
FACTORIAL VALIDATION OF A CIVIC DISPOSITION SCALE FOR SENIOR SECONDARY SCHOOL STUDENTS IN BENUE STATE: IMPLICATIONS FOR EFFECTIVE CIVIC EDUCATION ASSESSMENT

***Josephine N. Ogboji, Prof. A. D. E. Obinne & Prof. S. O. Emaikwu**

Nigeria.

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*Corresponding Author: Josephine N. Ogboji

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ABSTRACT

The study is on Factorial Validation of a Civic Disposition Scale (CDS) for Senior Secondary School Students in Benue State: Implications for Effective Civic Education Assessment. It was designed to validate using factor analysis method a Civic Disposition Scale for senior secondary school students. Two basic objectives guided the study. The study adopted an instrumentation research design. Benue State, Nigeria was the target study area and the population comprised 3,911 SS2 students from seven Local Government Areas (LGAs) in Zone B. A sample of 363 students (196 males, 167 females) was selected using multistage sampling with purposive and simple random techniques. Data were collected via a researcher-developed four-point rating CDS, validated by five experts and shown reliable with a Cronbach's alpha of 0.87. The scale was administered directly with trained assistants, and data were analyzed using SPSS. Results revealed that the instrument has a clear internal structure as evidenced in the scree plot, showing it measures a limited number of main ideas (hidden traits), and 30 of the 95 items are meaningfully connected to these core areas. Five factors extracted as underlying structure of the scale, labelled Civic duty, Community involvement, Political attentiveness, Ethical and Moral disposition and Openness to diversity were grouped based on items loaded on them. This is according to strong factor loadings, with values above 0.50 indicating solid relationships between items and their factors. The study concludes therefore that the CDS instrument developed is a reliable and well-structured tool for assessing civic disposition. It was recommended among other things that educators and researchers focus on the key factors identified in the scale when using the Civic

Disposition Scale to assess students and also that the full multidimensional nature of the scale be utilized in interpreting students' responses.

KEYWORDS: Civic disposition, Civic education assessment, Factorial validation, Scale reliability and Senior secondary students.

INTRODUCTION

Civic education occupies a central position in the intellectual and moral formation of secondary school students. At the senior secondary level, learners are not only preparing for external examinations and tertiary education but are also approaching the age of political maturity and civic participation. Within this transitional phase, civic education functions as a structured process through which students acquire knowledge of democratic principles, constitutional rights and responsibilities, rule of law, national values, and active citizenship. More importantly, it cultivates civic dispositions such as, attitudes, values, and commitments that shape how young people think about governance, public accountability, social justice, and collective responsibility (Owen, 2015). In pluralistic societies such as Nigeria, where democratic consolidation remains an ongoing project, the role of civic education in nurturing responsible, informed, and participatory citizens cannot be overemphasized.

At the senior secondary school level, civic education extends beyond theoretical understanding of governmental structures. It seeks to instill dispositions such as tolerance, respect for diversity, critical engagement with public issues, national loyalty balanced with global awareness, and willingness to participate in democratic processes. These civic dispositions determine whether knowledge translates into action. As Akinpelu (2020) argues in his analysis of citizenship education in Nigeria, the ultimate goal of civic instruction is not merely the transmission of political knowledge but the cultivation of democratic attitudes and responsible participation among young people. A student may possess factual knowledge about elections, constitutional provisions, or anti-corruption agencies; however, without the disposition to value democratic norms, uphold ethical standards, or participate constructively in civic life, such knowledge remains inert. Thus, effective civic education must be assessed not only in terms of cognitive achievement but also in terms of affective and behavioral orientations.

The necessity of proper assessment in civic education arises from the fundamental relationship between measurement and educational improvement. Assessment provides empirical evidence regarding the extent to which instructional objectives are being achieved.

In the context of civic education, reliable assessment enables educators to determine whether students are internalizing democratic values, developing positive civic attitudes, and demonstrating readiness for responsible citizenship. As Ojedokun (2021) argues, systematic and context-sensitive assessment is indispensable for determining whether civic education in Nigerian secondary schools effectively promotes democratic values, civic responsibility, and participatory competence among students. Similarly, Organisation for Economic Co-operation and Development (OECD). (2023) underscores that valid and reliable measurement of global and civic competencies is essential for aligning curriculum, pedagogy, and learning outcomes with democratic participation goals. Without systematic and psychometrically sound instruments, policymakers and educators may rely on assumptions rather than empirical data when evaluating civic education programmes. This often results in curriculum misalignment, ineffective instructional strategies, and weak accountability mechanisms in civic learning outcomes.

