

Determinants of Teachers' Conception of Sex Education in Primary and Secondary Schools in Cameroon

Lawrence N. Nchia¹, Joseph L. Tamesse², George E. Fonkeng³, Pierre Clement⁴

¹Corresponding Author: (Ph.D. Student); Didactics of Sciences; Postgraduate School of Social and Educational Sciences, University of Yaounde1; BP 47, Yaounde, Cameroon

²Department of Biology, Faculty of Sciences, University of Yaounde 1, Cameroon

³Department of Psychology, Faculty of Arts, Letters & Social Science, University of Yaounde 1, Cameroon

⁴ADEF, GestePro, University Aix-Marseille, France

Abstract: *Cameroon considered as Africa in miniature because of its bilingualism and socio-cultural diversity, opted for a trans-disciplinary approach to implement sex education in primary and secondary schools in 2007. This work intends to investigate the parameters which may influence teachers' conception on sex education in such a pluralistic country. Apurposeful sampled of 523 teachers were involved in this multivariate analysis. Principal component analysis (PCA) and Between-class analysis carried out on 24 sex education variables in Cameroon using the Biohead project questionnaire showed statistically significant differences for two parameters: group of teachers and language; and no significant differences for gender, religion, age, and qualification. These results reflect the constitutional long existence of two unharmonized sub-systems of education in Cameroon – the Anglophone and Francophone subsystems. These findings would enable us to develop constructivist strategies to overcome identified obstacles for a desired conceptual change in teachers and eventually their students, an effective strategy for the achievement of MDGs 3, 4, 5, and 6 as well as her vision of becoming an emergent state by 2035.*

Keywords: Sex Education, Conception, In-service teachers, Pre-service teacher, Primary and Secondary school

1. Introduction

Effective sex education reduces the risk of the potentially negative outcomes of sex like rape, unwanted pregnancy, abusive relationships, and contraction of STDS and HIV. By learning about sex-related issues that promote healthy and secure relationships, students develop important life skills such as good decision-making processes, negotiation, communication, and listening^[1, 2]. While the aims to establish a helpful background for making informed choices about sex is generally a consensus in sex education, the methods, content, and age to introduce them are not unanimously agreed upon because of its controversial socio-scientific nature^[3].

Analysis of syllabuses and school textbooks on sex education (SE) for secondary schools in Cameroon show some inadequacies as the psychosocial aspect of sex education such as homosexuality, paedophilia, incest, rape, abortion etc., are not mentioned. Emphasis is only on the anatomical and physiological aspects of human reproduction. Also the teaching methods observed are mostly classical rather than constructivist. This creates a knowledge gap that needs to be filled.

Considering the primordial role of teachers in the teaching / learning process, we think their opinion, representation, system of values, and their practices in relation to science and scientific knowledge (sex education in particular) could influence, consciously or unconsciously, their teaching and ways of approaching the content to teach. This could guide

their choices concerning the examples presented, the arguments advanced and the image they give about sex education issues. This will certainly influence the process of internal didactic transposition of knowledge. Even if the contents to teach are well defined in the syllabus, the contents actually taught are at the mercy of multiple uncontrollable parameters.

In 2007, a joint ministerial decision on the implementation of sex education (under Family Life Education / Population Issues and HIV & AIDS) in primary and secondary schools in Cameroon for better citizenship opted for a trans-disciplinary approach^[4]. Given the peculiar context of Cameroon with its two educational subsystems (English and French), bilingualism, geographical, religious, and socio-cultural diversity, we are motivated to think that these factors could account for the discrepancies in teachers' conception of sex education. Knowledge of these determinants will enable stakeholders in education, especially teacher trainers to develop the necessary strategies to overcome the obstacles in teachers' conception and eventually in their students, so as to train Cameroonians with the same citizenship values.

With this background in mind, and considering the view of sexuality education as a socio-scientific issue, we decided to develop the following research question to guide our work: **To what extent can differences in primary and secondary schools teachers' professional and socio-cultural background influence their conceptions of Sex Education in Cameroon?**

2. Literature Review

Two main theoretical frameworks orientate this work: the KVP Model of conception; and didactic transposition^[5, 6, 7]. Clement 2004 sees conceptions as an interaction between Knowledge (K), Values (V) and Practices (P). On its part, didactic transposition involves not only scientific knowledge^[8], but also social practices^[9], and system of values^[10]. This model is useful for didactic transposition and for conceptual change in the constructivist model of teaching and learning controversial topic like sex education.

