



THE JOURNEY FROM OBJECTIVISM TO CONSTRUCTIVISM TO AUGMENTED REALITY – THE ROADMAP AHEAD!

Dr. Seema K. Bhandare

Associate Professor

Adarsha Comprehensive College of Education and Research, Pune

Abstract

The present conceptual paper focuses on the evolution of the teaching-learning process from objectivism to constructivism through structuralism; functionalism and behaviourism finally leading from the transitory phase of cognitivism to the radiant phase of constructivism. It talks about how augmented reality is ahead of VR and the revolutionary impact it may entail. Paper gives an overview of the basic tenets of every school including its main idea, teaching method(s), and evaluation tools. It covers various aspects and activities in the B.Ed curriculum which reflect constructivism. It also offers a hopeful vision of reforming evaluation techniques. The paper presents a model of the journey of teaching-learning from Objectivism to Constructivism and in conclusion talks about how AR is the reality of tomorrow.

Keywords: *Structuralism, Objectivism, Constructivism, Augmented Reality, Discovery Learning, Experiential Learning, Virtual Reality, Journey of teaching-learning*

Introduction

Education means to blur the line between play and work and from an arena that is focused on work, now we're moving into an age where it is all about play and experimentation. Just as educational boundaries have been blurred, even the field of teacher education has undergone a sea change and the curriculum has moved on to follow a constructivist approach rather than an objectivist perspective.

Conventional methods of teaching-learning were based on objectivism which included structuralism -> functionalism -> behaviourism leading finally towards cognitivism which acted as the link between objectivism and constructivism.

Structuralism

- Complete stress was laid on the structure of the mind that includes only three things – sensations, feelings, and images.
- Method of Study – Introspection.
- As it was criticized for its limitations of scope and laid undue importance on parts and not the process,

This method of study was also highly subjective and could not be generalized and hence, the birth of functionalism was seen.

Functionalism

- Advocated the theory of mental life and behavior.
- Still laid importance on consciousness and mind.
- Internal mental processes were the core of functionalism.
- Method of study – Introspection, projects, activity-based learning.

As consciousness could not be assessed scientifically, the birth of behaviourism took place.

Behaviourism

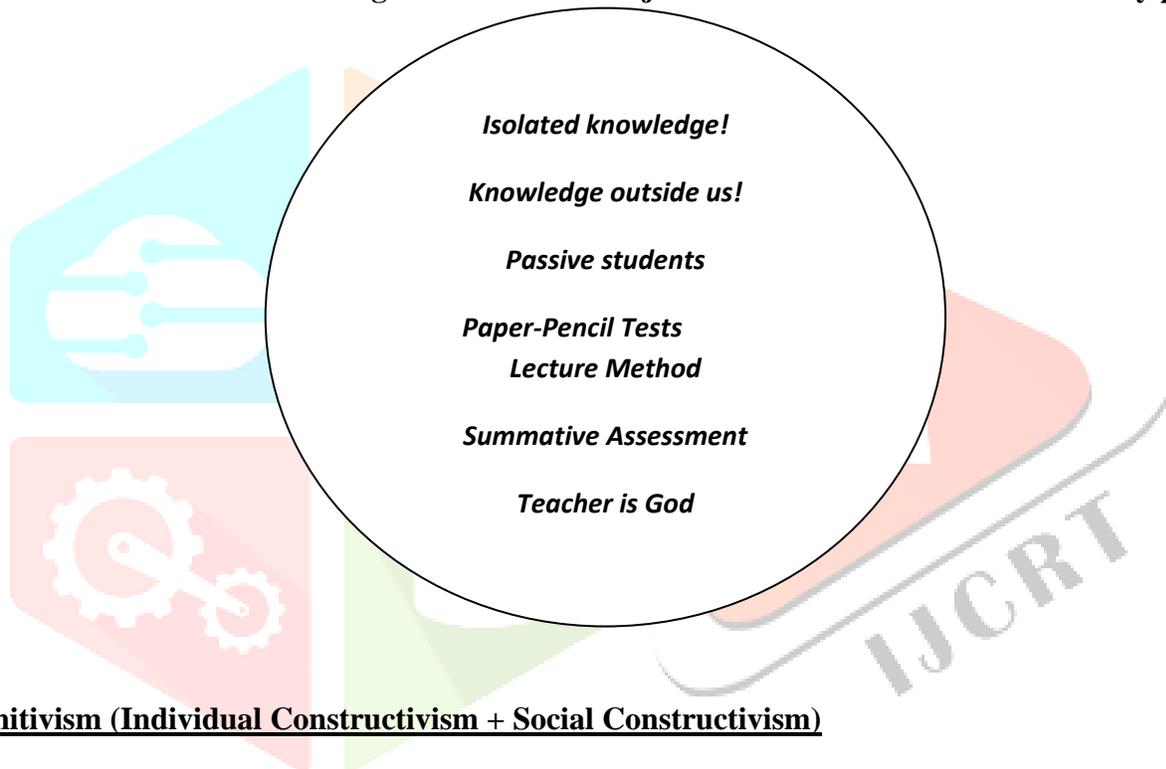
- Learning is a positive behaviour change.
- Overt and observable behaviour was given importance in this school by Watson.
- Environment was given a lot of weightage and hence, teaching methods were enriched to promote a conducive learning environment.
- Weightage is given to reward, motivation, and promoted programmed learning.
- Teacher was still the dominant one in the complete learning process.
- Pavlov's classical conditioning became the basis in which motivation and reinforcement are given before the act itself to trigger it. Skinner's Operant conditioning is when motivation comes after basic learning for further learning.

