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Reliability assessment of learning goal setting orientation survey in Nigerian High Schools: Implications for administration

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Abstract

Developing a goal-setting orientation that promotes positive learning achievement among students in Nigeria can be challenging. This study assessed the reliability of the items in the Learning Goal Setting Orientation Survey (LGSOS) for secondary school students in Osun State, Nigeria, and explore the implications for school administrators. A survey research design was utilised, with a mixed-method sampling technique used to select 40 senior secondary one and two students from 20 schools, totaling 800 students. An 84-item self-designed questionnaire titled "LGSOS" was administered to collect data from the student respondents. Results indicated that the items on LGSOS had high reliability indices, with Cronbach's alpha at 0.934, Guttman Split-half at 0.789, Spearman Brown at 0.797, and Lambda at 0.952, effectively measuring goal setting orientations and learning achievement among secondary school students in Osun State, Nigeria. Additionally, the responses showed a weak positive correlation value (r = 0.12) with a p-value less than 0.05, suggesting that school administrators were not consistently implementing learning goal setting orientation as a continuous process. One key implication of the study is the necessity of school administrators to provide resources and support to help students develop and maintain their learning goal setting orientations. The findings highlight the need for further research into revisiting the goal setting orientation of high school students in Southwestern Nigeria to enhance lifelong learning achievement.

Keywords: *administration, goal orientation, learning, secondary education, reliability*

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1. Introduction

The fact that some school administrators do not understand how students approach learning objectives is concerning because it makes it difficult for them to help create educational programs and interventions that assist students in improving their Learning Goal Setting Orientation (LGSO). However, high school students become aware of setting goals that influence learning through orientation programs, seminars, and educational talks from concerned stakeholders in education. It is disheartening that the majority of high schools in Nigeria, especially the privately-owned ones, no longer conduct orientation for first-year students. It is one thing for a student to study to learn, but another to set a goal for learning achievement in a day, week, month, or term. For example, according to Ogbiji (2011), both public and private high schools in Nigeria encounter similar issues with their orientation programs. However, public schools tend to have more consistent and comprehensive content in their orientation programs compared to private schools (Ogbiji, 2011). A well-directed goal setting may positively influence the Learning Goal Orientation (LGO) of students. For instance, following the findings of Anyanwu et al. (2022), secondary school students' mastery approach of the goal orientation is low with their academic achievement in English Language. Performance in the English language will be enhanced among high school students exposed to goal-setting intervention compared to those in the control group (Abe et al., 2014). While students' goal orientation and interest are closely related, their interest in chemistry is independent of their goal orientations (Idika & Adesoji, 2021). However, school administrators can gather information about the LGSO of students by using a survey, which can be compared across different administrations of the instrument to ensure consistency and reliability.

According to Williams and Lewis (2021), students' learning is influenced by goal orientation, which can be defined as a collection of students' views about their goals that explain why the objective is important to them (Abderrahim et al., 2021). For example, when a student aims for the highest grade in a subject, it could be because he wants to show that he knows a lot about the subject or because he wants to look better than his peers. The motivations behind the students' actions are thus illustrated by goal orientation (McCollum & Kajs, 2007, as cited in Abderrahim et al., 2021). On the other hand, goal orientation describes variations in how individuals perceive and react to success scenarios (Dweck, 1986, as cited in Diefendorff & Seaton, 2015). These variations may be related to objectives like learning and being valuable (mastery orientation); outperforming others in terms of social recognition, grades, and/or

outside rewards (performance-approach orientation); or avoiding failure because it is not worthwhile or will result in unfavourable opinions from others (performance avoidance orientation). Setting goals for mastery orientation is crucial for high school students' learning. Studies by Akinpelu et al. (2024), Awofala and Fatade (2023), Awofala and Lawani (2020), as well as reports from the West African Examinations Council (WAEC) and National Examinations Council (NECO) from 2011-2022, have all emphasised that Nigerian high school students struggle with poor mastery orientation leading to unsatisfactory performances in the two examinations. Although this may not be the goal of the current study, LGO involves students setting goals to achieve learning through mastery and performance.