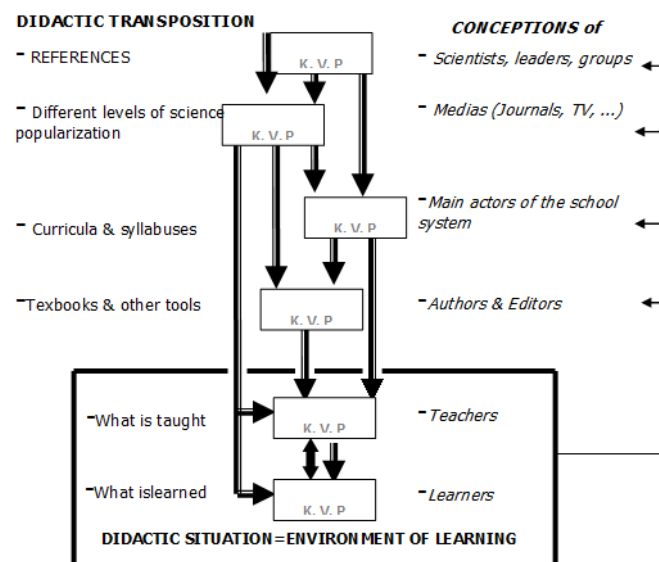


Figure 1: A new schema of didactic transposition, linked to the analysis of the conceptions of the main actors of the transposition (Adopted from Clément, 2006).

3. Methodology

The research design used is a non-interventional descriptive and analytical cross sectional study as it only seeks to describe, analyse and quantify variables. Research instrument used to collect data is a questionnaire designed and elaborated during the Biohead-Citizen project in Europe between 2004 and 2008. Twenty four Variables were selected:

a) On Values

- Opinion about homosexual couples having same rights as heterosexual couples (A41),
- Opinion about possible situations to accept abortion (A57, A58, A59, A65),
- most relevant behaviour to be considered in school sexual education to prevent spread of HIV/AIDS (A60),
- as to when the following topics should be first introduced at school by teachers and/or external specialists Examples:
- Pleasure organs (A85), Contraception (A86), Sexually transmissible diseases (A87), Abortion (A88), Homosexuality (A89), Paedophilia (A90), Pregnancy and birth (B37), Sexual intercourse (B38), Incest and sexual abuse (B39), Orgasm and sexual pleasure (B40), Eroticism and pornography (B41)

b) On Biological Knowledge

- When women stop taking the contraceptive pill, menstruation occurs, due to the absence of progesterone and oestrogens hormones. (B13) ;
- After ovulation, the follicle changes into corpus luteum which produces high levels of progesterone and oestrogens. (B17) ;

c) On practice of teachers:

- Who should teach about STI and psychological and social aspects of sex education (B3, B5, B19, B24) ;
- Teachers avoid teaching sex education because these topics are private (B18).

Two parallel independent translations of the questionnaire were made into French from the original English, and compared with another by a third person. A back-translation where the French version was translated back to English by an independent person and compared to the original English version was equally made to ensure homogeneity.

A purposive sampling method was used to sample 523 teachers in Cameroon representing in-service (In) and pre-serve (Pre) Primary (P), Biology (B), and Language (L) teachers from both the French and English subsystems of education, as shown in table 1 below.

Table 1: Distribution of respondents according to group of teacher and subsystem of education in Cameroon

Sample	Anglophone	Francophone	Total
In P	34	22	56
Pre P	69	67	136
In B	41	52	93
Pre B	46	47	93
In L	36	35	71
Pre L	37	37	74
Totals	263	260	523

Computations were performed mainly with the statistical software "R" with the multivariate analysis package ade4 after coding the questionnaire^[11, 12]. Multiple Likert-type question responses were summed together (interval data) and were analysed using multivariate techniques like: Multivariate Analysis of Variance (MANOVA) when dealing with two or more dependent variable and one independent interval variable with two or more levels (independent groups); and Principal Component analysis (PCA) when dealing with two or more dependent variable and no independent variable^[13]. We further performed a Between group analysis to complement the initial Principal Component Analysis (which differentiates all the persons) to show differences between groups' conceptions (age, language, gender, religions, & groups of teachers).