Above mentioned schools reflect objectivism.

Overall View of Objectivism

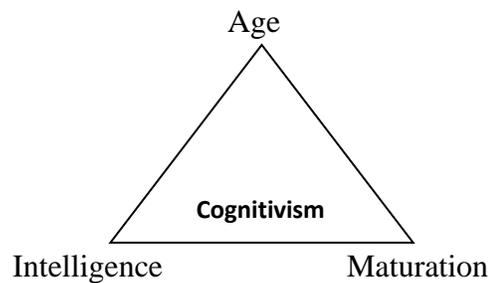
- The philosophy of Objectivism placed the teacher right at the top of the educational pyramid.
- Teacher transmits the knowledge to the students and holds complete authority over the learning process.
- Knowledge is static and is found outside us in books, in nature and one cannot create any knowledge.
- Objectivism promoted selective education and did not consider the vastness of knowledge and hence, the scope was limited and did not transcend any boundaries.

Objectivism states that knowledge is isolated and objective. This led to the next transitory phase.



Cognitivism (Individual Constructivism + Social Constructivism)

- Cognitivism was a transitory phase which focused on individual intellectual development which takes place step by step and is gradual.
- Piaget started thinking that knowledge is contextual and subjective. This was the seed sown which led to individual constructivism.



- Vygotsky introduced the concept of Social constructivism and said that learning is not an individualistic process, instead is facilitated by adult and peer support.

Bruner challenged Piaget's and Vygotsky's understanding of intellectual development and said development was not step by step and was totally governed by individual's own pace. It is related to his/her interaction with the world and his perception of the world.