A crucial step in the learning attainment process is setting effective goals. On the other hand, a goal is an objective or future vision that a student plans, commits to, and envisions (Chen, 2023). Students set deadlines in an effort to accomplish goals in a limited amount of time. As high school students pursue a variety of objectives, including social and academic ones, their learning achievement is influenced by the goals they choose to pursue and the degree of commitment they make to achieving them (Chen, 2023).

A mentality known as learning orientation places a strong emphasis on the value of gaining knowledge from novel situations. Learning-oriented students are inquisitive and receptive to new concepts. They do not hesitate to take on new tasks. According to Anseel et al. (2015), learning-oriented students place a high value on developing their skills to the fullest extent possible in order to finish their tasks. Nonetheless, school administrators must ensure that goals are set to improve students' learning orientation and the overall academic atmosphere in which they work.

While students with high Performance Goal Orientation (PGO) concentrate more on pursuing the goals to demonstrate their competency in comparison to others, such as peers, or to obtain desired feedback from others regarding their competence, students with high LGO consistently work toward mastery of a skill or task in an effort to increase competence (Abderrahim et al., 2021). Usually, LGO produces higher performance levels than PGO because LGO links better self-regulation techniques and increased on-task attention. According to Fengquin and Nai (2018), LGO students are therefore more inclined to take on demanding or tough school assignments and put in more effort. In order to consistently achieve positive learning, high school students with LGO can set a goal by creating a study schedule that is either self-designed or provided by the school. At this stage, it is critical to keep in mind

that high school students are typically teenagers or minors who lack mental self-control. However, ensuring that goal-setting process is properly implemented and monitored by parents, guardians, caregivers, teachers, and school administrators may encourage students to attain good learning.

Unfortunately, in many secondary schools in Nigeria, administrators have not effectively redirected students' focus towards academic success (Bello et al., 2015). There is a need for orientation for first-year students and reorientation for returning students to help them set academic goals and achieve success in their learning. Unlike in the late 90s in Nigeria, where dignitaries and role models in society, including teachers, Parents-Teachers Association, education ministers, leaders, administrators, governors, and other education stakeholders, were invited to speak at high school students' orientations, today, school administrators often prioritize prayers for students instead (Karfe et al., 2020). As a result, some students have adopted the philosophy that "when something desirable is unavailable, it becomes even more desirable," leading them to misuse their study time. Furthermore, regrettably, in high schools in Nigeria, school administrators have not designed a survey to assess students LGSO (Umar et al., 2021). However, the majority of students in secondary schools in Nigeria are unaware of their LGSO ability. Results from completing the survey at the beginning and end of every term enable stakeholders such as teachers, parents, guardians, and administrators to have adequate knowledge about the progress of students in setting realistic goals that promote learning. It also helps administrators monitor students' LGSO capability. Without this, students' attitude towards goal-setting and academic achievement may suffer.

This paper assesses the LGSOS scale in high school students and its implications for school administrators. Therefore, it is highly important for high school administrators to use their own developed LGSOS and administer it on students to determine the reliability of the instrument in collecting data on students' LGO. In behavioural sciences, education, and other fields of study, researchers utilise various data collection techniques such as surveys and Likert scales. However, for a survey scale to consistently measure what it is intended to assess, it needs to be valid and reliable (Odo & Eze, 2019). Psychometric characteristics are the terms used to describe these two concepts. While the majority of research has studied the relationship between goal orientation and students' learning or academic achievement, the current study intends to assess the consistency in the responses of secondary school students in Nigeria using an already self-developed learning goal setting orientation survey. The study also highlights

the implications of goal orientation for students' learning for school administrators. Hence, the following research questions were raised in the study:

1. What is the internal consistency reliability of the items on the LGSOS among secondary school students in Osun State, Nigeria?

