

Longitudinal Analysis How-to's

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What is a longitudinal analysis?

Longitudinal analysis involves examining various aspects of the course over time. It allows course developers to identify trends that may be addressed when the course is revised. The revision process is, "a modification to the course mission statement, an increase or decrease in course length, or training material modification that requires additional resources." Though the revision process is on a large-scale, a course developer may also use the longitudinal analysis for interim changes.

Source: NAVEDTRA 135B, 4-1-9

How do I select classes to include in my analysis?

"Charting a Course" allows you to select the classes that you want to include in your analysis. The classes are organized according to the following categories: Class Number, Class Convene Date, and Classroom Type. Use this information to select the classes you want to compare.

For example, if you are interested in comparing how students performed in two types of classrooms (such as traditional versus Introductory Automated Electronic Classroom, or I-AEC), you will want to determine a time period in which courses of both classroom types were offered. Then, select all of the courses that are listed for both types of classrooms within that timeframe.

If you are interested in how students performed in one particular classroom type (such as Advanced Automated Electronic Classrooms, or A-AEC) over time, use the information in the Classroom Type column to make your selections.

For the course revision process, you may be most interested in all of the courses that have been offered since the last course revision.

How do I analyze longitudinal information?

There are five steps in conducting a longitudinal analysis. They are:

1. [Review student enrollment information.](#)
2. [Review student achievement information.](#)
3. [Review Student Critique of Training.](#)
4. [Review instructor feedback.](#)
5. [Develop a revision strategy.](#)

Because the purpose of a course is to improve student learning upon course completion, only end of course information is retrieved from the Student Critique, Instructor Feedback, and Student Achievement tabs. For the student achievement information, the number of students passing each objective will appear for the last test for which the objective was assessed.

Note: While completing Steps 1 - 4 above, refer to the “How do I conduct reviews within each information source (student enrollment, student achievement, student critique, and instructor feedback)?” link at the beginning of this How To. This link will provide you with the procedures and information you need to analyze the data you are reviewing in Steps 1 - 4. Step 5 occurs **after** you have completed the first four steps. Developing a revision strategy will involve using all of the information you collect in the previous four steps.

1. Review student enrollment information.

Student enrollment provides some insight into who is or is not passing a course and why. This information is helpful in determining if there is a problem area in a course, but it does not indicate specifically what the problem is. For instance, a high number of students not passing a course may indicate an opportunity for improvement. Also, a high number of Academic Review Boards may indicate that students are having difficulties with the course.

There are seven classifications of student enrollment:

- **Starting enrollment** is the number of students enrolled in a course on the first day of class.
- **Number of Non-grads, Academic** is the number of students who fail to complete a course due to their inability to meet the curriculum’s educational requirements

Source: CeTARS Help Homepage, available at http://wwwnt.cnet.navy.mil/cetars/help_home.htm

- **Number of Non-grads, Non-academic** is the number of students who fail to complete a course due to factors not related to their academic performance.

Source: CeTARS Help Homepage, available at http://wwwnt.cnet.navy.mil/cetars/help_home.htm

- **Number of Non-grads, Disenrolled** is the number of students administratively removed from training for a variety of reasons, such as cancellation of a class or course, a student’s inability to meet prerequisites, or withdrawal by parent command.

Source: CeTARS Help Homepage, available at http://wwwnt.cnet.navy.mil/cetars/help_home.htm

- **Graduates** are the number of students who have successfully completed a course of instruction.
- **Number of Academic Review Boards (ARBs)** is the number of ARBs “whose members evaluate a student’s progress through a course and recommend a specific action when the student is having difficulty achieving the course objectives”

Source: CeTARS Help Homepage, available at http://wwwnt.cnet.navy.mil/cetars/help_home.htm

- **Average Final Grade** is an average score of all student final grades at the end of a course.

Click on the following link for information on how to conduct this review:

[How do I conduct reviews within each information source \(student enrollment, student achievement, student critique, and instructor feedback\)?](#)

2. Review student achievement information.

Review the percentage of students passing each terminal and enabling objective. For each objective, the identification number of the last test in which it was assessed and percentage of passing students are listed. Reviewing this data can help you pinpoint particular parts of the course that were strong and parts of the course that may need to be revised. If a low percentage of students are passing a terminal objective, then each of the corresponding enabling objectives should be considered for revision, even if they have a high percentage of passing students.

