

The Attitudes of Teachers and Students towards ‘One-to-Five’ Students’ Network: Implications for students’ learning

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Abstract: This study was conducted to explore the attitudes of teachers and students towards the one-to-five students’ network. Cognizant of this, survey research design and quantitative research approach were followed to meet the purposes of the study. Accordingly, 471 teachers and 476 students were selected from 17 secondary and 43 upper primary schools in Tigray through a multistage-cluster sampling. Data were collected through self-developed questionnaire. Finally, data analyzed through mean and independent samples t-test revealed that teachers and students had positive attitudes towards the one-to-five students’ network. Moreover, even if there were no significant attitude differences among participants of similar cycles, a statistically significant attitude differences were found among upper primary and secondary school participants. The differences were found in favor of the upper primary school teachers and students. Finally, the implications of the findings for the improvement of students’ learning are highlighted.

Keywords: Students’ network, attitude, cooperative learning, students’ learning

INTRODUCTION

One-to-five students’ network is an instructional strategy introduced to improve students’ learning in Ethiopia (Reda & Hagos, 2015). It is organized on the basis of predefined structures and procedures. To create the network groups, students are first classified into three categories named as ‘A’, ‘B’ and ‘C’ on the basis of their academic achievement. The ‘A’ group contains students with academic achievement greater than 86 percent and the ‘B’ group contains students with academic achievement greater than 75 but less than 86 percent; and those students with academic achievement below 75 belong to category ‘C’ (Tigray Region Education Bureau, 2011). Once students are classified into three categories, network groups composed of one student from ‘A’, two students from ‘B’ and three students from ‘C’ are formed. In addition to academic achievement, residential proximity and sex are also used to form the network groups. However, residential proximity and sex are used to form the network groups when the teacher fails to maintain the diversity of group members through the use of academic achievement as a criterion to establish the network groups.

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One-to-five students' network is usually associated with cooperative learning strategy where students of different sex, academic achievement and background support each other to improve their own and others' learning (Johnson, Johnson, & Taylor, 1999). However, relating one-to-five students' network with cooperative learning strategy has been debated. One of these debates focuses on the name 'one-to-five'. That is, the meaning for the name one-to-five deviates from cooperative learning. Literally, 'one-to-five' implies that one student – most likely the 'A' student will be given higher responsibility than others and thus the work division and responsibility among members of the network group is likely to be skewed. Consequently, some (For example, Seid & Tarekegn, 2017) recommend to replace the 'one-to-five' by five-in-one (five students in one group). Moreover, studies that compared the one-to-five students' network with cooperative learning have contended that there are similarities between students' network and cooperative learning. For example, after assessing the practice of student network, Reda and Hagos (2015) have concluded that the one-to-five student network seems to be a close version of cooperative learning not cooperative learning itself.

In addition, our informal observation of different schools for various duties other than the present research appeared to reveal that the one-to-five students' network is subjected to various criticisms. Teachers and students in particular are heard criticizing the one-to-five students' network as a simple routine dumped by higher authorities without their acceptance and consent. However, other than anecdotal evidence, there are no systematic studies about the attitudes of teachers and students towards the one-to-five students' network. Therefore, the present research was initiated to address the following research questions:

- What are the attitudes of teachers and students towards the one-to-five students' network?
- Are there differences in the attitudes of teachers and students towards the one-to-five students' network?

Attitude is an umbrella term used to explain people's preferences, feelings, emotions and expectations of an issue or an object (Jain, 2014; Schafer & Tait, 1986). It is the judgment that people make in the form of 'negative' or 'positive', 'like' or 'dislike', 'good' or 'bad'. Therefore, exploring the attitudes of teachers and students towards the one-to-five students' network could help to understand their feelings about the one-to-five students' network. Moreover, as attitude helps to predict people's behavior (Fazio & Olson, 2003), exploring the attitudes of teachers and students towards the one-to-five students' network would help to predict their behavior pertaining to the practices of students' network. Behavior is an overt trait that consists actions or observable responses resulting from someone's attitude (Jain, 2014).