Each Between groups analysis was completed by a randomisation test (Monte Carlo) to analyse the levels of significance between groups (determined by position of the arrow within or outside the histogram). When two variables could be in interaction, we suppressed the effect of one by using orthogonal PCAIV (Principal component analysis with respect to instrumental variables) to analyse the effect of the second variable independently. This is to enable us know if the two parameters influencing a variable are mutually independent or strongly linked to each other^[14].

4. Results and Discussion

Multivariate analyses of purposefully sampled 523 teachers' conception using PCAIV and Between Class Analysis shows statistically significant differences for two parameters: group of teachers (Fig 2&3); and language (Fig 4&5). No significant differences were noticed for gender, religion, age, and qualification (Fig 6 to 9).

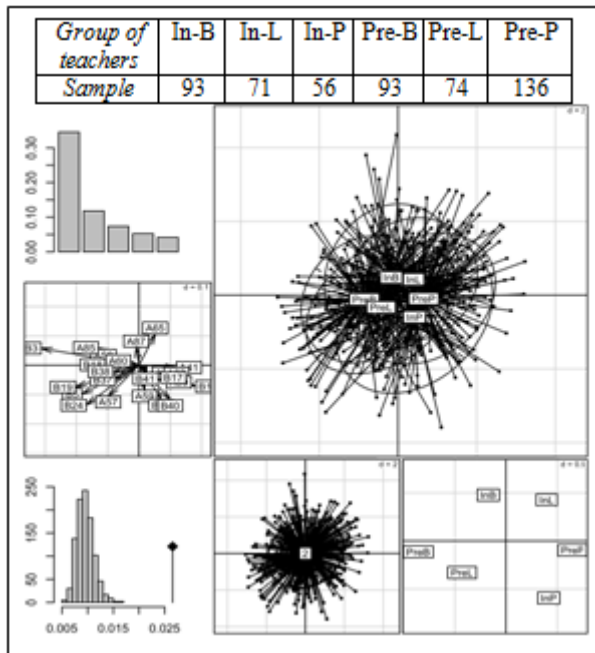


Figure 2: Between-class analysis on groups of teachers after PCAIV on **language** shows a statistically significant effect. See the Monte-Carlo test (in figure 2 above bottom extreme left)

-The graph (upper right) shows that the centre of gravity of the 6 groups of teachers (InB, InL, InP, PreB, PreL, and PreP) are separated (effect of group of teachers investigated), while the middle bottom graph shows that the centre of gravity of language 1 (English Speaking) and 2 (French Speaking) are superimposed. **The two factors are mutually exclusive.** Each point is a person, linked to the centre of gravity his/her teachers' group.

- The PCA histogram of the eigenvalues (upper left) shows that the first component accounts for 35% of the total variance. This component constitutes the X axis of the charts. It reveals that the most statistically significant discriminating factors among groups of teachers in decreasing order of magnitude are B3, B19, B5, B13 and B24 differentiating axis 1. They refer to questions on 'who should teach what

content? The longest vectors are B3 and B19 variables which distinguish PreB from PreL and PreP.

The **Montel Carlo test** (Figure 2), is statistically significant indicating that the level of teaching (Primary or Secondary), the subject taught (Biology or Languages), and training (Pre-service or In-service) has a statistically significant influence on the teachers' conception relative to sex education. This agrees with the works of Berger et al., (2007), Yammine (2008), and Selmaoui (2007)^[15, 16, 17].

We found a clear difference between in-service and pre-service teachers, in particular among primary school teachers. The in-service primary teachers have difficulties coping with the content of sexuality education especially with social and affective issues like: homosexuality (A89); abortion (A88); orgasm & sexual pleasure (B40); pleasure organs (A85); paedophilia (A90), and safer sex (A60). In contrast to the in-service primary school teachers, the pre-service primary teachers agreed with safer sex, abortion, and homosexuality and preferred to teach these contents early in the curriculum. In-service and pre-service primary as well as in-service biology teachers are strongly against introduction of eroticism in school compared to pre-service biology teachers. There is no difference in opinion between in-service and pre-service language teachers.

Generally primary school teachers as opposed to biology teachers of secondary education are against the teaching of STI and psycho-social aspects of sex education to their students, and will opt for health professionals to handle these issues. The conception of language teachers (pre-service and in-service) is intermediate between those of biology and primary school teachers but closer to those of biology teachers.

The histograms of Figure 3 below explain the differences between the different groups of teachers in details on the variables that characterise the horizontal axis of Figure 2:

B3 – Sexually transmitted diseases should be taught primarily by biology teachers.

