Effectiveness in Teaching ‘Introductory Programming’ for the Students of Engineering and Technology: The Need of Hour

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Abstract

The teaching and acquirements anterior programming plays a basal role in programming education. The arising administration in teaching anterior programming is basal for the acceptance of engineering and technology due to the foundation programming advance in the curriculum. Therefore, this contemporary cardboard aspire the acceptation of teaching anterior programming, advisory objectives, advisory planning, teaching methods for programming, approaches in agreement sequencing of capacity in programming, assuredly the cardinal anatomy plan was developed based on sequence.

Keywords: Anterior Programming, Teaching and Acquirements Programming, Teaching Approaches, Teaching Methods

1. Introduction

Teaching and acquirements of anterior programming for the acceptance is problematic. The disability of acceptance to complete baby programming assignment at the achievement of anterior units is not abnormal. This cardboard presents some of the affidavit why abysmal cerebration in the breadth should be prioritized. In adjustment to accompany out the apt anatomy plan in convalescent the qualities of teaching anterior programming, adapted acquirements objectives and teaching planning are emphasized. Further, teaching methods (traditional and computer assisted) ensures with approaches (concept aboriginal and botheration solving) in sequencing of topics.

In addition, the cardinal anatomy plan explores the breeze for bigger acknowledgment in acquirements and teaching anterior programming, added over highlights the advisory objectives in agreement of cerebral domain, advisory planning to teachers, teaching methods, approaches in sequencing capacity of programming.

2. Significance of Teaching Introductory Programming

2.1 Failure to Adeptness Accustomed Standards or Outcomes

a. The teaching (or alarmingly ample admeasurements of graduates are clumsy to affairs in any allusive faculty).

b. The acquirements (and teaching) of programming in Higher Apprenticeship is a abiding problem.

c. Learning to affairs is an all-important programming ability in those courses.

2.2 Canyon Ante and Progression of Students

The commonsense of CSE & IT are added amenable in programming capacity chronicle to canyon ante and progression of students. The acceptable advance of acceptance will advance the aplomb appear programming education, as well the advance may advance them in their able like programmer, developer etc

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2.3 Foundation Subjects

Foundation courses in computer science affectation accurate challenges for the teacher: the courses advance basal abilities and attitudes which are important for able acquirements in after courses; they are generally ample courses with appropriately ample administration and authoritative loads; teaching agents generally acquisition them ambitious and, for some staff, they are apparent as onerous. Now, accede the analytical role of foundation courses from the learners perspective. They accord a ample accomplice of acceptance their aboriginal absolute aftaste of the discipline. Negative adventures may abash acceptance from added study.

3. Instructional Objectives

Instructional objectives are statements that specify of the instruction. The able-bodied accounting objectives by the agents are important for the afterward reasons

- First, the abecedary to accommodate the procedures; second, the abecedary to advice in evaluating the success of the instruction; third, they advice the apprentice adapt his/her furnishings to achieve the absorbed of the instruction.

3.1 Charges for the Objectives

- Objectives accord the administration to agents in the alternative of the methods and advisory resources.
- Objectives anatomy a base to appraise the learners and teaching acquirements process.
- Objectives let acceptance apperceive why any agreeable is to be learnt.

3.2 Autograph Advisory Objectives

Some considerations in autograph advisory objectives are:

- Think about what a apprentice who accomplished the cold would attend like.
- Think about what the weakest acceptance in your chic can do.
- Teacher one should accept an abstraction of the acquirements assignment to authorize for your students.
- Gronlunds approach.
- General Objectives “objectives are accustomed in attributes and call the all-embracing aims of the unit/topic.
- Example: Understanding the ascendancy anatomy in C programming
- Develop affairs in C language.
- Specific objectives: Assay specific behaviours that learners accept to display outcomes.
- Example: Define pointer.
- List the types of user accurate function.
- Draw a flowchart for accustomed problem.

4. Instructional Planning

4.1 Charges for Planning

a. To ensure the adapted allocation of teaching time to anniversary affair and to abstain alive out of actual.
b. To anticipate accidental overlapping of subjects, acquaint and alliteration of advice.
c. To advise the capacity in an analytic sequence.
d. To baddest a lot of acceptable advisory adjustment s, abstracts and media for the acceptance of an accurate chic.
e. To enhance the teacher cocky aplomb in his/her adeptness to advise on an absorbing and able way by chief a amount of adapted alternatives.

Planning for teaching is capital for able and able conduct of any educational programme. The advisory plan deals with the alertness of three types of plans.

- Course plan.
- Unit plan.
- Lesson plan.

4.1.1 Advance Plan

The capital accent while advancing an advance plan is on the allocation of time for teaching the assorted units of the abridgement of a course

Step 1: Assay units of apprenticeship of an accord syllabus.
Step 2: Arrange the units of apprenticeship in an analytic sequence.
Step 3: Appraisal the time adapted for teaching anniversary assemblage.
Step 4: Providing time for administering tests and after light classes.
4.1.2 Assemblage Plan

The assemblage plan will accredit the abecedary to assay all the assets needed, teaching strategies and the appraisal procedures to be used\(^1\).

Components of assemblage plan.
Column 1: Title of the affair
Column 2: Specific advisory objectives.
Column 3: Teaching points.
Column 4: Acceptance adeptness to be developed.
Column 5: Teaching method.
Column 6: Teaching "Learning aids.
Column 7: Book references.
Column 8: Evaluation.
Column 9: Time in hours.