2. What is the stability of the items on the LGSOS among secondary school students in Osun State, Nigeria?

2. Literature Review

2.1. Scale and Scale Reliability

When a scale (e.g., survey) is administered repeatedly on the same subject(s) for which it was designed, it is expected that the subjects give the same responses consistently. However, both the instrument's design and the respondents' answers on the scale contribute to reliability (Oncu, 1994). Therefore, there are factors that limit the scale reliability result. They include the scale, the subjects to which the scale is applied, and the setting or environment in which the scale was used (Gay, 1985).

First, the length of a scale influences its reliability, and adding more items to an unreliable scale does not improve its reliability (Oncu, 1944). Generally, a longer scale with more items tends to be more reliable than a shorter scale (Gay, 1985). Second, items that are too easy or too difficult can lower the reliability of a scale. It is necessary to consider the age and class of the subjects to ensure that the items are appropriately challenging. Third, items that effectively differentiate between subjects with varying abilities tend to have higher reliability (Traub, 1994). Fourth, the reliability index of the items on the scale is important to consider. Generally, the more homogeneous the group or individuals for which the scale is intended, the higher its reliability (Oncu, 1994). Fifth, objectivity in scoring can influence reliability; and consistency in scores obtained from the same subject or different subjects by different scorers is essential for a scale's reliability (Oncu, 1994). It is also crucial for all test takers to experience the same testing environment to maintain the reliability of test results. Consistency in ambient factors such as light, sound, and comfort level is important for all examinees (Thorndike et al., 1991). Lastly, the various sources of variation in estimating methods can also influence reliability (Gay, 1985). The definition of reliability can vary depending on how the reliability coefficient is calculated.

2.2. Methods of Estimating Reliability

In tests and measurement, three attributes of reliability that are often estimated are stability, internal consistency or homogeneity, and equivalent or parallel forms (Shodiya & Adekunle, 2022; Danner, 2016; Hulin, Netemeyer & Cudeck, 2001). While two methods of reliability, stability and internal consistency, were utilised, all three methods are being discussed in the current study.

Stability is the ability of a measure to hold steady over time without requiring changes to the testing environment or the respondent (Mohajan, 2017). The procedure is to administer a particular test first on a group of respondents (pre-test), and then on the same subjects (post-test) separated by a time interval of one or two weeks, known as test-retest. The time interval between the first and second administration of the two tests (pre- and post-) should be neither too short nor too long to avoid subjects' responses in the first test influencing their responses in the second test. To determine the test-retest reliability, the Pearson Product Moment Correlation (PPMC) is used to correlate the pre- and post-test scores (Imasuen, 2022). The test-retest correlation coefficient (r) obtained is known as the reliability coefficient of the scale or instrument, indicating the strength of the scale. Although there is no clarity around the interpretation of reliability of scale stability, estimates greater than 0.5 are acceptable in research (Ekolu & Quainoo, 2019). However, Popham (2000) proposed that a test-retest reliability estimate with an r coefficient between 0.70 and 0.90 is acceptable.

The equivalent, alternate, or parallel forms method of reliability measures the consistency of test-takers' responses across two versions of a test, A and B (Liepmann et al., 2007, as cited in Danner, 2016; Onunkwo, 2002, as cited in Ikpi, 2021). Therefore, the design of the items in the two versions of the test will align with the test blueprint or syllabus, and constructed to have similar average item difficulty. When estimating equivalent reliability, the two test forms (A and B) are administered to the same examinees or respondents with a time interval in between. This time interval should not be too short or too long to prevent test-takers' scores from being influenced by fatigue or maturation. Subsequently, the scores from both test versions are correlated using PPMC, and the resulting correlation coefficient, r, becomes the coefficient of equivalence.

The two alternate test forms are identical in all aspects except for the specific items included, meaning that the items are constructed from the same syllabus. An example of two parallel test forms in Nigeria are the University Tertiary Matriculation Examination (UTME)

conducted by the Joint Admissions and Matriculation Board (JAMB), and the entrance Post-UTME conducted by tertiary institutions. The items in both test forms are derived from the JAMB syllabus. It is important to note that equivalent, parallel, or alternate test forms differ from test-retest.