B19 – Psycho-social aspects of sex education should be taught primarily by biology teachers.

B13 –When women stop taking contraceptive pill, menstruation occurs, due to the absence of progesterone and oestrogens hormones.

B5 –Sexually transmitted diseases should be taught primarily by health professionals (doctor, nurse).

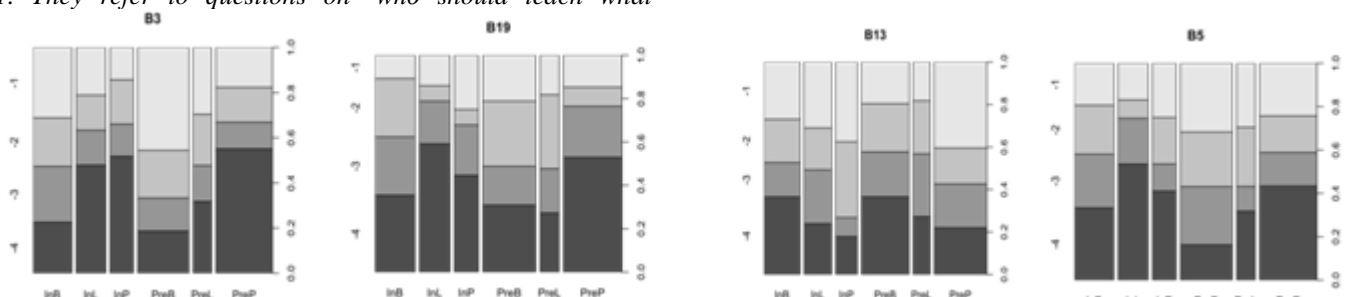


Figure 3: Histograms representing the responses of individuals (in percentage) by group of teacher to variables B3, B19, B13 and B5. Key: -1=strongly agree; -2 = agree; -3 = disagree; -4 =strongly disagree.

About 30% of in-service secondary languageteachers agreed that STIs should be taught primarily by biology teachers (**B3**) compared to 50% in-service biology teachers. This indicates lack of confidence on the part of non-biologist handling scientific aspects of STIs. 70% of both in-service and pre-service primary teachers disagreed with the proposal indicating their lack of confidence to teach STIs at primary school level.

The opinion of Pre-service Biologyteachers is almost similar to that of Pre-service Language teachers. 50% agree with the proposal that psycho- social aspects of sex education should be taught primarily by biology teachers (B19), as opposed to Pre-service Primary teachers with only 75% refusing the proposal. 80% of In-service Language teachers disagreed indicating their levels of competence compared to 60% of In-service Biology teachers. Literal teachers feel more confident compared to biologist teaching psychosocial aspects of Sex Education. The opinions of In-service Primary teachers are closer to In-service Language teachers. Pre-service Biology and Pre-service Language teachers' opinion are shared fifty – fifty.

There is an almost similar response between In-service Biology and In-service Language teachers with 50% agreeing that when women stop taking the contraceptive pill, menstruation occurs, due to the absence of progesterone and oestrogens hormones (**B13**). This indicates that only about half of the secondary teachers have correct knowledge about the role of hormones on the menstrual cycle. It reveals a problem with application of knowledge as a possible result of rote learning. No significant differences between Pre-service and in-service secondary school teachers was observed.

More of in-service than pre-service secondary teachers disagreed that sexually transmitted diseases should be taught primarily by health professionals (doctor, nurse) -**B5**

Unlike similar researches carried out on teachers' conception on sex education in sixteen countries by Berger, D., et al [15], we noticed that Language (*Figure 4 & 5*) is a major determinant of teachers' conception of sex education in Cameroon.

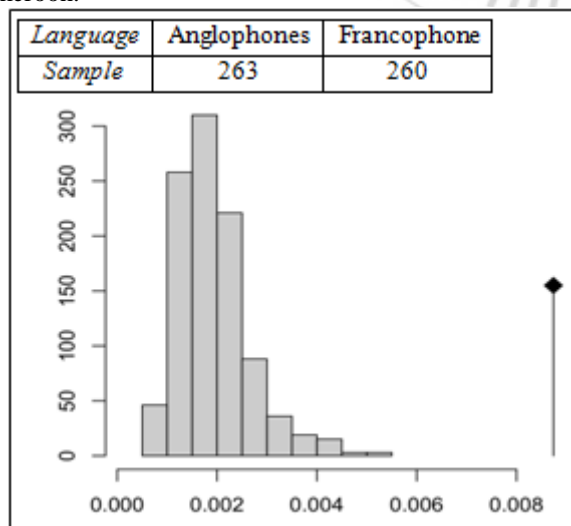


Figure 4: Monte-Carlo test - Between-class analysis on language: statistically significant (N.B. arrow outside Histogram).

