



The Relationship between Teachers' Emotional Expressions and Professional Commitment in Public Primary Schools in Nsinze Sub County, Namutumba District, Uganda

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Abstract: *This study was conducted to examine the relationship between teachers' emotional expressions and professional commitment in public primary schools. The study used a cross-sectional survey design and included both teachers and head teachers as respondents. The sample size for the study was determined using a table guide, with 8 head teachers and 76 teachers included in the sample. Data was collected using a questionnaire, which included sections on the respondents' characteristics, school environment factors, and professional commitment of teachers. The collected data was coded and entered into the SPSS software for analysis. The data was also checked for accuracy, and any missing data was confirmed. The findings of the study revealed that primary school teachers in Nsinze Sub County, Uganda, are dedicated and willing to go above and beyond in their teaching. They excel in organizing classes, taking on extra tasks, and promoting transparency and responsibility. However, they face challenges such as poor problem-solving abilities, budget cuts, and a lack of engaging classroom tools, which contribute to underachievement. To improve, the study suggests that teachers should have regular meetings, evaluate student progress, and provide additional support when needed. It is also important to avoid discrimination based on sex, caste, creed, and religion to prevent academic underachievement. Overall, the study highlights the commitment and dedication of primary school teachers in Nsinze Sub County while also identifying areas for improvement to enhance student achievement.*

Key Words: *Teachers' emotional expression, Professional commitment, Nsinze Sub County, Public primary schools*

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1. Introduction

According to Seninde (2020), the Ministry of Education and Sports attributes the poor pupil performance to teachers' absenteeism, estimated at 17%, which is totally a definition of personality of teachers in many schools and an adverse effect of professional commitment of teachers. Commitment of the teachers is one of the most important issues in the education sector. A number of investigations have identified the personality of the teachers as a major influencing factor of their organizational commitment

(Kuan, et al., 2022). However, relatively few researchers have examined the impact of five factor model of personality on organizational commitment (Kuan, et al., 2022).

Moreover, dedication and other aspects of a profession are closely intertwined. Stronger commitment is specifically associated with more participation at work and in certain civic activities, better performance, more pleasure, reduced stress, fewer absenteeism, and less work-family problems (Wang, et al., 2021). Israeli teachers' commitment and their citizenship behaviours were shown

to be closely related in that teachers with greater commitment levels were more likely to remain after school hours to assist pupils with class materials (Wang, et al., 2021).

Under the presumption that personality of teachers is related to their efficacy as teachers, a lot of study has been done (Klassen & Virginia, 2014). The majority of the research on the subject has focused only on examining the relationships between teachers' self-reported traits and other within-teacher, self-reported outcomes, which limits the data supporting this premise (Wang & Tsai, 2019). This study prompts to examine the association between teachers' personality and professional commitment. An analysis of 43 research with 9216 individuals shows a substantial but minor relationship between general psychological traits and professional commitment (Wang & Tsai, 2019).

Nsinze Sub County is one of the sub counties in Namutumba District, Eastern Uganda and is characterized by the decline in teacher commitment to duties. Professional commitment of teachers is a phenomenon that is so lacking in Nsinze Sub County. Much as a lot is being done by the government to address issues affecting education in primary schools, much more is lacking. The personality of teachers is observed to be a core determinant of their professional commitment. However, not much has been documented concerning the two variables in the context of Nsinze Sub County and Namutumba District, Eastern Uganda.

Namutumba District is often listed among the educationally backward districts in the Busoga sub region. According to the speech by the DEO (2018) in an annual general meeting, teachers have failed to fully become concerned with their professional duties, and a good number of them keep dodging their regular teaching responsibilities; absenteeism is a common vice among teachers; many do not complete syllabi; making lesson plans seems to be a myth; and the general conduct does not make teachers role models. The administrative structures, infrastructural makeups of schools, and career-related programmes in all ramifications should be enabling rather than constituting a constraint to the commitment of teachers, as presently seems to be the case here. The daily Monitor for October 18, 2022, reports that teachers in Namutumba District shunned the few staff houses in government-aided primary schools, saying most of them were built during the leadership of President Apollo Milton Obote and are in a dilapidated state. In line with this, the District Education Officer, Namutumba District, says the school cannot function well without a clear definition of personality of teachers. To date, studies about teachers' personalities and professional commitment are scanty, more so in the context of Nsinze Sub County. It is against this background that the present

study sought to establish the relationship between teachers' personalities and professional commitment.

