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Nexus Between Learning Styles and Understanding of Nature of Science Among Pre-service Science Teachers in Obafemi Awolowo University Ile-Ife

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Abstract: The study assessed the understanding of the nature of science as well as the learning styles mostly adopted by Science pre-service teachers in Obafemi Awolowo University. These were to provide information on the relationship between learning styles and the understanding of the nature of science among preservice science teachers in Obafemi Awolowo University. The study adopted a descriptive survey and ex post facto research design. The population of the study comprised all pre-service Science teachers in Obafemi Awolowo University. The study used a stratified random sampling technique to select one hundred and seventy-eight pre-service teachers across Biology, Physics, Chemistry, and Mathematics fields. The study used one instrument named Pre-service Science Teachers Learning Style and Understanding of Nature of Science Questionnaire (PSTLSUNSQ). The study showed a significant relationship between the course of student and NOS ($\chi^2 = 55.22$, $p < 0.05$) as there was a moderate level of understanding of nature among Biology, Chemistry, and Physics students with a high level for Mathematics students. The study also showed Audio learners were predominant as shown by 38% of the respondents as learning style related significantly with the course of study ($\chi^2 = 26.29$, $p < 0.05$). The study concluded that there was a significant effect of learning styles and course of study on the learner's understanding of the nature of science. ($F=4.289$, $p<0.05$).

Keywords: Learning Styles, Understanding of Nature of Science, Science

INTRODUCTION

Science has generally been defined by several scientists (DeHann, 2011). While some see it as a way of making enquiries, others see it as a medium of asking questions and providing solutions to problems in our environment. The study of Science is all-encompassing as it consists of various components that need to work together to achieve its predetermined desired results (Onah, 2003). It is a methodological approach to making enquiries, asking questions about our natural world, and how to survive in it (Urevbu 2001). Although science has been presented to learners as a course that does not need creativity as it is taught based on specific known principles that only need to be known, Garba, (2009) asserts that Science education is an enormous, grey, complex, and difficult area that demands only seemingly intelligent and brilliant students to venture into. Since it demands a unique medium and procedure of learning that equips learners to train other people, it is believed that science education should be handled differently from other fields.

Science education is described as a pedagogical process of advancing individual knowledge about the environment to improve and develop the skill of systematic inquiry and natural attitudinal characteristics (Pember &Humbe, 2009). It is also described as the process of learning science; thereby arousing learner's curiosity for scientific critical thinking about the existence of our natural world for life and sustenance. Science education serves as a trigger for learners to explore and understand what they have in their environment and how it could be used and reserved for the use of generations

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(Garba, 2009). This is important in that it helps to train the learners in making appropriate life decisions, acquire relevant skills, undergo critical thinking, learn new things and solve problems.

In Nigeria, most students believe that science is a subject that requires rote memorization; resulting in a lack of interest because of inadequate teaching and learning environment. (Kolawole & Oginni 2009). As a result, teachers and learners are unable to use their individual and independent skills to learn and explore science effectively. This is because the individual differences of learners have not been strictly considered for learning science. Various interventions at teaching science have been based on the use of appropriate human and non-human tools, upgraded content of instructions and learning environment and little about considering the total wellbeing of the learners. This difference has been based on various factors, one of which is the individual style of learning. These learning styles are germane in explaining how best learners use various senses to decipher, explain and relate to various aspects of the environment and concepts which science seeks to explain. Sometimes, learners are forced to study science-related courses, which they fail; and even when they do not fail, they do not possess a conceptual understanding of the subject matter. This is largely because of the lack of understanding of the nature of science (Kareem, 2019). Hence, students are unable to apply classroom knowledge to real-life experiences or generate innovative ideas because of how the knowledge of science is taught.