Internal consistency, or homogeneity, as a measure of reliability, concerns the reliability within the measuring instrument. According to Imaseun (2022) and Ahmed et al. (2022), the focus of a researcher in measuring the internal consistency of a scale is to estimate how well each item in the scale measures the content or construct under consideration. A scale's internal consistency is predicated on the idea that items measuring the same construct should correlate, and the coefficient of internal consistency offers an estimation of the measurement's reliability (Kimberlin et al., 2008; Kaplan & Saccuzzo, 2005). Although Cronbach's coefficient alpha (α) is the most frequently used method of estimating internal consistency reliability of a scale, other methods including Guttmann split-half, Spearman Brown, Lambda, Kudder-Richardson, inter-rater or scorer reliability, and so on exist (Dimitrov, 2002; Sijtsma, 2009, as cited in Ahmed et al., 2022). Nevertheless, its limitations are well known, with some of the most important being the assumptions of tau-equivalence and normality, and uncorrelated errors (Yang & Green, 2011). Therefore, researchers are expected to utilise two or more methods in estimating the item homogeneity of a scale. However, in the current study, four methods were used and discussed.

The split-half approach compares one half of the results of a set of scaled items in a measuring device to the other half in order to determine the degree of internal consistency (Ahmed et al., 2022). Reliability can be estimated using this method when an instrument is only administered once. The items can be divided in a number of methods, including dividing them randomly, splitting them in half into a first and second test half, splitting them in half according to item attributes (statistical twins' approach), or splitting them into both even and odd (odd-even split). Then, the scores obtained in the two halves of the test are correlated using PPMC. According to Amelang and Schmidt-Atzert (2006) and Bühner (2011), in order to obtain an estimate of the reliability of the instrument as a whole, the r coefficient is corrected by applying the Spearman-Brown prophecy formula. The formula is applied to step up the r coefficient and is known as correction for attenuation. The coefficient obtained with split-half reliability is called the coefficient of internal consistency. The adjusted reliability estimate known as the Spearman-Brown coefficient can be obtained by computing the Spearman-Brown

correction using SPSS. The maximal split-half coefficient approach (Hunt & Bentler, 2012) can also be used to calculate it. However, this method requires a lot of calculation, particularly when splitting the instrument into all potential test halves. Furthermore, reliability can be estimated using the maximal split-half coefficient and the R program Lambda4 (Hunt, 2013). The split-half method has its limitations.

Consequently, the split-half estimate of internal consistency reliability involves splitting a whole test into two equal halves, leaving psychometricians with an inconvenient situation. Moreover, it is a known fact that when there are more items in a scale, it increases reliability. For instance, a scale with 200 items will produce a higher reliability coefficient compared to another with 40 items. However, splitting a whole test's items into two halves lowers its reliability. Therefore, in order to correct the situation, psychometricians apply the Spearman-Brown prophecy formula. The following formula is used to transform the split-half correlation as input into a full scale:

$$\text{rfull} = \frac{2(rhalf)}{1 + rhalf} \quad \text{..... Equation 1}$$

Cronbach alpha is an estimate of internal consistency reliability used to measure items that are weighing a similar construct (Lam et al., 2010). It depends on how many items there are on the scale and how the items' average inter-correlations are (Ahmed et al., 2022; Mohajan, 2017, as cited in Shodiya & Adekunle, 2022). Although Cronbach alpha can be applied when test items are scored dichotomously, it is more suitable for estimating scales that have more than two responses, such as the Likert scale (Heale & Twycross, 2015). However, the greater the number of items in a summated scale, the higher Cronbach's alpha tends to be. Although Cronbach alpha reliability ranges between 0 and 1, 0.7 and above is acceptable for high reliability (Heale & Twycross, 2015). Consequently, the Cronbach alpha method has been criticised by psychometricians and researchers because of its weakness in producing higher reliability coefficients. Therefore, items that have the weakest correlation with other questions are removed in order to increase a scale's Cronbach alpha coefficient.

