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# Pre-Service Elementary Teachers' Perceptions On The Usage Of Concept Cartoons In The Science Instructional Process

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***Abstract***
This study investigated pre-service elementary teachers' perceptions on Concept cartoons by using survey method through google forms. 42 student-teachers pursuing Diploma in Elementary Education Colleges constituted the sample. The research tool consisted 30 statements including both positive and negative statements on Concept Cartoons Strategy. Research Data was gathered in a span of two weeks. Google forms received were analysed using statistical techniques such as mean, standard deviation and 't' test. Results indicated that, Concept cartoons in the Science instructional process makes students more active. The results found that, Urban student-teachers had more positive perceptions on the usage of the Concept cartoons than the rural student-teachers. Science and Commerce, Commerce and Arts disciplines student-teachers do not differ in their perceptions on the usage of Concept cartoons; but Science discipline student-teachers had more positive perceptions on the usage of Concept cartoons than Arts student-teachers. The data suggests that, Concept cartoons could be a valuable addition to educational practices, potentially leading to improved student outcomes and more engaging classroom experiences.

***Key words*:** Perception, Concept cartoons, Science, student-teachers

## Introduction

In the educational revolutions, psychological theories have prominent place. One such philosophy is the constructivist Philosophy. Constructivist philosophy is introduced assuming that the child is the active learner and constructor of knowledge in the classroom. The previous knowledge also plays very important role in constructing the new knowledge. Supporting to this, many activities will be executed inside and outside the classroom by the teachers who performs the role of a facilitator to the students. Learning environment has an important role in students' life as it caters the need of the students to be an active listener and to construct the knowledge by activities. Many hands' on and minds on activities will be administered in the classroom to make the instructional process more effective. In addition, through Science strategies also, a teacher can reach the students by providing meaningful experiences for conceptual understanding of many concepts, phenomenon's etc. One such strategy is the Concept cartoons which play an important role in Science Instructional Process.

## Concept Cartoons Strategy

Concept cartoons is a new strategy in the field of Science education, created by **Keogh** and **Naylor** in **1991**. These are the comical characters debating about an idea or everyday situation, creates platform to discuss and stimulates reasoning ability. They have positive and negative dialogues to discuss. These texts will be in the students' language, with scientifically acceptable viewpoints. The Concept Cartoons can take the shape of animated or still pictures or motion pictures with musical background.

Concept cartoons can be in the form of colourful sheets or posters which act as a learning resource to the students in meaningful conceptual understanding. It can be used as a teaching strategy and also an assessment tool through worksheets. A typical Concept cartoons has the following characters;

- It is a Visual comic tool with speech bubbles.
- It represents the scientific ideas in casual way with minimum text in the dialogues
- The scientific ideas are applied in everyday situations
- The alternatives have equal viewpoints with positive and negative dialogues

Concept cartoons strategy can be used in the computer environment through projector also. It can be used either in groups or for individual learning also. The different thoughts presented on the sheets with 3-4 cartoon characters of any scientific idea can provoke the minds of the students to learn in discussion mode. Then, the misconceptions related to the idea will be explored by the students as the classroom environment supports to express the ideas or opinions freely. Then the teacher acts as the facilitator to overcome the misconceptions attached to that idea. So, Concept cartoons help them to know the new knowledge with their prior knowledge.

Present, Ask to comment, Ask to rationalize, Stimulate and Set the follow-up activities are the steps involved in usage of Concept cartoons to teach a Science concept in the classroom; the same is represented below.