Due to dearth of affective instruments in many secondary school systems, assessment practices in civic education have traditionally emphasized cognitive domains—such as recall of constitutional provisions, identification of governmental organs, or explanation of civic concepts. While cognitive mastery is important, it does not fully capture civic disposition. Civic disposition encompasses complex constructs such as political efficacy, civic responsibility, tolerance, law-abiding orientation, and commitment to community development. These constructs are multidimensional and cannot be adequately measured through conventional objective tests alone. Consequently, there is a pressing need for psychometrically sound instruments capable of measuring these latent variables accurately.

Ensuring that a civic disposition scale is valid and reliable within its sociocultural context remains a major challenge. Civic values are shaped by historical, cultural, religious, and socio-political realities. As Schulz, Ainley, Fraillon, Losito, Agrusti, and Friedman (2018) observe in their international study of civic and citizenship education, contextual differences significantly influence how civic attitudes and engagement are expressed and measured across societies, thereby underscoring the importance of culturally sensitive assessment tools. In Benue State, with its ethnic diversity, agrarian community structures, active youth political engagement, and democratic transitions, students' civic orientations are influenced by unique contextual factors. Consequently, instruments developed in different cultural or national settings may not adequately capture the lived experiences and value systems of senior secondary school students in the state. This underscores the need to develop or adapt a context-specific civic disposition scale.

Factorial validation is essential in establishing the structural integrity of such an instrument. Through exploratory and confirmatory factor analyses, researchers can determine whether the scale's dimensions align with theoretical constructs and empirical data (Rahn, 2025). This process identifies coherent clusters of items and ensures that each item meaningfully contributes to the intended construct. Without factorial validation, instruments may contain ambiguous, redundant, culturally inappropriate, or weak items, thereby compromising interpretation and utility. Validated assessment tools support educational planning, curriculum reform, and teacher development by providing accurate data on students' civic strengths and weaknesses (Kline, 2016). They also promote evidence-based practice and allow for monitoring, comparison, and longitudinal tracking. It is based on the backdrop that the researcher is motivated to examine factorial validation of a Civic Disposition Scale for Senior Secondary School Students in Benue State and its implications for effective civic education assessment.

STATEMENT OF THE PROBLEM

Civic education is a vital subject for fostering democratic values, responsible citizenship, and active participation among senior secondary school students in Nigeria. Beyond acquiring knowledge of government structures, constitutional provisions, and civic rights, students are expected to develop civic dispositions such as tolerance, respect for diversity, political efficacy, and commitment to community development. However, assessment in many schools remains heavily focused on cognitive achievement, emphasizing recall and theoretical knowledge rather than measuring attitudes and dispositions. This creates a gap between the goals of civic education and evaluation practices. Moreover, many existing assessment instruments are developed abroad and fail to reflect Nigeria's socio-cultural realities, limiting their relevance and accuracy in measuring students' civic dispositions.

In Benue State, where ethnic diversity, communal relations, youth political engagement, and socio-economic challenges shape students' civic experiences, instruments that are not culturally validated may fail to capture the true structure of students' civic dispositions. The absence of a contextually grounded and psychometrically validated Civic Disposition Scale tailored to senior secondary school students in Benue State therefore represents a methodological and practical limitation in civic education research and practice. Now, the problem of the study is to conduct a factorial validation of a Civic Disposition Scale for senior secondary school students in Benue State.

OBJECTIVES OF THE STUDY

The study is designed to:

1. Determine the model fit (scree plot) of the civic disposition scale instrument
2. Identify the factor structure that underlie the civic disposition scale instrument
3. Determine the number of items that emerged from the factor analysis of the items of the scale instrument to evaluate students' civic disposition

RESEARCH QUESTIONS

The following research questions were answered in the study.

