# Reporting checklist for cross sectional study.

Based on the STROBE cross sectional guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the STROBE cross sectionalreporting guidelines, and cite them as:

von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies.

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|  |  | Reporting Item | Page Number |
| **Title and abstract** |  |  |  |
| Title | [#1a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#1a) | Indicate the study’s design with a commonly used term in the title or the abstract | a cross-sectional descriptive survey research design[1] |
| Abstract | [#1b](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#1b) | Provide in the abstract an informative and balanced summary of what was done and what was found | Background: Measurement is essential for methods of instruction to be successful. Having an instrument that is reliable and validated in the given setting is vital. The primary goal of this research project is to validate the instructional practice scale (IPS) for university instructors in the Ethiopian context. Methods: By implementing a cross-sectional descriptive survey research design, 1,254 participants across four public universities – Arbaminch, Dilla, Wachamo, and Jinka representing the first, second, third, and fourth generations, respectively were randomly selected and participated. The data was split in half and underwent an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results: The three components of the EFA were alternately filled with seventeen items that satisfied certain standards, had a loading value of > .5, and a Cronbach alpha of ≥ .874. The factors identified in the EFA have been confirmed to be the thirteen items with loading, Cronbach alpha, Raykov's rho coefficient (rho\_A), composite reliability (CR) value of >.7, and Average Variance Explained (AVE) value of > .5. Tests of measurement and structural models showed a good fit. The Fornell-Larcker criterion, which is employed in discriminant validity analysis, demonstrates that the square root of the AVE for each construct is higher than the correlation it exhibits with other constructs. The correlations' heterotrait–monotrait (HTMT) ratio is getting close to zero, and there isn't one in the confidence interval at the .05 significance level. Both guaranteed strong discriminant validity. Conclusion: For university instructors, the 13 items generally have powerful psychometric properties. The three subsections of the instruction practice scale—planning (4 indicators), delivering (4 indicators), and assessment (5 indicators) — are meant to measure the instructional practice effectively. Implications of the findings were further discussed [1,2] |
| **Introduction** |  |  |  |
| Background / rationale | [#2](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#2) | Explain the scientific background and rationale for the investigation being reported | to more accurately assess the construct in the context of Ethiopian university instructors, presuming that the Ministry of Education would provide freshman students with uniform learning modules. Measuring this construct using a validated instrument is essential to gaining knowledge of it, effectively conveying that to others, and making necessary corrections. A construct needs to be evaluated using a reliable and appropriate in-context tool to obtain its images. [3] |
| Objectives | [#3](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#3) | State specific objectives, including any prespecified hypotheses |  Investigate the fundamental factor structures in instructional practice in EFA.  Verify the structures discovered using exploratory factor analysis.  Assess the tool's psychometric qualities, such as validity and reliability, in the setting of Ethiopian public university instructors[4] |
| **Methods** |  |  |  |
| Study design | [#4](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#4) | Present key elements of study design early in the paper | a cross-sectional descriptive survey method to gather data from the target population at certain points in time. [4] |
| Setting | [#5](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#5) | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | eight universities identified in it, are categorized based on generation (year of establishment). Four public universities—Arbaminch, Dilla, Wachamo, and Jinka—representing the first, second, third, and fourth generations, respectively [4] |
| Eligibility criteria | [#6a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#6a) | Give the eligibility criteria, and the sources and methods of selection of participants. | randomly selecting participants[5] |
|  | [#7](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#7) | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | n/a |
| Data sources / measurement | [#8](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#8) | For each variable of interest give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group. Give information separately for for exposed and unexposed groups if applicable. | The items were first developed by Abundo (2019), Benosa (2017), and Sergio (2018) to account for the instructional practice of teachers through classroom observations to compile their thesis at Bicol University. By 2022, Bibon extracted those items and compiled them in the form of a scale responded in five alternative responses - never, rare, sometimes, frequently, and always. Grounding on the constructivism of teaching and learning and the suggestion of educational institutions, Bibon (2022) classified into three categories of instructional practice. These include —planning (8 indicators), delivering (9 indicators), and assessing (8 indicators)—the scale is meant to measure the instructions used by scientific teachers. In his study, the scale's Cronbach alpha of .86 indicated better internal consistency when assessing the construct.[4,5] |
| Bias | [#9](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#9) | Describe any efforts to address potential sources of bias | randomly selecting participants[5,7] |