Although Guttman's (1945) Lambda reliability cited in Hunt (2013), a split-half reliability estimate does not assume tau-equivalence or unidimensionality, it turns out to be a better measure of reliability. This is because it produces a higher value of reliability than Cronbach's alpha, which is the most commonly used measure. When the sample size is small

or there are many items, Guttman's (1945) reliability may overestimate reliability, but Cronbach's alpha tends to underestimate true reliability. Six reliability metrics based on the split-half approach were published by Guttman. Researchers have disputed Guttman's reliability measures. Guttman, for example, suggested dividing the test questions in a way that maximises this estimate, but he did not offer a concrete technique. However, within the past 60 years, a number of researchers have achieved advancements in this area. Bentler (1972) first presented the greatest lower bound (ρ+), which states that the maximum reliability that can be attained is achieved by retaining matrix 3 positive semi-definite (all eigenvalues) and reducing the trace of the covariance matrix (the variances). Hunt (2013) cites Callender and Osburn (1977) as the authors of Maximised λ4, which used an algebraic approach for dividing items into halves of the same number. However, the LGSO is a self-designed multidimensional psychological construct used in the current study to collect information from Nigerian high school students about administrators' attempts to influence their LGSO. However, the LGSO is a self-designed multidimensional psychological construct that is used in the current study to collect information from Nigerian high school students about administrators' attempts to influence their LGSO. Therefore, when developing the LGSO, school administrators must ensure they request an estimation of its internal consistency and stability.

2.3. Responsibilities of Administrators in Goal Setting Orientation to Improve Learning

According to Mango et al. (2019), school administrators are responsible for creating detailed plans, enforcing rules, and inspiring students to achieve outcomes they may not have been able to reach on their own through goal-oriented learning techniques. Setting academic goals helps students focus, motivates them to excel in their schoolwork, and encourages the development of positive behaviours. Academic achievement begins with setting academic goals. However, it is important to change high school students' biased attitudes towards goal-setting and learning orientations to more realistic and positive ones. School principals and their assistants should ensure that proper monitoring is in place, and teachers should incorporate academic goal setting into their lesson plans. One aspect of monitoring is ensuring that the LGSOS does not deviate from its intended purpose of assessing the LGO of high school students. However, administrators must ensure that students complete the survey at the beginning and end of every term. Additionally, administrators should provide orientation and

reorientation services to both teachers and students on the benefits of goal setting to improve student learning achievement. Therefore, the achievement goal theory better explains the constructs or variables in the current study.

2.4. Theoretical Review: The Achievement Goal Theory

The achievement goal theory examines how students respond to challenges, and is a theory of motivation, that focuses on the driving forces that motivate a learner to achieve a predetermined goal (Cheng, 2023; Senko et al., 2011; Maher & Zusho, 2009). For example, in an academic setting, students set goals for themselves, whether it is to achieve a specific grade, appear more intelligent than their peers, or acquire knowledge. In the current study, the theory is applied to high school students who may need external motivation from parents, teachers, school leaders, and administrators to set realistic academic goals that can lead to learning achievement. They need guidance on developing a positive attitude towards learning goal-oriented techniques. One notable gap in the literature is the lack of focus on realistic academic goal setting that can result in learning achievement. Therefore, the current study is relevant in addressing this gap.

3. Methodology

3. 1. Research Design

The study utilised a survey research design based on the positivist research paradigm. Positivism is a quantitative approach to research. The paradigm was chosen because it is based on reliable, objective facts that are independent of personal interpretation (Maksimovic & Evtimov, 2023). The Croatian Encyclopedia (2021) states that one of positivism's most widely disputed tenets is the unification of the natural and social sciences. Positivism adopts Hume's radical idea that knowledge is dependent on the unity of observations and does not exist outside of what can be observed (Loughlin, 2012). On the other hand, both the natural and social sciences are subject to laws, and the foundation of all science is the investigation that results in new knowledge (Maksimovic & Evtimov, 2023). However, the conditions for observing and controlling experiments in the social sciences and humanities differ from those in the natural sciences. In the natural sciences, the objects under investigation are easy to fully objectively perceive, control, or predict by the researcher due to direct contact with them. Conversely, social-humanistic constructs such as behaviour, attitudes, orientation, emotions, and anger are

difficult to fully objectively perceive, predict or control (Maksimovic & Evtimov, 2023). In the current study, the LGSO is a social-humanistic construct in which the researcher objectively studies the participants. The researcher used survey design because it involved collecting data from a sample of students through their responses to questions (Check & Schutt, 2012, as cited in Ponto, 2015; DuBenske et al., 2014).

