CHAPTER 5: ANCHOR LEARNING

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WHAT DOES ANCHOR LEARNING MEAN?

The Group of Vanderbilt Cognition and Technology (CTGV) first developed anchor learning in 1990 under the leadership of John Bransford. Although many people have been contributing to the theory and research of anchor learning, the leader of this theory is Bransford. Anchor learning, one of the application models of constructivist approach, is a learning approach, which prescribes that all learning activities should be organized around a story, problem or case that is called anchor. This approach also provides the students with the opportunity to apply the information they have gained on different real life cases and thus serves as a bridge between school life and real life. The materials within the border of programmes basing on anchor learning are generally technology-based and they contribute to students' success in a positive manner.

ANCHOR

Lexical meaning of the word 'anchor' is to moor or anchor something with an anchor. Within the framework of anchor learning, it means a comprehensive knowledge base or environmental adjustment that provides students with a rich source of information. Another definition of 'anchor' within the framework of anchor teaching is a comprehensive case of story or problem that also includes introductory and explanatory preliminary information that students will need and that presents a rich source of information.

FEATURES OF ANCHOR

- It helps students to see the information they need and set their important goals, and to apply them in daily life.
- It is composed of stories.
- It makes students focus on the subject on a large scale.
- It presents basic preliminary information.
- It is generally composed of video materials.

Activities of anchor learning provide support of learning that will associate ideas with other content areas or that will enlarge them. On the other hand, the scope of anchor learning requires students to be placed in a story based on a problem. Anchor teaching provides students with pragmatic basics, fills in the blank between theory and practice, breaks the weakness of information (stable, lifeless, memorized information) about structuring cognitive theories and new methods of learning by means of blending both; and thus anchor teaching helps students to develop the necessary information, ability and confidence for being an individual that can think independently and a problem solver at the same time. The scope of anchor teaching necessitates students to be placed in a story that is based on a problem. While researching the problem, students define the information range and look for the information necessary for solving the problem. They play an authentic role while developing solutions for the problem. The teacher, on the other hand, facilitates students' works and plays the role of a trainer.

Anchor educations is one of the authentic activities that secure effective organization of information and that facilitate learning by means of creating target structures accelerating the formation of cognitive products. Bransford and his friends, under the leadership of Vandebilt Cognition and Technology Group (CTGV), employed a structuralist approach while emphasizing on process/transaction within content. Anchor teaching is a learning approach that supports both formal and informal reasoning and that provides the students with the opportunity to learn when and which one to use. This approach achieves its goal by means of real and complex problems that one comes across throughout daily learning and by having students look at these problems through multi-dimensional perspectives.

Most of the educators agree that the fundamental principal of education is to teach the students how to think independently and how to cope with problems. The goal of anchor education is this: solving the problem of memorized information by means of using target structures and to accelerate thinking in conformity with the related conditions.[1] The model of anchor education helps students to gain information that can be used on a large scale instead of memorized information, and it achieves this by the help of a guide or focus that will attract the students' attention.[2]

According to Bransford, this guide helps students to define the problem and to head towards their own perception and memory related to this problem. The function of this guide is the same as the target structures that facilitate a strong activation in short-term memory and that create appropriate cognitive information. If these advisors can secure students to head towards their own perception and interpretation related to the problem, teaching will be clear beyond cognitive borders and possess the features of expert behaviour. Bransford goes on as below: "Anchor education has got two basic goals. The first one is to help students to realize the the importnat points of the case defined as the problem. The other is to cause a change about their perception of the guide and about what they understand from the guide as they look at the case from different points of view." What is expected from the guide is to attract the attention of student and to help student to focus on the related points of the problem that is supposed to be solved. Inter-disciplinary researchers in Vanderbilt think that anchor education can be activated by the help of microcomputer technology.[3]

Basic Goals of Anchor Learning
- The most basic goal of anchor learning is to help students to be a thinker that has self-confidence and to develop their information and ability by means of the method of problem solving. Computers and videodisks are used to achieve this.
- To overcome unnecessary and stable information.
- To design interesting and realistic contexts that support effective structuring of information.
- To create an atmosphere in which teachers and students can do research and share their experiences for the sake of problem solving based on real situations.
- To develop students' abilities to achieve holistic goals in a **deductive** manner without disintegrating information and skills.
- To help teachers to be a guide or coach and to be a learner together with their students and thus cooperate with them.
- To create **student-based** classrooms by means of activating students.
- To develop students' skills of effective communication and of independent thinking and learning.

