

Teachers' Behaviours Towards Vital Interactions that Attract Students' Interest to Learn Mathematics and Career Development

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Abstract

It is natural for students to expect appropriate behaviours from their teachers. Not only students but also every human being appreciates care from surrounding individuals. Within the classroom, students can feel less motivated to take part in the learning of the given course with the teacher who has offensive behaviours. The purpose of this study was to explore students' reflections about what they consider to be appreciable behaviors of mathematics teachers, for students to be motivated to learn. The study also intended to find out whether there is a link between teachers' behaviours and students' career development. A total number of 53 students comprised of 16 primary pupils, 26 secondary students, and 11 graduate students participated in this study. Purposive, inconvenient, and systematic sampling methods were used to collect data. The findings showed that teachers' behaviours can influence learners' interest to learn mathematics. However, the study showed that there is no link between mathematics teachers' behaviours and learners' career development. Therefore, teachers are advised to be approachable, responsive, and behave in a way that motivates students to learn mathematics.

Keywords: classroom behaviours, mathematics teachers, students-teachers' interaction, students' career development, students' interest

Introduction

With the advancement of the democratic world and learner-centered pedagogy trend, students are expected to learn in a conducive environment where they feel comfortable to learn. Under such circumstances, students are protected and prevented from any sort of harm and/or discrimination. Thus, students are treated with love, care, and teachers behave friendly to their students. Although a teacher may sacrifice him/ herself and tries his/ her best to teach effectively as required, students can remain less concerned about the lesson being taught, and instead, develop negative attitudes towards the subject and the teacher him/ herself. Therefore, in addition to seeing the way teachers- students' interaction can be strengthened, there is also a need to wonder if the kind of teachers' classroom behaviours may or may not influence students' career development for their future life.

There are local and global fundamental values that teachers should possess. Such values should be exercised in the classroom during instruction (Kawaruma, 2015). Teachers are important ethical leaders to the moral development of their students. Their ethical values and behaviours influence their students both in the classroom and in the community where students live. Ethical

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behaviours may be jeopardized by selfishness, greed, and carelessness, brutality, and these characters may negatively influence students' attitudes concerning their learning (Cummings, Dyas, & Maddux, 2001; Banfield, Richmond, & McCroskey, 2006; Plax, Hays, Ivey, & Kearney, 2009). However, it is believed that the desirable ethics, such as integrity can improve academic and moral performance in students (Kawaruma, 2015).

The vision of Rwanda is to transform the country into a knowledge-based economy with much emphasis on technological, mathematical, and scientific skills (Rwanda Education Board, 2015). Also, mathematics contributes to shaping how individuals deal with various individual private, social, and civil life (Anthony & Walshaw, 2009). Hence, the way teachers behave at school alongside the students has a large influence on students' performance in mathematics as well as in any other subjects (Zijlstra, Wubbels, Brekelmans & Koomen, 2013; Jennings & Diprete, 2010a; Muijs & Reynolds, 2015). Furthermore, Jennings and Diprete (2010) argued that teachers with appreciable behaviours, indirectly positively affect the academic skills of students. Whenever students are facilitated and cared for, their academic self-efficacy increases (Sakiz et al., 2012). What teachers do such as preparing lessons, teaching, and managing the classroom, is not simply a matter of professional requirements; instead, it is a combination of care and ethics as educational expectations that nurture secure, fair, and impartial society (Shevalier & McKenzie, 2012). Thus, the way teachers live within the school settings and their habits have effects in one way or another on students' skills development.

There is a need to think about students' intrinsic motivation towards a learning subject since these emotional feelings may be influenced by the teacher her/himself. Students may feel less motivated and avoid to take the course with the teacher who has offensive behaviours (Banfield et al., 2006). Teachers and students are the main actors in classroom instructional activities. Without an effective interaction between teachers and students, learning objectives may be hard to be achieved. Therefore, this paper aimed at exploring students' reflections about what they consider to be appreciable mathematics teachers' behaviors, in front of their students that may motivate them to learn the subject. The findings from the study are likely to contribute to the existing literature on informing mathematics teachers and to some extent any other subject teachers, how teachers – student interaction plays a great role in influencing their students' performance and career development.