3.2. Population, Sampling, and Sampling Techniques

The population for the study included all secondary school students in Osun State, Nigeria. The sample consisted of 800 Senior Secondary one and two (SS 1 and 2) students. The researcher used the mixed-method sampling technique to select the sample. Five Local Government Areas (LGAs) were randomly selected from the three Senatorial Districts in Osun State, Nigeria. Subsequently, four secondary schools were chosen from each of the five selected LGAs (totaling 20 schools) using a simple random sampling technique. Furthermore, 40 students were selected from each of the 20 chosen secondary schools using a stratified random sampling technique based on class level as a stratum. Within each class, students were assigned numbers based on the population, and the researcher alternately selected students with even or odd numbers until 800 students were chosen. Senior Secondary 111 students had just finished their final exams in the West African Senior School Certificate Examination (WASSCE) conducted by WAEC and NECO. As a result, they were excluded from the study because they were absent during the administration of the instrument.

3.3. Instrument Validation and Reliability Testing

The study used an 84-item self-designed questionnaire titled “LGSOS” to collect data from student-respondents. The questionnaire has two sections: Section A collected information on students’ goal setting orientation construct, while section B elicited information regarding the students’ learning orientation construct. Responses were rated on a three-point Likert scale and coded as ‘Yes’ = 3, ‘Not Sure’ = 2, and ‘No’ = 1. The initial 192 items were reduced to 130 after face and content validity testing by five experts in the fields of Psychology, and Tests and Measurement. To test the reliability of the 130 items, the instrument was pilot-tested on 80 Junior High School (JHS) students. Based on feedback, while 12 items were reworded, 46 were deleted, and the scale was reduced to 84 items, which showed high reliability (Cronbach’s alpha = 0.93).

3.4. Ethical Considerations

The researcher obtained a letter of introduction from the Head of the Department of Educational Foundations and Counselling at the Faculty of Education, Obafemi Awolowo University, Ile-Ife, Nigeria. The letter requested permission from the school principals, vice principals, teachers, and student respondents. Three research assistants were recruited for the study. Participants were informed of their right to decline participation at any time, and their identities were kept confidential in the questionnaire. There was no language barrier during data administration and collection, as the research assistants and the researcher are fluent in speaking the native language of the student respondents.

3.5. Data Administration and Collection

The LGSOS was administered on 960 student respondents, rather than the originally planned 800. Subsequently, copies of the questionnaire were sorted, with only 800 properly filled copies being selected and included in the study; the remaining copies were discarded. Responses of participants in a survey or scale can be influenced by different factors such as their mood, and externalities like environment, time, age, and ethnicity (Multon, 2010, as cited in Aderson et al., 2021). However, test-retest reliability was utilised to assess the consistency in the answers of the respondents in the first and second administrations of the LGSO survey (Briggs-Gowan et al., 2016; Syeda & Climie, 2014). Therefore, data collection occured over a four-week period. The pretest and post-test each lasted for five working days, totaling 10 days, with a two-week waiting interval between them.

3.6. Data Analysis

Data analysis was conducted using various reliability estimates and correlation measures. The data obtained from the responses of the student respondents on the LGSOS was analysed using Cronbach's Alpha, Guttman Split-half, Spearman-Brown, and Lambda internal consistency reliability estimates for research question one, PPMC was employed for correlational analysis of the scores obtained from the first and second tests (pre- and post-tests) for research question two.

4. Findings and Discussion

The internal consistency reliability of the LGSOS items was assessed using Cronbach's Alpha, Guttman split-half, Spearman Brown, and Lambda formulas. The results are presented in table 1.

