skills. Brown (1975) on the basis of Aygyle's social skill model identified skills under three aspects viz. planning, performance and perception. Centre of Advanced Study in education, Baroda, presented skills in the form of Baroda General Teaching Competence Scale (1975) having 21 teaching skills at the pre-instructional, instructional and post instructional level. Singh (1979) identified 22 teaching skills whereas Menon et al. (1983) gave a comprehensive list of 74 teaching skills. The skills mostly practiced were skill of set induction, explanation, board writing, questioning, classroom management, reinforcement and stimulus variation. These skills have been practiced through micro teaching cycles (Allen, 1963) where the emphasis was on knowledge acquisition, skill acquisition and transfer phases (Clift, 1976). For demonstrating the skill to trainees several models has been identified. Bandura & Ross and Ross (1963) emphasized filmed models and found thee as effective as live models. Orme (1966) emphasized on perceptual models then symbolic model where as Allen et al. (1967), Gilmore

(1975) emphasized on positive models focusing on displaying desirable behavioural through positive examples. Stulurow (1965) emphasized model the master teacher approach where an expert or master teacher demonstrate the skill and the skill, attitude and personality of master teacher are acquired by the students through observation, imitation and practice. The next challenge was to transfer the mastered skills in to real teaching situation. Jangira (1981) enumerated elements that operate for the integration of skills and later different integration strategies have been formulated viz. vicarious, additive and subsumptive strategy. Vicarious integration involves no proper technique of integrating acquired skills, additive can be single, diode and triode additive strategy and in subsumption strategy integration follows hierarchical manner from simple to complex skills. Till 1990s the emphasis was on training of basic teaching skills which were applicable in behaviouristic and cognitive approaches to knowledge transaction. In the beginning of 21<sup>st</sup> century, we witnessed the challenges to our capabilities at various levels. To keep pace with the drastic skill set changes at social, technological and economic level, extraordinary resourcefulness is required on the part of educational leaders in order to keep the institutions vibrant, dynamic and versatile. In 1990s with the advent of constructivism the emphasis shifted on to training teacher in the skill of exploration, engagement, explanation, elaboration and evaluation. Till then elements of technology are missing in skills. The potential use of technology in the form of computers or internet appeared late in 1990s or in early 21<sup>st</sup> century, as smart board applications just started in 2002. The skill used in instructional design were merely based on behaviourism (Harbartian approach) or constructivism (5E approach), and technology has no place in their development. The educators and teachers by their own have integrated technology in these approaches without set assumptions or guidelines. The advent of online learning systems and technological gadgets gave rise to entirely new set of skills and competencies in education. The learners who are more technologically oriented now, demand altogether different skill sets other than traditionally practised. Also the emergence of new approaches, pedagogies, technologies and theories is recommending entirely new models of teaching and learning. The hybrid micro teaching skill is a brief encounter which includes blends of traditional and online learning systems in an appropriate manner depending upon the content and context. It is called hybrid as it involves mixing of technology-based-learning; combination of pedagogical approaches and mixing of forms of instructional technology.

## **Constructivism**

Constructivist approach mainly constitutes the ideas of Piaget (1977), Kelly (1991) and Vygotsky (1978). They put emphasis on active construction of knowledge, exploration of new ideas and experiences where teacher role is to facilitate this exploration (Langer and Applebee, 1987). This approach assumed that teacher should act as facilitator for learning and constructor of conditions for appropriate learning. Roger Bybee (1987) gave constructivist 5E model on instructional planning incorporating five Es viz. engage, explore, explain, elaborate and evaluate. The 5 E approach is mostly used as a constructivist approach to instruction in India. Besides this, Dyalbagh Educational Institution (2012) developed a model promoting Activity-based-lesson planning (ABLP) incorporating the constructivist philosophy. Even ABLP approach does not give emphasis on technology integration in instructional process. Every institution or school is formulating new ways to integrate technology to enhance the process of teaching and learning. In most cases over and ineffective use of technology has negatively impacted the pedagogical transactions (Twigg 2003).

