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GENDER PERSPECTIVES IN THE CONTENT OF LANGUAGE TEXTBOOKS

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Introduction

Textbook is one of the most essential tools for teaching learning process which helps to develop knowledge within students. It is a device in which any kind of desired information and knowledge can be contained and made available to the target audience. Textbooks are written not only for the purpose of developing knowledge but also to foster social, cultural, democratic, moral and other human values of life. It is the textbook through which the education and socialization of children takes place. Writing an unbiased and student friendly textbook is the demand of the present time. Textbooks reflex customs, traditions, culture, ideals, ideas and other essential values of human life. The content of a textbook greatly affects the behavior and perception of children towards the human being and society. Textbooks act as one of the most powerful tools of education and socialization. They reflex the knowledge, values, ideas, and ideals desirable by the society. It is the textbook through which students especially children develop sense of self, society, social roles, values, customs, traditions, social rules and regulations etc. Textbooks function as a medium of social change and social control. The manner in which textbook materials are presented, languages used to explain male and female characters, proper nouns used to describe male and female character, nomenclature given to male and female based on their personal characteristics. Pictures used in the book to explain a situation etc. have a great impact on students' attitude to develop either positivity or negativity towards societal concepts like male and female members of the society.

Gujarati language textbook is a commonly used textbook from class-1. Talking about the state of Gujarat, where the mother tongue is Gujarati. It is very important to develop, grow and acquire the mother tongue. And it is the young generation's responsibility to protect the state's mother tongue. The content and activities provided in the textbook are very important to develop love for the mother tongue. So that the child can read, write and create in his/her own language through these activities and through the content given in the textbook. So while preparing the textbook, it is very important to ensure that topics that create feelings such as gender bias or gender stereotype are not included.

Textbooks are analyzed for many aspects like relevant content, pictures, activities and exercises. But looking into the nature of inclusive society of today it is also important to look into the aspects of gender representation in textbooks. Language textbooks which generally represents the literature of the society in which it is spoken. The literature is the mirror of the society's culture, etiquettes and ways of life so language textbooks indirectly are helping students to develop awareness about the society in which they are living. So it is necessary to analyze language textbooks based on the gender aspects. It helps to develop proper attitudes in students by channelizing the teaching learning process by teacher. With this intention the present study was conducted on the Gujarati language text book of standard 9 of GSEB board for analyzing gender perspectives represented in different lessons presented as content.

Investigator has gone through 22 Studies out of which 11 studies were related to textbook evaluation and 11 studies were related gender perspectives in textbooks. In the 11 studies related to textbook evaluation of different boards were evaluation on different criteria's like physical aspect, academic aspects, linguistic and cultural needs of the state and learners, language skill development aspects, content, exercise, grammar section and provided relevant materials, gender issues. **.[Kattel,M. (2021) ; Swami, Anil Basweshwar (2021); S.Rangaraju (2020); Muhammad, A. & Muhammad, k. (2019); Shahi, B.R. (2017);Shree & Lakshmi (2015); Sharma,B. (2015) Thotapally,.A. (2014);Vasava,J (2011); Vasava,D. (2008); Indnani,J.(2005)] .**

The reviewed studies on gender perspective in textbook show that gender biases were found in terms of visuals, vocabulary, exercise, strength and weaknesses of textbook, illustration, occupational activities for gender. **(Shah, M. (2019); Linda, R. (2018); Bhattacharya, S. (2017); Basnet, R.D. (2016); Tarrayo, V.N. (2014); Kobia, John M. (2009), Hindi subject (Kumari. S. (2014), social science (Kharbanda, R. (2015) ; Kumari. S. (2014).** The studies used the content analysis for finding out gender perspectives in the textbook and drawing implications from these studies. The investigator used the content analysis tool of the textbook content prepared by NCERT for finding out the gender perspectives in Gujarati textbook with the objective the following objectives.

1) To evaluate the content of the Gujarati Textbook of class IX (Gujarati medium) with respect to Gender bias , Gender stereotyping , Gender neutral or gender inclusive, Visuals on gender bias, Exercise / Projects / Activities which reflect gender bias
2) To suggest ideas to reduce gender related issues in Guajarati textbook of class IX.

Explanation of the terms

Gender Perspective: The gender perspective in this study is with respect to the aspects mentioned in the tool made by NCERT in 2016 for analyzing the reading materials which has the aspects like Gender bias, Gender stereotyping, Gender neutral or gender inclusive, Visuals on gender bias, Exercise / Projects / Activities which reflect gender bias.

The study is delimited to the Gujarati Textbook for standard IX (Gujarati medium) published by Gujarat state Board of school textbooks (2016). The selected textbook was analyzed based on NCERT tool designed for gender analysis of textbooks. Analysis of the textbook comes under Descriptive Research and the tool or technique employed here is the content analysis. Content analysis serves as a useful purpose in yielding information related to gender issues and helpful in the evaluation and explaining social or educational practices with reference to gender.

Evaluation tool prepared by NCERT (2016) was used for analyzing the content of the Gujarati textbook. This tool is prepared for evaluating any teaching material of upper primary schools with gender perspective on Gender bias, Gender stereotyping, Gender neutral or Gender inclusive, visuals on gender bias, exercise / projects / activities which reflect gender bias in its content. Content Analysis of all the chapters from class IX Gujarati Textbook was done with respect to gender perspectives provided in the tool. The analysis was categorized to find the different aspects related to gender perspectives as mentioned in the explanation of Gender perspectives tool given by NCERT (2016). The major findings of the study are listed below.