1.1 Purpose of Study

The study seeks to establish the relationship between teachers' emotional expressions and professional commitment in public primary schools in Nsinze Sub County, Namutumba District.

2. Literature Review

Emotions are extremely slippery concepts that are hard to pin down theoretically and to study experimentally. In keeping with the majority of the study on emotions, we see emotions as the mediators between an individual's experiences and the events and the situations in which they occur. Based on the work of Sawchuk, (2015), we adopt a multi-componential definition of emotion, arguing that it can be understood as a synchronous, coherent pattern of central nervous and peripheral-physiological reactions reflected in action tendencies and facial, vocal, and gestural expressions that are integrated into subjective experiences.

When someone is angry, for instance, they may frown and make threatening gestures because they are feeling very adversely stimulated and want to "fight" the unpleasant input that has provoked their anger. Since emotions may both spark and fuel efforts towards a goal, they have substantial significance for motivation (Gol-Guven, 2016).

This is seen through either constructive or destructive behaviours. Negative behaviours present themselves by disciplines that anybody may find objectionable, and good behaviours manifest themselves through acts that pupils and everyone else at school could like.

According to study done by Anika (2018), there are a number of elementary schools where teachers are abusive to their pupils. The use of vulgar language has garnered the attention of worldwide communities as well as state and central governments in practically all nations in an endeavour to assist and put an end to the evil. According to study that was conducted in Kenya (Euke, 2013), the punishment for using vulgar language in the classroom is to have the teacher excommunicated from the profession. The fact that not much has been published on the use of vulgar language as a personality manifestation of teachers in selected elementary schools in Uganda may help to explain why research like this one was carried out in the first place: to add to the existing body of literature.

Poor behaviour is also a component of primary schools, where punishments are part of the day-to-day lives in schools, thus threatening the psychological stability of pupils while they are in school. Keres (2010) also conducted a study, but in developed countries, and established that teachers who control their emotions are always found around pupils, trying to guide them here and there. In addition, he found that teachers who can keep their emotions in check are always found around pupils.

Retaliation is one form that emotional expression can take when it's not channelled appropriately. When a pupil is not performing at the same level as the rest of the class group, the pupil is usually aware of this fact. The pupil observes that his fellow pupils are praised and rewarded for their correct work, while he himself is reprimanded for his own acts. To make up for his personal incapacity to achieve success in the classroom, a pupil may regularly interrupt the class or even attack other pupils verbally or physically to compensate (Anika, 2018). This may be done as a kind of compensation.

Poor background knowledge, failure to keep up with advances in their subject area, lack of work experience in the subject area, particularly for practical subjects, relationships with colleagues that are either too social or lack rapport, relationships with pupils that are either too close or not, prioritising personal errands over workload, prioritising younger years over older years, personal problems that existed prior to teaching, and a lack of engagement with support provided by more experienced teachers are all contributing factors (Joyce & Showers, 2017).

According to Kajo, (2011), inefficiency in the workplace may not necessarily be malevolent, but it is always purposeful, and it does not include behaviour or circumstances that are unintended or unconscious. Environmental factors, a lack of training, changes in an employee's personality or living circumstances, as well as external factors, are all potential motivating factors behind unproductive behaviour on the work. Misconduct in the workplace can manifest itself in a variety of ways and can be either deliberate or inadvertent. At other times, behaviours such as speaking with coworkers or attending outside events distract from the productivity of a team and should not be supported by the organisation. This is one of the situations in which a team should not be productive. If you want to stop unproductive work behaviour from spiraling out of control, it is essential to have a solid understanding of what factors contribute to the behaviour and how to rein it in.

Evidence suggests that teachers' emotions are likewise organised in a domain-specific fashion, similar to how students' emotions are (Grauwe, 2017). Accordingly, instructors' feelings vary across the range of subjects and

themes they teach since various subjects and topics evoke different feelings in them. Teachers in Germany's primary schools, for instance, reported significantly different levels of satisfaction and anger when instructing students in arithmetic, science, and German (i.e., reading and writing), as indicated by research by Khan, (2019).

