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CONTENT, TEACHER AND LEARNER IN TEACHER EDUCATION

- B.VALLI PILLAI

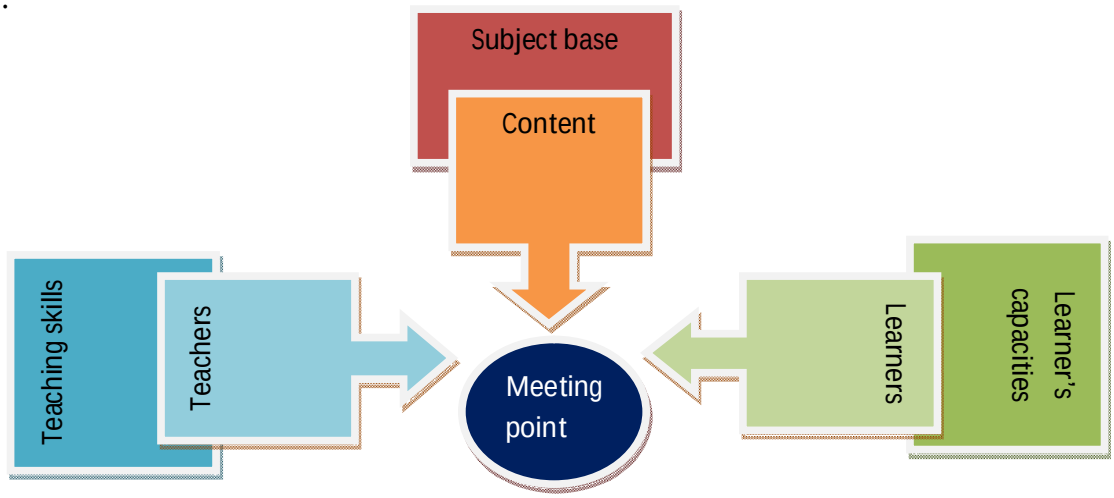
INRODUCTION

Good education is the one that paves the way for overall success, a sense of achievement and freedom for a person. Education also becomes a principal agency of modifying the society. If education has such a crucial part to play in enhancement of societal and individual development, then it is essential to assess and value all the elements related to the imparting of education. More than that, we need to look at the agency that taken up the calling of teaching of teachers namely the teacher education system and assess and value all the elements related to teacher education.

And when one says teacher education – what happens there or what is focused there is – are people engaged in **teaching to teach**, are they engaged in **learning to teach**, are they engaged with **teaching to learn** or are the members engaged in **learning to learn.** In a way all of them happen. A teacher educator is teaching the student-teachers to teach and the student-teachers are engaged in learning to teach. At a later point of time the student-teachers turned teachers will be teaching the school students to learn and ultimately it will so result that school students will be learning to learn. So we have 'teaching' teachers (teacher educators) 'learning' teachers (student- teachers) and 'learning' learners (school students)

TRIAD OF EDUCATION

Basically education revolves around three important elements namely teacher, content and learner.



CONTENT

The content or the discipline is vast area. The content in any subject can be equated to the universe where deeper understanding about it still eludes even the most knowledgeable. The history of mankind is replete with efforts of man in capturing the “unknown”. The subject base in its miniature form is the content.

When one talks of content usually we think in terms of written or oral texts. These texts are nothing but the compilation of **knowledge gathered from the past** through and by human intervention. We term it as “body of knowledge”. This body of knowledge is limited to what became unveiled, unearthed or uncovered so far /this far in the history of mankind and made available / accessible. It is as good as the latest discovery only. It is man and men’s experience in another form. In the content aspect of a teaching learning process the human element is hidden from the view.

There are some assumptions regarding the content and dual views about it which needs to looked into. Whether is fixed or fluid, whether it is bounded within a limit or goes beyond the limits, whether it is discrete unit or continuum, whether it is static or dynamic.

TEACHERS

When one talks of teachers they are the ones who are “bearers of knowledge” and in a way they are **knowledge in its present form.** What differentiates a teacher from others is the capacity for or the skills for teaching a content area. The kind of knowledge that a teacher possesses can be explained in the following way. Shulman defined content knowledge of a teacher as “the amount and organization of the knowledge per se in the mind of the teacher” (Shulman, 1986,in Kirschner, 2006), and pedagogical content knowledge as knowledge “which goes beyond knowledge of subject matter per se to the dimension of subject knowledge for teaching”. He further defined curricular knowledge as “the pharmacopoeia from which the teacher draws those tools of teaching that present or exemplify particular content”.