1. What is the model fit (scree plot) of the civic disposition scale instrument?
2. What is the factor structure that underlies the civic disposition scale instrument?
3. What is the number of items that emerged from the factor analysis of the items of the scale instrument to evaluate students' civic disposition?

LITERATURE REVIEW

Concept of Civic Disposition

Civic dispositions refer to orientations related to democratic character formation. They are the private and public attributes essential to the maintenance and improvement of constitutional democracies. (Owen, 2015) Civic dispositions are referred to as the citizen traits necessary for a democracy such as tolerance, public spiritedness, civility, critical mindedness and willingness to listen, negotiate, and compromise. (Rietbergen-McCracken, 2018). Civic dispositions also include a wide range of intrapersonal and interpersonal virtues, values and behaviours that provide a foundation for individual's active embrace of the norms of good citizenship. Citizens with right civic disposition embrace their democratic rights, duties and responsibilities in a tolerant, responsible and civil manner. The democratic worth of a political system entails citizens who care for and are willing to promote democratic values.

The acquisition of civic dispositions such as political attentiveness, respect for the rule of law, a commitment to justice, equality and fairness, trust in government, political efficacy, civic duty, respect for human rights, concern for the welfare of others, social responsibility and community involvement is necessary for the stable functioning of a constitutional democracy. These dispositions further position and require citizens to be informed about politics and government; monitor political leaders and public agencies to ensure their actions are principled, and work through peaceful legal means to change unjust policies (Owen, 2015). Civic disposition is an affective aspect of learning in civic education. Affective

domain of learning is the aspect of learners' emotions and feelings in terms of character and behaviour. This is the part of learning that deals with persons, how they act, feel, their emotions and different behaviours such as a person's individual attitudes and characteristics (Hindawi, 2021). It concerns everything about the learner's body sensitivities.

Concept of Factorial Validation

Factorial validation is the process of establishing the construct validity of an instrument through factor analysis, a statistical technique that reduces many observed variables into a smaller number of underlying factors. It uncovers latent structures that explain patterns of relationships among variables and accounts for observed variability in a dataset (Carpenter, 2018). In social sciences and education, factor analysis condenses complex attributes into interpretable dimensions. Wang and Wang (2020) described it as a method for identifying relationships among variables, while Rahn (2025) noted it strengthens validation by ensuring instruments accurately reflect intended constructs. This technique is especially valuable in psychology and education, where latent constructs such as attitudes, motivation, leadership, and civic disposition are measured.

Through factorial validation, researchers assess whether scale items align with their theoretical dimensions. Factorial validation is commonly carried out using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA explores possible factor structures without prior assumptions, while CFA tests a hypothesized model for fit (Hair, Black, Babin, & Anderson, 2019). Interpretation also involves eigenvalues and scree plots, where eigenvalues indicate variance explained and the scree plot's "elbow" shows the number of significant factors. Knekta, Runyon, and Eddy (2019) noted that a steep early decline signals strong constructs, while Watkins (2021) emphasized that factors before the elbow are meaningful, and those after may reflect minor variation or noise.

Factorial validation consists of systematic procedures undertaken to establish the structural validity of a measurement instrument. The process begins with a clear conceptual definition of the construct and the careful development of items that adequately represent its theoretical dimensions. After drafting the instrument, data are collected from a sufficiently large and representative sample to ensure stability of the factor solution. The dataset is then examined for suitability through tests of sampling adequacy and inter-item correlations, since factor analysis requires meaningful relationships among variables before factors can be extracted (Kline, 2016; Field, 2018). Once these preliminary conditions are met, Exploratory Factor Analysis (EFA) is conducted to uncover the underlying structure of the instrument. EFA

helps determine the number of factors, assess factor loadings, and eliminate weak or cross-loading items (Fabrigar & Wegener, 2019). Thereafter, Confirmatory Factor Analysis (CFA) is performed to test the hypothesized measurement model and evaluate its goodness-of-fit using established statistical indices (Brown, 2015). If necessary, theoretically justified modifications are introduced to improve model fit. Finally, reliability analyses such as internal consistency estimates are computed to confirm that the validated factors are coherent and dependable, thereby strengthening the instrument's construct validity (Hair et al., 2019).