Literature review

Teachers' ethical behaviors

While detailing teachers' ethical behaviours, Gieger (2007) described what characterises a good teacher. The author argued that “a good teacher is always considerate, ethical, expressive, forceful, intelligent, resourceful, reliable, mature, magnetic, and infallible, possessing good judgment and a sense of humour” (p.100). In the same views, Anthony and Walshaw (2009) characterised an effective mathematics teacher as one having an ethic of care in classroom communities by helping students to develop mathematical identities and proficiencies, being organized, and providing students with a chance of providing ideas independently and in collaboration with others. Furthermore, the effective mathematics teachers should be equipped with good communication skills to conduct a classroom dialogues while talking about mathematical concepts, using a language that is understood by learners, providing tasks that help students to view, develop, use, and make mathematics meaningful, make a connection between mathematics topics with their daily experiences. Williams-Johnson and Schutz (2009) argued that showing care to students (for example showing interest in students or trying to help students in hardship) at the same time maintaining healthy and productive classroom

management was a regular practice of teachers that students took advantage of. This was supported by the results from the study conducted by Ukobizaba, Ndiokubwayo, Mukuka, and Uwamahoro (2019) whereby students indicated that they are encouraged by a caring teacher. While focusing on teachers' classroom practices, teachers' personalities and abilities, Newman and Schwager (1993) observed that grade 3, 5, and 7 students perceived their teachers to be helpers and facilitators. Under this consideration, students were no longer thinking that they are dumb, instead, they were free to ask questions to get help as their teacher demonstrated cooperative behaviours. Besides, Cogan's (2016) findings on teachers' behaviors showed the enactment of teachers' inclusiveness in the classroom setting. Furthermore, teachers' higher enthusiasm in the classroom, influenced higher quality instructional behaviours, especially when teachers were monitoring students' behaviours and providing them with social support (Kunter, Tsai, Klusmann, & Burnner, 2008).

Teachers' unethical behaviours

Gieger (2007) described teachers' unethical behaviors such as "being autocratic, ineffective jerks or clowns, or chronically flawed in attitude, behavior, values or instructional techniques" (p. 100). The research conducted by Banfield, Richmond, and McCroskey (2006) showed teachers' offensiveness to be the most teachers' misbehaviours that affected students both morally and academically. In the research conducted on Western University students in the United State of America about college teachers' behaviours, students declared that teachers could degrade the students in front of the class and insult them (Kearney et al., 2009). Teachers were perceived to be rude, self-centered, and irritable, considering themselves superior or arrogant. Teachers were also reported for sexual harassment and prejudice. Teachers' offensiveness was also characterised by strictness and unreasonable reactions and arbitrary decisions such as refusing late works, punishing the whole class for one student's wrongdoing, looking rigid, inflexible, and with an authoritarian personality. Such behaviours were observed also in Northwest South Carolina, where university pre-service teachers and on in-service educators, identified misbehaviors that were concerned with a direct violation of students' physical and emotional well-being (Barrett et al., 2012).

The study draws on education and social cohesion framework (Sayed & Badroodien, 2016) that suggests that education affects social cohesion through the development of certain competencies (knowledge, skills, attitudes/values) in students. While discussing the relationship between education and social cohesion, Kantzara (2016) pointed out that "education contributes to preserving current social ties by binding individuals internally and externally. The first is achieved through socialization, while the second is accomplished by preparing them to participate in the division of labour that for most people is a necessity" (p.43). In this regard, Anthony and Walshaw (2009) argued that mathematics pedagogy is that one which is committed to promoting social cohesion within mathematics classroom as well as developing a student who is a wholly productive citizen. The present literature generally focused on teachers' behaviours that affect students' physical and emotional life, however, the literature does not provide students' views of how they reflect on their mathematics teachers' behaviors within the classroom. Thus, the framework enables us to figure out students' appreciations of teachers' classroom interactions that attract students' interest to learn mathematics and to understand how mathematics teachers' ethical behaviours contribute to students' career development concerning overall country social cohesion.