METHODOLOGY

Research design

The purpose of the present study, as suggested by the research questions, was to assess the attitudes of teachers and students towards the one-to-five students' network. Cognizant of this, survey research design and quantitative research strategy were employed to achieve the purposes of the present research. Survey design is "important to understand the social world... [and is] appropriate for research questions about self-reported beliefs and/or behaviors (Neuman, 2007, p. 167). Neuman has specifically indicated the areas under which survey design is applicable. According to him, it is applicable to research investigations that address research questions related to behavior, attitude, characteristics, expectations, self classification and knowledge in educational settings. Therefore, as the present research was about the attitudes of teachers and students, survey design was found to be more applicable than other research designs.

Moreover, a quantitative research methodology was employed to address the research questions. A research methodology shows the general orientation – whether qualitative or quantitative methods were employed to conduct the research (Bryman, 2008). Quantitative research was used because the present research was built on the deductive approach. It begun with the issue of one- to-five students' network (as a theory) and then proceeds to see specific traits associated with the student network, that is, the attitudes of teachers and students. Quantitative research methodology attempts to quantify the behavior or observation of events and follows a deductive orientation (that is from theory to research) (Bryman, 2008).

Target population of the study

The target population of the study were upper primary (grades 5 to 8) and secondary (grades 9 to 10+2) school teachers and students of Tigray National Regional State. During the study period, 2013/2014, there were 1262 upper primary and 128 secondary schools and around 582,500 students enrolled in the schools (168,905 secondary; 413,595 upper primary) and 16,025 full time teachers (10,995 upper primary and 5,030 secondary) (Tigray Region Education Bureau, 2014). Teachers and students were mainly targeted because they are the ones that play key roles in practicing the one-to-five students' network. In addition, students and teachers of upper primary and beyond were targeted because students' network is not practiced in the lower primary cycle-grades one to four (see, Reda & Hagos, 2015).

Sample and Sampling Technique

A multi-stage cluster sampling technique that involves convenient and simple random sampling techniques were employed to select participants. Mutli-stage cluster sampling technique was followed because it was difficult to get a fairly representative number of participants using one sampling technique. Cluster multi-stage sampling is applicable when

the geographic distributions of units are scattered, and, therefore, is difficult to develop a complete list of the research participants (Koul, 2006; Neuman, 2007). Therefore, the multi-stage cluster sampling procedures were undertaken sequentially as the selection of zones (at the first stage), 'wereda' (at the second stage), schools (at the third stage), and teachers and students (at the fourth stage). Concomitantly, convenient sampling technique was used to select zones, and simple random sampling technique was used to select 'weredas', schools, teachers and students across the respective stages. More specifically, the sampling procedures were undertaken as follows.

First, out of the seven zones in the region, five of them were selected through a convenience sampling technique. This was done simply for economic reasons. Convenience sampling, despite its limitations related to representativeness, is cost effective (Neuman, 2007). Second, 20 'weredas' were selected out of the thirty-three 'weredas' located in the selected five zones. The selections of 'weredas' were done through a simple random proportional sampling technique. Thirdly, 60 schools (17 secondary and 43 upper primary schools) were selected through simple random sampling method (i.e., lottery method) from the list of schools in the selected 'weredas'. Fourth, ten teachers and ten students (a total of 471 teachers and 476 students) were further selected from each school sampled using simple random sampling method (i.e., lottery method). Simple random sampling was used both for economic reasons and its strengths over other sampling techniques. Simple random sampling is easy to manipulate and, in a context where trendy lists are available (for example, the list of students in alphabetical order, list of teachers according to their academic rank), one has to use simple random sampling other than the systematic sampling technique (Neuman, 2007).

Procedures and tools of Data Collection

Data were collected through a self-developed questionnaire. This was done because questionnaire is important to collect data about the attitudes of individuals or a group (Koul, 2006). The questionnaire had 12 items constructed in Likert scale (1=strongly disagree, 2=moderately disagree, 3= agree, 4=moderately agree, 5= strongly agree). To avoid participants' response set – a problem of giving similar responses to all items (Yalew, 2012), six of the items were negative and the remaining six were positive. In addition, because comparing teachers and students' attitudes' towards the one-to-five students' network was among the purposes of the study, similar items were developed to teachers and students. The development of similar questionnaire items for participants of different experiences, help researchers to compare mean results among the participant groups (Neuman, 2007).