A conceptual understanding is important in carrying out scientific activities as it gives learners a good grasp of the components of scientific concepts. The general understanding of the Nature of Science (NOS) over time has been quite vague as there have been different opinions on the Nature of science. There has been an evolution in the understanding of this concept over the years due to the dearth/ variation in the understanding of what science teaching and learning entails (McComas, Clough & Almazora, 1998; Lederman, Lederman& Antick 2013). A lack of adequate understanding of the nature of science will affect every students' scientific activities as well as science processes. It is important to note that individuals often conflate NOS with science processes (which is more consistent with scientific inquiry). Although these aspects of science overlap and interact in important ways, it is nonetheless important to distinguish the two. It is the understanding of this nature of science that helps individuals to carry out scientific processes effectively. It becomes easier to carry out scientific activities and create innovative moments if the details about what science entails and how it comes about are known. The Nature of Science (NOS) is an essential component of scientific literacy as it brings to light the epistemological aspect of science. NOS seeks to explain the knowledge process, values and needed beliefs for gaining scientific knowledge. Nature of Science could be viewed under the broad components of understanding of:

a) The scientific world involving basic knowledge and demands also seen as the raw materials for scientific end products
b) The scientific enquiry involving the processes of science to arrive at scientific results
c) Scientific enterprise comprising the visible end products of science

To be grounded in scientific theories, principles, and the correlation between learnt concepts and society, it is important to understand the nature of science. This will also help to chart the course for future development and predictions. Understanding what science entails will demand an understanding of the nature of science itself. Teachers who teach science are also required to possess this understanding to know the genesis of the concepts taught in science as this will assist to teach the concepts better. Lederman and Lederman (2014) points out that for science teachers, adequate pedagogical and professional training does not necessarily translate to best classroom practices or scientific understanding of the students. It shows that a good understanding of science and its scientific nature will be an additional boost beyond the core of pedagogical training to increase science students' understanding. This means that for science teachers, professional development must include understanding the Nature of Science; thus boosting students' understanding of the same. Some pre-service teachers believe that studying science is an avenue to live a comfortable life due to job opportunities available in science-related fields. This mindset becomes ineffective in building learners that create innovative ideas. In addition, those that understand to some extent what the Nature of Science entails have been lagging in passing this understanding down to their successors in the various fields of the study of Science. (Seung, Bryan & Butler, 2009).

Factors such as background, culture, lack of creativity in science, innovations, and a proper transference of knowledge of the nature of science have caused many students to withdraw from science education to other fields where they can explore and relate with things around them in enjoyable ways. Students that resorted to studying science education are grudgingly striving to survive the boredom of what they get in science (Ogunmade, 2006). This boredom could be due to a lack of appropriate skills and focus on the details of learning Science. Although, in Nigeria, there are students who are genuinely interested in science education, it has been observed that many of these students lose interest along the line due to ill-equipped learning environments, which have resulted in ineffective training of pre-service teachers in science education. (Omoifo, 2012)

One factor that could contribute to the understanding of the nature of science among pre-service Science teachers is the individual style of learning. Everyone has a different style of learning through which they speedily assimilate and have information stored up in their memory with the ability to recall this information and as when needed (Mulder, 2013). Individuals have generally seen learning styles as specific ways of processing information. Although learning styles are different and are specific to different individuals, an individual can master different learning styles. This can be based on circumstances and others, which may seem to be recessive, can be cultured or learnt which will easily aid survival in any situation. Although using multiple learning styles is a relatively new approach that educators have only recently started to recognize (Morgan, 2014), various delineation has been attuned to learning styles. Some of these include Kolb's Model, Honey& Mumford's Model and Flemings Model. Kolb (1976) delineated the learning styles into accommodating, diverging, converging and assimilating; Honey and Mumford categorized learning styles to include activist, reflector, theorists and pragmatists, while Flemings divided his learning style based on senses used to learn to include visual, audio, reading and kinesthetic learners. (Kolb, 1976; Honey and Mumford; 1982; Fleming, 2006). For this Study, Fleming and Mill's Model modified in Flemings (2006) that categories learning styles into Visual, Auditory, Reader and Kinesthetic (VARK) will be used. Fleming believed that students' most preferred learning style has a bearing on their attitude and learning. It has been discovered that every individual uses more than one learning style but has a predominant learning style. The predominance in learning styles, said to be due to many factors, may also be specific to different fields and points of needs of the learners. Core science splitting into Biology, Chemistry, Physics and Mathematics may also have learning styles specific to them and this could have a bearing on understanding NOS. It is important to assess individual learning styles in science, based on science areas and check if this affects students' understanding of the Nature of Science. Hence, this study.