Techniques of Anchor Learning
Anchor teaching focuses on the importance of learning through problem solving. Education at school generally develops the performance of the students through tests and they don't accelerate problem solving through more realistic duties. For example, it has been previously stated that daily problem solvers cannot transfer the mathematical processes they have learnt at school to the routine problems that rarely come out outside of school – even if it is necessary.

It is a common problem to know something but not to be able to use the knowledge in a related situation. Whitehead (1929) called this phenomenon as memorized knowledge, namely, a kind of knowledge which is possible to be used just in cases very similar to the previous one although it is

applicable in a variety of problems. Whitehead claimed that learning environment produced memorized knowledge. On the other hand, anchor teaching is based on researching in laboratory and class, and thus tries to help the knowledge to be less memorized than the knowledge gained by means of traditional class activities such as remembering and exercise.[4] This fundamental principle is a good example of structurist learning that emphasized the importance of inclusive learning. The techniques that help anchor teaching to be used effectively are target structures, students' active participation, content, applicability, awareness and cognitive apprenticeship.

Target structures activate short-term memory. It provides the necessary and enough opportunities of repetition that helps the development of cognitive areas that are a must in problem solving by means of accelerating the students' effort to keep and recall knowledge and thus passing from short-term memory to long-term memory. These structures also help the formation of specific definitions of successful or unsuccessful processes of production.

Students' active participation helps students to form their knowledge themselves. This technique associates the subject with real life and it increases students' performance.

Content is the area where learning takes place and it inevitably has a great effect on learning. Content that is not irrelevant makes the most meaningful effect on learning. After all, it should be kept in mind that content includes all processes of learning.

Applicability sets forth that students are asked to solve a new problem at this level. The problem should be new in quantity and in quality besides being relevant to the real life. The student should employ the related principles, generalizations, methods and techniques while solving this problem.[5] The main goal of applicability is that students are expected to use the gained knowledge within connecting it with real life, change this knowledge and re-shape it. Within the framework of this basic idea, students are expected to achieve creative thinking, to explore and to produce.

Awareness seems to be the step where we receive the first signals about the students' attitudes and inclinations. Students' low level of inclinations to be sensitive to participate in intellectual process and to be just aware of this process makes up the core of awareness. At this level, students experience the feelings of first conceding, the inhibitory or facilitating sides about accepting clearly (receiving) the expression of opinion (attitude) informed to them. It is an important detail that "remembering" which is accepted as a very important cognitive product at the information level of cognitive areas related to this principle is not included in awareness. It provides us with the opportunity to explain behaviours with affective processes, not with mental processes.

Cognitive apprenticeship is acculturation of students through real applications together with activity and social interaction.[6] The concept of apprenticeship emphasizes the importance of experimental activities in learning. Moreover, learning is accepted to be context-based, circumstanced and acculturating. The traditional apprenticeship is to carry out easily-visible and learned duties. Apart from this, thinking processes should be made clearer in cognitive apprenticeship. It will be easier and more likely to improve processes when students can easily have access to the teacher's thought and students' thoughts are clearer and comprehensible for teachers.

Design Elements of Anchor Learning
In anchor teaching, atmospheres that are rich in problems, that makes students' active participation sustainable and that is called as guide are in question instead of classical problems that are typically used in teaching maths.[7] These certain learning environments create opportunities for some activities while not allowing other activities. Traditional classical problems provide students with the necessary numbers for a goal and aimed calculations. It provides students with the opportunity to find only the true mathematical processes. On the other hand, daily situations provide students with a big opportunity to solve problem in terms of sustainability based on complexity and richness. Students have to set the goals of the situation, define the problem, produce a number of strategies in order to solve the problems, choose the right one among these strategies, implement the choice and evaluate

their performances according to their goals.[8] For example, the video called Jasper and other guides created by CTGV are designed to provide students with the opportunity to solve problems that are mostly faced in daily life. Seven features of design gain importance in ensuring this opportunity.[9] These features are;

Derivative learning style, outline of the story creates a meaningful content for problem solving. Students by means of resistance stability create the end of the story. It gives students motivation to create the end of the story. Students enjoy determining the end of the story themselves. An additional benefit of derivative learning style is that it helps students to be active when produced by means of resisting and when the necessary sub-problems are solved.