Also, review reasons for students passing the objectives. Reflect on instructional strategies, class activities, and events that helped students pass these objectives.

Finally, review reasons for students not passing objectives. Reasons for students not passing objectives may be found in the Student Critique of Training and the instructor feedback.

Click on the following link for information on how to conduct this review:

[How do I conduct reviews within each information source \(student enrollment, student achievement, student critique, and instructor feedback\)?](#)

3. Review Student Critique of Training.

The Student Critique of Training displays the average student rating for each item on the critique form and designates each item as a "strength" or an "opportunity". Review the possible reasons for the opportunities and any plans for revision that were identified.

Click on the following link for information on how to conduct this review:

[How do I conduct reviews within each information source \(student enrollment, student achievement, student critique, and instructor feedback\)?](#)

4. Review Instructor Feedback.

Instructor feedback includes responses to items on the instructor feedback form as well as any problem areas and plans for revision that instructors entered into the Instructor Feedback Tab. Use the following information to help you review items that instructors answered:

Some items are rated on a 1-5 scale:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

Other items are rated with a Yes, designated as a "1" or a No, designated as a "0".

Items rated N/A mean that that item did not apply to the course.

Click on the following link for information on how to conduct this review:

[How do I conduct reviews within each information source \(student enrollment, student achievement, student critique, and instructor feedback\)?](#)

5. Develop a revision strategy.

After examining all the available information (student enrollment, student achievement, student critique, and instructor feedback) you should be able to pinpoint areas that are strengths or opportunities for improvement.

Previously entered suggestions for revision are a good starting point in making your plans for revision. Determine the frequency and emphasis placed on the suggested plans. More frequent and greater emphasized suggestions should take priority over other comments.

You may want to compare information within each information source by looking for frequent positive comments, high ratings, or high student achievement as areas of the course that worked well and should be repeated. Specify plans for revision in areas of the course with frequent negative comments, low ratings, or low student achievement.

Click on the following link for information on how to conduct this review:
[How do I conduct reviews within each information source \(student enrollment, student achievement, student critique, and instructor feedback\)?](#)

How do I conduct reviews within each information source?

To conduct reviews for each type of information, follow the five steps below:

1. [Identify trends.](#)
2. [Determine how trends are related to other information sources.](#)
3. [Determine why these trends occurred.](#)
4. [Determine what to do as a result of the analysis.](#)

1. Identify trends.

A trend chart is a graph that illustrates patterns of occurrences over time. For this module, those occurrences displayed are the ratings of questions on the Student Critique of Training and instructor feedback form, and the number of students who graduate from a course or pass course learning objectives.