- In Gujarati textbook standard 9. Lesson no. 5,6,7,13,18,19,20,21 total 9 lessons are related to gender neutral.
- Lesson no. 6 and 21 are related to gender stereotype and gender bias.
- Lesson no. 7, 13, 18 and 20. Total 4 lessons are related to gender inclusive.
- Lesson no. 3, 4, 6, 12,16, 22 and 24. these 6 lessons are showing male oriented.
- Lesson no. 6, 19, 15, and 18. these 4 lessons founded female oriented. Focus given only on female character.
- Lesson no. 4, 16, 18, 20, 22, and 24. In these 6 lessons prestigious occupations like leader of village, doctor, king, and industrialist are given to male characters. In which perceptive like gender discrimination and gender stereotypes are seen.

- Lesson no. 2,4,6,11,18, and 20. In these lessons male and female both performs duty like humanity, moral duty social duty when needed. Which promote gender neutrality.
- Lesson no. 4, 16, 22 and 24. These lessons are related to customer practices like praying god, to get heaven so donate something and do Puja, Bhajan etc.
- Lesson no. 2, 4, 6, 7,9,11, 13, 15, 18, 20, 21, and 22 in these lessons are showing equally contributions and achievements of male and female both. Gender neutral perspective seen in this lessons.
- Lesson no. 7, 6, and 18. In these lessons are showing power relations between daughter and mother with neighbors, with people. There are gender neutral perspective showing.
- Lesson no. 6, 15, 18, 20 and 21. These 5 lessons are related to female contributions and also can say female dominant.
- Lesson no. 7, 11 and 20. These 3 lessons showing equally distribution of workload. These lessons promote gender neutral and gender inclusive. Which is good for secondary level students.
- Lesson no. 4, 6 and 16. Gender bias and gender stereotype seen in these 3 lessons because only female character performs all house hold chores duty.
- Lesson no. 4, 18 and 20. Male and female both are seen as agents of change in terms of struggle. Find out Gender neutral perspective.
- Lesson no. 4 and 22. In these lesson showing that male character performs religions activity marriage, neighbors and organization meeting. These create gender stereotype and general inequality between male and female.
- In Gujarati textbook standard 9 total male character 34 and female character 17 are represented in different stories.

Discussion

In patriarchal world women help in family management and men are going out in society to earn and manage financially. Women are doing different household work and men's work is limited to outside the house mainly with earning for maintenance of the family. Men relax at home or outside after their work is over, but not women. Resources are also available at the mercy of elders to women. Even though in today's democratic world situations have changed, and resources are made available for women, not much has changed with reference to their gender status. They should also get chance and they should get equal status. We

should grow our self-everyone should get equal priority. If we have democracy in governing, then this should work and for this the main root is education because of awareness from education this gender equal awareness can be developed.

Gender discrimination in textbook is explicit. One cannot openly say that it is the outlook of the writer. The lesson is a part of a literature existing in a particular time and it is representing the situations of society during that time. However, the discrimination in the textbook is not right. We all are living in 21st century and the same aspects are being repeated and are being taught to children without teacher's awareness that they are cultivating the age old conceptions about gender in their students. boys and girls are growing up with misconceptions about gender equality. The book should have gender equality value which is the relevant and required component of present context.

All language text books are made with literature parts taken from different era to fulfill language teaching objectives. Lessons based on different time zones definitely show gender related issues as per the time representation. But present time needs and ideas of gender are different. But those lessons should be dealt by teacher incorporating the changing scenario and explaining how such kind of attitudes inversely effect current gender needs and issues. Also textbooks highlight lessons with different gender attitudes like, female achievement in male dominated areas, females in different positions of administration and also males taking up female positions. For this some suggestions are also provided in this writing.

1. Gujarati textbook front and back page should show gender equality with pictures and themes on male and female writers and on stories included.
2. Ccomposition written by a female writer or female poet should also be included as lessons.
3. A photo of an author (female) should also kept on the first page of the book.
4. Equal number of male and female oriented topics should be placed in the books.
5. Lessons showing sacrifice, love, and dedication of the mother should be included along with lessons showing the sacrifice, love, and dedication of the father.
6. Garbo, Stuti, Pada or Bhajan of Mataji should also be included.
7. The editors should maintain equality in selecting lessons with male and female oriented topics.
8. A lesson showing the importance of a righteous queen should be included.

9. Lessons representing the present day attitudes towards gender must also be included in the textbooks for comparison during teaching learning.

Implications of the present study

The study has following implications to the field.

1. The findings are useful for content developers of language text books to incorporate appropriate lessons.
2. The analysis provides proper ideas for teachers to incorporate gender neutral strategies to develop awareness in teaching learning
3. The study has implications for policy makers to develop guidelines to evolve gender neutral curriculum and text books relevant for present context.

Conclusion

The present study on Gender Perspectives seen in the content of class IX Gujarati textbook find out gender perspectives existing in the textbook in terms of gender neutral, gender stereotype, gender inclusive, and gender bias. As per the objectives of teaching language, lessons from different era of the literature need to be selected to prepare a textbook. As literature is the mirror of the society, it definitely shows the societal conditions of that particular time. The only way to develop gender neutral attitude here is to integrate the present changed gender concepts while teaching the content by teacher. The textbook is an important part of the classroom. The textbook is used by the teacher to teach students all perspectives of the society in which they are surviving. The best way to eliminate gender inequality is through integration of new concepts while teaching from textbooks in the classroom.

The textbook is important for both students and teachers. Education is used to develop values in the classroom. The future of the country is the young generation. It is necessary to develop perspective approaches towards gender neutral, gender inclusive, gender equality. It is important to remove discrimination against women. Traditional beliefs about gender discrimination prevailing in the textbook can be removed by awareness development by teacher during teaching learning. The change has to come from the school itself.