METHODOLOGY

The study adopted an instrumentation research design because the researcher validated a civic disposition scale instrument to measure the civic disposition of Senior Secondary (SS2) students. The study was conducted in Benue State, Nigeria in the North-Central geopolitical zone of the country. Three thousand nine hundred and eleven (3911) Senior Secondary Two (SS 2) students in the 2023/2024 academic session from the seven Local Government Areas in Zone B Benue state made up the population while a sample of 363 SS2 students consisting of 196 males and 167 females from 7 LGAs of Benue state was drawn using the multistage sampling procedure via proportional, purposive and simple random sampling techniques. Data collection was through a researcher-developed Civic Disposition Scale (CDS) structured on a 4-point rating scale ranging from Strongly Agree to Strongly Disagree. The items were generated based on identified dimensions of civic disposition. The CDS was validated by five experts while its internal consistency reliability was established via the Cronbach's alpha method with an internal consistency coefficient is 0.87. Direct delivery method was used in administration with the assistance of research assistants. Data collected was subjected to factor analysis using Psch-package. Cronbach's alpha and confirmatory factor analysis (CFA) was employed to examine the construct validity and extraction of the civic disposition scale

RESULTS

Research Question 1: What is the model fit (scree plot) of the civic disposition scale instrument?

To determine the model fit, the instrument was subjected to SPSS analysis to get the scree plot. The result (scree plot) as depicted in figure 1

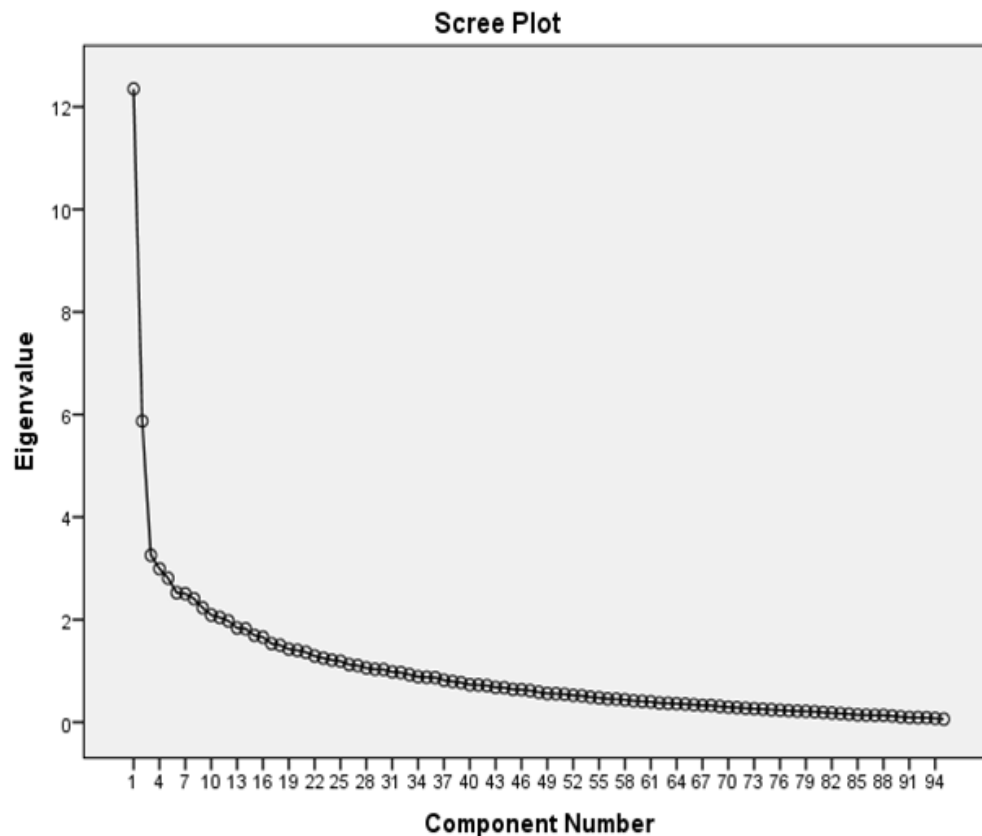


Figure 1: Model Fit (scree plot) of the Civic Disposition Scale Instrument.