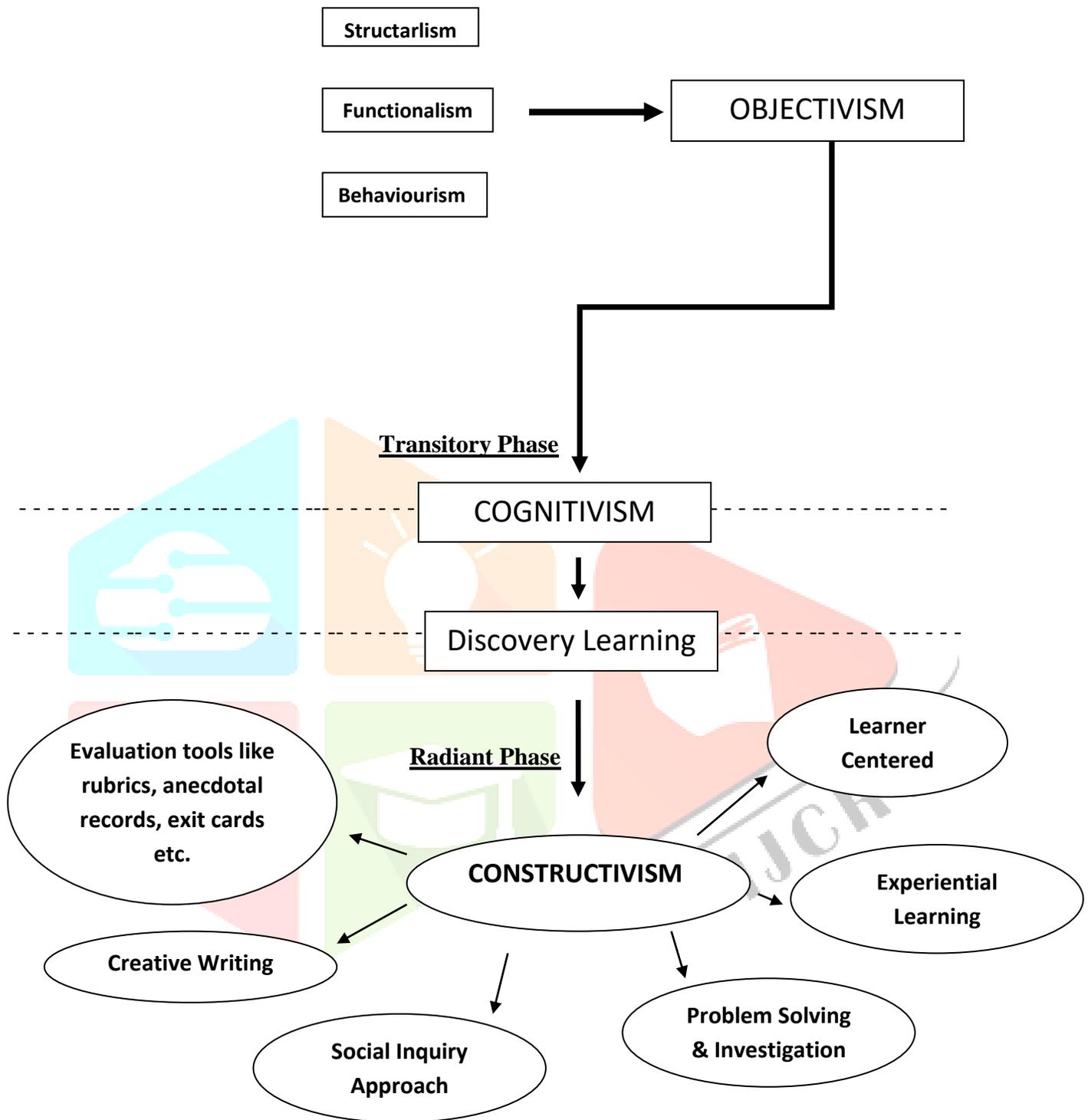
5 E's of information construction process given by Bruner are:

1. Engage
2. Explore
3. Explain
4. Elaborate
5. Evaluate

In addition to this information construction process, he also laid extensive stress on social interaction, social experiences and cultural influences. Hence, Bruner said that constructivism is blend of both cognitive development and social learning. He couldn't coin the term 'constructivism and hence, called it '**Discovery Learning**'. This gave birth to the concept of constructivism which included the best of all behavioural and cognitive theories. Constructivism calls for a new culture and new class environment.



Model of the Journey of teaching learning



Constructivism in B.Ed curriculum

Keeping in mind the umbrella scope of constructivism, the need of such a paradigm shift has been conspicuously quoted in NCF 2005. One saw a pedagogical shift from teacher centered approach to learner centered approach where teacher’s role is that of a scaffolder. Teacher needs to gradually withdraw her support system and the student becomes a totally independent learner.

Due to a paradigm shift, the classroom techniques have undergone a facelift from traditional methods of lecture, demonstration, and discussion as given in the objectivism to interactive, experimental, heuristic methods as stated under constructivism.