Methodology

The present study is qualitative and survey-based (Cohen et al., 2007) whereby interviews, survey questionnaires, and focused group discussions were used to collect data. Two primary and secondary schools with pseudonyms A and B for confidential reasons were used in this

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study for a simple reason that schools are located within researchers' neighborhoods. The schools were used before getting permission from headteachers. Researchers preferred to use end years' students, which are primary three (P3), primary six (P6), senior three (S3), senior six (S6) students since with three years of learning cycle at a school, students are experienced to witness about their learning experiences. Eight P3 and eight P6 learners were considered and were selected systematically, by assigning a number to each student and picking a student after an n^{th} frequency. Students picked from the class, formed a sample for a group discussion. Five senior three students were also systematically selected. To get different views from more experienced students, a sample of 21 students from senior six students were purposively selected and used within this study. To know more about most experienced students, eleven graduate pursuing their post-graduate studies at the University of Rwanda-College of Education (UR-CE), were conveniently sampled for regional representability (see Table 1). Therefore, a total of 53 persons were sampled to contribute in the present research. Mathematics teachers were looked at since the subject they teach is taken in both primary and in ordinary level (O' level) as a crosscutting subject on which much attention is needed to be paid for.

Table 1 Categories of respondents in sample

Categories	Primary learners		Secondary students		Graduate students ¹		Total
	P3	P6	S3	S6	Year one	Year Two	
Levels	P3	P6	S3	S6	Year one	Year Two	53
Sample	8	8	5	21	5	6	
Data collection methods	Group Discussion (Kinyarwanda)		Questionnaire	Interview			
Type of data collected	Translated English Qualitative and quotations		Quantitative and quotations	Qualitative and quotations			

¹Graduate students are Master students from the African Centre of Excellence for Innovative Teaching and Learning Mathematics and Science (ACEITLMS) at the University of Rwanda College of Education (URCE) based at the Rukara Campus.

During data collection, we used two languages; Kinyarwanda and English. Kinyarwanda (participants 'mother tongue) was used to discuss with primary school children because we wanted students to express freely in their argumentations, while English was used for questionnaire delivered for senior six students and graduate students. A group discussion was conducted before being released by their teachers and the discussion took place during the recreation period. In the analysis phase, we translated the group discussions into English to share our findings with the rest of the world. The respondents were also explained the purpose of the research and its significance. We assured the respondents that all the provided information will be kept confidential, and everyone was free to participate. Group discussions and interviews were conducted, while survey questionnaires were filled, and all data were collected in our presence. Data were descriptively analysed and presented using direct quotes and general themes.

Findings

Students' reflections on teachers' classroom behavioral practices about their interest in learning mathematics

Primary school learners

As we were interested in finding which teacher's behavioural practices within the classroom that attract interest in learning mathematics, to the reality about this curiosity, we approached primary school learners. Not much was found in primary school students. However, learners argued that they like teachers who care for themselves, do not stress them, do not beat or abuse them. For instance, Primary-6 learners said:

"Our mathematics teacher like other teachers of ours, listen to us and when we are confused, we ask him questions, and he provides explanations".

Secondary school students

For secondary school students, we were interested to hear from students, the appreciable behaviours that they find on their mathematics teacher. Students responded that their mathematics teachers master the content and deliver the course as expected, are calm, goal-oriented, explain deeply, listen to their students, and that they are humble. For instance, one Senior-6 student said: *"The teacher interacts with us through listening to our needs and reacts to the questions asked and answers the raised questions"*. However, one Senior-6 student reported that her Mathematics teachers are careless, do not tell stories or jokes, and sometimes looks stressed.

When secondary students were asked to identify and describe whose behaviours are admired at school and why students have mentioned different subject teachers. Both Senior-3 and Senior-6 students reported that teachers converse with them and advise them to prepare their future life. Besides, other students said that they like most of their teachers who support them in learning, flexible, honest, intelligent, open to them, and tell stories within the lesson. For instance, one student said:

"I like most my Economics teacher because he considers an individual's strengths and weaknesses and comes up with support for those who are in need."