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SUGGESTIONS FOR INSTITUTIONALISING ORGANISATIONAL CREATIVITY AND INNOVATION

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Introduction:

In today's globalised world it is very important than ever to be creative and innovative. This means thinking in new ways and being open to completely different ways of seeing the things. Many writers define creativity as generation of new idea and innovation as the translation of a new idea into a new company, a new service, a new process or a new method of production. The Educational organization that is not creative and innovative may not survive. Thus, the educational organizations should look for ways to encourage and foster creativity and innovation on both the individual and institutional level.

Individual creativity and innovation

Individuals differ in their ability to be creative. Creative people tend to be more flexible than non creative people. They have the ability and willingness to shift from one approach to another while tackling a problem. They prefer complexity to simplicity and tend to be more independent than less creative people, sticking to their guns when their ideas are challenged. Creative people also question authority quite readily and are apt to disobey orders that make no sense to them. For this reason they may be difficult to manage in most organizations. Motivated more by an interesting problem than by material reward, they will work long and hard on something that intrigues them.

Organizational creativity and Innovation

Just as individuals differ in their ability to translate their creative talents into results, organizations differ in their ability to translate the talents of their members into new products, processes or services. To enable their organizations to use creativity most effectively, managers need to be aware of this process of innovation in organizations and to take steps to encourage this process. The creative process in organizations involves three steps ; idea generation, problem solving or idea development, and implementation.

Creative process:

The creative process in organizations involves three steps ; idea generation, problem solving or idea development, and implementation.

Generation of ideas:

The generation of ideas in an organization depends first and foremost on the flow of people and information between the organization and its environment. For eg. The vast majority of technological innovations have been made in response to the conditions outside the organization. If the organizational leaders are unaware that there is change in the outside world which demands change in the internal environment and that there is dissatisfaction with already existing practices, they are not likely to seek innovations.

The generation of ideas is more likely to promote innovation when those ideas issue from the grass roots level of the organization. Empowering people at the lower levels i.e teachers in the organizations to initiate new ideas within the context of supportive environment is a valuable means of implementing successful innovations. In addition, although many new ideas challenge a organizations' cultural traditions, such innovative organizations should routinely encourage teachers to generate new ideas.

Idea Development:

Unlike idea generation, which is greatly stimulated by external contacts, idea development is dependent on the organizational culture and processes within the organization. Organizational characteristics, values, and processes within the organization. Organizational characteristics, values, and processes can support or inhibit the development and use of creative ideas. Commitment to the rational problem solving approaches increases the likelihood that high quality, creative ideas will be recognized and developed fully.

The organizational structures also play an important role. Rigid organizational structures that inhibit communication between people in different departments will often keep potentially helpful from even knowing that problem exists. By creating barriers to communication, rigidly structures organizations may prevent problem solutions or different ideas from reaching the leaders who need them.

Implementation:

The implementation stage of the creative process in organizations consists of those steps that bring a solution or invention to the society.

For innovation to be successful, a high degree of integration is required among the various units of the organization. Creativity can be best nurtured in a permissive climate, one that

encourages the exploration of new ideas and new ways of doing thing. Many leaders find it difficult to accept such a climate. They may be uncomfortable with a continuing process of change, which is essential accompaniment of creativity.

Some suggestions for institutionalising organizational creativity and innovation:

Develop a culture of innovation:

Establishing the culture of innovation requires a broad and sustained effort. Though changing an organizational culture is never easy, with the right leadership, cultures can be reshaped and amazing results can accrue. Establishing an attitude of relentless growth is what enables an organization and its people to achieve their goals. The spirit of relentless growth keeps fresh ideas flowing and reinvigorates any organisation. Thus, "the primary challenge facing leaders is to institutionalize an environment where every decision and direction can be constantly and safely reassessed.

Inspirational leadership:

The question for leaders today isn't if culture is important for success but how culture can drive successful innovation – and there is a need of inspirational leadership to influence the kind of culture that leads to behavior that's truly innovative.Inspirational leaders create an inspiring culture within their organization. Inspirational leaders breathe life, confidence and creativity into the organization. They supply a shared vision and inspire people to achieve more than they may ever have dreamed possible. People change when they are emotionally engaged and committed. People do what they have to do for a manager; they do their best for an inspirational leader. People are not led by plans and evaluations. If you want to move and get the best from your people, don't say "I have a strategic plan". You must create inspiration, self-respect, a sense of ownership and excitement.

Inspirational leaders create 'can-do' attitude and make work fun. They unlock inner power of their people and sustain their commitment. They inspire, energize and move people. They build communities in which people feel valued, capable, confident and strong. They inspire team members to believe in the extraordinary work they can do together.

Sustainable ability to change:

In today's world characterized by rapid unpredictable change and volatility, the sustainable ability to change is much more important in any organization than the ability to create change in the first place. The ability to change can be achieved by building an adaptive organization and synergizing systematically capabilities as strategy innovation and volatility leadership.

Encourage new ideas:

A positive climate should be created in the organization where all are allowed to share their innovative ideas along with the head of the institution. Organization superiors from the top to the lowest level supervisors must make it clear in word and deed that they welcome new approaches. To encourage creativity, managers must be willing to listen to subordinates' suggestions and to implement promising ones to convey them to higher level managers. They should not have any fear from the superiors and should be encouraged to come out with innovative ideas to do different things.

Permit more interaction:

A Permissive, creative climate, should be fostered by giving individuals the opportunity to interact with members of their own and other work groups. Such interaction encourages the exchange of useful information, the free flow of ideas, and fresh perspectives on different issues.