The statistical significance difference for Language after PCAIV for teacher groups (figure 5) revealed that these two parameters are mutually exclusive. This could be justified by the existence of the English and French subsystems of education, with two different sets of structures, programme, and examination practices. This is reflected in the Teachers' Training Schools and Colleges where there is lack of harmonisation in the teaching programmes for both English and French speaking Cameroonians.

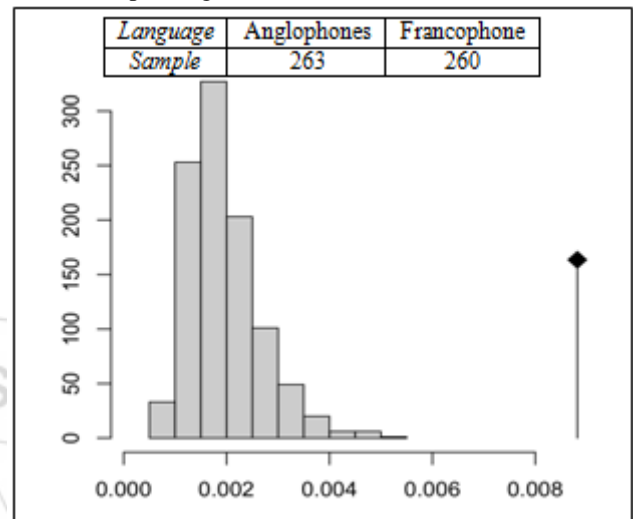


Figure 5: Monte-Carlo test - Between-class analysis on language after PCAIV on group of teachers statistically significant.

The influence of language on teachers' conceptual is in line with the social or dialectic constructivist view of vygotsky. Since learning is social in nature according to this view, cultural tools, especially language, play a crucial role in knowledge construction.

The impact of Language may act as a socio-cultural obstacle for the effective teaching of sex education for better citizenship in Cameroon with a unique legal system and policy. In effect, according to Fulford^[18], a cultural dimension of Language is its role in self-identity at local, regional, national, and global levels. Castro et al.,^[19]; and Bilal and Erdogan^[20], established a close relationship between language and culture. Thus to teach a language is same as teaching a culture. The usage of a language thus expresses the double interaction between the social practices of the language and the implicit or explicit values of teachers' conception. In Cameroon we noticed that **language** significantly determines the conception of teachers on sex education, as significant differences are observed between teachers of the Anglophone and Francophone sub-system of education. This could be accounted for by the semantic and semiotic meanings of sex education terminologies or concepts in English and in French.

The extent to which language determine teachers' conception of sex education can be further analysed from an **Independent t-test**. It indicated that there is a:

- Statistically significant difference in conception of Anglophone and Francophone, $t(386) = 2.67$, $p = 0.008$. That is, the average score of Anglophones ($M = 7.20$, $SD = 18.67$) was significantly different from that of francophone

(M = 3.90, SD = 8.30) as to when to **teachhomosexuality (A89)**;

- Statistically significant difference in conception of Anglophone and Francophone, $t(372) = 3.12, p = 0.002$. That is, the average score of Anglophones (M = 7.63, SD = 20.28) was significantly different from that of francophone (M = 3.48, SD = 8.35) as to when to **teachpaedophile (A90)**;
- statistically significant difference in conception of Anglophone and Francophone, $t(448) = 2.99, p = 0.003$. That is, the average score of Anglophones (M = 9.99, SD = 26.74) was statistically significantly different from that of francophone (M = 4.40, SD = 15.47) as concerns **Knowledge about menstrual cycle (B17)**;
- statistically significant difference in conception of Anglophone and Francophone, $t(280) = 2.01, p = 0.045$. That is, the average score of Anglophones (M = 4.20, SD = 11.47) was statistically significantly different from that of francophone (M = 2.80, SD = 0.78) as to when to **teach sexual intercourse (B38)**;
- statistically significant difference in conception of Anglophone and Francophone, $t(467) = 1.91, p = 0.056$. That is, the average score of Anglophones (M = 7.41, SD = 18.60) was statistically significantly different from that of francophone (M = 4.87, SD = 11.58) as to when to **teach orgasm and sex pleasure (B40)**;
- Statistically significant difference in conception of Anglophone and Francophone, $t(346) = 2.54, p = 0.011$. That is, the average score of Anglophones (M = 6.99, SD = 16.86) was statistically significantly different from that of francophone (M = 4.24, SD = 5.88) as to when to **teach eroticism and pornography (B41)**.