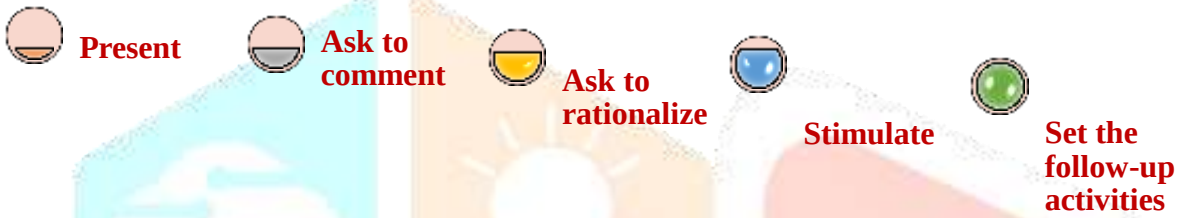


**Fig 1: Steps involved in the usage of Concept cartoons in Science Instructional Process**

**Literature Review**

There are lot of studies in the literature studying Concept cartoons' effect on different variables. **Birisci, Mentin & Karakas (2010)**, Concept cartoons guaranteed that the instruction process became more exiting and interesting which led to the fruitful learning. The Concept cartoons used in cohesive instruction design affected learning positively with enhanced motivation **(Sibel Cengizhan,2011).** Concept cartoons' effectiveness in Chemistry instruction for Teacher education created a debate environment with students improved critical thinking skills and academic achievement **(Dr. K Abdul Gafoor & Shilna V (2015).** The Concept cartoons in Science were thoughtful, amusing with improved academic achievement, cognitive structures of the students **(Ozge Ceylan, Elif Atabek Yigit, 2018).** The Concept Cartoon teaching strategy enhanced creative thinking as well as student's interest in Science, Technology, Engineering and Mathematics. The effect of Concept cartoon on enhancing achievement in Chemistry, the study led to better understanding of instructional process **(O.S. Asha ,2020).** Concept cartoons based on Constructivist philosophy had positive effect on students to learn biology concepts **(Ali Aslan, Tubanur Aslan Engin, Gulbubu Kurmanbekova, Fethi Kayalar, Filiz Kayalar, Yalcm Karagoz, Adem Engin, 2021).** The Concept cartoons Strategy affected positively on the interests of the Primary school students' scientific ideas. Students expressed cumulative interest and positive attitudes in the primary classes **(A. Letina, 2023).**

**Perceptions on Concept cartoons**

The survey was carried out through the Google forms. It consisted of 30 statements including both positive and negative statements about usage of Concept Cartoons Strategy in the Science instructional process with following five major dimensions, namely;

***Dimension 1: Educational Effectiveness and Learning Impact***

1. Concept cartoons affect the performance of the students
2. Concept cartoons make instructional process more effective
3. Concept cartoons make learning more enjoyable
4. Concept cartoons provide meaningful understanding of the concepts
5. Concept cartoons help in permanent learning of the concepts
6. Retention of concepts is easy through Concept cartoons
7. Usage of Concept cartoons in the instructional process consumes more time in conceptual understanding
8. There is no significant difference between instruction with Concept cartoons and traditional methods

***Dimension 2: Student Engagement and Motivation***

1. Concept cartoons act as visual aids
2. Concept cartoons afford motivation in the classroom
3. Concept cartoons make me more eager to learn
4. Concept cartoons make learning environment entertaining
5. Lessons with Concept cartoons don't bore me
6. Textbooks that include Concept cartoons interest the students in learning
7. Concept cartoons inside a lesson attract attention of the students

***Dimension 3: Cognitive Development and Learning Skills***

1. Concept cartoons help me in divergent thinking
2. Concept cartoons improve my inquiry learning skills
3. I realize my misconceptions through Concept cartoons
4. I gain new knowledge through Concept cartoons
5. Designing Concept cartoons increases my inventiveness

***Dimension 4: Teacher and Instructional Perceptions***

1. Concept cartoons lessons are different from other lessons
2. I am more impressed with Concept cartoons
3. By usage of Concept cartoons, it is difficult to finish syllabus in time
4. In my opinion, Concept cartoons are too artificial in nature
5. I think usage of Concept cartoons helps in the professional growth
6. Teaching by using Concept cartoons excites me

***Dimension 5: Practical Considerations and Challenges***

1. Construction of dialogues in the speech bubbles of Concept cartoons is difficult
2. Designing animated Concept cartoons is tough
3. Concept cartoons are suitable only for science teaching

These dimensions encompass various aspects of how Concept cartoons are perceived and their impact on both students and teachers in educational context. All the statements were given a 5-point rating like "Strongly Disagree", "Disagree", "Neutral", "Agree" and "Strongly Agree".

**Objectives of the study**

The present study was conducted with the following major objectives:

1. To find the differential effect of the Perceptions on the usage of Concept cartoons in Science of rural and urban student-teachers.
2. To find the differential effect of the Perceptions on the usage of Concept cartoons in Science instructional process of Science and Commerce disciplines student-teachers.
3. To find the differential effect of the Perceptions on the usage of Concept cartoons in Science instructional process of Commerce and Arts disciplines student-teachers.
4. To find the differential effect of the Perceptions on the usage of Concept cartoons in Science instructional process of Science and Arts disciplines student-teachers.