STATEMENT OF THE PROBLEM

To impart knowledge in learners, pre-service science teachers must have a deep understanding of the nature of science. The variations that exist in students' performance in science are often a result of factors related to teachers. These factors have been researched in the aspect of training and pedagogical development but the core requirement of science education and scientific knowledge, which is understanding NOS, should also be looked into. Over time, pre-service teachers also complain about their understanding of what is learnt in the classroom, showing that learning styles could be a factor affecting their understanding of the Nature of Science. There could also be variation in the understanding of Science across various science fields among pre-service teachers. It is then important to assess pre-service teachers' knowledge of the Nature of Science and determine which learning styles are predominant among the student. This study provides information on how learning styles affect the understanding NOS using Obafemi Awolowo University as a case study.

OBJECTIVES OF THE STUDY

This study aims to;

i. examine the level of understanding of the nature of science in pre-service science teachers in Obafemi Awolowo University;
ii. assess the predominant learning styles of pre-service science teachers at Obafemi Awolowo University;
iii. determine the effect of learning styles and course of study on the understanding of the nature of science among pre-service teachers at Obafemi Awolowo University.

RESEARCH QUESTIONS

I. What is the level of understanding of the Nature of Science in pre-service Science teachers in Obafemi Awolowo University*?*

II. What are the predominant learning styles of pre-service Science teachers at Obafemi Awolowo University?

RESEARCH HYPOTHESIS

There is no significant effect of learning styles and course of study on the understanding of the nature of science among pre-service teachers at Obafemi Awolowo University.

SIGNIFICANCE OF THE STUDY

This study will provide information about the level of understanding of the Nature of Science and the predominant learning styles among pre-service Science teachers at Obafemi Awolowo University. This study will also seek to understand the influence of individual learning styles and course of study on their understanding of NOS. It could also help provide information on learning styles' predominance among the different course of study.

METHODOLOGY

The study adopted a descriptive survey research design. The population for this research were pre-service science students across various levels in Obafemi Awolowo University, Ile-Ife. Disproportionate stratified random sampling was used to select pre-service teachers across the science-teaching subjects in the study area. From each level of classes in the study area, that is 100-400 level, twenty-five students were selected from Biology, seven students were selected across Chemistry classes while six students were selected across Physics and Mathematics Classes making a total of 100 Biology students, 28 chemistry students and 24 Physics and Mathematics students. One instrument was used for the study named *Pre-service Science Teachers Learning Style and Understanding of Nature of Science Questionnaire* (PSTLSUNSQ). The understanding of the nature of science was measured based on the understanding of the scientific world, understanding the nature of scientific enquiry, and understanding of the scientific enterprise. (Adapted from AAAS, 1989). Flemings VARK model of learning style was used to assess the learning styles of preservice teachers in the study area. The instrument was designed to determine the respondents' level of understanding of the nature of science and to access their predominant learning styles. The instruments were validated via expert judgment and a reliability test was carried out. The Understanding of Nature of Science section yielded a reliability score of 0.79 while the learning style section yielded a reliability score of 0.82 using the Cronbach Alpha coefficient. The data collected were analyzed using appropriate statistical software and tools.

RESULT

What is the level of understanding of the Nature of Science in pre-service Science* teachers at Obafemi Awolowo University*?

Table 1 Summary Table of Pre-service Science Teachers' Understanding of NOS

UNDERSTANDING SCIENTIFIC WORLD							
	Low	**Moderate**	**High**	Total (%)	χ^2	df	p
Biology	**35**	**65**	**2**	**102**	**44.17**	**6**	**0.00**
Physics	**0**	**16**	**8**	**24**			
Chemistry	**0**	**19**	**9**	**28**			
Mathematics	**0**	**15**	**9**	**24**			
Total (%)	**35(19.7)**	**115(64.6)**	**28(15.7)**				
UNDERSTANIDNG SCIENTIFIC INQUIRY							
Biology	**32**	**68**	**2**	**102**	**49.91**	**6**	**0.00**
Physics	**0**	**13**	**11**	**24**			
Chemistry	**0**	**20**	**8**	**28**			
Mathematics	**0**	**11**	**13**	**24**			
Total (%)	**32(18.0)**	**112(62.9)**	**34(19.1)**				
UNDERSTANDING SCIENTIFIC WORLD							
Biology	**28**	**74**	**0**	**102**	**38.53**	**6**	**0.00**
Physics	**0**	**20**	**4**	**24**			
Chemistry	**0**	**25**	**3**	**28**			
Mathematics	**0**	**16**	**8**	**24**			
Total (%)	**28(15.7)**	**135(75.8)**	**15(8.4)**				
Overall Understanding the Nature of Science							
Biology	**33**	**68**	**1**	**102**	**55.216**	**6**	**0.00**
Physics	**0**	**13**	**11**	**24**			
Chemistry	**0**	**20**	**8**	**28**			
Mathematics	**0**	**10**	**14**	**24**			
Total (%)	**33(18.5)**	**111(62.4)**	**34(19.1)**				