Regarding the assumptions about the teacher too there are dual views. Is she / he the sole holder of knowledge or knower or she / he too is a learner. What is that that gives her right to transact content? Is she supposed to be expert far excellent or otherwise? She too is bound by the expertise she has gained from her education and experience. The teacher is the via media who is able to pass on the content to the learner. It is needless to say that teachers are the most responsible, influential and significant agents in the school process. Creation of good teachers is not possible by imparting only some theoretical

knowledge; it takes years to develop proper attitude and efficacy. As Dunkin and Biddle (1974) point out teacher qualities or properties like skills, knowledge and attitudes are manifested as a result of his or her formative experience and teacher training experiences. They are termed as presage variables that influence the teacher behavior in the classroom teaching. The teacher training experiences is a major factor in the making of good teachers. The social interaction between these two main human actors namely the teacher and learner in educational set up should be in its ideal best if educational goals are to be achieved.

LEARNERS

The learners in turn are "receivers of knowledge" and in a way they are **knowledge in its future form**. Learners are so considered because they have the desire to know about something which is still unknown to them and which would be of use or interest to them. There are certain assumptions about the learner too. Is he a blank slate or something more? Is the capabilities over estimated sometimes? Is there over expectation from him /her? She / he too is bound by the biological factors related to mental growth and development.

LEARNERS AND THEIR COGNITIVE STRUCTURE

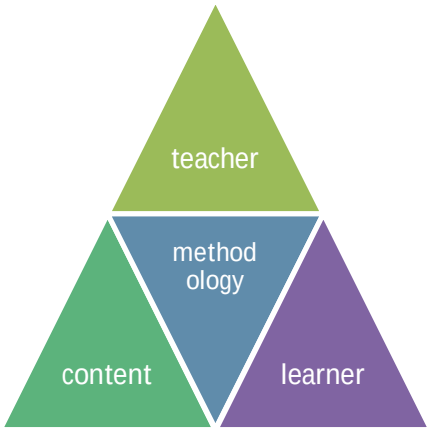
As more researchers were once again concerned with processes inside the head, cognitive psychology arose on the landscape of science. Their central claim was that cognition was information processing of the brain. Cognitive psychology did not dispose the methods of behaviourism, but rather widened their horizon by adding levels between input and output. (http://en.wikibooks.org/wiki/Cognitive_Psychology_and_Cognitive_Neuroscience)

The learner's cognitive structure is of crucial importance. Human cognitive structure talks about the way cognitive structures are arranged in the mind. The structure of intellect as propounded by J.P.Guilford points out that three most important aspects that affect learning of a learner are the content dimension, operation dimension and product dimension. The operation dimension involves the cognitive processes including cognition, memory recording, memory retention, convergent thinking, divergent thinking and evaluation. Atkinson and Shiffrin 1968, (in Kirschner, 2006) came out with their sensory memory – working memory and long term memory model. Working memory has two well-known characteristics: When processing novel information, it is very limited in duration and in capacity. We have known at least since Peterson and Peterson (1959, Kirschner, 2006) that almost all information stored in working memory and not rehearsed is lost within 30 sec and have known at least since Miller (1956, in Kirschner, 2006)) that the capacity of working memory is limited to only a very small number of elements. That number is about seven according to Miller, but may be as low as four, plus or minus

one. When the learner is asked to work with minimal guidance it places a huge burden on this working memory.

METHODS AND APPROACHES

There are interactions happening between the content, teacher and learner in a classroom setting. The methodology is the one that straddles the content, teacher and the content.