Freedom to fail:

Freedom to fail means a freedom to explore, venture, experiment and succeed in uncharted territory. Many new ideas sometimes prove impractical and useless. Effective managers accept and allow for the fact that time and resources will be invested in experimenting with new ideas that do not work out. Failure provides a great learning opportunity and should be viewed as a very lifeblood of success. If you give people freedom to innovate, the freedom to experiment, the freedom to succeed, then you must also give them the freedom to fail. The organization of tomorrow will demand mistakes and failures. It is only by trying lots of initiatives that we can improve our chances that one of them will be a star. The more you fail, the more you succeed. You learn from taking action, from your mistakes, from feedback, from getting going. "Life itself is a process of trial and error... And those people who make no mistakes are those who make nothing."

All you do by not letting your people fail is postponing the growth of your organization because:

"Success comes from good judgment
Good judgment comes from experience
And experience, often, comes from bad judgment!"

Provide clear objectives and freedom to achieve them:

Organization members must have a purpose and direction for their creativity. Supplying guidelines and reasonable constraints will also give managers some control over the amount of time and money invested in creative behavior. As a leader, one must envision the future,

passionately believe that one can make a difference, and inspire people to achieve more than they may ever have dreamed possible. You must see a changed world beyond the time horizon, create an ideal and unique image of what it could become, open your followers' eyes and lift their spirits. You must believe that your dreams can become reality and, through your attitude, get people to see exciting opportunities and possibilities for the future. People change and unlock their inner power when they are emotionally engaged and committed.

Offer recognition:

Creative individuals are motivated to work hard on tasks that interest them. But, like all individuals, they enjoy being rewarded for a task well done. By offering recognition in such tangible forms as bonus and salary increases, managers should demonstrate that creative behavior is valued in their organization. Financial rewards do encourage people to produce results. But the kind of ownership that really generates energy is not financial. It is emotional. Set stretch goals – they energize people. Become a positive, encouraging person. Give people a sense of responsibility and make them feel that their actions make a difference. Communicate with people frequently and praise them.

Conclusion:

For institutionalizing creativity and innovation in any organization the contribution from all is needed. The role of institutional head is of utmost importance as he/she is the one who will really see that the creativity is institutionalized. The leader has to give the supportive environment and encourage its people to come out with new ideas.

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USE OF COMPUTER ASSISTED INSTRUCTION IN EDUCATION

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INTRODUCTION

Education is one of the most important elements responsible for the growth of society. Therefore, It has significantly adjusted to the changes brought about by the information age of today. It is not sufficient to only update and modify the course material for the modification to be successful. The introduction of information resource based education paradigms is also rather significant. Computer-Assisted Learning (CAI) is one of the instructional strategies that relies on the utilization of information system resources. CAI has existed for over four decades, and its broader application has been made possible only with the appearance of personal computers.

Computer-assisted instruction (CAI) is a teaching approach that employs computers as a learning environment, setting in which learning takes place, which improves the learning time and students' motivation, and can be helpful for students with varying learning paces. Principles of self-directed learning and computer technology were used to create this teaching approach (Hancer & Tuzeman, 2008). “Regarding the organization of the learning process, in CAI pupils are led by the strategy of small (short) steps, i.e. by the piecemeal plan, being straight learned about their own movement and with the teacher’s arrangement to every student. In this way, every pupil learns independently, individualized and at his/her own speed” (Pejić, 2006: 46). With the help of CAI, students can exercise increasing control over the selection, management, and evaluation of their own educational endeavors, which they may do whenever they decide, location, age, or method. In other words, students are free to choose what they choose to study and how. (Pilli, 2008). Furthermore, because CAI uses a presenting style that is influenced by motion, color, and sound, it is aesthetically pleasing. Furthermore, CAI abduction and seizure students’ consideration by giving opportunities for event, with the student’s past achievement as the challenger (Mahmood, 2006). By preventing incorrect study theories through prompt

responses, CAI also dispels preconceptions. Computer-assisted learning reduces rote learning and allows for purposeful study (Renshaw & Taylor, 2000).

The use of CAI in biology education has been suggested by numerous scientists, educators, and researchers. Nevertheless, not all biological materials are suitable for use in the CAI application. as noted by Hancer and Tuzeman (2008). Numerous studies that compare the efficacy of CAI to standard teaching paradigms in the execution of various biological materials have validated this. Çepni et al. (2006) examined how students' cognitive domain levels (understanding, comprehension, and application) were affected by the Computer Assisted Instruction Material (CAIM) on the subject of photosynthesis. According to the study's findings, students in the CAIM group performed noticeably better overall on the overall accomplishment test than learners in the conventional group. At the level of fact-knowledge, both groups received about the same amount of points, according to an analysis of the students' performance on personal cognitive domains. However, However, when it came to comprehending and applying knowledge, students in the CAIM group scored better than those in the control group. Using conventional instruction (CI), Yusuf and Afolabi (2010) examined the effects of individualized computer-assisted instruction (ICAI) and cooperative computer-assisted instruction (CCAI) on the biology performance of secondary school students in the areas of food chain, food web, energy shift, vitamins, and the pyramid of numbers. It was discovered that students who were resolved to CAI, either individually or in collaboration, generally performed better than their counterparts who were also resolved to CAI. When comparing the effectiveness of ICAI with CCAI, the CCAI approach resulted in noticeably higher student accomplishment.

“Water is made up of hydrogen and oxygen. Fishes and other aquatic animals take oxygen from water. Therefore bubbles of hydrogen gas come out when they breathe. Thus, water is consumed from the reservoir and the level should come down.”

They were the statements of a student in the researcher's class in the tenth grade who was quite enthusiastic and self-assured about her opinions concerning the water level above a reservoir that contains fish and additional aquatic species. She used the reasoning she had built to connect the different scientific ideas she had studied and seen thus far to explain aquatic life. Following three days of talks, debates, and investigation, it was determined that plants make use of the oxygen that is dissolved in water. When she and a few other students in the class brought up the same issue three months later, it was noted that the

students had gone back to their original justification for the aforementioned phenomenon. Even though their argument reflects the most praised aspects of science education, the concepts researched, findings, problem-solving using logic and reasoning, and drawing connections to real-world situations, there is a clear doubt about the learners' explanation of the phenomena.