Video environment helps students to understand complexity in a better way and to make contact between problems instead of presenting information in a text format. It is especially useful for students who have difficulty in reading, because it creates a rich image or a mental model related to the problem.[10] Video enables characters, events and places to be described in rich, lively and realistic situations where presentations just based on text are difficult to be successful. The second benefit of video based style is that it enables related past (basic) information to be established that can motivate other problems to be studied in maths and other subjects.

Narrating style; characters are designed with content where a major event and successive events are seen as slide and information is placed within. The struggle and resistance at the end of the video (narration) creates an image for students in which they feel that they solve the problems in a realistic way instead of just a conference presentation. Moreover, it helps students to use mathematical concepts more authentically to tell the events in a more colourful and graphical manner. For example, the guide called Jasper is designed as a story that presents a realistic problem. Stories have structures, which enable even children to understand the stories. In the story, there is a major character who has got a certain goal and who faces with difficulties in achieving his/her goals. Anew solution is not presented related to the problem of the major character in the story. Instead of this, students are expected to solve the problems and find the solutions themselves. The reality of the story provides the students with the opportunity to use the information they gained in daily situations and this reality helps them to perceive the relationship between maths and reasoning on one side and daily events on the other side.

Problem Complexity; steps having a number of relations presented to the students are a complex problem. Complexity is based on an intentional and a very simple concept: The expected benefit of this style is that students will be able to cope with the complexity in the real world more easily when they are raised up like this. Unfortunately, traditional class activities do not provide students with the necessary motivating opportunity to solve the complex problems by means of necessary mathematical thinking skills. Video presentation of resistance not only keeps the complexity of the work in secret but also ensures it to seem interesting and solvable.

For example, even the simplest Jasper video presents 16 sub-problems that are related to each other. This complexity provides students with the opportunity to do the necessary exercises to define and describe the problem. CTGV guides are described as challenging problems that encourage students to explore mathematical dilemma. Complexity ensures exploring to be sustainable. The problem situations presented in the guide has got a lot of solutions as is the case with real daily problems and these problem situations provide the opportunity to explore and compare multiple problem-solving strategies. Thus, an effective atmosphere is created where the students has the opportunity to learn that complex problems necessitate sustainable effort and planning.

Data Design Embedded in a Scenario; One of the important design features of mathematical texts is "embedded data base." The information in the format of database necessary for the resistance to be solved is internalized by video. Video does not exactly define mathematical word problems that need to be solved to define the resistance. All in all, to know and determine the problem for the first time is to define the necessary information, to remember the presented information and then to

deduce information from the story. In other content areas, macro-text introduces extra resources to be used for gathering necessary information to the students.

Each guide includes all the necessary data necessary for solving the basic problem embedded in video (irrelevant information is given, as well). In daily problems, sometimes, some data are not clear and the problem solvers are obliged to guess the possible values of these variables. This causes the activity of problem solving to be difficult and mistaken, especially for inexperienced students who do not know the suitable values of variables. If data are given in the video, the students have equal chance to reach them without any effort and it gets easier to start the activity of problem solving. At the same time, certain real variables provide students with the opportunity to do the exact calculations necessary for formal problem solving. In fact, the typical way to solve daily problems is to arrive at the result through general guesses.

The Group of Related Adventures; Books and articles of cognitive science about learning just suggest concepts that are gained when content is annexed to a text and so it is not possible to come across usual evaluations and to use them in new situations. The adventures in Jasper series are designed in a way that each problem has got at least three parts: 1. Planning a trip, 2. Statistics, 3. Planning a work, maths and geometry. Students are provided with the opportunity to use or re-use mathematical concepts in these various texts. This helps the possibility to transfer to new situations to increase and the possibility of "inert" learning to decrease. In the original adventure, there is an also embedded "anagol" problem related to each adventure that helps students to reinforce and extend the mathematical concepts they use.