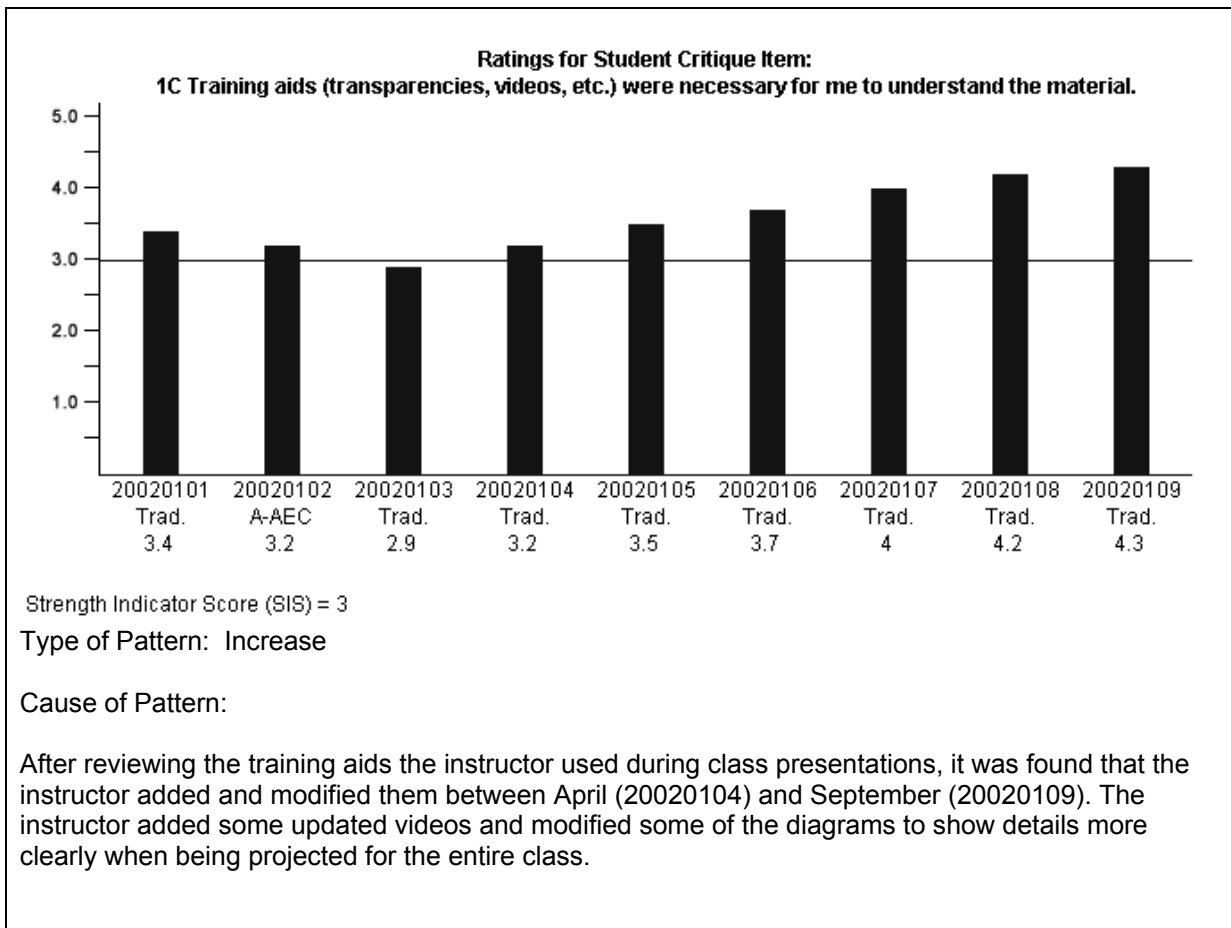
In this module, bar graphs are used to illustrate trends of end of course information for various class offerings. Bar graphs are available to display end of course enrollment information, the percentage of students who passed individual course learning objectives, and average ratings of items on the Student Critique of Training. For bar graphs related to the Student Critique of Training, the line that runs across the bars represents the Strength Indicator Score (SIS). By comparing the bars for each class against the SIS, you will be able to prioritize which classes to examine in more depth.

Remember that one of the main purposes of a trend chart is to determine patterns that have occurred over time. Patterns to look for are increases, decreases, or the maintenance of scores (that is, enrollment numbers, percentages of students passing, and average ratings). You will also want to make note of spikes and cycles in the data.