The teacher is no more the transmitter of knowledge but actually one who helps investigate and explore knowledge. The students aren't passive receivers anymore, they are active knowledge constructing agents and harvesters of the same. The teacher is now just expected to be the organizer who facilitates the students to construct their own knowledge.

Constructivism and its techniques in B.Ed curriculum:

Experiential Learning in Simulation: Dewey is being followed seriously as hands-on experience is being gained by the student teachers through micro-teaching, simulation, internship etc. Teaching aids are being prepared on their own and reteach lessons help better one's own performance once it is evaluated by peers and teachers. In B.Ed, it is a combination of reflective and non-reflective learning techniques.

Concept Mapping: Models of teaching are based on concept mapping. Content analysis and sequential learning in CCM also include concept mapping (studying the structure of the subject while doing its pedagogical analysis).

Problem Solving: Preparation of lesson notes, reteach sessions and real-life experience in the classrooms help student teachers identify problems, plan for a solution, execute the plan and also evaluate the effectiveness. In B.Ed, one is made competent to teach the same topic at different levels by enriching the learning experiences and elevating the level of objectives.

Investigatory Approach: Lot of practical work promotes this approach. The student-teacher needs to visit schools, conduct a survey, enquire about different aspects hence, developing a sense of inquiry. Analysis of psychological tests also promotes this approach.

Creative Writing: Report writing of cultural and sports events, field visit notes, essay competitions, speech and debate scripts promote the spirit of creativity.

Social Inquiry Approach: A philosophical and psychological foundation is created in order to equip the student teachers to conduct social enquiry in their classroom. Student teachers closely experience the essence of observation, induction, deduction which are basic parameters of social inquiry.

Though teaching learning process is strongly constructivist in nature in B.Ed, the evaluation techniques are still following an objective approach that is of quantitative assessment. In B.Ed, we need to focus on Continuous and Comprehensive Evaluation that will test the student teachers through formative and summative assessments. Different tools and techniques of evaluation that can be used are performance based tests, portfolios, investigative projects, rubrics, interviews, mind mapping, anecdotal records, a celebration of learning, exit cards, graphic cards, and simulation.

Our vision for B.Ed curriculum is that student teachers should be able to design a constructivist classroom where students will, on their own, design experiments, explore, investigate, evaluate and manage their own learning. There will be a complete shift in classroom culture, attitudes, beliefs and practices. It will be a phenomenal revolution that will transform education from a process of 'knowledge acquisition' to 'knowledge construction'.

Towards a new tomorrow! – How Virtual Reality and Augmented Reality will transform the education sector!

Yaakov Garb in his research in 1987 was the first one to have used the term – 'Virtual Reality' and said that creating a set up with visual symbols would help in cognition. VR and AR both. Augmented Reality is the perfect way to help students understand concepts that are abstract and difficult to teach using traditional games. Students in the classroom today are well versed in working with technology and it is essential to provide inputs in the way they understand best. Gamification is a famous component of AR in which the content is provided in the format of a computer game with levels and rewards. This instigates the student to step up knowledge to progress to the next level. There are a lot of AR Tools available online to convert the content you want to teach into the AR format and should be used wisely by the teacher. New research in

the world of AR in Education is proving that this type of learning boosts the motivation of students, is quicker than traditional teaching methods and safe practice.

Anyhow, on the flip side, the challenges are also many. Perfect hardware and software are needed and might not be as accessible to everyone. The teacher might not have the appropriate technical expertise to guide students. Barring these few points, if AR is used in a classroom setup, the students would really like it if they are transported to a different world without actually being in that situation. Take for example, be it mixing chemicals in a high-tech laboratory, or a walk in a jungle observing plant species, or being a part of a literature conference and having the real feel of all these situations – nothing can be more interesting. AR would be perfect even when we talk of remote learning as the user can engage himself creatively in the process without much guidance for the teacher. At the enterprise level, AR has already created a strong foothold and it is imperative, for us educationists to accept that the wave of AR is about to sweep our sector and we need to prepare ourselves accordingly.

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