## **Blended Instruction**

Blended instruction as a term or concept has been conceived from blended learning. Blended Learning as a new educational phenomenon or paradigm shift can be described as a specific integration of multiple approaches to pedagogical instructions from traditional face-to-face (F2F) learning systems and online learning systems. American Society for Training and Development (2003) rated blended learning among top trends in the knowledge delivery industry (Rooney, 2003), whereas the Chronicle of Higher Education (2002) advocated that the mixing of online and traditional instructions is a unrecognized trend in education today (Young, 2002). Bersin & Associates (2003) define blended learning as combination of instructional media and Driscoll (2002) & House (2002) described it as a combination of instructional methods. Ray (2001), Rooney (2003), Young (2002) and Graham (2005) define blended learning as combining online and face-to-face instruction. As all learning systems involve multiple delivery media and multiple instructional methods, the meaning given by Bersin, Driscoll & House does not reflect the essence of blended learning, whereas the description given by Ray (2001), Rooney (2003) & Young (2002) reflects the historical emergence of blended learning systems. Oliver and Trigwell (2005) argued that blended learning addressed the forms of instruction, teaching, or pedagogies and it does not go with the term learning. They further show dissatisfaction with the term blended. Blending doesn't signifies the integration with technology only, as there are different modalities which needs to be combined for effective learning. So blended learning has been conceived differently by different peoples, which illustrates its widely untapped potential. Graham, Allen & Ure (2003) concluded that people preferred blended learning approaches to improve pedagogy, increase access or flexibility and to increase cost effectiveness. In present time the peoples are following blending models at activity, course, program and institutional level. Blending at the program level and institutional level is mainly at the discretion of learner whereas instructor or designer decides the blending strategies at activity and course level. Zemke (2002) proposed a situational instructional design model adopting learning theories of Bloom, Merrill, Keller, Gagne, Clark and Gery consisting of five key components viz. live events, online content or self paced learning , collaboration, assessment and reference materials. Similarly, Singh (2003) developed a model to create appropriate blends ensuring meaningful learning. Dziuban, Hartman and Moskel (2004) compared blended learning model with face-2- face and fully online model of instruction over the span of two years. In the end they concluded that the blended learning has potential to increase student learning outcomes. They indirectly focussed on certain skills emphasized that blended learning initiative requires appropriate planning and support, learner support, quality faculty development, and creative and authentic assessment. Marques and Woodbury et al (1998) worked on the ways to integrate the features of web-based learning into a conventional classroom instruction. They emphasized that this integration required new set of technological skills as coherence of web resources in conventional classroom required lot of training and practice. The overall results indicate that the approach was successful and should be extended to other instructors and courses also. Similarly, Tuckman (2002) determined the effectiveness of a hybrid instructional model, called ADAPT that combines the features of computer-mediated and traditional classroom instruction. The hybridism of the ADAPT model provide structure and opportunity for students to involve in the learning process.

The need of the time is access to diverse knowledge which is country like India seems to be a distant dream. It is because most of the population which is below poverty-line opt for schooling in schools which are either lacking in facilities or competent teachers. In such

schools even a single mobile can change the whole instructional scenario. A teacher can use his personal gadgets to teach by incorporating hybrid micro skill. Moreover there is a growing concern among educators also regarding the use of lesson planning approaches to train would be teachers. Teacher educators are finding it hard to arrive at a conclusion as which instructional design of lesson plan format is most suitable for a particular subject. The skill will enable all the teachers to use it according to there area of expertise. In this sense the hybrid micro skill is of immense importance for educational institutions also as it will revolutionize the world of training and instruction.

## Objectives

The following objectives were framed in the study:

1. To develop a hybrid micro skill having elements of both face to face and on line instructional systems.
2. To find out the difference in academic achievement of high school students taught with and without hybrid micro skill.
3. To find out the difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill.

## Hypotheses

The following hypotheses were formulated to achieve the objectives of the study:

1. There exists no significant difference in academic achievement of high school students taught with and without hybrid micro skill.
2. There exists no significant difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill.

## Design of the study

The study was experimental in nature. Pre-test and post-test experimental design has been used to ascertain its effectiveness. The population of the study comprised of high school students and pre-service student teachers studying in teacher preparation course for high school level. The sample constitutes 6 student teachers, 3 each from science and social science background, studying in teacher preparation course for high school level. The student teachers were selected through cluster sampling technique. For testing effectiveness of developed skill 140 high school students from 7<sup>th</sup> and 8<sup>th</sup> grades were selected purposively from three randomly selected high schools during internship program. The investigator conducted secondary data analysis, focused group interviews and in depth interviews. For developing hybrid micro skill, teacher educators, school teachers, pre service student teachers, and various experts at national level, different micro skills and model micro lesson plans of different micro skills has been consulted. Investigator reviewed blended learning literature critically to finalize the components of the skill. Components of the skill were, selection and organization of resources, handling traditional resources or strategies, handling on line resources, simplicity and appropriateness of blends, sequencing of the content and involvement of learners. The developed micro-lessons were shown to experts from