Table 1

Internal consistency reliability statistics of the LGSOS items

Reliability Estimate Method	N	Reliability Coefficient
Cronbach's Alpha	84	0.934
Guttman Split-Half	42 Pairs	0.789
Spearman Brown	42 Pairs	0.797
Lambda	84	0.952

***Source**:* Author's Data Analysis

Table 1 shows the estimated internal consistency reliability coefficients of 84 items of the LGSOS among secondary school students in Osun State, Nigeria. Four reliability measures were used: Cronbach Alpha (0.934) indicates that the LGSOS is 93.4% reliable and 6.6% unreliable; Guttman split-half (0.789) suggests that both halves of the scale contribute equally to measuring the underlying construct (LGSO); Spearman Brown (0.797) shows that the full-length test, based on the reliability of the two halves, is perfectly equivalent; and a high Lambda coefficient (0.952) reveals significant differentiation in student responses.

The reliability coefficients demonstrate that the LGSOS items are highly reliable in terms of internal consistency among secondary school students. This implies that the scale effectively measures goal setting orientations and learning achievement among secondary school students in Osun State, Nigeria. Additionally, the high Cronbach alpha coefficient of 0.934 supports the findings of Heale and Twycross (2015), suggesting that Cronbach's alpha tends to be higher with more items on a summated scale, and a reliability coefficient of 0.7 or higher is considered highly reliable. The results also align with Guttman (1945), as cited in Hunt (2013) that, despite not assuming tau-equivalence or unidimensionality, Guttman's Lambda reliability is a more reliable metric than Cronbach's alpha. This is evident in the higher reliability coefficient of 0.952 estimated by Lambda compared to Cronbach's alpha of 0.934.

The study demonstrates that the items on the survey scale (LGSOS) effectively measure goal setting and learning orientations among secondary school students in Osun State, Nigeria.

This indicates that each item in LGSOS measures the construct (learning goal setting orientation) very well and supports the findings of Imaseun (2022), Ahmed et al. (2022), Kimberlin et al. (2008), and Kaplan and Saccuzzo (2005). Furthermore, Yang and Green (2011) emphasised the importance of using multiple reliability estimates and highlighted the assumptions of tau-equivalence, normality, and uncorrelated errors when calculating the internal consistency reliability of a scale's items. The current study aligns with this recommendation by utilising four reliability methods to estimate the internal consistency reliability of LGSOS.

The findings are also consistent with the study of Ahmed et al. (2022) that when a test is split, the items demonstrate internal consistency reliability when the coefficients of the two pairs are consistent with each other. The items in LGSOS are highly inter-correlated, as evidenced by its Cronbach alpha coefficient, which supports the findings of Ahmed et al. (2022), Mohajan (2017), as cited in Shodiya and Adekunle (2022), who found that the average item inter-correlations and the scale's item count influence the Cronbach alpha.

The findings are also in line with Guttman (1945), who suggests that while Cronbach's alpha tends to underestimate true reliability, Lambda may overestimate reliability when there are a large number of items. However, the study's findings indicate that the coefficient of internal consistency reliability of the two halves of LGSOS, when the Spearman-Brown prophecy formula was applied for the scale's correction for attenuation, is high. This supports the findings of Amelang and Schmidt-Atzert (2006) and Bühner (2011), who suggest that in order to obtain an estimate of the reliability of the instrument as a whole, the r coefficient should be corrected by applying the Spearman-Brown prophecy formula.

Table 2
LGSOS stability coefficient

GOLSS	N	Mean	SD	r	p
Pre-test	800	2.62	40.25		
Post-test	800	2.65	40.75	0.12	< .05

Source: Author's Data Analysis

The stability of the LGSOS was assessed using the test-retest method of reliability estimate. After the initial administration of the scale to the entire sample, a second administration was conducted on a subset of the sample after two weeks. The scores of the

student participants in the first and second administrations were correlated using PPMC. The results are presented in table 2.

