

WWC Review of the Report “Getting Under the Hood: How and For Whom Does Increasing Course Structure Work?”^{1,2}

The findings from this review do not reflect the full body of research evidence on the impact of increasing course structure.

What is this study about?

The study measured the impact of what the authors called “increased course structure” on student achievement in an undergraduate biology course at a 4-year institution in the southeastern United States.

Undergraduate students who enrolled in a biology course during three consecutive terms of the study period comprised the intervention condition. Students who had enrolled in the same course during the preceding three terms comprised the comparison condition. All sections of the course were taught by the same instructor, with the first three terms taught using the traditional lecture format and the second three terms incorporating the increased course structure.

The study examined the impact of the intervention on exam scores, exam pass rates, and course pass rates.³

What did the study find?

None of the analyses presented in this study meet WWC standards, and therefore, the study findings are not presented in this WWC report.

Features of Increased Course Structure

The course is a one-semester general biology course for the general student population. To create the increased course structure, the authors modified the traditional lecture format of the course—which involved very little student participation and only three graded homework assignments—by (a) increasing in-class group work to about 35% of class time, (b) assigning weekly graded preparatory homework, and (c) providing guided questions that students could attempt to answer while reading the week’s assigned textbook material. This increased course structure was intended to help students improve their out-of-class study time allocation, improve classroom culture, and increase the perceived value of the course for students.

WWC Rating

The research described in this report does not meet WWC group design standards

In this quasi-experimental design study, the comparison group included students from three consecutive semesters, and the intervention group included students from three later consecutive semesters. Because the comparison group was formed from earlier cohorts, time is considered a *confounding factor*—or a component of the study that is completely aligned with one of the conditions. Therefore, differences between the groups cannot be attributed solely to the intervention, and the study cannot meet WWC group design standards. Therefore, the findings from this study are not presented in this WWC report.

Endnotes

¹ Eddy, S. L., & Hogan, K. A. (2014). Getting under the hood: How and for whom does increasing course structure work? *CBE—Life Sciences Education*, 13, 453–468. doi:10.1187/cbe.14-03-0050

² Single study reviews examine evidence published in a study (supplemented, if necessary, by information obtained directly from the authors) to assess whether the study design meets WWC design standards. The review reports the WWC’s assessment of whether the study meets WWC design standards and summarizes the study findings following WWC conventions for reporting evidence on effectiveness. This study was reviewed using the Postsecondary Education evidence review protocol, version 2.0. A quick review of this study was released on October 2, 2014, and this report is the follow-up review that replaces that initial assessment.

³ There were several outcomes included in the study that are not described in this WWC report. The study authors surveyed a subset of students about their study habits and perceptions of the course. These outcomes are not eligible for review under the Postsecondary Education evidence review protocol.

Recommended Citation

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Glossary of Terms

Attrition	Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.
Clustering adjustment	If intervention assignment is made at a cluster level and the analysis is conducted at the individual level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.
Confounding factor	A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.
Design	The design of a study is the method by which intervention and comparison groups were assigned.
Domain	A domain is a group of closely related outcomes.
Effect size	The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.
Eligibility	A study is eligible for review if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
Equivalence	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
Improvement index	Along a percentile distribution of individuals, the improvement index represents the gain or loss of the average individual due to the intervention. As the average individual starts at the 50th percentile, the measure ranges from -50 to +50.
Multiple comparison adjustment	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
Quasi-experimental design (QED)	A quasi-experimental design (QED) is a research design in which study participants are assigned to intervention and comparison groups through a process that is not random.
Randomized controlled trial (RCT)	A randomized controlled trial (RCT) is an experiment in which eligible study participants are randomly assigned to intervention and comparison groups.
Single-case design (SCD)	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.
Standard deviation	The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample are spread out over a large range of values.
Statistical significance	Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < .05$).
Substantively important	A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the [WWC Procedures and Standards Handbook \(version 3.0\)](#) for additional details.