| Study size | [#10](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#10) | Explain how the study size was arrived at | using Comrey & Lee, 1992 determination for factor analysis [5] |
| Quantitative variables | [#11](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#11) | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why | n/a |
| Statistical methods | [#12a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#12a) | Describe all statistical methods, including those used to control for confounding | confirmation factor analysis, and descriptive statistics and exploratory factor analysis [8] |
| Statistical methods | [#12b](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#12b) | Describe any methods used to examine subgroups and interactions | n/a |
| Statistical methods | [#12c](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#12c) | Explain how missing data were addressed | data cleaning made and incomplete data removed prior analysis [9] |
| Statistical methods | [#12d](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#12d) | If applicable, describe analytical methods taking account of sampling strategy | Kothari's (2004) stratified proportional sample size formula, nh = (Nh/N)\*n [5] |
| Statistical methods | [#12e](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#12e) | Describe any sensitivity analyses | n/a |
| **Results** |  |  |  |
| Participants | [#13a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#13a) | Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed. Give information separately for for exposed and unexposed groups if applicable. | n/a but 1254 participants were participated [5] |
| Participants | [#13b](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#13b) | Give reasons for non-participation at each stage | n/a |
| Participants | [#13c](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#13c) | Consider use of a flow diagram | n/a |
| Descriptive data | [#14a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#14a) | Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders. Give information separately for exposed and unexposed groups if applicable. | 1,254 instructors took part. Approximately 956 (76.2%) participants were male, and 298 (23.8 %) participants were female, making up around three-fourths and one-fourth of the total, respectively. The age distribution has a mean of 34.16 years and a standard deviation of 4.37, falling between the minimum age of 28 and the maximum age of 45. This number appears to be in line with the distributions of work experiences and academic ranks. There were 1186 (94.6%) master's degree holders, 50 (4%) PhD holders and 18 (1.4%) assistant lecturers as the final minimum size. This means that the instructors in the minimum, maximum, and average age groups will be covered, accordingly. One year of work experience at a university is the minimum, while sixteen years is the maximum. Ultimately, 852 (67.9 %) participants, or the higher two-thirds, underwent training for higher education teaching under the Higher Diploma Program (HDP). In contrast, approximately one-fourth of instructors were not [8,9] |
| Descriptive data | [#14b](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#14b) | Indicate number of participants with missing data for each variable of interest | n/a |
| Outcome data | [#15](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#15) | Report numbers of outcome events or summary measures. Give information separately for exposed and unexposed groups if applicable. | n/a |
| Main results | [#16a](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#16a) | Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included | n/a |
| Main results | [#16b](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#16b) | Report category boundaries when continuous variables were categorized | n/a |
| Main results | [#16c](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#16c) | If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | n/a |
| Other analyses | [#17](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#17) | Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses | n/a |
| **Discussion** |  |  |  |
| Key results | [#18](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#18) | Summarise key results with reference to study objectives | The three components of the EFA were alternately filled with seventeen items that satisfied certain standards, had a loading value of > .5, and a Cronbach alpha of ≥ .874. The factors identified in the EFA have been confirmed to be the thirteen items with loading, Cronbach alpha, Raykov's rho coefficient (rho\_A), composite reliability (CR) value of >.7, and Average Variance Explained (AVE) value of > .5. Tests of measurement and structural models showed a good fit. The Fornell-Larcker criterion, which is employed in discriminant validity analysis, demonstrates that the square root of the AVE for each construct is higher than the correlation it exhibits with other constructs. The correlations' heterotrait–monotrait (HTMT) ratio is getting close to zero, and there isn't one in the confidence interval at the .05 significance level. Both guaranteed strong discriminant validity. [12-17] |
| Limitations | [#19](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#19) | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias. | n/a |
| Interpretation | [#20](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#20) | Give a cautious overall interpretation considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence. | 12-18 |
| Generalisability | [#21](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#21) | Discuss the generalisability (external validity) of the study results | for university instructors [1] |
| **Other Information** |  |  |  |
| Funding | [#22](https://www.goodreports.org/reporting-checklists/strobe-cross-sectional/info/#22) | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | Dilla University but the finding doesn't refelect the funders interest [18] |