Table 2 shows a positive correlation value of r = 0.12 and a p-value less than 0.05, indicating a significant positive relationship between the pretest and post-test responses of Osun State secondary school students in Nigeria on the LGSOS items. The r coefficient value suggests a weak relationship between the pretest and post-test responses of the students, demonstrating weak but stable reliability. This suggests that the responses of Osun State secondary school students in the LGSOS are not consistent, as school administrators failed to make LGSO a continuous process. The result aligns with the findings of Multon (2010), as cited in Aderson et al. (2021), highlighting that inconsistencies in respondents' answers in a survey can be influenced by their mood and external factors including age, time, and ethnicity. However, administrators have failed to consistently implement or monitor the LGSO practices in secondary schools in Nigeria. The result suggests that prior to the study, secondary school students in the study area have not been completing the LGSO survey. This result contradicts the findings of Ekolu and Quainoo (2019) and Popham (2000) that a test-retest reliability estimate with an r coefficient > 0.5 is acceptable, while between 0.7 and 0.9 is most acceptable.

The findings of the current study show a significant, positive, weak relationship between the pre-test and post-test responses of high school students in Nigeria regarding the LGSOS. This indicates a weak but stable relationship. However, it suggests that students were uncertain about the implementation of LGSO practices by school administrators. Consequently, the students' responses to all items of the LGSOS were inconsistent in the first and second tests. The current study implies that learning achievement is low in Nigerian high schools due to the lack of goal setting practices among students, which contradicts the previous studies of Mango et al. (2019), Wirthwein et al. (2013), Hulleman et al. (2010), as cited by Cheng (2023), Senko et al. (2011) and Maehr and Zusho (2009).

5. Conclusion

The study investigated the reliability of the items in the LGSOS among secondary school students in Osun State, Nigeria, and explored potential implications for school administrators. The study revealed that the responses of high school students between the pretest and post-test in the LGSOS are inconsistent. Students' answers in the pretest did not align with their responses in the post-test, suggesting a lack of awareness among Nigerian high

school students regarding LGSO practices. Socio-cultural factors such as age and ethnicity, may be responsible for the inconsistencies in students' responses in the pretest and post-test. This is a result of the fact that the study was limited to only Osun State which is in the Yoruba ethnic group of Nigeria with other ethnic groups in the country not included. However, the study concluded that school administrators do not create an environment that enables or implement measures that extrinsically motivate students to set goals for effective learning to occur.

The importance of teaching high school students to set goals cannot be overstated, as it has significant administrative implications that administrators should consider. By understanding how students set goals for learning achievement, administrators can create effective educational programs and interventions. One way to do this is by collecting baseline data for goal setting from students' responses in the LGSO at the beginning and end of every term, and monitoring students' progress towards their set goals.

Creating awareness and implementing policies and interventions that support a learning goal-setting orientation, such as mastery and learning orientations, can motivate high school students to set academic goals that lead to positive lifelong learning achievement. Administrators can achieve this by organising orientation programs for both new and returning students each academic session. Inviting role models such as teachers, education ministers, leaders, Parents-Teachers Association members, writers, and researchers to deliver motivational speeches on LGSO and following up with seminars can serve as a reminder to students about the importance of goal setting.

High school students who understand how to create realistic academic goals focus more on learning and knowledge development than on achieving high test scores to outshine their peers. This mindset leads to increased motivation, engagement, and learning achievement. Therefore, school administrators can support goal-setting orientation by fostering a school atmosphere that values students' growth and improvement over perfection. One key implication is the necessity for administrators to provide resources and support to help students develop and maintain their learning goal-setting orientations. This may involve offering guidance on setting realistic and achievable goals, providing access to academic support services, and creating a positive learning environment that encourages goal setting and achievement. It is crucial for teachers to incorporate academic goal setting into their lesson planning, and administrators should ensure adequate monitoring is in place.

This study is limited to specific high schools in Osun State, Nigeria. Therefore, it indicates the necessity for additional research to revisit the goal setting orientation of high school students in Southwestern Nigeria in relation to their academic achievement. Moreover, future research could explore comparisons between public and private schools, as well as cultural contexts within Nigeria.

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The author declares the use of Artificial Intelligence (AI) in writing this paper. Specifically, Grammarly was used to search for references. The author takes full responsibility in ensuring proper review and editing of contents generated using AI.

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