Figure 6 to 9 below demonstrate that teachers' conceptions of sex education in Cameroon are not determined by religion, gender, age group, and level of education. These factors do not determine teachers' knowledge, values and practice with respect to sex education. The absence of a link may be due to the homogeneity in teachers' conception.

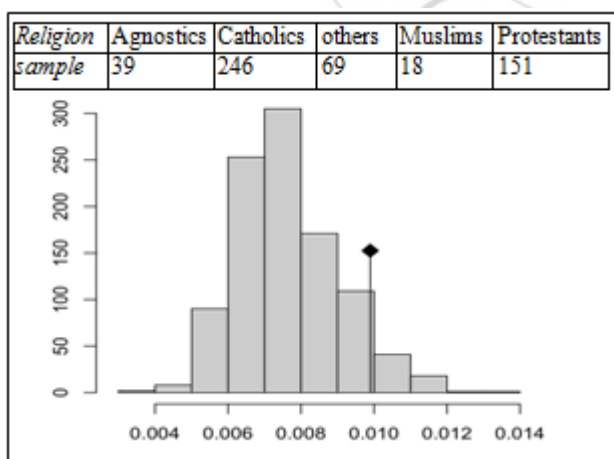


Figure 6: Monte-Carlo test - Between-class analysis on **religion**: not statistically significant at $p < 0.01$.

While the study by Yamine,^[16] demonstrated the impact of religion on the conception of Lebanese teachers on sex education, and the works of Berger D., et al^[15], showed that religion is a major factor that correlates with teachers

conception on sex education in twelve countries in the world, we obtained contradictory results in Cameroon as religion has no significant effect despite the fact that the population is equally made up of Muslims, Christians and Atheist as with other studies. This could possibly be explained by the high level of administrative tolerance and government policy of national integration between the Muslims, Christian and different ethnic groups as can be testified by the several joint ecumenical services to fight terrorisms from Boko Haram group in the northern part of Cameroon. It portrays unity in diversity, and the ability of Cameroonian teachers to teach sex education with sensitivity, compassion, and respect for beliefs and values that may be different from their own.

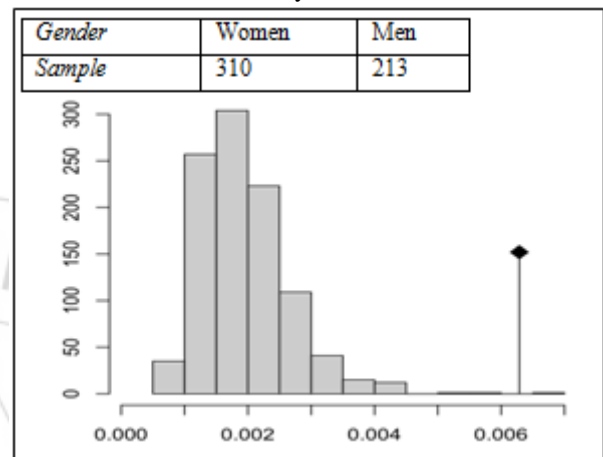


Figure 7: Monte-Carlo test - Between-class analysis on **gender**: not statistically significant.

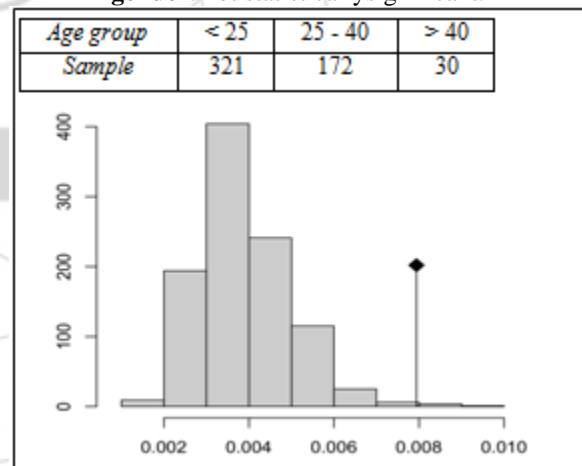


Figure 8: Monte-Carlo test - Between-class analysis on **age groups**: not statistically significant (N.B. arrow within histogram).