4.1.3 Assignment Plan

The appellation assignment refers to the breakthrough of content, abilities and abilities imparted during an individual aeon of instruction\(^5\)–\(^7\).

Cognitive lesson: Teaching programming usually comprises access and activated periods. Cerebral assignment absorbs the teaching of information, concepts, syntax, and bothersome solving. Cerebral acquaint are presented by agents during access periods. The four important phases of a cerebral assignment anatomy are:

- Introduction or Preparation.
- Development or presentation.
- Consolidation or Recapitulation.
- Evaluation and follow-up.

5. Teaching Methods

Teaching methods play a basal role in the development appearance of cerebral lesson, added the teaching adjustment involves in convalescent the capability of teaching anterior programming. Now a days, array of teaching adjustment are exists, every adjustment in teaching is the aforementioned for the abecedary bear the aforementioned agreeable to the students\(^8\). But the allegation from the assay of assorted teaching methods may advance the capability in teaching and acquirements programming.

Generally, teaching methods can be classifieds into two categories;

- Traditional teaching methods.
- Computer-Assisted teaching methods.

5.1 Acceptable Teaching Methods

Traditional teaching in programming is anxious with the abecedary getting the ambassador of the acquirements environment\(^9\). Power and albatross are captivated by the abecedary and they play the role of adviser (in the anatomy of lectures). They absorption acceptance as accepting 'knowledge holes' that charge to be abounding with information. In short, the acceptable abecedary angle that it is the abecedary that causes acquirements to occur\(^10\).

Learning is chiefly associated aural the classroom and is generally competitive. The lesson's agreeable and supply is advised to be a lot of important and acceptance adept ability through assignment and conveyance (such as blueprint learning).

There should be an able advice amid abecedary and students\(^10\). There is as well the archetypal way and a controllable chic breadth the abecedary would advise on the blackboard, explained, asks acceptance to archetype and fabricated abiding acceptance paid absorption and listen.

The acceptance may get lath of the aforementioned way of teaching adjustment done by the abecedary which is on the blackboard and alert to the abecedary allocation while they sit down in chic and calefaction up their chairs. Besides that, adorning the acceptance with canning and blame is not a acceptable way for acceptance get traumatizes in college\(^11\).

5.2 Computer Assisted Teaching Methods

Computer assisted adjustment in teaching advice a lot breadth there is a centered classroom which is created by the abecedary and accustomed by the students. In avant-garde adjustment acceptance are acquainted of their acquirements action through the computers\(^12\). Thus with the advice of computers agents adapt their plan in the alien accumulator accessory and present it to the chic through slides appearance which is an easier way. And acceptance can do their belief and their plan all in the computer after depending 100% on their abecedary in colleges.

The computer assisted adjustment of teaching acceptance become too absolute breadth they anticipate they don't charge advice from anybody because they anticipate they can achieve annihilation by them\(^13\). Thus with the use of computers in academy acceptance gets absent with online amateur and websites to browse on besides their studies which will could cause them distraction.
6. Approaches in Sequencing Topics of Programming

The capacity of teaching programming can adapt for bigger acknowledgment, for archetype the arrow concepts can acquaint afore explain the scanning variables in C programming. In accustomed the altered blazon of approaches exists, such as syntax charge less approach, arcane approach, botheration analytic approach, alive learning, and abstraction aboriginal and flat based approach. But a part of these approaches the majority and added acceptable approaches are abstraction aboriginal and botheration analytic approach.

6.1 Abstraction Aboriginal Approach

Concepts of programming are emphasized; acceptance plan on systems problems, not arbiter problems, accurate the solutions to problems as algorithms in a bogus language, and analysis these algorithms after about-face to a programming language. Acceptance advance aplomb in their compassionate of the axiological attempt of programming, apprentice to plan in groups, conveyance advice skills, and are able to apprentice a programming accent to apparatus the concepts they accept learned. Acceptance with this accomplishments are able-bodied able for majoring in any breadth of accretion.

6.2 Botheration Analytic Approach

This access is as well referred to as Problem-Based Acquirements (PBL) and is generally accomplished beneath the agreement analysis and design

Barg et al. suggests PBL is characterized by:

- Open-ended, authentic, abundant problems which drive the learning.
- Absolute teaching and appraisal of all-encompassing and metacognitive skills.
- Collaborative acquirements in groups.

Fincher suggests that a added pedagogical based access based on botheration analytic is that declared by Barnes et al. breadth they call how programming tasks were reconceptualised for the acceptance abroad from a coding exercise appear an action acute a abstracted and audible accomplishment set. They acquired a simple aeon of activity: Understand “Design“Address “Review.

This is again activated not alone to programming tasks in a specific syntax, but beyond several courses and syntaxes. This allows the apprentice to apprehend that botheration analytic is a audible set of behaviors that can be activated beyond abounding areas. In added words, the apprentice comes to accept that botheration analytic is a communicable skill.

7. Strategic Framework

By because the aloft breeze in teaching programming sequence. The researcher was developed a cardinal framework to advise anterior programming, which was apparent in beneath Figure 1.

8. Summary

In adjustment to audit the problems with teaching and acquirements of anterior programming, this cardboard shows the acceptance of teaching anterior programming for the acceptance of Engineering and Technology, in accession it advise the tips to address an adapted objectives and planning by the agents for teaching anterior programming. Further, teaching methods (traditional and computer assisted) ensures with approaches (concept aboriginal and botheration solving) in sequencing of topics. An added abstraction is beneath action to assay and appraise the framework.

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