Biology preservice teachers' expectations of how much they'd enjoy teaching were investigated by Carron, & Chau, (2016), who found that it made sense to differentiate between how much people expected to enjoy teaching about different topics, such as the return of wild wolves, preimplantation genetic diagnosis, and global warming. Furthermore, numerous elements in both the immediate and distant environments affect instructors' emotional experiences. Teachers at the secondary level, who often have more than one class every school year (Carron, & Chau, (2016), have reported experiencing consistently different levels of teaching delight and anger with each set of pupils.

Furthermore, teacher team support and the organisational culture of schools have been found to influence teachers' levels of pleasure of teaching and emotional tiredness (Klassen, & Virginia, 2014). In short, we see teachers' emotions as highly contextualised, personal experiences that involve action inclinations and physiological and expressive reactions, and hence belong to the nomological net of basic human occurrences.

Self-report surveys like the Teacher Emotions Scales and the Teacher Emotion Questionnaire are commonly used in the current quantitative research to measure teachers' emotions, which are generally conceptualized as more trait-like entities. Experience sampling measures brief post-lesson or daily diary questionnaires (and interviews in which teachers describe specific episodes of positive or negative emotions are commonly used when studying teachers' emotions (Klassen, & Virginia, 2014).

3. Methodology

3.1 Research design

The study employed both quantitative and qualitative approaches. It was a cross-sectional survey in design and analytical in nature in that the researcher used different categories of respondents (teachers and head teachers) at the same time. It was a survey because it gathered data from many respondents at the same time so as to describe the nature of the commitment of teachers in public primary schools.

3.2 Study Population

The study was conducted in Nsinze Sub County, Namutumba District, Eastern Uganda. The study was

conducted in government primary schools because they all have full-time, qualified teachers posted and paid by the government, have reference materials provided by the government, and all implement government programs.

This puts them in the right position as a resource for this study. The study population in Nsinze Sub County is categorized as in Table 1.

Table 1: Study population

No	Name of School	Staff Composition 99 (M = 45; F = 54)	
		Male	Females
1.	Kibenge Memorial P/S	5	9
2.	Buseene P/S	6	5
3.	Bubago P/S	8	10
4.	Isegero P/S	7	5
5.	St. Paul Buwongo P/S	6	6
6.	Bunyagwe P/S	4	5
7.	Katengereire P/S	3	6
8.	Buwongo P/S	6	8
	Total	45	54

Source: From headteachers of the primary schools

The study population comprised of a total of 99 members of the teaching staff in all the eight public primary schools in Nsinze Sub County. The target number of respondents was therefore 99.

3.3 Sampling of the Population

This comprises sample size determination and determination of sampling techniques that was used to obtain study population.

3.4 Sample Size

The sample size for the schools was determined using Krejcie and Mogan's (1970) table guide. This table guide states that an appropriate sample size for the eight primary schools is eight. The Krejcie and Morgan table guide treats any study population with numbers from 0 to 14 as to be considered directly. The notion in the Krejcie and Morgan Table Guide is that sample size calculation or determination starts at 15 members and above.

However, when it comes to the 99 members of the teaching staff, the most appropriate sample size is 76. This is because it is within the range of 95–99 people, whose sample size is 76.

3.5 Sampling Strategies

Selection of schools. Primary schools were stratified between government-established and privately created in order to assure representative sampling. Consequently, public primary schools were considered for the study.

The selection of teachers. For teachers, convenience sampling was an appropriate technique. Only teachers who were at school were sampled. However, the stratified sampling approach also applied here to establish male and female teachers at each school selected for this study.

3.6 Instruments of Data Collection

In this study, the researcher prepared a set of structured questions for teachers in the public schools to be selected. The questionnaire comprised various sections, including: the respondents' social and demographic characteristics; questions on school environment factors and questions on professional commitment of teachers. On the other hand, the researcher conducted interviews with heads of schools and other administrators as it deems fit. The researcher held each interview session for a period of not more than 45 minutes. Leaving the last 15 minutes to the top of the hour is typically intended to allow interviewees to create organized programs that most likely began with another hour.