While asked secondary students about the teacher whose behaviors are not appreciable and why Senior-3 students mentioned various subject teachers but did not wish to explain why. Except for one Senior-3 student who said:

"I do not like my Kinyarwanda teacher behaviours because he is most of the time calm and we fear him". Besides, a Senior-6 student observed the same and argued: *"Our Mathematics teacher is calm, strict, and cannot joke with us"*.

When we asked senior-6 students the subject that they do not like and why, out of 21 respondents, seven said that they do not like sciences, nine students said that they do not like mathematics, while the remaining students opted for other different subjects. Out of 21 respondents, 16 reported that they do not like those subjects because they are difficult for them, while five students gave other different reasons. For instance, one student said *"I think mathematics is not my talent"*, while another student declared: *"I do not like French because the teacher only talks as if he is talking to himself and I do not understand what the teacher is telling me."*

Both Senior-3 and Senior-6 students have reported that some teachers are knowledgeable about mathematics content, approachable and that they can provide pieces of advice. However, students also revealed that their mathematics teachers remain silent, strict on the set rules, and

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stick on decisions made. Students considered such teachers to be anti-social. Some mathematics teachers were also reported to be not as effective in teaching as expected because they are on the pace of quick learners and fail to adapt to slow learners' pace.

Graduate students

When we asked graduate students about the teachers whose behaviours were admired when they were in secondary school's bench, graduate students revealed that they liked teachers who used put them into group discussions, employed vital examples to make students understand, motivated them, respected time, advised them, mastered the content, and who showed care. For instance, one Tanzanian graduate said that her Biology teacher at the ordinary level used to inspire her. She reported that their teacher used to say: *"You ladies, you have to study hard, opportunities are there and waiting for you"!*

Graduate students were asked the teacher whose behaviours were not admired. Students said that they did not like teachers who used to scare them and undermine them by calling them dull. Some of the graduate students mentioned that some of their mathematics teachers used to come to class without preparation, failed to consider individual differences of their students, and did not manage to give guidance to the students. For instance, one graduate student said:

"I did not like my mathematics teacher when I was in Senior-6 because he was anti-social. When asked, the teacher could not answer. Once he gave exercises and homework, he could not give feedback".

When we asked if the subjects liked by graduate students were linked to the teachers' behaviors, out of 11 respondents, 10 responded that there was a link between. Students explained that they were motivated by the teachers' teaching methodology and the quality of explanations provided. However, seven out of 11 graduate students agreed that subjects they disliked were linked to how teacher-student interaction was not effective to support learning.

Though graduate students also reported that some teachers nowadays can joke around and that teachers- students' relationship is fair, however, graduate students reported that some mathematics teachers are tough and behave strictly while teaching. This is whereby one Tanzanian student said: *"Some teachers are harsh. They do not like to make a relationship with kids. They do not consider the level of their students"*.

The influence of mathematics teachers' behaviors on students' career development

Primary school learners

We asked the learners the career they wish to join after schooling. The most cited career pathways including medicine, teaching, military, and sports journalism. Learners mentioned that they want to be nurses because they want to take care of patients; soldiers because they want to keep the country secured, and sports journalists because they like sports and want also to appear on television. However, learners did not link their future career choice to their mathematics behaviours. Only one Primary-6 student said: *"I wish to become a teacher because our mathematics teacher cares about us"*.

Secondary school students

When we asked secondary students the careers that they are intending to join after schooling and why, both students of senior-3 and Senior-6 have mentioned different careers, including, being managers of businesses, entrepreneurs, teachers, accountants, lawyers, IT (Information Technology) managers, medical doctors, air hostesses, journalists, singers among others. The

reasons for joining those careers were simply because they like such jobs and expect to gain from them. For instance, one Senior-6 said:

"I want to become an IT manager because it is based on technology and I do wish to know how to create soft wares." While a Senior-3 said: "I want to be a businessman because once you make a profit and succeed, you get the best future".

When students were asked if the career they wish to join is linked to their teachers' behaviours, students responded that there is no link between the career they are intending to join and their teachers' behaviours.