**Hypotheses of the study**

1. There is no significant differential effect of Perceptions on the usage of Concept cartoons in Science of Rural and Urban student- teachers.
2. There is no significant differential effect of Perceptions on the usage of Concept cartoons in Science of Science and Commerce disciplines student- teachers.
3. There is no significant differential effect of Perceptions on the usage of Concept cartoons in Science of Commerce and Arts disciplines student-teachers.

4. There is no significant differential effect of Perceptions on the usage of Concept cartoons in Science of Science and Arts disciplines student-teachers.

**Method**

Research data was collected using Descriptive Survey method through Google forms. It consisted of 30 statements including both positive and negative statements about the 'Perceptions on Concept cartoons' in the Science instructional process.

**Population and sample**

Student teachers pursuing D.El.Ed Colleges in Bengaluru constituted the population. A total of 42 student-teachers were selected as the sample for the present study using Purposive sampling technique.

**Collection of the data**

Data was collected by administering a tool in Google form prepared by the researcher entitled as "Perceptions on Concept cartoons".

**Procedure for the analysis of data**

The responses on the Google form were converted into scores as Strongly agree-5, Agree-4, Neutral-3, Disagree-2, Strongly disagree-1. For the positive statements values of 5,4,3,2 and 1 were assigned and for negative items the weightage was given in the reverse order.

The maximum score points under each statement would be 5 and the minimum would be 1. In total scores, the minimum will be 30 and maximum will be 150. On the basis of this score pattern, the Mean and Standard Deviation for 42 student-teachers were calculated. Then 't' value was found out; based on the obtained t-value, comparing with the critical value with df the significant difference will be found out.

**Results and Discussions**

Based on the collected data, the following conclusions were drawn about Perceptions of student-teachers on usage of Concept cartoons in the science instructional process on the basis of five dimensions.

**Table-1: N, Mean, Standard Deviation And 't' values of Perceptions on Concept cartoons**

| Variables | | N | M | S.D | 't' | Significance |
|---|---|---|---|---|---|---|
| Native background | Rural | 25 | 113.88 | 9.90 | 2.35 | Significant at 0.05 level |
| | Urban | 17 | 120 | 7 | | |
| Subject discipline | Science | 9 | 121.22 | 6.39 | 1.08 | Not Significant |
| | Commerce | 9 | 117.55 | 7.98 | | |
| | Commerce | 9 | 117.55 | 7.98 | 1.03 | Not Significant |
| | Arts | 24 | 114.08 | 10.06 | | |
| | Science | 9 | 121.22 | 6.39 | 2.42 | Significant at 0.05 level |
| | Arts | 24 | 114.08 | 10.06 | | |

**From the table 1,**

- The obtained 't' value 2.35 is greater than the critical value 2.02 with df =40 at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. That means there is a significant differential effect of Perceptions on the usage of Concept cartoons in Science of rural and urban native background student-teachers.
- The obtained 't' value 1.08 is lesser than the critical value 1.75 with df =16 at 0.05 level of significance. Hence, the null hypothesis is accepted. That means there is no significant differential effect of Perceptions on the usage of Concept cartoons in Science of Science and Commerce disciplines student-teachers.
- The obtained 't' value 1.03 is lesser than the critical value 2.04 with df =31 at 0.05 level of significance. Hence, the null hypothesis is accepted. That means there is no significant differential

effect of Perceptions on the usage of Concept cartoons in Science of Commerce and Arts disciplines student-teachers.

- The obtained 't' value 2.42 is greater than the critical value 2.04 with df =31 at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. That means there is a significant differential effect of Perceptions on the usage of Concept cartoons in Science of Science and Arts disciplines student-teachers.

**Conclusion**

This study investigated the Perceptions of Pre-service elementary teachers on the Usage of Concept cartoons. The overall perception of the Concept cartoons is highly positive. They are seen as effective tools in motivating students and for enhancing learning, engagement and conceptual understanding across various subjects, not just Science. These findings are in agreement with findings of others namely; Keogh and Naylor, Kabapinar, Ekici and Aydin and Balim, Inel and Evrekli.

The study found that, Urban student-teachers had more positive perceptions on usage of the Concept cartoons than the rural student-teachers. Science and Commerce, Commerce and Arts disciplines student-teachers do not differ in their perceptions on the usage of Concept cartoons; but Science discipline student-teachers had more positive perceptions on the usage of Concept cartoons than Arts student-teachers. The data suggests that Concept cartoons could be a valuable addition to educational practices, potentially leading to improved student outcomes and more engaging instructional activities.

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