Moreover, to improve the content validity of the questionnaire for teachers (two secondary and two upper primary school teachers) have commented on the questionnaire. Further, the questionnaire was piloted before administering to the actual participants of the study and its reliability was checked through the split half method. The split –half method is appropriate when the items of a questionnaire are designed to measure one behavior/issue (ያለው, 2004 ዓ/ም). Accordingly, the reliability of the questionnaire was found to be 0.84 (for teachers)

and 0.81(for students) and this reliability is acceptable (see, Morgan, Leech, Gloeckner, & Barrett, 2004; ያለው, 2004 ግ/ም). Once this done, the questionnaire was administered to the actual participants of the study by the researchers.

Procedure of Data Analysis

Once the completed questionnaires were collected from the respondents, the researchers have discarded all incomplete questionnaires and tallied the complete ones. As a result, questionnaires collected from 129 teachers (115 from upper primary and 14 secondary) and 124 students (58 from upper primary and 66 secondary school students) were found incomplete and therefore were excluded. Consequently, the response of each respondent was entered into SPSS version 16 and the reliability of responses was checked through split-half method. Accordingly, the reliability of the actually administered questionnaire was found to be 0.91 (for students) and 0.96 (for teachers) which is found to be acceptable (see, Morgan, et al., 2004; Yalew, 2012). Finally, data were analyzed through mean scores and independent samples t-test. The mean score was used to understand whether the respondents had positive or negative attitudes to one-to-five students' network. In addition, the independent samples t-test was used to test the attitude differences among the respondents. Independent samples t-test is applicable to test the differences of means obtained from two independent groups drawn randomly (Koul, 2006).

RESULTS

Respondent Characteristics

The upper primary school teachers participating in the study were 315 in total among whom 126 were female and 189 were male while the secondary school participating teacher were 37 female and 119 male. The mean age of the participating teachers was 33.89 with a standard deviation of 8.3. Likewise, 139 of the upper primary school student participants were female and the remaining 193 were male while 47 of the secondary school student participants were female and 97 were male. The mean age of the student participants was 14.6 with a standard deviation of 1.4.

Attitude Mean Score of Teachers and Students

Assessing the attitudes of teachers and students towards the one-to-five students' network was the main concern of the research and a Likert-scale questionnaire was employed to measure the attitudes of teachers and students. Accordingly, the mean attitude of teachers and students towards the one-to-five students' network is indicated below.

Table 1

Mean Score of Teachers' and Students' Attitudes towards the One-to-Five Students' Network

Respondent category	Respondents' school levels	N	Mean	SD
Students	Upper Primary School students	332	4.10	.76
	Secondary school students	144	3.67	1.01
Teachers	Upper Primary school teachers	315	4.10	.99
	Secondary school teachers	156	3.77	1.12
Total		947	3.98	.96

Key: Positive attitude (Above agree) ≥ 2.5 ; Negative attitude (below agree) < 2.5

Table 1 depicts the mean attitude of teachers and students towards the one-to-five students' network. Therefore, as depicted in the table, the mean response of teachers and students ranges between 3.67 and 4.10, which is above the 'agree' level. This implies that both teachers and students have positive attitudes towards the one-to-five students' network. However, there seems to be variation among respondents of different school levels.

Primary school students and teachers have higher positive attitude mean scores (each with an attitude mean score of 4.10.) than respondents at secondary school. The mean scores of secondary school teachers and students are found to be 3.77 and 3.67, respectively. Secondary school students have the lowest positive attitude mean score towards the one-to-five students' network as compared to the other groups (secondary school students' attitude mean score 3.67). In the same vein, secondary school teachers have slightly better positive attitude towards the one-to-five students' network as compared to secondary school students' (secondary school teachers' attitude mean score 3.77). In sum, Table 1 shows that teachers and students, despite the differences in attitude mean scores, have positive attitudes towards the one-to-five students' network. However, to better understand the attitude mean differences among participants that belong to different school levels, additional test of significance was employed.