Given that they were sixth graders, the researcher had been teaching these students science for over four years. An in-depth investigation showed that these students' interactions with characteristics and their conceptual modeling to comprehend their reality are more complex and scientific than we, as educators, consider and what the typical tests and conversations can reve, despite the fact that they did well on tests and in class reactions, which supported the researcher's faith in their conceptual knowledge. It was also observed that just four scientific students, who did not return to their original comprehension, had used the different resources at their disposal to try and solve the problem.

“One important human response to the wonder and awe of nature from the earliest times has been to observe the physical and biological environment carefully, look for any meaningful patterns and relations, make and use new tools to interact with nature, and build theoretical models to apprehend the whole nature. This personal struggle has led to present science. Broadly speaking, the scientific method contains several inter linked steps: inspection, looking for regularities and patterns, creating hypotheses, innovative qualitative or mathematical models, deducing their consequences, verification or falsification of theories through observations and controlled experiments, So, meeting at the basis, philosophy and act dominant the natural world. The laws of science are never viewed as fixed eternal truths. Even the most established and universal laws of science are always regarded as provisional, subject to modification in the light of new observations, experiments and analyses” (NCERT, 2005).

(Worth, 1999) identified children as common scientists in "The Power of Children's Thinking" and postulated that, “They do what scientists do, but perchance for some lightly dissimilar and less cognizant clues. They are afraid to know the nature just as adults are or one can tell alike superior than them. There is a dreadfully amusing, but a little upsetting, world full of fillip versatile them. Many persons, still, have studied to avoid some of that nature rather examine it. Young children avoid very little” (Worth, 1999). Children's inquiries frequently reveal their level of curiosity. Children are therefore more approachable

and curious than typical adults. They present an alternative to the idealized character of scientific. Their thoughtfulness stems from their examination of the chaotic environment they live in, which is mirrored in at school a youngster attends.

"Furthermore when children beginning school and throughout school years, they previously have preformed information around how the natural earth works. These data may derive from within the didactic framework or from their memories outside of school. Research has shown that teaching is unbelievable to accomplish unless teachers and syllabus dossier take into narrative learners' predisposition" (Rosalind H.Driver's, Squires, Rushworth, & Wood-Robinson, 1994).

"What causes the moon's phases?" was said. Why does the season change? Even if they haven't had these kinds of discussions with elders, students do offer some answers, according to Weiler (1998). Teaching the American Institute of Physics, he creates an assortment of various structures teaching kids about science. For example, many children believe that the light is produced by the moon and that the moon's phases are caused by the Earth's shifting shadow. Additionally, a lot of people think that when Earth is far from the sun, winter is frigid, and when Earth is near the sun, summer is sweltering. On the other hand, the Moon is thought to reflect light from the Sun, according to science. The moon's visible light areas are also known as its phases. According to scientific theory, seasonal variation is caused by the tilt of the Earth's axis. The North Pole points toward the sun in the summer and away from it in the winter in the northern hemisphere.

Though reasoning behind the easy ideas that children make, may not be as complex as a scientific attitude behind the observer cannot be challenged. These early concepts that children form are referred to by some as Alternative Frameworks, by others as naive conceptions or alternative conceptions. Preconceived ideas, non-scientific beliefs, naive theories, confused conceptions, or conceptual errors are some names for alternative frameworks. These are essentially instances in science where an individual's knowledge and beliefs conflict with what is understood to be true according to science. In this study, these terminologies that denote similar mismatches are used interchangeably and are called Alternative Frameworks" (Worth, 1999).

Karen Worth goes on to say, "A youngster will not abandon his hypothesis created by so much work and observations just because an adult disagrees with it or a single

incident contradicts it. Youngsters are reluctant to abandon the theories and notions they have worked so hard to develop. They struggle to develop understandings that apply to their everyday lives based on their experiences. They have no intention of abandoning their beliefs simply because someone tells them so or because something happens to contradict what they have come to believe. Even adults struggle to change well-founded convictions, as anybody familiar with the history of science will confirm. If a youngster has a good concept and has worked hard to create it, they won't give it up unless they have many of fresh experiences that make it acceptable. Worth (1999).

USING COMPUTERS AS TOOLS

The third primary use of CAI is for students to write their own computer programs to solve various issues.This method is called computer-assisted learning or, to put it another way, computer-as-tools. By building programs in programming languages including APL, BASIC, C, LOGO, and PASCAI, students investigate solutions to a different of problems. Furthermore, a variety of advanced programming tools are now accessible. As component of their programming repertory, this enables students to access and/or produce images, audio, and video elements. Word processing, spreadsheet, database, and communications application packages are among these tools.

Prior to 1977, when inexpensive, fully constructed microcomputers were widely accessible, the majority of CAI operations were concentrated in either business and industry or post-secondary educational institutions. Early CAI applications in Canada were not CAI-related. Numerous universities, colleges, and technical institutes established academic computing centres and computing science teaching departments as programming and problem-solving applications emerged and matured. For instance, the University of Waterloo leads the globe in the development of student interpreters and compilers. Students in universities and colleges all across the world utilize Waterloo's compilers and interpreters on a regular basis. They operate on a wide range of systems.

The first significant CAI project in Canada was started in 1968 at the University of Alberta's Faculty of Education, under the guidance of Dr Steve Hunka. The IBM 1500 system, an experimental computer-based instructional system used in this project (of which IBM only made 20), was installed. After being employed for research and development at the University of Arizona for 12 years, the IBM 1500 was replaced with a Control Data Corporation PLATO System. Then, major CAI programs were under progress

at the Ontario Institute for Studies in Education, the University of Calgary and National Research Council.