Table 1 shows that most of the respondents in Biology, Physics, Chemistry and Mathematics have a moderate level of understanding of the nature of science in terms of understanding of the Scientific world. It was also seen that

there is a significant relationship between the course of study of the respondents and their understanding of the Scientific World. (χ^2 = 44.17, p<0.05). It was seen that most of the respondents in Biology, Physics and Chemistry have a moderate level of understanding of the nature of science in terms of Scientific Enquiry. It was also seen that there was a high level of understanding of scientific enquiry among Mathematics students. The relationship between pre-service teachers' area of specialization and understanding of scientific enquiry was also significant. (χ^2 = 49.91, p<0.05). In addition, most of the respondents in Biology, Physics, Chemistry and Mathematics have a moderate level of understanding of the nature of science in terms of Scientific Enterprise. The relationship between pre-service teachers' area of specialization and Understanding of scientific enterprise was also significant. (χ^2 = 38.53, p<0.05). On the overall understanding of the Nature of Science, the study showed that most of the respondents in Biology, Physics and Chemistry have a moderate understanding of the Nature of Science. It also showed that there was a significant relationship between the course of study and teachers' understanding of the nature of science. (χ^2 = 55.22, p <0.05). It concludes that there was a moderate level of understanding of the nature of science among respondents in Biology, Physics and Chemistry while most of the respondents in Mathematics have a high level of understanding of the Nature of Science. There was also a significant relationship between respondents' understanding of the nature of Science and their course of Study.

What are the predominant learning styles of pre-service science (Biology, Physics, Chemistry, and Mathematics) teachers at Obafemi Awolowo University?

In providing answers to this question, responses to the items under Section B of the questionnaire, which addresses learning styles, were analyzed in two different ways. To find the pre-service teachers learning styles, the responses were analyzed using cluster analysis in line with the grouping of the items. The results of the categorization and final cluster centre were presented in Table 2.

Table 2 Final Cluster Centre of Learning Styles of Respondents in the Study Area

	Cluster			
	1	2	3	4
Visual	7.52	3.04	8.00	4.63
Audio	4.98	2.58	4.00	3.37
Reading	7.12	2.27	28.00	4.82
Kinesthetic	17.48	6.45	15.00	11.44

The table provides the final clusters of learning styles among preservice teachers in Obafemi Awolowo University. To select the clusters, the lowest cluster mean was selected for each cluster and marked out. From the table, Presets who were Auditory learners belong to Cluster 4, Cluster 2 were for Reading learners while Cluster 1 was for Visual learners and Kinesthetic Learners belonged to Cluster 3. The percentage of respondents in each Cluster was presented in the table below.

Table 3. Descriptive Statistics of Learning Styles of Respondents in the Study area

	Frequency	Percent
Visual	52	29.2
Audio	68	38.2
Reading	55	30.9
Kinesthetic	3	1.7
Total	176	100.0

The table showed that 29.2% were Visual learners, 38.2% were Audio learners as 30.9% and 1.7% were reading learners and kinesthetic learners respectively. This shows that Audio learners were predominant while the kinesthetic learners were the least respondents in the study area.

Table 4. Learning Styles in Each Course of Study of Preservice Science Teachers

	Biology	Physics	Chemistry	Mathematics	Total (%)	χ^2	Df	p
Auditory	43	7	14	4	68			
Reading	53	1	0	1	55			
Visual	6	14	13	19	52	26.29	1	<0.05
Kinesthetic	0	2	1	0	3			
Total (%)	102	24	28	24	176			

The table above shows that most of the preservice teachers in Biology were Reading Learners while most of the respondents in Physics were Visual Learners. It was also shown that most Chemistry learners were auditory learner while most learners in Mathematics were Visual learners. The study further showed that there is a significant relationship between learning styles and the course of study of the respondents in the study area. (χ^2 = 26.29, p <0.05)

Research Hypothesis

There is no significant effect of learning styles and pre-service Science teachers' course of Study (COS) on the understanding of the nature of science at Obafemi Awolowo University.