Establishing contact with the programme; Each video includes all the information necessary for solving the problem (resistance) in the story. In addition to this, the story also provides various opportunities from other subjective situations to the matters of introduction. For example, maps are used for help to the figures about solutions in the part of planning a trip. These are composed of important parts of the planning a trip in geography, trip and famous events. It establishes a natural connection such as Charles's passing Atlantic on his own.

These seven principles of design affect each other mutually and work as a gestalt (deduction) rather than a sum of independent features. For instance, using video motivates students and takes them out of the class to the real world. This text makes it possible for those students who have difficulty in learning from a material to solve complex maths problems. While this kind of wording, productive design of stories, the complexity of the struggle and indeed the adventures, learning opportunities of presenting data internalized in producing sub-goals hold back the the complexity of finding information about the subject matter and job (duty) management, the job includes encouragement in local decision-making. The wording makes the internalized data easier and mentions indirectly about the related problems that provide opportunities for connections while passing to the programme. Anchor teaching provides the students who have lack of motivation to learn with the necessary guidance and help.

Chart 1: Comparing Anchor Learning and Traditional Teaching

Today, the effectiveness of learning-teaching processes are limited. The methods that are being used cope with the problems only superficially and as a result of this, students cannot transfer information.	Anchor learning eliminates memorized information and instead, creates an atmosphere that helps students to search, think critically, solve problem and improve creativeness.
Traditional learning-teaching processes aim at equipping students with theoretical information instead of having students do practice.	Anchor learning tries to find the best way to structure the necessary information in order to increase effectiveness of the methods used in learning-teaching processes and also it tries to realize this kind of structuring. In other words, abstract information is given in relation to real life.

Traditional methods do not create an atmosphere that helps the effective class conscious. These methods even turn the classes into a frightening atmosphere.	Anchor teaching provides an atmosphere that helps to encourage students to participate in learning actively by means of anchor teaching or situation around an interesting subject.
Traditional teaching approach accepts information as the goal. This understanding encourages students to memorize the information instead of learning it.	Anchor teaching sees information as a means of learning. It encourages students to do research, to make assumptions, to evaluate the accuracy of their findings and to make sense of them by means of scenarios based on a goal and new principles and concepts embedded in these scenarioes.
Teacher-based paradigm that supports the competition between students do not increase students' motivation, on the contrary, it prevents students to use their potential because of fear.	Anchor teaching increases motivation by means of individualizing teaching and creating an atmosphere where students are not afraid of mistakes. Moreover, it provides students with the opportunity to control their own information's pace and effectiveness.
Teaching techniques used in traditional teaching cannot establish a connection between real life and learning, so students are delayed to concretize and learn the abstract information.	**"Target structures"** used as a technique in anchor teaching establish a connection between learning and real life, and so increases students' motivation, develops the appropriate information structures and helps all the products to come out necessary for solving scenario problems.
The traditional educational paradigm focuses on "what students should learn."	Anchor teaching tries to find an answer for "how students will learn" and focuses on making the information permanent and also making it easier to learn concepts.
The teacher is an information presenter.	The teacher is a leader of class, a guide, and advisor and a coach.
Passive learning. Giving back the previously prepared results and second hand reasons.	Active thinking, research, exploring and first hand reasons.
Equipping students with memorized information.	Providing students with pragmatic bases. In other words, filling in the gap between theory and practice.

Features of Anchor Learning

1. Anchor teaching is a form of situated learning.[11]
2. An event, a story or texts in which information is built are common.
3. It is related to problem-based learning.
4. Open-ended problems are used, but the problem includes clues or some data are embedded in the skeleton of the problem.[12]
5. Learning and teaching activities are often designed around an anchor, which is mostly a story.
6. Teaching materials include rich resources that can make explanation for students to try out in order to decide how to solve the problem.
7. It emphasized the need to provide students with the opportunity to study on and think about the problem.
8. Group or co-operative problem solving is possible.
9. The goals of the programme provide students with the opportunity to use actively on the situation establish a connection and explore.
10. Activities of anchor learning support learning in associating ideas with other content areas or enlargening them.

Anchor learning appeared as a result of the problem that has been mentioned in the field of education since 1929 and that accepts the fact that information is usually stable and it cannot be used in many

different situations or problem solving activities. The finding is that learning is situated where the experts facing the same professional dilemma transfer their experience to students and where the problems are realistic. An apprentice structures the problems authentically depending on realities with real data where the performance is also authentic about the real jobs when one can face while working as an apprentice of a historian, physicist or businessman.