3.7 Procedure to data collection

The researcher obtained a letter from the research department introducing him to the research ethics committee once the proposal and the research instruments have been authorized and accepted by the supervisors and the evaluation committee. Then, in order to guarantee that the study is viewed as solely academic, a letter of introduction was utilized to contact the various types of respondents.

To perform the study in primary schools, the researcher travelled to the Namutumba District Education Officer's office and local authorities in Nsinze Sub County. This was done to increase the reliability and validity of the findings.

To conduct the study in their respective primary schools and plan the exercise of data collecting without interfering with school schedules, appointments were scheduled with the head teachers of those schools' respective primary schools as well as teachers.

In each of the schools chosen for the research, data were gathered simultaneously using questionnaires and interviews. The substance of the questionnaire was conveyed to the respondents, and a questionnaire was also done to ensure that the study's objectives were met. Under the researcher's supervision, the questionnaires were distributed to the teachers at each school that were visited. The researcher spoke with headteachers while respondents' complete surveys.

Each school received three days from the researcher to gather data. At each school, the third day was devoted to document research, during which time reports and

pertinent papers were examined and the necessary data were retrieved.

3.8 Data Analysis

The data collected using questionnaire was coded, and entered into the Statistical Package for Social Sciences (SPSS) software to prepare it for analysis. Data were then edited for accuracy, especially to check if there was no missing data or if any missing data, tools were checked and re-checked for confirmation of this. On the other hand, Qualitative data were selected carefully following the specific objectives and was then entered in computer for preparation for analysis.

4. Results and Discussion

The study was intended to establish the relationship between emotional expression and professional commitment of teachers. The results were measured by ten items anchored on a five-point Likert scale. Findings were as indicated in the table below.

Table 2: Findings about Emotional Expression

Code	Statement on emotional expression	N	M	SD
EE1	I take any consultations by pupils outside classroom as a bother	76	3.40	1.28
EE2	I consider myself as someone who does not need to do any extra work apart from teaching	76	4.88	0.49
EE3	While in a meeting, I make sure my idea is always considered without objection	76	2.89	1.35
EE4	Some teachers tell me that I am unfriendly	76	3.55	0.89
EE5	Fellow teachers rarely like associating with me while at school	76	3.43	1.10
EE6	I normally have disagreements with school administrators over many issues.	76	2.87	0.99
EE7	I do not entertain dialog in case of any problems	76	2.75	1.02
TP8	By the way, I am not an outgoing person	76	1.54	0.50
TP9	I rarely work in teams	76	2.13	1.12
EE10	I know myself as an Impatient person	76	4.37	0.48

Taking consultations outside classroom as important. As seen in Table 2, emotional expression in terms of being consultable by learners was rated successfully with scores as ($M= 3.40, SD= 1.28$). By implication, the teachers are not so emotional to pupils and as a result, they allow pupils to consult them. Headteachers were asked about the most important aspects of emotional expression and in one of their responses, the headteacher school B stated:

...avoiding emotional expression helps in timely preparation of schemes of work. Besides, it also

enhances self-drive and commitment among teachers. By so doing, positive emotions in turn promote the reduction in cases of dodging classes or dodging schools, as pupils develop love for the teacher (Headteacher, 2023)

These findings are corroborated by an Australian study by Kajubi (1989), which found that 92% of teachers in the study said they do not have enough time to prepare effectively for classroom instruction, which is the main responsibility of their position. However, there are some

studies which reflect positive results. On classroom preparation, for instance, Keres, (2010) indicates that teachers in many schools all over the world regularly work hand in hand with fellow staff and colleagues to plan fun activities and teaching methodologies to encourage the participation of pupils in lessons.

Avoiding extra work. Table above shows that primary school teachers in public primary schools in Nsinze Sub County do not, on average, exhibit avoidance of extra work ($M = 4.88$, $SD = 0.29$). This still indicates that taking on extrawork among teachers is being largely given priority. Relatedly, In the words of the headteachers, it was quoted:

... regular supervision promotes the spirit of getting involved in extra work which in turn makes teachers know what to teach at a certain period. For purposes of accountability and transparency, a teacher is normally tasked to take the lesson plan for stamping before anything. Therefore, by ensuring that teachers have an organized style of delivering services, the issue of attending to extra work is automatically settled... (Headteacher, 2023).