Table 5. Factorial ANOVA table of Effect of LES and COS on NOS

Tests of Between-Subjects Effects

Dependent Variable: NOS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	63370.982[a]	11	5760.998	65.917	.000	.816
Intercept	175270.350	1	175270.350	2005.441	.000	.924
Course of Study	4031.580	3	1343.860	15.376	.000	.220
Les	7699.175	3	2566.392	29.365	.000	.349
COS * LEs	1874.217	5	374.843	4.289	.001	.116
Error	14333.177	164	87.397			
Total	852566.000	176				
Corrected Total	77704.159	175				

a. R Squared = .816 (Adjusted R Squared = .803)

To assess the effects of Learning styles and Course of Study on the Understanding of the nature of science of respondents in the study area, a 4x4 factorial Analysis of Variance was used to determine the effect on the understanding of the nature of Science. The study showed that there is a significant main effect of Field of Study on the understanding of NOS of respondents in the study area (F=15.38, p<0.05) and this effect account for 22% variation in the NOS of students as shown by the partial eta squared value of 0.22. Also, Learning styles had a significant effect on NOS understanding of the respondents and this accounts for 34.9% variation in pre-service teachers responses (F=29.37, p<0.05, eta square=0.349). Learning style and Course of Study jointly impact on Understanding NOS and this joint effect will account for 11.6% variation in the understanding of the nature of Science of the respondents (F= 4.289, p<0.05, eta squared=.110). Scheffe's post Hoc was used to determine the direction of difference between the Independent variables (Learning styles and Course of Study) on the dependent variable (Understanding NOS)

Table 6. PostHOC Analysis of Effect of COS on NOS

Multiple Comparisons
Dependent Variable: NOS
Scheffe

(I) Field of study	(J) Field of study	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Biology	Physics	-33.2353*	2.12094	.000	-39.2264	-27.2442
	Chemistry	-29.6242*	2.02331	.000	-35.3395	-23.9089
	Mathematics	-38.3440*	2.15794	.000	-44.4396	-32.2484
Physics	Biology	33.2353*	2.12094	.000	27.2442	39.2264
	Chemistry	3.6111	2.62269	.595	-3.7973	11.0195
	Mathematics	-5.1087	2.72790	.323	-12.8143	2.5969
Chemistry	Biology	29.6242*	2.02331	.000	23.9089	35.3395
	Physics	-3.6111	2.62269	.595	-11.0195	3.7973
	Mathematics	-8.7198*	2.65270	.015	-16.2130	-1.2266
Mathematics	Biology	38.3440*	2.15794	.000	32.2484	44.4396
	Physics	5.1087	2.72790	.323	-2.5969	12.8143
	Chemistry	8.7198*	2.65270	.015	1.2266	16.2130

Based on observed means.
The error term is Mean Square (Error) = 87.397.

*. The mean difference is significant at the .05 level.

The posthoc analysis showed that there was a significant difference in the understanding of NOS among respondents in Biology and those in [Chemistry, Physics and Mathematics] ($p<0.05$) but no significant difference between those in (Physics and Mathematics_ and (Physics & Chemistry) ($p>0.05$). There was also a significant difference in the understanding of NOS of respondents in Chemistry and Mathematics ($p<0.05$). It can be deduced from the table that respondents in Mathematics had the highest performance in terms of understanding NOS, followed by those in Physics, then Chemistry and Biology as shown by the mean (I-J) difference.