Figure 7 and 8 above clearly indicate that gender and age group do not influence teachers' conception of sex education in Cameroon as might have been expected from literature. It could also be indicative of the degree of gender equity and social practices in Cameroon towards reproductive health care coupled with the intensified campaign carried out by the Ministry of Public Health, WHO, and some Local NGO to fight against the HIV/AIDS pandemic over the past two decades which has targeted all age groups.

The between class analysis of the different age groups to which the teachers belong has no statistically significant effect on their conception of Sex education as indicated in figure 9 below. This was also verified by carrying out a one-

way Analysis of Variance (ANOVA) test on the 24 variables. The different F values and p values obtained revealed that for the entire 24 variable there were no statistically significant differences in teachers' conception between the three age groups as the p (sig.) values were greater than 0.05.

The result of the non-influence of gender, age and level of education on teachers' conception in Cameroon agrees with the research findings from other sub-Saharan African countries like Burkina Faso and Senegal by Bere et al, 2008^[21] and Thiaw et al, 2008^[22] respectively.

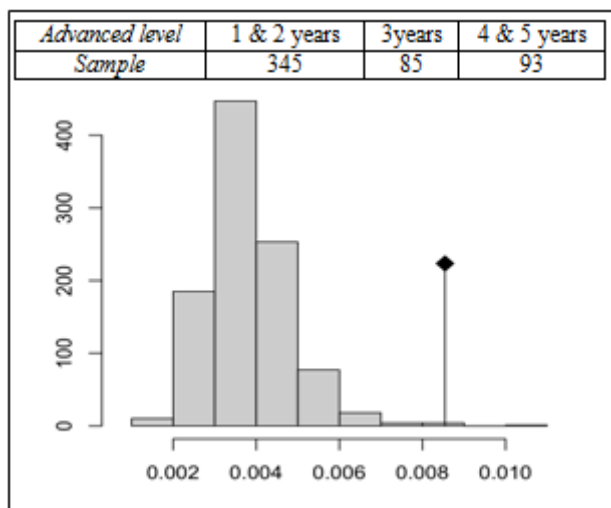


Figure 9: Monte-Carlo test - Between-class analysis on level of education (Qualification): not statistically significant.

5. Conclusion

Socio-scientific issues like sex education needs to be well understood by all teachers since they are the main transmitters of knowledge, attitudes, skills, ideas and competences to students. They must understand the approach to teaching the controversial content of their subjects and help learners to make a meaningful connection between the knowledge, ideas and skills learnt with their life. Teachers need to wake up and live up to their expectation so that the intended MDGs to change the lives and living standards of the masses can be achieved.

The conception of certain groups of Cameroonian teachers not to introduce certain biological, psychological, and social topic of sex education early in schools or never to teach it at all in school milieu could be seen as a psychological obstacle to the effective implementation of a comprehensive sex education change in Cameroon. Also their conception as to who to teach these topics is an epistemological, pedagogic and psychological obstacle to effective teaching^[23]. There is thus the necessity to bring about conceptual change in teachers using socio-constructivist didactic strategies^[24, 25].

This work reveals that teachers' conceptions are rooted more in their values and social or traditional practices than on scientific knowledge. It portrays sex education as a socio-scientific controversial topic and thus raises two main problems; firstly, how can we respond to the social pressure and the development of appropriate citizenship in

Cameroon? Secondly, which didactic and pedagogic approach should we privilege in the acquisition of knowledge and competencies relative to sex education, that would overcome the influence of language and teachers' professional background?

6. Perspectives

If government, medical teams, and other stakeholders in the fight against HIV/AIDS/STI could consider this interaction between knowledge, values and social practices in building the conception or representation about this pandemic, it may enable them to develop more appropriate ways of bringing about the required behavioural change to reduce the prevalence of HIV/AIDS/STI. All the previous messages are directed principally towards cognitive development and ignoring the affective domain has not reduced the incidence significantly.

Work is already in progress to compare these results with those of other sub-Saharan Africa Francophone countries (Senegal, Burkina Faso and Gabon) and our colonial matter Francophone find out we are bound by common citizenship values or simply by language.

7. Acknowledgement

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