TRADITIONAL TEACHING APPROACHES AND THE CAI

The CAI courseware created for this project addressed the subject of scientific decision-making and was created especially for a six-week section of the Singaporean school science curriculum. A curriculum-based collection of educational modules created especially for the Singaporean target demographic made up this CAI courseware. It was curriculum-specific and content-specific. In other words, the CAI modules' material closely adhered to the Singapore Ministry of Education's recommended curriculum. The duration of each teaching session in the schools dictated the length of each CAI module. Even the day and time of the CAI syllabus's completion are independent of the institutions' set schedules. A series of instructions involving learning activities for the notion of decision-making, followed by a predetermined set of exercises, comprised the CAI method. Students were given the required knowledge during the CAI lessons. Additionally, the students received practice tasks, instructions on the computer displays, and an evaluation of their learning. Both right and wrong answers were required in order to receive feedback. The study also included a control group that studied the same subject using the direct expository teaching methods that are popular in Singapore in order to raise the validity of the findings from the evaluation study.

The control group used a normal explanatory technique consisting of six modules, each lasting six weeks and consisting of two lectures, much like the CAI approach. There were two 35-minute courses in each curricular subject. As a result, the CAI and control groups spent the same amount of time learning the identical material. Both groups received the same instruction from the same teacher. Additionally, to improve internal validity, both groups received identical sets of worksheets and tasks. While the control group's activities were sent as worksheets, the CAI group's exercises were saved on the computer. In the conventional style, the instructor used the direct expository teaching method and gave a series of instructions. The learning was started, led, and managed by the instructor. Transparencies, charts, diagrams, and presentations were employed as teaching tools. Worked cases and answers were shown to the students on the overhead projector.

After that, students had to do the worksheet activities. The teacher gave the first explanation and the worksheets that reinforced the lessons, so the pupils needed no help

from the instructor to comprehend to grasp what they were doing. There was little one-on-one interaction between students or between teachers, and most interactions in the classroom took place between the instructor and the entire class.

TOOLS FOR COMPUTER ASSISTED LEARNING ASSESSMENT

Multiple-choice questions (MCQ) :- This kind of activity is mostly utilized for computer-based assessments that gauge how well students grasp the material they have received. CBTs make advantage of it.

Fill in (close) the Gap :- In CBTs as well, the learner must input text in the blanks or gaps if certain words are missing. To complete the task, the learner must supply appropriate terms. The test is simple to complete within a few minutes and may be made using low-cost software.

Search the Answers :- In this test, students are given questions and are required to use the Internet or e-libraries to get the answers on their own. The teacher may get the responses in any of the needed forms.

Scrabble/Crossword Puzzles :- The primary applications of crossword puzzles are in basic education or computer-assisted language acquisition. The game may be played during free time, and they can be made using the terminology that the children have recently been studying.

Online Interactive Chat :- Group chats may be an effective learning tool for professors and students to communicate online via text or voice. Making use of social networking platform to set up a server for group chats is rather simple. However, if there aren't enough people using the chat room, it might be challenging to control at times and get monotonous. Conversations may lead to fascinating conversation when undertaken with tasks and appropriate student groupings (age groups, hobbies, etc.). This is particularly true when the teacher assigns post-chat activities at the end of the session.

Drills :- Students can be prepared for actual on-field problems by using computer simulations of real-life scenario exercises. Software designed specifically for the purpose can be used to conduct drills. Organizing computer-simulated drills can be costly, especially if specialized equipment and a high degree of computer proficiency are needed.

WebQuest :- In a WebQuest, students are asked to respond to questions on topics that are mostly accessed online. Instead than having students search for information, WebQuest aims to improve their ability to use and analyze it. Here, the instructor will give the pupils the necessary links to the online exercise.

Adventure Games :- In these computer-simulated role-plays, students are given a scenario to navigate and successfully complete. The learner must analyze the game quickly and enter the results as text, by clicking on certain choices, or by adjusting the game's controls. The application provides comments on the player's performance at the conclusion of the game.

Listening Exercises :- The computer takes the role of the cassette recorder for these tasks. A sound system is connected to the computer. A computer-played audio recording must be listened to intently by the students. Audio streams, CDs, and DVDs, as well as podcasts, are frequently utilized. The purpose of this activity is to help children improve their listening abilities. If the pupils have understood the material, multiple-choice questions can be used right away.

CAI VISUALIZATION TOOLS

In CAI, visualization is a crucial component. Seeing is believing, meaning that when a lecture is correctly displayed for students to view, they are better able to understand what they are being taught. 2D plots make it simple to construct and enhance 3D things. For teaching a subject or course that demands attention to detail, traditional visual aids like pictures, drawings, maps and designs are now woefully insufficient. 3D models for computers, animated films, Computer maps with color, and more are examples of the latest visualization technologies.

Visual CAI technologies are being utilized for teaching and presenting purposes in a variety of disciplines to display and convey key ideas. While the program should work on most PCs with no setup, the visualization gear should be portable. For the pupils to readily picture the demonstration, the teaching method should be adaptable. The user or pupils should have the ability to change the viewing angle and enlarge or contract certain areas of the notion they are viewing.

Java is the most widely used software technology for creating visual applications. Writing and developing software that works on several platforms with minimal

alteration is made simple with Java. Web-based apps that are portable and interactive may be made by combining Java with HTML and VRML.

ADVANTAGES OF CAI

There are several benefits that CAI offers to the education industry. These consist of Self-Paced/Self-Directed Learning: Students can choose their own learning speed since they have more control over the CAI process. Throughout a course, students are free to study at their own pace. They are allowed to repeat a project or material modification as frequently as they have the desire. If they are already familiar with a subject, they can also pass past it. This increases teaching effectiveness and saves time. Similar to this, since every student learns differently, they may decide what they want to study and in what order.