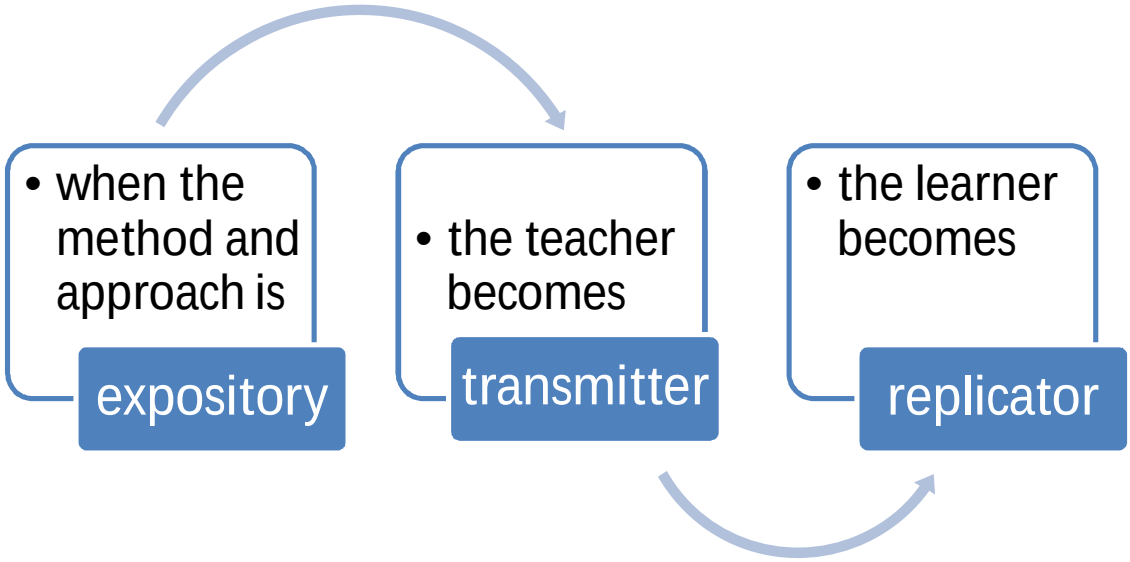


The crucial element is the content reaches the learner. Either the teacher has to ‘take’ the content to the learner or the learner himself has to come and ‘take’ the content. This is where dual views come into existence. There are arguments that learner can and has the ability to come and ‘take’ the content in his independent capacity. And there are arguments that teacher should be the one that ‘takes’ the content to the learner. In fact the former is called the teacher centered or traditional method and when learner becomes active it is considered as innovative methods.

The studies related to teaching methods focus on traditional method and innovative methods. There have been arguments about the two. There are people who say or make assumptions that students learn better if they discover or construct essential information for themselves. On the other side people say novice learner should be provided with direct instructional guidance on the concepts and procedures required by a particular discipline and should not be left to discover those procedures by themselves.

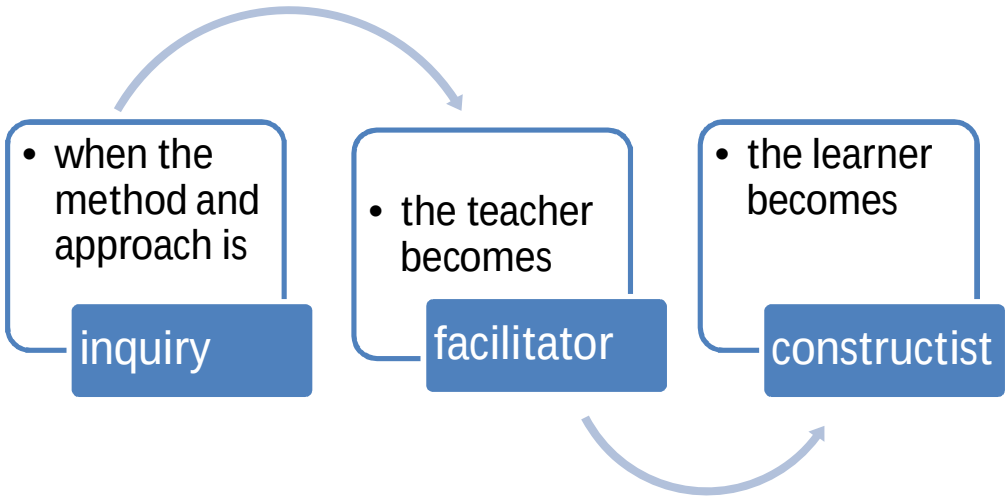
The traditional method can be defined as providing content that fully explains the concepts and procedures of a particular topic in a particular discipline that students are required learn. Here a competent and knowledgeable and experienced person is in the forefront. The Education he (teacher) has had experience enables him to exhibit his expertise. There could be instances where education and experience has not translated into expertise. Or a competent and knowledgeable and experienced person is there through the book he has written or explained or a webpage he has developed.

The method and approach of transacting the content becomes expository where the teacher is just a transmitter and the learner is replicator.



The new methods have been called by various names discovery learning, problem solving, inquiry learning, and experiential learning. In all of them the students are placed in inquiry learning contexts and asked discover the fundamental and well known principles of the discipline by modeling the investigatory activities of professional researchers. It is based on the assumption that when learners construct their own solutions it leads to most effective learning experience and also knowledge is best acquired through following the inquiry procedures of the discipline. It is also argued that the direct instruction interferes with the natural process by which learners draw on their previous experience and learning style to construct new knowledge.