Notes:

* 1a: a cross-sectional descriptive survey research design[1]
* 1b: Background: Measurement is essential for methods of instruction to be successful. Having an instrument that is reliable and validated in the given setting is vital. The primary goal of this research project is to validate the instructional practice scale (IPS) for university instructors in the Ethiopian context. Methods: By implementing a cross-sectional descriptive survey research design, 1,254 participants across four public universities – Arbaminch, Dilla, Wachamo, and Jinka representing the first, second, third, and fourth generations, respectively were randomly selected and participated. The data was split in half and underwent an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results: The three components of the EFA were alternately filled with seventeen items that satisfied certain standards, had a loading value of > .5, and a Cronbach alpha of ≥ .874. The factors identified in the EFA have been confirmed to be the thirteen items with loading, Cronbach alpha, Raykov's rho coefficient (rho\_A), composite reliability (CR) value of >.7, and Average Variance Explained (AVE) value of > .5. Tests of measurement and structural models showed a good fit. The Fornell-Larcker criterion, which is employed in discriminant validity analysis, demonstrates that the square root of the AVE for each construct is higher than the correlation it exhibits with other constructs. The correlations' heterotrait–monotrait (HTMT) ratio is getting close to zero, and there isn't one in the confidence interval at the .05 significance level. Both guaranteed strong discriminant validity. Conclusion: For university instructors, the 13 items generally have powerful psychometric properties. The three subsections of the instruction practice scale—planning (4 indicators), delivering (4 indicators), and assessment (5 indicators) — are meant to measure the instructional practice effectively. Implications of the findings were further discussed [1,2]
* 2: to more accurately assess the construct in the context of Ethiopian university instructors, presuming that the Ministry of Education would provide freshman students with uniform learning modules. Measuring this construct using a validated instrument is essential to gaining knowledge of it, effectively conveying that to others, and making necessary corrections. A construct needs to be evaluated using a reliable and appropriate in-context tool to obtain its images. [3]
* 3:  Investigate the fundamental factor structures in instructional practice in EFA.  Verify the structures discovered using exploratory factor analysis.  Assess the tool's psychometric qualities, such as validity and reliability, in the setting of Ethiopian public university instructors[4]
* 4: a cross-sectional descriptive survey method to gather data from the target population at certain points in time. [4]
* 5: eight universities identified in it, are categorized based on generation (year of establishment). Four public universities—Arbaminch, Dilla, Wachamo, and Jinka—representing the first, second, third, and fourth generations, respectively [4]
* 6a: randomly selecting participants[5]
* 8: The items were first developed by Abundo (2019), Benosa (2017), and Sergio (2018) to account for the instructional practice of teachers through classroom observations to compile their thesis at Bicol University. By 2022, Bibon extracted those items and compiled them in the form of a scale responded in five alternative responses - never, rare, sometimes, frequently, and always. Grounding on the constructivism of teaching and learning and the suggestion of educational institutions, Bibon (2022) classified into three categories of instructional practice. These include —planning (8 indicators), delivering (9 indicators), and assessing (8 indicators)—the scale is meant to measure the instructions used by scientific teachers. In his study, the scale's Cronbach alpha of .86 indicated better internal consistency when assessing the construct.[4,5]
* 9: randomly selecting participants[5,7]
* 10: using Comrey & Lee, 1992 determination for factor analysis [5]
* 12a: confirmation factor analysis, and descriptive statistics and exploratory factor analysis [8]
* 12c: data cleaning made and incomplete data removed prior analysis [9]
* 12d: Kothari's (2004) stratified proportional sample size formula, nh = (Nh/N)\*n [5]
* 13a: n/a but 1254 participants were participated [5]
* 14a: 1,254 instructors took part. Approximately 956 (76.2%) participants were male, and 298 (23.8 %) participants were female, making up around three-fourths and one-fourth of the total, respectively. The age distribution has a mean of 34.16 years and a standard deviation of 4.37, falling between the minimum age of 28 and the maximum age of 45. This number appears to be in line with the distributions of work experiences and academic ranks. There were 1186 (94.6%) master's degree holders, 50 (4%) PhD holders and 18 (1.4%) assistant lecturers as the final minimum size. This means that the instructors in the minimum, maximum, and average age groups will be covered, accordingly. One year of work experience at a university is the minimum, while sixteen years is the maximum. Ultimately, 852 (67.9 %) participants, or the higher two-thirds, underwent training for higher education teaching under the Higher Diploma Program (HDP). In contrast, approximately one-fourth of instructors were not [8,9]
* 18: The three components of the EFA were alternately filled with seventeen items that satisfied certain standards, had a loading value of > .5, and a Cronbach alpha of ≥ .874. The factors identified in the EFA have been confirmed to be the thirteen items with loading, Cronbach alpha, Raykov's rho coefficient (rho\_A), composite reliability (CR) value of >.7, and Average Variance Explained (AVE) value of > .5. Tests of measurement and structural models showed a good fit. The Fornell-Larcker criterion, which is employed in discriminant validity analysis, demonstrates that the square root of the AVE for each construct is higher than the correlation it exhibits with other constructs. The correlations' heterotrait–monotrait (HTMT) ratio is getting close to zero, and there isn't one in the confidence interval at the .05 significance level. Both guaranteed strong discriminant validity. [12-17]
* 21: for university instructors [1]
* 22: Dilla University but the finding doesn't refelect the funders interest [18] The STROBE checklist is distributed under the terms of the Creative Commons Attribution License CC-BY. This checklist was completed on 09. July 2024 using <https://www.goodreports.org/>, a tool made by the [EQUATOR Network](https://www.equator-network.org) in collaboration with [Penelope.ai](https://www.penelope.ai)