The scree plot shows a sharp drop in eigenvalues at the beginning and then a slow, almost flat line. This pattern means that only a small number of factors explain most of what the civic disposition scale is measuring. In simple terms, a few key areas account for most of the differences in how students responded to the items. The “elbow” point (that is where the line begins to level off) appears around 6 to 8 factors. This point helps researchers decide how many factors are meaningful. Before this point, each factor adds important information. After this point, the factors contribute very little and do not improve understanding of the scale in any meaningful way. The first 2 to 5 factors are especially important because they explain a large portion of the total variation in responses. This suggests that students’ civic dispositions can be grouped into a few major dimensions rather than many unrelated ones. The later factors likely represent minor differences or random noise rather than strong underlying traits. In sum, the scree plot indicates that the instrument has a clear internal structure. It measures a limited number of main ideas (hidden traits), and most of the 95 items are meaningfully connected to these core areas. This supports the idea that the scale is well-organized and valid for assessing civic disposition.

Research Question 2: What is the factor structure that underlies the civic disposition scale instrument?

The factor structure of the CDS based on Rotated Component Matrix is as depicted in figure 2

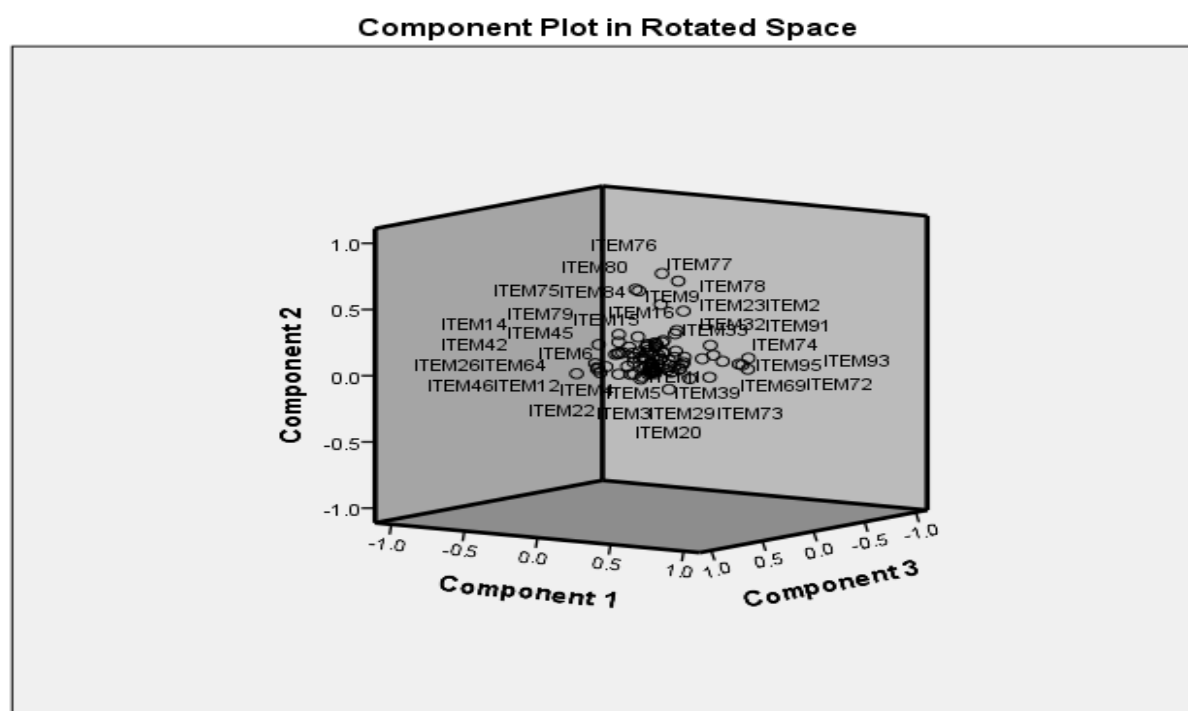


Figure 2: Factor Structure of the Civic Disposition Scale Instrument.

Based on the factor analysis, items with loadings below .300 and those loading on multiple components were removed. This process produced 21 major factors, while 30 isolated items were retained for further review. The results show that the civic disposition scale measures several distinct aspects of students' civic behaviours and beliefs. Items from Item1 to Item95 were grouped according to strong factor loadings, with values above 0.50 indicating solid relationships between items and their factors. In general, the findings confirm that the instrument is multidimensional, capturing different components of civic disposition, as presented in Table 1(Appendix A1).