This further demonstrates the fact that planning and preparation are essential elements of successful teaching, as shown by several writers, including Kumar, (2014). Failure will result from a lack of it. Every teacher should, if anything, be overprepared. Good teachers almost always live in a state of planning and preparation. They are constantly considering the upcoming lesson. Planning and preparation have a significant impact on pupils' learning. An oral study by authors (Khan, 2019) also describes professional commitment of teachers using the dimensions of classroom preparation, teaching in the classroom, grading pupils' work, administration, personal attention to pupils, coaching, and interaction with parents.

Rigidity on ideas. Results according to Table above show that though there is low regard for being rigid on ideas by teachers while holding or attending meetings with administrators at public primary schools in Nsinze Sub county, Namutumba District ($M = 2.89$; $SD = 1.35$). Based on this, one of the headteachers, in response to the circumstances that surround teachers during meetings organized with in the school stated:

If pupils perform better, distinctions are rewarded with some gifts like sets, books, money and the like. Teachers receive child allowances to better performing teachers. In this school, there is a space for take-home offers in terms of food, salt and sugar at the end of every term. Some teachers receive housing allowances in terms of rent fees and many other reward approaches... (Headteacher, 2023).

However, Wang, et al., (2021) claim that the new public management ideology of result-oriented teacher teams contradicts important components of the teachers' present meaning system and fails to meet demands that are now unsatisfied within the meaning system. Furthermore, they state that the ideology of result-oriented teacher teams fails to answer the demands that are currently unmet within the meaning system. As a consequence of this, it would appear that a significant percentage of the cognitions that are included in result-oriented teaching teams have a restricted amount of significance.

This is probably not done in primary schools in Nsinze Sub county, Namutumba District. This is also explained by the findings in relation to whether teachers are unfriendly ($M = 3.55$; $SD = 0.89$), whereby Ado, (2017) identified that emotional expression for teachers differs with schools; however, this is not the case in Nsinze Sub county, Namutumba District, where overall, teachers do not manifest a high level of unfriendliness. They are good at managing their time at work (mean 3.43 hours, standard deviation 1.10 hours). This aligns with, which illustrates that attention may be given to teachers and their "teaching processes" in addition to organisational emphasis or result-oriented and ephemeral assessments, in order to improve the quality of teaching in higher education (Brooks, 2017). The evaluations are intended to be temporary. In light of this, the Information Systems Quality (ISQ) laboratory devised a model based on a process that allowed educators a methodical and step-by-step approach to achieving greater teaching excellence. In addition, the research that Ado (2017) conducted on the topic of collaboration or association among teachers found that the most important instructional duties that are carried out by teachers include the creation of lesson notes, the development of schemes of work, and the periodic evaluation of pupils' knowledge.

Last but not least, teachers do not collaborate together ($M = 2.13$; $SD = 1.112$), which is shown in Kevin (2019) establishment that some teachers act as coaches for child sporting teams, while others are responsible for administering the school paper or directing the school play. It was observed, based on the remarks of one of the school principals, that:

...after supervision, there is always conferencing which in turn encourages sharing of ideas about the activity. Following the sharing of ideas, a peer supervision review is made and resolutions made to come up with what to do next in as far as resource mobilization and allocation are concerned... (Headteacher, 2023).

At the primary school level, Hasbay, & Altındag, (2018) established that teachers generally hold parent-teacher

conferences twice a year to discuss the pupil's academic progress. At special-needs schools, teachers meet with parents as often as once every two weeks to establish a pupil's Individualized Education Plan (IEP) and discuss his or her progress.

5. Conclusion and Recommendations

5.1 Conclusion

Based on their involvement in class planning and preparation, teachers at public primary schools in Nsinze Sub County, Namutumba District, are shown to be less dogmatic in their approaches to education. Generally speaking, primary school teachers in Nsinze Sub County do not shy away from extra duties, which suggests that they place a high value on preparation and planning. Teachers are urged to put in extra time and effort to promote a culture of openness and responsibility. This indicates that a sizeable proportion of the knowledge provided in outcome-oriented teaching teams may be of low relevance. Teachers in Nsinze Sub County, Namutumba District, were assessed to be well-organized and friendly in the survey. Finally, teachers don't work together since some oversee extracurricular activities like coaching sports teams or running the school newspaper. Always a conference follows supervision to promote the exchange of views on the task at hand.