The problem of slow and quick learners is addressed by this. Every student may learn at their own speed with CAI. Since they may always revisit the lesson whenever it is convenient for them to study, slow learners won't be upset if they can't keep up with the others. Students grow more accountable and conscious of the consequences of their chosen learning style and technique as they control their own learning pace. For instance, web based adaptive educational systems (WAES) adjust to the needs of the learner and offer varying degrees of information, evaluation, and comments for the learner to examine.

Better Computer abilities: Students who are not computer literate will be forced to acquire and enhance their computer skills via frequent computer interaction. When two or more pupils must share a computer, it also fosters a feeling of teamwork. Pupils will be urged to utilize computers more for their work as their proficiency with them improves.

Visualization: Obviously a computer-based study or test makes a pupil more attentive. A feeling of anticipation causes the pupil to pay closer attention during the session. Multimedia resources better inspire students visually, and seeing helps them listen. This enhances pupils' innate learning style.

Learning Efficiency: Students that use CAI are better able to retain what they have learned for longer periods of time and acquire concepts or abilities more quickly and with less effort. They would therefore need less time from teachers.

Sensory Stimulation: Because we are able to take in and process information, we are multisensory creatures. Fletcher (1990) asserts that 75% of what individuals see, hear, and do is stored in their memory, 20% of what they hear, and 40% of what they have seen and heard.

The computer's ability to arouse the senses and display information in a variety of media 40% of the things they have seen and heard, and 20% of what they hear. can enhance the educational experience. Because they foster excitement and offer an engaging atmosphere, computers support learning.

Communication Development: Video conferences and chats assist the growth of speaking, writing, and communication abilities. Through debates and opinion discussions, they offer speaking practice. Occasionally, the teacher's official assessment is not involved.

Content/Lesson-Centered: In contrast to a typical teacher-centered classroom, a computer-based class directs students' focus away from the instructor and toward the content or topic being taught. A content centered teaching strategy is advantageous to the learner. Pupils focus intently within the computer or computers before them, which helps them become more at ease throughout class.

Enthusiasm: In general, computer technology in the classroom makes the lesson more engaging and fascinating. It keeps students' interest and encourages them to engage fully in class activities.

IMPEDIMENTS OF CAI

Students may experience general anxiety when computers are used in the classroom for the first time since they are unfamiliar with what will be shown to them. The instructor will also have to deal with computer anxiety if the students, especially the older ones, are not computer proficient. It would need a significant amount of time for pupils to adjust to CAI in this setting.

In a computer-based self-assessment course where they must work independently, students may feel overwhelmed by the amount of data they are handling. Because students' attention is often directed to the computer, the instructor needs to concentrate more on the lesson. Additionally, while introducing CAI for the first time, it is best to avoid using too many multimedia relays.

When pupils are so enthralled with what they are viewing on the internet that they hardly pay attention to what is being taught, that is also an undesirable situation. They can become so engrossed in the multimedia visuals that, by the conclusion of the session,

they won't have understood the main ideas of the course or will just listen to the lecture in passing since their minds are "far away." This is more likely to occur with younger kids.

While it's true that creating visually appealing demonstrates is a crucial component of CAI, the main goal of the class is for the pupils to comprehend and learn the material; if they don't, Computer integration in the classroom won't work. The instructor should make an effort to keep the student-computer connection in balance. Asking questions on the material should be a frequent way for the teacher to make sure the pupils are understanding. It is the responsibility of the teacher to make sure that students learn and are able to confidently convey what they have learned, even when the computer may pique their interest and help them comprehend a course better.

TYPES OF SOFTWARE USED IN CAI

Different types of Software used for Computer Assisted Learning are

(i) Drill and Practice

- Worksheets and flash cards are typically used in schools in a similar manner as drill and practice software. It organizes repeated disclosures of facts or data in a pattern akin to a game or quiz. For example, Reader Rabbit, Accelerated Reader, and Math Munchers
- For many years, the most common kind of computer application was drill and practice software since teachers were unsure of other uses for computers. Because it tracks student performance, drill and practice software is also a strong fit for behavioral learning and teaching approaches. Drill and practice software primarily targets lower-order thinking skills.
- Applications for drills and practice do not make full use of the power of computers. Still, Numerous drill and practice programs excel at what they do. The computer never gets tired of giving pupils the practice and constructive criticism they require.
- To update both instructors and students on their progress, most programs for drill and practice as well include a tracking device. Furthermore, numerous programs for drill and practice incorporate music & additional stimulating features to motivate pupils, allowing them to advance at their own pace while utilizing the software.

(ii) Tutorial

- In contrast to drill and practice software, which does not have a teaching component, tutoring software introduces ideas or abilities and then provides students with the chance to practice them.
- Mentoring may be either linear (students have to move from page 1 to page 2, and so on) or non-linear (students can proceed in a variety of directions depending on their needs or areas of interest). Linear software is more common in older software.
- Tutorials frequently include a lot of interaction. Students do not just study computer veeil peacefully; some tutorials manage lengthy lessons and adjust the pace and feedback depending on the students' progress.
- pupils who are absent or require remediation may benefit from taking a digital lesson if one is available that covers the topic missed.

(iii) Problem Solving

- Students can observe the outcomes of their responses to different circumstances by using problem-solving software. Feedback is given based on the factors that learners have manipulated. Software for solving problems may not always use realistic settings. Such as, in the Carmen San Diego series, In an attempt to find a criminal, the student takes off throughout the globe in search of clues. Children study geography and develop their problem-solving skills simultaneously, but the process is artificial.
- When utilized in combination with the curriculum, problem solving applications have a great deal of potential in the class. It might potentially be difficult to give comments based on each student's individual selections In the event that you need a computer.