DISCUSSION

The study is on factorial validation of a Civic Disposition Scale (CDS) for senior secondary school students in Benue State: Implications for effective Civic Education assessment. It was aimed to validate via factor analysis of a CDS. From the analysis of research question one which seeks to find out the model fit of the CDS instrument. Results revealed that the scree plot result provided clear support for the factorial validation of the Civic Disposition Scale

for Senior Secondary School Students in Benue State. The sharp drop in eigenvalues at the beginning showed that only a few key factors explained most of the differences in students' responses. This means that civic disposition among students is organized around a small number of core dimensions rather than many unrelated traits. The finding is in tandem with Knekta, Runyon, and Eddy (2019), who stated that such a pattern indicates strong underlying constructs within a scale. Also, the elbow point around 6 to 8 factors further confirmed that only the early factors were meaningful, while later ones added little value. The result resonates with Watkins (2021) who explained that factors before the elbow are usually the most important for interpretation. In sum, the result shows that the CDS instrument has a clear structure and is suitable for effective Civic Education assessment in Benue State.

The second objective was to examine the factor structure underlying the Civic Disposition Scale (CDS) for Senior Secondary School Students in Benue State. Using the Rotated Component Matrix, items with loadings below 0.300 or those cross-loading on multiple components were removed to ensure clarity and precision. This refinement produced 5 major factors, while 30 isolated items were retained. The findings indicate that the CDS measures several distinct dimensions of students' civic behaviours and beliefs, demonstrating that civic disposition is not a single, uniform trait but a combination of related components. Furthermore, items from Item1 to Item95 clustered under factors with strong loadings above 0.50, showing that each factor represents a meaningful dimension of civic disposition. This confirms the multidimensional nature of the scale, suggesting that students' civic attitudes, participation, community involvement tolerance, and respect for societal norms are captured in separate, interpretable dimensions. These results are consistent with Field (2018), who noted that high factor loadings reflect clear and interpretable latent constructs, and Fabrigar and Wegener (2019), who emphasized that a well-defined factor structure strengthens instrument validity and reliability. The implication of the results is that the CDS is a robust and structured tool suitable for assessing civic dispositions, providing reliable insights for effective Civic Education assessment in Benue State.

CONCLUSION

The study is on factorial validation of the Civic Disposition Scale (CDS) for Senior Secondary School Students in Benue State: Implications for Effective Civic Education Assessment. Results demonstrate that the instrument possesses a clear and interpretable factor structure. The scree plot indicated a limited number of dominant factors, with the elbow point highlighting the most meaningful components, confirming that the scale captures a small set

of core latent constructs underlying students' civic dispositions. The factor analysis further revealed that the scale is multidimensional, with 5 major factors and 30 retained items reflecting distinct aspects of students' civic behaviours and beliefs. Strong factor loadings above 0.50 indicated that items clustered coherently under interpretable factors, supporting the scale's structural validity. The study concludes that the CDS is a reliable and well-structured tool for assessing civic disposition. Its multidimensional nature allows educators and policymakers to evaluate students' civic attitudes, participation, and values accurately.

RECOMMENDATIONS AND IMPLICATIONS FOR EFFECTIVE CIVIC EDUCATION ASSESSMENT

1. The study found that the scree plot indicated a limited number of dominant factors, with the first 2– 5 factors explaining most of the variance in students' civic dispositions. Hence, it is recommended that educators and researchers focus on these key factors when using the Civic Disposition Scale to assess students.

Its implication is that Civic Education assessment can be more targeted and efficient, capturing the most meaningful aspects of students' attitudes, participation, and values, and guiding focused instructional strategies.

2. The study also found that the factor analysis revealed a multidimensional structure, with 5 major factors and 30 retained items representing distinct aspects of students' civic behaviours and beliefs. Therefore, it is recommended that the full multidimensional nature of the scale be utilized in interpreting students' responses.

The result implies that Civic Education assessments can provide a comprehensive evaluation of students' civic development, ensuring that programmes address all relevant components thereby enhancing the effectiveness of both teaching and assessment.

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