Although anchor teaching is accepted to be an explanation and discussion rather than simple reading or watching of the presented story,[13] it is similar to situation-based learning. It is also similar to problem-based learning, but not to open-ended learning. In problem-based learning, students want to do research at first hand where learning environment includes external resources. Anchor modules typically include all the necessary information to solve the problem in order to carry out problem-based learning more easily in limited time or with limited resources. Although some experts claim that anchor teaching is a method mostly related to teaching science and maths, anchor teaching is also related to reading, writing and history besides science and maths.

Anchor stories use internalized data. The necessary steps to solve a problem are defined for the design of a anchor story. Then, they are built in a story line. CTGV has developed Jasper Woodbury problem-solving series for learning maths at secondary school level. In the scenario of Wounded Eagle, students are supposed to find and define the best way to move a wounded eagle, the amount of fuel in the ultrahigh plane, the weight of Cargo and other data. It should not be easy to solve the problems; some of them should be complex since students should think on the problem and structure their various ideas by means of defending them in a discussion environment. All the Jasper problems are so complex that they need 14 steps to reach the correct solution. Those problems having more than one solution are good and it is better to go into the classroom together in order to define the solutions of different groups.

Provisions of Implementing Anchor Learning
1. An effective plan should be prepared about the related subject.
2. It should be determined from which resources students are supposed to get help for problem solving.
3. Students should be informed about how the tools will be used.
4. Students should be given help about using the tools when necessary.
5. The stories having problem situations in them should be explained to students using technology such as macro-media means in order to form realities and information.
6. Students should be encouraged to re-arrange the data necessary for solving the problem and to explore the story once more.
7. Students should be made to develop solutions for the problem and to present these solutions to the class.
8. Ideas against or for the presented solution should be discussed in class.

There are three methods that can used for students to understand the subject while making a plan:
The method of valid movement: It is a method that is formed by means of putting forth an example event that can be used in real life.
The method of invalid movement: It is making a story of elements that cannot be implemented by the individual in real life because of physical possibilities.
Incomplete method: It is about not being able to complete an action because of some reasons although it gets started with the belief that it can be completed. For example, a pilot sets off in order to fly a plane, but he/she cannot fly the plane because the plane runs out of fuel.

STEPS OF IMPLEMENTING ANCHOR LEARNING IN CLASS
1. Step: Choosing a field of study
2. Step: Defining an anchor
3. Step: Introducing the anchor
4. Step: Discussing the anchor
5. Step: Establishing groups and research questions

6. Step: Running the research
7. Step: Presenting the research[15]

The teacher as below uses all the steps mentioned above in class:

1.   Step : Choosing a field of study
This step is the first step of anchor teaching and a field of study is chosen here. While choosing a field of study, the needs, interests and preliminary information of students are considered and the field is chosen in order to provide students with an atmosphere where they can express their ideas comfortably. At the first step, students are got known for anchor. The anchor can be a video segment that includes a complex problem and data necessary for solving the problem. In another class, video content can be enriched with information that maintains thinking about target concepts or with information related to the text and that necessitates comparison for in-class discussions.

2.   Step : Defining an anchor
This anchor can be a video presentation that includes a complex problem where information that will help the problem to be solved is embedded. Various scenarios are arranged in video presentations and the basic characters in the scenarios try to solve an important problem. What students are supposed to do is to determine these characters, to do research about the information necessary for problem solving and to help the characters in the scenario to solve the problem. At this step, students develop sharing expertise around the anchor. The anchor makes it possible for students to carry out multiple visits to special programmes and to develop expertise on certain views. At this phase, the teacher leads the discussion of anchor. While students' information about the anchor increases, students can take the responsibility of their own learning more than before at the same time. If the teacher and students develop expertise about the anchor, the connection passing to the programme and their previous experiences can find a common platform of sharing in class.

3.   Step : Introducing the anchor
The anchor prepared at the second step is introduced to students through watching. Sub-titles can be determined for anchor in this environment. Students explain the anchor with their own research. The intervals in the information gained through using the anchor can be necessary for students to search the related materials. In an educational technology class, students can learn new technologies by means of using anchor for content material. For example, students can create a Hyperstudio that is meticulously formed about one of the subjects in the anchor.