Graduate students

When we asked Graduate students if the career they are in is matching with that one they had chosen, out of 11 respondents, 10 responded that it is not matching with the intended careers. Students revealed that they had planned to be nurses, medical doctors, environmentalists, journalists, among others. The reasons given for not joining the intended careers are that they did not get the good marks, and they were then reoriented by their governments because of their performance. For example, one Tanzanian graduate student said:

"I was planning to be a medical doctor. I faced a problem of lacking science teachers in my school, at an ordinary level. Thus, I performed poorly. I, therefore, opted to choose Education as a teacher where higher marks were not asked." Another student from Kenya said: "I wanted to be a nurse. I joined the nurse campus. Later, there were some of the things that scared me. For example, cleaning wounds and seeing blood. So, I said 'no', and then, I opted for science education".

To find out if the fact of deviating from the planned careers was because of their teachers' behaviours, all graduate students replied that the careers they are in by then were not linked to their previous teachers' behaviours. For instance, a South Sudanese explained: *"It is not because of my teachers' behaviors, instead it is because I failed to score the required marks".*

Discussion of results

Considering the impact of students-teachers' relation on students' performance, a conducive environment needs to be developed and maintained to manage students' attitudes towards a given learning subject. This kind of relationship is expected within the competence-based curriculum currently in use in Rwanda, whereby appropriate attitudes and values are among the skills that students need to acquire and develop (Rwanda Education Board, 2015). Seven out of 11 graduate students who agreed that the subjects they disliked were linked to their teachers-students' relationship, shows how teachers' behaviors can influence students' motivation to learn the subject. We thus concur with scholars like Cummings, Dyas, and Maddux (2001) who said that teachers' ethical behaviours may influence negatively or positively students' attitudes towards a learning subject.

The results that showed that the majority of the asked students (19 out of 26) declared that they do not like mathematics because it is difficult. These results gave us a suggestion that teachers of mathematics have a primary task of changing students' perception and motivate students to love mathematics and show them how mathematics is feasible, through a collaborative and flexible manner.

Students generally reported that they like teachers who care, advise them, and motivate them, support their learning, flexible, and telling stories within the lesson. We agree with Shevalier and McKenzie (2012) who declared that students do not only need a teacher who masters the content and effectively deliver the content but also a kind of a teacher who cares and shows behaviours that attract their interest to learn mathematics. It is hoped that teachers-students relation will impact students' motives and make students like the subject and therefore get

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actively engaged in constructing their knowledge (Price, Williams-johnson, & Schutz, 2009). In other words, since teachers and students are the main actors of classroom instructional activities, failure to maintaining an effective classroom teacher-student interaction may hinder learning objectives to be achieved.

Even if all the respondents asked said that there is no link between the career development and teachers behaviours, however, from education and social cohesion perspective, it can be drawn that mathematics teachers' behaviours are most likely to transform their students into productive citizens by inviting them to critically reflect on their daily lives. We, therefore, support the claim of Sayed and Badroodien (2016) who declared that teachers' ethical behaviors in addition to good teaching practices are key roles in enabling students' commitment to a better future life.

Concluding remark

In this study, we showed that pupils and students do not only like teacher who masters the content and deliver effectively the content but also students argued that they need in a teacher who cares and shows behaviours that attract their interest to learn mathematics. Teachers in general and mathematics teachers, in particular, may risk their students get demotivated and change their attitudes as a result of teachers-students' interaction deterioration. Therefore, students' poor performance may occur. As it is envisaged within the competence-based curriculum, students need to be assessed not only in their knowledge and skills but also in their attitudes and values. While assessing students' attitudes and values, teachers generally need to see and find out to what extent their students show interest in learning the subjects being taught, before taking adequate measures. To strengthen students-teachers' interaction, teachers particularly need to check if they are not the root causes of students' negative attitudes and poor moral values that students may show. Teachers should take measures that allow students to learn independently by changing the way they behave. Even if teachers behaviours were found not affecting students' career development, but teachers need to train students in a way that will make them successful in their careers. Despite the study limitations in terms of sample size and country representability, if the country considers mathematics as a pillar in developing competencies within the transformative education framework, mathematics teachers need to raise the level of teaching and demonstrate behaviours that enable graduates to be the best performers in mathematics and ready to participate in the division of labour as required by the societal needs.

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