(iv) Simulation

- A simulation is a real entity, event, or phenomena that is modeled or shown so that students may observe how their actions impact the scenario. Sometimes doing the actual task is impractical or inappropriate, thus a simulation is utilized to provide sketches that would otherwise be rejected. Simulation software behaves in real-world scenarios, which is how it differs from analytical software.
- The academic community may benefit from this kind of software, which is a very active use of computers. Pupils are empowered to change some elements of scenarios or models. They may see the effects of their choices right away.

- When using simulation and problem-solving software, one thing to keep in mind is that assessments may not always accurately represent what students have learned from using these programs. Alternative modes of evaluation that can help us better assess students' knowledge and comprehension needs to be considered consideration when we begin to employ software that tackles higher order thinking skills.

(v) Games Software

- Frequently, game software sets up a competition to beat the computer or other players with the highest score.

(vi) Discovery

- A broad collection of data relevant to a subject or course is provided via the discovery technique, which then challenges students to Examine, contrast, infer, and assess the data based on their investigations.

FEATURES OF CAI

By influencing psychological processes and boosting motivation, Programmers on computers have been able to develop computer-assisted learning programs that have improved student learning. According to recent studies, computer applications support this learning through the following mechanisms:

(i) Personalization Information

- Personalizing data grants computer-assisted-instruction to boost trainee passion in the accustomed works and boost the intramural sense and institution of the substantial. Causing items on the display to move. Learning is enhanced by the way objects move that are used to explain specific concepts, such as Newton's First Law of Motion. According to Reider (1991), this is because it reduces the cognitive burden on the learner's memory, allowing them to complete tasks involving search and recognition and create more connections between material.

(ii) Practice Activities

- Offering practice exercises that combine curiosity and difficulties Computer-assisted-instruction boost encouragement by supplying the pupils with a challenging material that piques their attention. Events that are inherently encouragement also bring other

momentous benefits similarly individual fulfilment, objection, importance, and advocacy of a confident aspect on whole life leaning.

(iii) Creative Context

- Providing a creative context. Through interaction, a creative environment promotes learning. Added to employing computer programs, Events that are inh As Fein (1981) and Signer (1987) have found, imagination is frequently quite intrinsically motivating. Granting a pupil authority over their own learning, Giving students autonomy over their education results in more leaner-controlled education, which boosts motivation. A more motivated student ultimately learns more.

TYPES OF STUDENT INTERACTIONS IN CAI

(i) Recognition

- In the case of recognition-type interactions, the student is merely required to indicate whether or not the information presented by the machine, in the shape of an ambiguous statement or query, has already been presented, This sort of item can occasionally be seen in CAI interactions as binary choice (yes/no) or multiple choice items.

(ii) Reconstructive

- Reconstructive comprehension or understanding This form of interaction, which ranges from some pretty complex types of understanding to some rather simple ones, is the most prevalent in the CAI. As opposed to (i) and (ii), these kinds of engagement involve the student in worthwhile activities on the supplied content rather than relying on the surface-level characteristics of the information. He might be * Keep in mind that a VDU terminal is used for this interaction..

(iii) Intuitive Understanding

- Intuitive or Global Reconstructive Understanding The description of these interactions is even more challenging. Their goals include "getting a feel" for a concept, mastering complex pattern-acceptance abilities or creating a feeling of action, and they frequently entail extended engagement. The focus is on practical education., which may help students become more conscious of their behaviors in

relation to a constellation of issues or concepts that experts believe are essential to comprehending a certain field of knowledge. More than in types (i), (ii), and (iii), comprehension must be shown in the student's actions in this case. Teachers will evaluate it based on these actions; explicit criteria recorded in the machine cannot be used.

- Finding the basis for trailing simulations, developing a "feel" for diagnostic approaches, addressing problems using classical methods, and similar activities are all part of these interactions. Through these kinds of encounters, the student learns the expert physician's diagnostic techniques while experimenting with different tests and treatments. The goal is to improve the clinician's perception of when certain actions are appropriate in various situations.

(iv) Constructive Understanding

- Constructive Knowledge Interactions of type (ii) are quite flexible and allow the student to "create" information. Due to the fact that new information is nearly always created in opposition to existing knowledge, The student participates in "open" inquiry in Type (v) exchanges; he is not attempting to find answers that must fall inside the discipline's established framework. He is, in his opinion, going beyond what is already known. He could be putting his own theories to the test, creating his own methods, and making judgments based on his own research. This interaction appears to be authentic research rather than merely exercises on the methodology and substance of existing areas.

LIMITATIONS OF CAI

- Even if chemical and biological investigations may be carried out through simulation, practical experience is lacking. Furthermore, manual skills like operating a machine or managing an equipment cannot be developed via CAI packages.
- The process of creating CAI systems comes with actual expenses. Effective CAI is costly in terms of staff time to develop and implement.
- A particular CAI package's coverage may go out of date. The procedure for creating these packages comes at an extremely high expense. The resources used to produce the course would be wasted if it is out of date.

- It's possible that CAI packages fall short of instructors' expectations. The CAI author and a teacher may have different goals and approaches.
- It's challenging to encourage and prepare teachers to make use of computers in class. This new gadget might terrify them. They might not want to invest more effort in planning, choosing, and utilizing CAI tools. Additionally, it might be seen as a threat to their job.
- Computer installation is accompanied with administrative issues. The issues were specifically connected to the computer's physical location, the cost of covering and preserving the hardware, and time-tracking.
- The constant developments in hardware make it difficult to choose a system before it becomes outdated. If a large number of institutions install a new system, they might not receive the courseware needed for it, and the courseware that has already been generated might become obsolete.

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