The method and approach of transacting the content becomes inquiry and the teacher becomes a



facilitator and the learner moves up to become a constructor of knowledge.

ESTABLISHING VERACITY OF METHODS ADOPTED

The various methods adopted by teacher are clubbed under the title of instruction. The goal of instruction is rarely **simply to search for or discover information.** The goal is to give learners specific guidance about how to cognitively manipulate information in ways that are consistent with a learning goal, and store the result in long-term memory. Recommending minimal guidance was understandable when Bruner proposed discovery learning in the year 1961 as an instructional tool because the structures and relations that constitute human cognitive architecture had not yet been mapped. (Kirschner,2006)

Another consequence of attempts to implement constructivist theory is a shift of emphasis away from **teaching a discipline as a body of knowledge** toward an exclusive emphasis **on learning a discipline by experiencing the processes and procedures of the discipline.** (Kirschner,2006)

Despite this clear distinction between learning a discipline and practicing a discipline, many curriculum developers, educational technologists, and educators seem to confuse the teaching of a discipline as inquiry (i.e., a curricular emphasis on the research processes within a science) with the teaching of the discipline by inquiry (i.e., using the research process of the discipline as a pedagogy or for learning).

There is difference between the way an expert will deal with finding solutions or finding the truth and how a novice can handle it. The teacher is the one who have the found a path in the maze of information. It had come to her after prolonged efforts and after deeper reflections. "Expert problem solvers derive their skill by drawing on the extensive experience stored in their long-term memory and then quickly select and apply the best procedures for solving problems." (Kirschner, 2006) With the term *expert* we describe someone who devotes large amounts of his or her time and energy to one specific field of interest in which he, subsequently, reaches a certain level of mastery. It should not be of a surprise that experts tend to be better in solving problems in their field than novices (people who are beginners or not as well trained in a field as experts) are. They are faster in coming up with a solution and have a higher success rate of right solutions. But what is the difference between the ways experts and non experts solve problems? (http://en.wikibooks.org/wiki/Cognitive_Psychology_and_Cognitive_Neuroscience)

Research on the nature of expertise has come up with the following conclusions:

•Experts **know** more about their field,

•their knowledge is **organized** differently, and

•they spend more time with **analyzing** the problem.

When it comes to problems that are situated outside the experts' field, their performance often doesn't differ from that of novices.

Knowledge:

An experiment by Chase and Simon (1973) dealt with the question how well experts and novices are able to reproduce positions of chess pieces on chessboards, shown to them briefly. The results showed, that experts were far better in reproducing actual game positions, but that their performance was comparable with that of a novice when the chess pieces were arranged randomly on the board. Chase and Simon concluded, that the superiority on actual game positions was due to the ability to recognize them from the more or less 50,000 patterns stored in an expert's memory. In comparison, for a good player there may be 1,000 patterns and for a novice only few to none at all.

Organization:

In 1982, M. Chi and her co-workers took a collection of 24 physics problems and presented them to a group of physics professors, as well as to a group of students with only one semester of physics. The task was to group the problems based on their similarities.

As it turned out, the students tended to group the problems based on their *surface structure* (similarities of objects used in the problem), whereas the professors used their *deep structure* (the general physical principles) as criteria.

Analysis:

Experts often spend more time trying to understand the problem before actually trying to solve it. This way of approaching a problem may often result in what appears to be a slow start, but in the long run this strategy is much more effective.

Therefore it is wrong to expect the learners with their limited exposure to think and bring about the results as an expert will do.

IMPROVING THE CONTRIBUTIONS OF PYSCHOLOGY

The knowledge gained from psychology can be of great help if some precautions are kept in mind. The following lines enlist some suggestions (Hilgard, 2007)

1. Validate the principles developed in the laboratory in real life situations. A theoretical principle must be first tried out under the conditions of actual life. In real life there are constraints of time, personnel and equipment. A instructor does not have complete charge of his students and so he is not free to do everything he wants to do. Any learning principle has to be tried out in classroom before we can be sure that it is useful.

2. Be tolerant of negative results. If two methods of teaching or training is tried out the findings may fovour one or the other so. Instead of concealing the findings, the results ought to be let known to others.
3. Enlist the cooperation of inventive practical people. Very often experienced teachers have a flair for finding ways to suit learning to ability level. Psychologist can collaborate with such persons .
4. Make relevant use of past experience in facing new problems.
5. Maintain motivation until a difficult task is completed or a baffling problem solved.

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