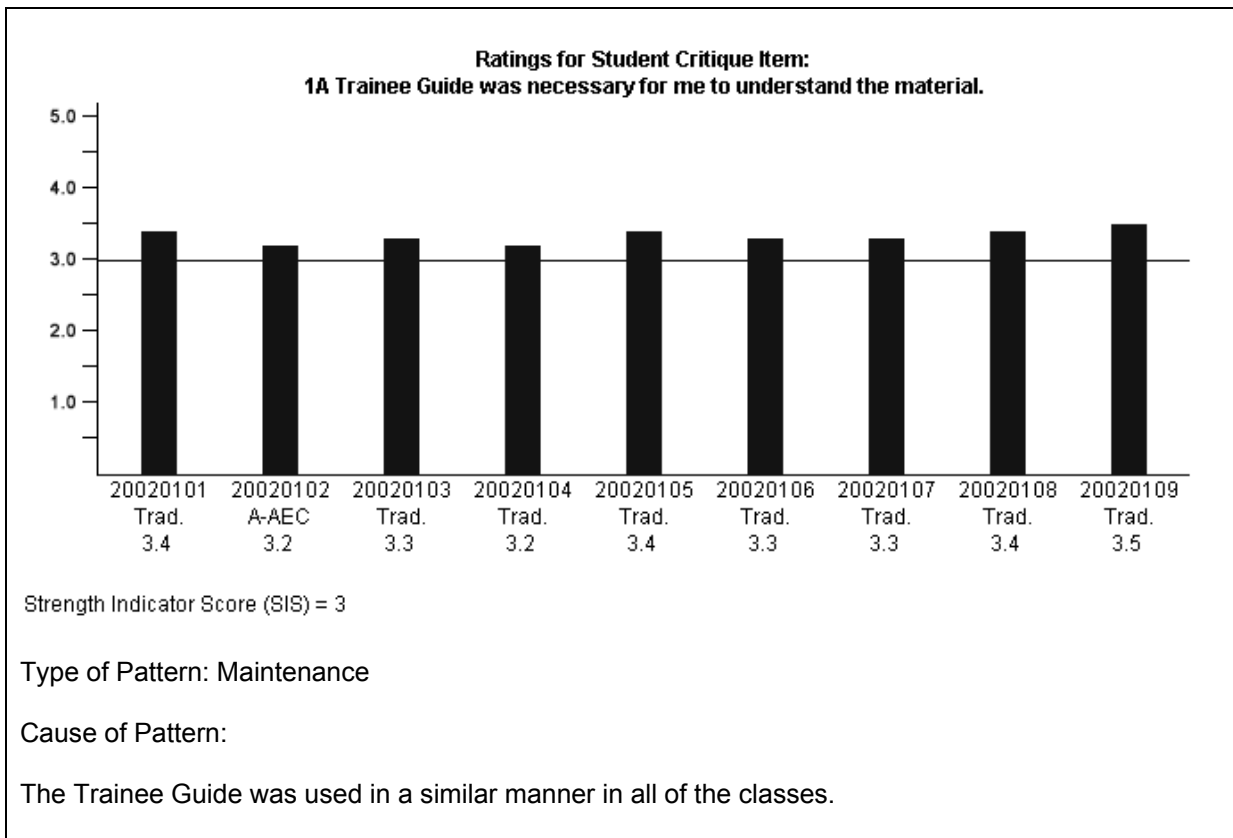
Here are some general rules to follow as you look for patterns:

- A pattern of increase or decrease exists when six or more consecutive points are moving in the same general direction. This direction is either upward (an increasing pattern) or downward (a decreasing pattern).
- A pattern of maintenance exists when nine or more points remain generally steady or close to a similar point.

The following is an example of an increasing pattern in a trend chart:

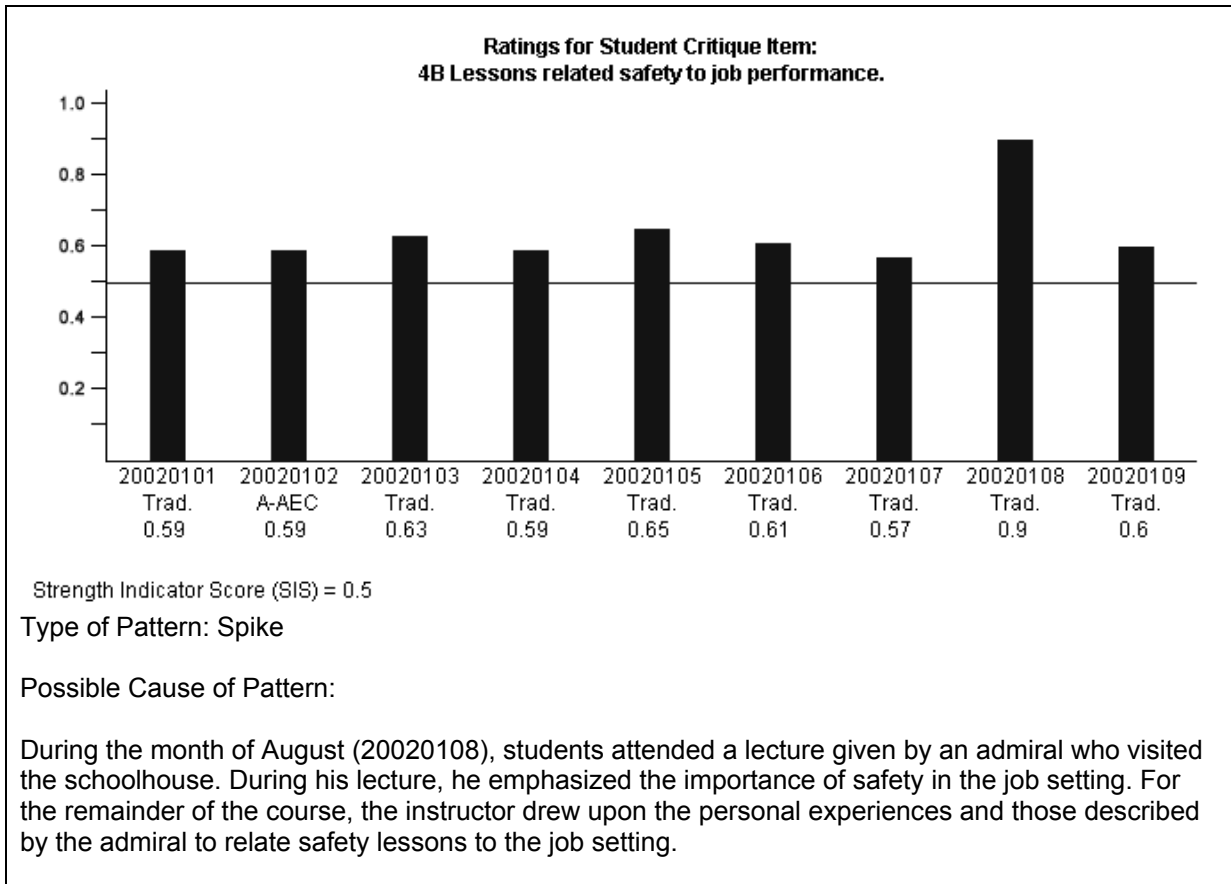


The following is an example of a maintenance pattern in a trend chart:



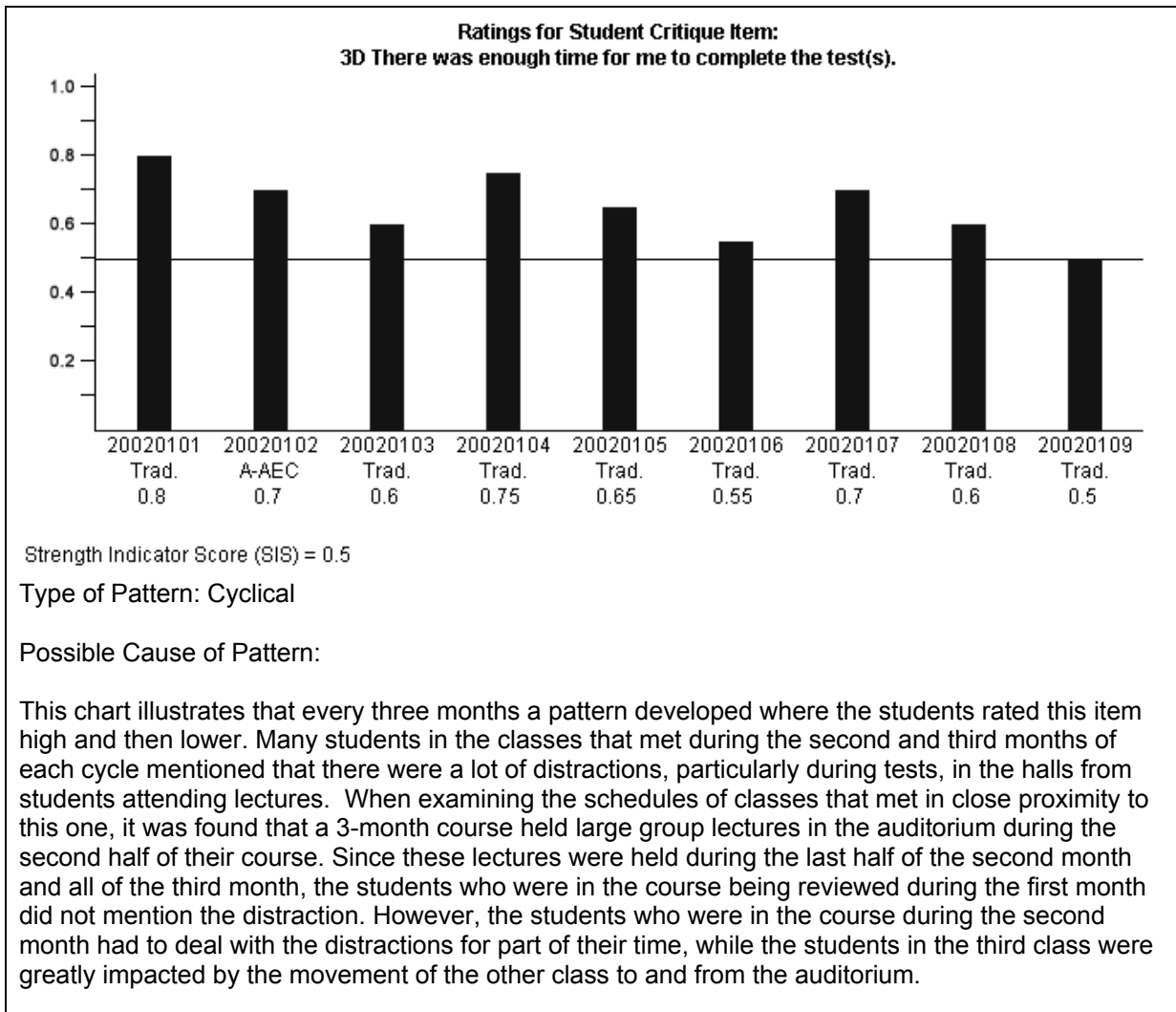
Sometimes, trends do not follow a consistent general direction. Another arrangement that may occur is called a spike. A spike is a single score that is located far above or below the general direction of the other scores.

The following is an example of a spike in a trend chart:



Another type of pattern to look for is called a cyclical tendency. A cyclical tendency is a pattern where the trend repeats itself.

The following is an example of a cyclical tendency in a trend chart:



A key part of examining these trends is to determine the causes for the patterns.

For trends that follow a general direction or that are cyclical, it is important to identify the causes for the pattern. Since these patterns occur repeatedly, they may be considered “common causes”.

For trends with spikes, the causes may be considered, “special causes”. These causes should be described in the plans for revision so they may be replicated, maintained, or decreased depending on whether or not the pattern illustrated positive results.

2. Determine how trends are related to other information sources.

One way to understand a particular trend is to compare trend charts and comments for similar items or objectives. Similar trends in similar items and objectives may indicate a common cause. For student achievement information, you will want to look at objectives within the same unit. For

the Student Critique of Training or the instructor feedback form, you may want to compare items that are within the same category, such as “Course Materials” or “Lesson Topics”.

Sometimes, it is helpful to compare items from other information sources to confirm conclusions developed from one information source. For example, you may want to compare an item on the Student Critique of Training with similar items on the instructor feedback form. To do this, go to the Single Offering Tab, select the end of course information for the appropriate class offering(s), and go to the “Compare Student and Instructor” screen.

3. Determine why these trends occurred.

To determine the causes of the trends, it is helpful to examine comments made during previous reviews of the Student Critique, Instructor Feedback, and Student Achievement Tabs. You will want to look for comments that were made frequently or those comments that made reference to a special cause. Also, be sure to pay special attention to those comments that the previous reviewer(s) emphasized as being key reasons for opportunities and plans for revision.

4. Determine what to do as a result of the analysis.

After you determine the causes of the trends, you will want to enter your observations and conclusions about the strengths, opportunities, and plans for revision. These observations should be made from your analysis of the trend charts and the comments made by previous reviewer(s). They should summarize and reiterate the emphasis placed on key factors and events described by previous reviewers. Now that you have determined why these trends occurred, you should be able to address how you will maintain favorable results and make improvements in the areas that were not as favorable.

Where can I go for more information?

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