Table 7. PostHoc Analysis of LES on NOS

Multiple Comparisons
Dependent Variable: NOS
Scheffe

(I) Cluster Number of Case	(J) Cluster Number of Case	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Auditory	Reading	17.8217*	1.69538	.000	13.0327	22.6107
	Visual	-27.0147*	1.73174	.000	-31.9064	-22.1230
	Kinesthetic	-9.5147	6.70701	.571	-28.4603	9.4309
Reading	Auditory	-17.8217*	1.69538	.000	-22.6107	-13.0327
	Visual	-44.8364*	1.81734	.000	-49.9699	-39.7029
	Kinesthetic	-27.3364*	6.72962	.001	-46.3458	-8.3269
Visual	Auditory	27.0147*	1.73174	.000	22.1230	31.9064
	Reading	44.8364*	1.81734	.000	39.7029	49.9699
	Kinesthetic	17.5000	6.73887	.085	-1.5356	36.5356
Kinesthetic	Auditory	9.5147	6.70701	.571	-9.4309	28.4603

Reading	27.3364*	6.72962	.001	8.3269	46.3458
Visual	-17.5000	6.73887	.085	-36.5356	1.5356

Based on observed means.

The error term is Mean Square (Error) = 87.397.

*. The mean difference is significant at the .05 level.

The Posthoc analysis showed that there was a significant difference in the understanding of NOS among Auditory learners and [Reading &Visual Learners] ($p<0.05$) but not with Auditory and Kinesthetic learners ($p>0.05$), a significant difference exists between Readers and all other kinds of learners ($p>0.05$). There was also no significant difference in the understanding of NOS of respondents that are Visual and Kinesthetic learners ($p>0.05$). The Mean I-J difference shows that Visual learners have the highest level of understanding of NOS with all positive value for Mean I-J followed by kinesthetic learners than auditory learners and the reading learners.

DISCUSSION OF THE STUDY

The study showed that there was a moderate level of understanding of the Nature of Science among pre-service teachers in the study area. The understanding of NOS was moderate among students of Biology, Chemistry and Physics while most of the pre-service teachers in Mathematics have a high level of understanding of NOS. This did not agree with the study of Mihladz and Dogan (2011) whose study showed a low understanding of NOS. This moderate belief would make students understand NOS when they begin to teach and will make teaching science better. The study however agreed with the study of Findlay and Souter (2008) that showed an agreement with understanding the nature of science among the respondents. Students in Chemistry had the lowest understanding of NOS among the respondents in their study but the study was similar among the three subjects of Chemistry, Biology and Physics.'

The study also showed that Auditory learners were predominant in the study area but in assessing learning styles based on course of study, students in Biology were mostly reading learners, those in Physics and Mathematics were predominantly visual learners while Chemistry students were mostly Auditory learners. Fleming and Mills (1992) suggest that learning styles preferred by students affect their behaviour and learning. It is perceived that pre-service teachers for each subject area would learn better using their preferred learning style and this would enhance understanding of NOS. The study agreed with the findings of Narayanam (2007) which shows that Auditory was the highest level of learning styles among the respondents sampled. Mathematics students who are mostly visual learners have a high level of understanding of NOS. The perceived volume of contents in Nigerian Biology classes may be responsible for their learning style. Mathematics being a subject with formulas and calculation will demand that students use their sight more; thus justifying the visual learning style.

This then explains why learning styles and course of study independently and jointly affect the understanding of the Nature of Science of respondents in the study area. This agreed with Fayombo (2015) whose study showed an influence of learning styles on academic achievement and suggested that learning styles could be tailored towards teaching strategies to improve academic achievements. It is already established that science teaching transits focus from academic achievement to the understanding of the Nature of Science. This shows that if pre-service teachers understood the nature of science, especially teachers in different subject areas, it could help achieve better teaching and learning of science and science concepts. Thus, improving the science processes and enquiry skills of teachers and students. This will help provide an appropriate support mechanism that is customized for every science and technological field of learning.

CONCLUSION

The study concluded that focusing on the learning styles of individual learners could help to improve the understanding of NOS and this will be effective in making pre-service teachers learn better and by extension teach better. It also concluded that there could be peculiarities with subject specialization and learning styles as seen by various learning styles peculiar to different science subject areas. The study concluded that learning style and Course of Study jointly affect the understanding of NOS.

RECOMMENDATIONS

The study recommends that individual learning styles should be considered in teaching science, as this would aid the understanding of NOS. Subject peculiarities should also be considered in relating the content of instruction to students as different specific areas have different strengths for learning styles. Thus, allowing teachers and curriculum specialists to pattern instructions in Science according to different learning styles to enhance the understanding of NOS. It is also recommended that the curriculum should contain vital components involving the nature of science to enhance the understanding of scientific concepts.

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