4.   Step : Discussing the anchor
After watching the anchor, the teacher and students discuss what they have understood about anchor in class. This discussion about anchor can provide students with the opportunity to look at the situation from different angels and they can be aware of the fact that they themselves are responsible of their own learning. Students use their information as a means to solve the problem. They use this information to put forth the solutions for the anchor itself or to associate the information with other problems in other fields of studies. At this step, teachers can prepare the outline (skeleton) in order to help students to solve the problem. For example, those teachers using Jasper Woodbury series to teach problem solving and other mathematical skills can encourage students to define how to handle the problem by means of providing them with the necessary resources in the process.

5.   Step : Establishing groups and research questions
At this step, students sit in a way to carry out-group work in order to review the information at hand and to establish research questions. After establishing the questions, research groups are established. The teacher can want each group to prepare their research project. At this step, students are allowed to study on projects related to the anchor. Students work on related projects for anchor. At this step, students are provided with the opportunity to express their ideas about their own subject (information) and other related subjects. Some of the examples of this step include reading more about the subject, writing a report or an essay, or preparing a multimedia report.

6. Step : Running the research

At this step, students are expected to do research. At this stage, students develop two basic skills, which are:

a. Learning how to work cooperatively in a learning group
b. Learning special research skills.

These two basic skills also include these skills that teach students how to run the research:

a. Using library and media centers while collecting the necessary information,
b. Finding and recording important information, writing a research report.

7. Step : Presenting the research

At this last step where anchor teaching is completed, students present the research they have carried out and that includes the answers of previously determined questions to their friends in line with the investigation among groups. Students share what they have learnt from the project. The process of sharing not only makes them be proud of their studies but also they gain an important point of view including how their classmates have solved the problem. At this point, students are encouraged to compare their solutions in the video and to evaluate the strengths and weaknesses of each approach.

Anchor learning provides teachers with the opportunity to carry out a gradual structurist implementation with anchors instead of making a sudden change in their classrooms by means of these steps. The fact that teaching is arranged around an anchor makes teaching a bit more manageable for teachers.[17]

The Principles That the Teacher Should Keep in Mind About Using Anchor Teaching in Class

Anchor learning is a student-based learning method. The teacher is a guide and coach while using the method of anchor learning instead of just transferring the information to students and having them get the information passively as is the case in traditional teaching[14] . While using this method in class, the teacher should act as a coach and participate in research with his/her students by means of taking the role of a learner just like the students. While using this method, the teacher should design learning environment with the principles stated below:

- Multi-media, web-media or other interactive technologies should be used as much as possible in story telling.
- The teacher should encourage student groups to choose and get key clues, realities and information.
- Students should be encouraged to re-arrange the necessary information and to "re-play" or "re-explore" the story in problem solving.
- There should be created an atmosphere that allows students to develop solutions and to present their ideas to the class.
- All ideas should be discussed with for and against arguments.
- Students should be encouraged to think about the original scenario with expressions such as "what if, if, now that, unless" by means of using similar problems and new data.

Some exercises should be done by means of asking different problems about the scenario at the beginning.[18]

Video should be used as much as possible in order to make realistic anchor stories while implementing the method of anchor learning. CD-Rom or videodisc can be preferred just as videotape. Students can watch the parts of the story again while discussing the steps of the story when necessary while solving the problem.

Students should study on the problem in small groups. As a result, they present a report of all their solution plans to the class. During the presentation, various ideas for and against can be discussed. Logic problems (for example, if you do not agree with this idea) can help students to understand the problem in deep by means of explaining the relationship between appropriate variables. The studies of

additional problems necessitating similar skills or strategies used in the first scenario can be easily transferred to different skills. In studies conducted with fifth and sixth grade students, CGTV students have been found to "get higher marks than average in standard maths success test." However, they are not successful in recognizing and formulating the problem immediately (CGTV, 1992). Those students who are not good at finding a problem internalized in a story can primarily deal with this issue. Students can improve in formulating a problem by means of hard working (four-five group problem). The teacher in class as below uses the steps mentioned above;

The Advantages of Anchor Learning
- It helps students to be a more independent thinker who can apply information.
- It increases teacher-student interaction about problem solving and supports the process of problem.
- The fact that problems are given depending on necessary clue and exploring develops students' skill of transferring information.[19]
- It enables understanding the logic of concepts and problems instead of memorized information.
- It enhances permanence in learning.
- It provided opportunity to associate what has been learnt with real life.
- It encourages students to learn.
- It motivates students to think critically and explore.
- It motivates students to solve a problem effectively.
- It provides a rich learning environment.
- It makes it easier to understand information.
- It enables students' active participation.
- It associates what has been learnt with real life.
- It increases sensitiveness to scope.
- It increases the quality of learning process.