5.2 Recommendations

1. As a means of dispute resolution and behaviour management, educators may seek the advice of peers, guidance counsellors, and colleagues. Teachers are urged to put in extra time and effort to promote a culture of openness and responsibility. This indicates that a sizeable proportion of the knowledge provided in outcome-oriented teaching teams may be of low relevance.
2. Effective communication and the active pursuit of feedback can boost teacher motivation. Teachers should continue being resilient and quick to find solutions to problems, proving their ability to overcome the kinds of setbacks that often sap drive and derail progress towards important professional goals.
3. Pupils' capacity to learn new material and carry out routine classroom tasks is hampered by the lack of problem-solving skills. Teachers should meet often to share strategies for teaching challenging material, assess whether pupils are making progress, and provide extra help if needed.

References

- Ado, B. A. (2017). Evaluation of Teacher Performance in Schools: Implication for Sustainable Development Goals. *Northwest Journal of Educational Studies*, 22-26.
- Anika. (2018). *Impact of academic performance of students on Job selection*. Abuja.
- Brooks, D. C. (2017). *What Makes a Classroom an Effective Learning Environment?* London: London times.
- Carron, G., & Chau, T. N. (2016). *The quality of primary schools in different development contexts*. Paris: UNESCO.
- Euke, L. (2013). *Behavioural patterns of teachers in school and in classroom*. Lagos: FTD.
- Gol-Guven, M. (2016). The Effectiveness of the Lions Quest Program: Skills for Growing on School Climate, Students' Behaviors, Perceptions of School, and Conflict Resolution Skills. *European Early Childhood Education Research Journal*, 1-20.
- Grauwe, H. (2017). *Transforming School Supervision into a Tool for quality Improvement*. New York: International Review of Education.
- Hasbay, D., & Altındag, E. (2018). Factors that affect the performance of teachers working in secondary-level education. *Academy of Educational Leadership Journal*, 1-13.
- Joyce, B., & Showers, B. (2017). *Student achievement through staff development*. London: london times.
- Kajo, D. T. (2011). *Administrative Constraints on teaching effectiveness*. Nsukka: <http://www.unn.edu.ng>.
- Kajubi, S. W. (1989). *Education, policy review commission report*. Kampala: Mariarn Press.
- Keres, R. (2010). *Investigative efforts into the main attributes of academic underachievement in most European countries*. London.
- Khan, N. (2019). The Impact of Organizational Climate on Teachers Commitment. *Journal of Education and Educational Development*, 1-5.
- Klassen, R. M., & Virginia, M. C. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Science Direct*, 59-76. doi:<https://doi.org/10.1016/j.edurev.2014.06.001>

- Kuan, M. S., Wen, C. Y., & Min, H. L. (2022). Exploring Preschool Teachers' Conceptions of Teaching and Learning, and Their Self-efficacy of Classroom Management and Pedagogical Content Knowledge. *SpringerLink*, 263–273. doi:<https://doi.org/10.1007/s40299-022-00649-2>
- Kumar, A. S. (2014). Role Of Infrastructure in Teacher Retention: A Case Study of Kendriya Vidyalaya Aizawl. *Researchgate*, 3-6.
- Sawchuk, S. (2015). *Teacher Evaluation: An Issue overview, Why has teacher performance evaluation become such a central education issue?* New York: Education Week.
- Seninde, R. (2020). 25 UPE Namutumba schools to remain closed over latrines. *Bringing International debates on the African Continent*.
- Wang, G., Micheal, S., Zhang, S., & Katrina, L. (2021). Preservice teacher professional commitment: A conceptual model and literature review. *Science Direct*. doi:<https://doi.org/10.1016/j.tate.2021.103373>
- Wang, Y. L., & Tsai, c. c. (2019). Exploring the structure of science learning self-efficacy: The role of science learning hardiness and perceived responses to capitalization attempts among Taiwanese junior high school students. *Research in Science & Technological Education*, 54–70. doi:
<https://doi.org/10.1080/02635143.2018.1480476>