the field of educational technology, computer applications and language. The skill was practiced in additive strategy of skill integration. The investigator developed model lesson plans based on constructivist approach incorporating skill of developing and using blends. Every lesson plans has three modules in column form on exploration, engagement, explanation, elaboration and evaluation. At every module investigator incorporated both traditional and on line resources in the form of experts, documentaries, self prepared short clips, animations and blogs etc. The developed macro lessons were shown to experts from the field of educational technology, science and social sciences. The student teachers delivered their first five lessons with contemporary approach involving 5E constructivist model and conducted test after completion of specified units, which has been used as pre-test. Then they deliver next 5 lessons to the same students through 5E approach incorporating hybrid skill and conducted tests after completion of the specific content. The scores secured by students in these tests were used by investigator as post-test score. In the mean time investigators also observed the teaching of student teachers through self-prepared observation proforma. The t' test has been employed to find out the difference in teaching effectiveness of student teachers and academic achievement of high school students taught with and without hybrid micro skill.

## Result and Discussion

### Effect on academic achievement of high school students

One of the objectives of the study was to find out the difference in academic achievement of high school students taught with and without hybrid micro skill. For achieving the said objective student teachers delivered their first five lessons in science as well as in social science, with contemporary approach involving 5E constructivist model and conducted test after completion of specified units which has been used as pre-test. Then they deliver next 5 lessons to the same students through 5E approach incorporating hybrid skill and conducted tests after completion of the specific content. The scores gained by students in these tests were used as post-test score. The t' test has been employed to find out the difference in academic achievement of high school students taught with and without hybrid micro skill. The details of which are given below in table 1.

**TABLE 1**

#### Effect on academic achievement of high school students in science subject

Test	N	Mean	SD	SED	t' value
Pre-test	71	8.80	4.75	0.408	11.91*
Post- test	71	13.66	3.89		

\*significant at 0.01 level of significance

From table 1, it is quite evident that there exists difference in mean scores of pre and post-tests and t' value (11.91) is significant at 0.01 level of significance. Hence it can be concluded that the students when taught science through hybrid skill incorporated in 5E approach showed high level of performance than simply taught through 5E approach. Thus the hypothesis formulated that there exists no significant difference in academic achievement of high school students taught with and without hybrid micro skill in science subject is rejected.

TABLE 2

**Effect on academic achievement of high school students in social science subject**

Test	N	Mean	SD	SED	t' value
Pre-test	69	8.68	3.62	0.43	14.28*
Post- test	69	14.84	2.84		

\*significant at 0.01 level of significance

From table 2, it is quiet evident that there exists a difference in mean scores of pre and post tests and t' value (14.28) is significant at 0.01 level of significance. Hence it can be concluded that the students when taught social science through 5E approach incorporating hybrid skill showed high level of performance than simply taught through 5E approach. Thus the hypothesis formulated that there exists no significant difference in academic achievement of high school students taught with and without hybrid micro skill in social science subject is rejected.

**Teaching effectiveness of student teachers**

One of the objectives of the study was to find out the difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill. Self prepared observation performa has been used to ascertain the teaching effectiveness of student teachers. The score of first five lesson delivered without incorporating hybrid skill were used as pre-tests scores and those obtained through incorporating developed hybrid skill has been used as post test scores.

TABLE 3

**Teaching effectiveness of student teachers in Social Science**

Test	N	Mean	t' value
Pre-test(without micro skill)	3	63.3	4.61*
Post- test (with micro skill)	3	69.4	

\*not significant at 0.01 level of significance

Table 3 shows that there exists a difference in mean scores of pre and post tests and t' value (4.61) is not significant at 0.01 level of significance. Hence it can be concluded that there exists no difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill in social science subject. Table 4 given below shows that there exists a difference in mean scores of pre and post tests in teaching effectiveness and t' value (3.37) is not significant at 0.01 level of significance. Hence it can be concluded that there exists no difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill in science subject.

**TABLE 4**  
**Teaching effectiveness of student teachers in Sciences**

Test	N	Mean	t' value
Pre-test(without micro skill)	3	69.5	3.37*
Post- test (with micro skill)	3	74.4	

\*not significant at 0.01 level of significance

Thus the hypothesis formulated that there exists no significant difference in teaching effectiveness of student teachers teaching with and without hybrid micro skill is accepted.

## Conclusions

The initial feedback and experiences about the hybrid micro skill were encouraging as both student teachers and students enjoyed the new learning environment. There was increased engagement between student-teacher, student-student, student-content and student-out of school resources. It was also found that the blended instruction produce a greater sense of community feelings than traditional system. The addition of on line resources has increased the learning outcomes and there is also an increase in the interaction and satisfaction level of students. Investigator also observed that students enjoyed learning in blended learning atmosphere. In science and social science subjects, there is a significant effect of developed micro skill on the academic achievement of high school students, but no significant difference is found in teaching effectiveness of student teachers teaching with and without hybrid micro skill.

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