The Constraints of Anchor Learning
1. It takes time to formulate a problem.
2. Need for educational technologies are more than in traditional classes.
3. It causes false learning and waste of time if the teacher and students do not have enough information about the method.
4. It is difficult to mention a previously inbuilt programme.
5. It takes more time than traditional teaching approach.
6. The role of the teacher turns from information presenter to a coach and sometimes to a learner.

One of the most important disadvantages of anchor teaching is that it does not have a standard programme. Teachers feel a must to hide the amount of content that is inappropriate and thus lecturing on this content or defining it (like a drug) turns into just an applicable curtain model.[20]

The Process of Evaluation in Anchor Learning
Learning is a complex process. Individuals always change their mental structures. The effectiveness of learning environment depends on the programme, learning activities, students' motivation and students' growth. Trying to measure this complexity with tests limits information and cannot do an exact and correct measurement.[21] Anchor learning claims that the types of evaluation mentioned above cannot contribute to the individual since evaluation should focus on the processes of performance and thinking rather than what they know about a certain subject depending on their ability to memorize information. The teacher watches students' performance, evaluates and grades their skills in line with a group of values. In other words, originality and conformity with the form is important.[22]

Such activities open the door to the necessary deep thinking and questioning. They bring creative thinking, exploring, getting into action and being active together with performance evaluation. In traditional evaluations, the low rate of students' understanding causes low results. In such cases, some activities supported by anchor learning should be presented such as motivating students to

determine goals depending on thinking, to analyze alone, to develop skills of arranging information, learning how to learn and getting awareness of the thing that will be learnt.[23]

Evaluating students' information should not be accepted as a separate process different from programme and teaching. Teachers should gather different evidences that show teaching. Documents and observations related to the learning duties of students should be included in evaluation. Structured and unstructured observations and interviews, examples of studies, worksheets, project works, performances and presentations, performance exams, various type short answer questions can be used in evaluation. On the other hand, according to structuralist learning approach that constitutes a base for the formation of anchor learning, the system of evaluation should allow students to reflect what they have learnt in a multiple way and it should be in parallel with students' understanding.

Because of this reason, evaluation activities in anchor teaching include not only exams carried out in the middle and at the end of the educational period, but also observation, interview, discussion, files including all the products produced by students during learning activities (reports, notes, graphs, home works, project studies, pictures, bulletins, collections, etc.) all throughout the educational period and with a multiple way of view. When this is done, teaching through multiple points of view comes out with multiple evaluations. As a result of this, individual development, creative effectiveness and social sense of responsibility are encouraged. This also helps each student to get feedback about his/her own efforts.

According to anchor teaching approach, the teacher to guide teaching should use the results of evaluation. The teacher should ask the question of what should be done for students' development, and should arrange the next learning environment according to this answer.[24] The basic principle of evaluation is composed of the problems to be solved in the to-be prepared programme, inbuilt implementations, mutual feedbacks, establishing a connection with real life and evaluating performance with multiple points of view.[25] Evaluating students' information should be handled separate from programme and teaching.

Structured and unstructured observations and interviews, project works, performance exams, various type of short answer questions can be used in evaluation.[26] On the other hand, according to the structuralist learning approach that constitutes the base of anchor learning, evaluation is in line with the understanding that the system should let students reflect what they have learnt in multiple ways.[27] Because of this reason, evaluation activities in anchor teaching include not only exams carried out in the middle and at the end of the educational period, but also observation, interview, discussion, files including all the products produced by students during learning activities (reports, notes, graphs, homeworks, project studies, pictures, bulletins, collections, etc.) all throughout the educational period and with a multiple way of view.

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