Attitude Differences

Table 2

Attitude differences between Teachers and Students (both within and among cycles)

Respondents	N	df	Mean	SD	t	P
Upper Primary school students	332	474	4.10	.762	5.124	0.00*
Secondary school students	144		3.67	1.015		
Upper Primary school teachers	315	277.62	4.10	.993	3.123	.002*
Secondary school teachers	156		3.77	1.123		
Students (upper & secondary)	476	945	3.97	.869	-.281	.779
Teachers (upper & secondary)	471		3.99	1.048		
Upper Primary school students	332	645	4.10	.762	.055	.956
Upper Primary school teachers	315		4.10	.993		
Secondary school students	144	297.86	3.67	1.015	-.795	.427
secondary school teachers	156		3.77	1.123		

* p<0.05

Table 2 indicates the attitude mean differences among teachers and students. Accordingly, it reveals that primary school students have higher positive attitude toward the one-to-five students' network than secondary school students. The attitude mean differences between the secondary and upper primary school students is statistically significant ($t=5.12$, $df = 474$, $p<0.05$). In addition, the table reveals that upper primary school teachers have higher positive attitude towards the one-to-five students' network than the secondary school teachers and the difference is found to be statistically significant ($t = 3.123$, $df = 277.62$, $p < 0.05$). Nonetheless, taking teachers (both upper primary and secondary) and students (both upper primary and secondary) as two comparable groups, their mean attitude scores' difference is not statistically significant. Similarly, the attitude mean scores' difference between the upper primary school teachers and students, and secondary school teachers and students is not statistically significant.

DISCUSSION

The study has come up with two major findings. First, the attitudes of teachers and students towards the one-to-five students' network were found to be positive. Second, upper primary school teachers and students were found to have higher positive attitudes towards the one-to-five students' network as compared to their secondary school counterparts. Therefore, this section tries to discuss the findings focusing on two major points. First, it addresses the implications of positive attitudes of teachers and students towards the one-to-five students' network, and second, it proceeds to elucidate how the differences in the attitudes of teachers and students towards the one-to-five network can be explained.

Positive attitudes of teachers and students towards the one-to-five students' network

The findings revealed that teachers and students had positive attitude towards the one-to-five students' network. Taking the one-to-five students' network as one type of cooperative learning, the findings seem to be in line with previous studies that reported positive attitudes of teachers and students towards cooperative learning (see, for example, Er & AtaÇ, 2014; Farzaneh & Nejadansari, 2014; Latchanna & Dagneu, 2009; Teweldebrhan, 2015). However, it is still important to substantiate whether or not the one-to-five students' network is exactly the same with cooperative learning. In the one-to-five student network, as its name implies, the one student (i.e., the so called 'A' student) is seemingly given the responsibility to lead and help the other five students (i.e., the so called 'B' and 'C' students). This issue may not, therefore, be in line with cooperative learning methods where students of different academic achievement and sex help each other to improve their academic competence and other social skills (Johnson, Johnson, & Holubec, 1994). In cooperative learning, tasks and responsibilities shift from one to another among students of different academic achievements, and positive interdependence, individual accountability, face-to-face interaction, group processing and social skills are crucial ingredients for its effectiveness (Johnson et al., 1999). Nonetheless, as the one-to-five students' network involves parts of the ingredients of cooperative learning, comparing the positive attitudes of teachers and students towards the one-to-five student network against attitudes of teachers and students towards cooperative learning or other team work strategies is important.

The positive attitudes of teachers and students towards the one-to-five students' network imply that the participants have high regard for the one-to-five students' network. However, it is worth noting that the observed positive attitudes of teachers and students towards the one-to-five students' network may not guarantee positive behaviors or actions. Previous research reports tend to explain that an attitude may explain and predict people's behavior, but it is not a necessary precondition for people's actual behavior (Ajzen & Fishbein, 2005). This might be because attitude is covert (Ajzen & Fishbein, 2005; Jain, 2014), and thus people with positive attitude may act differently as a result of the varied situational variables or conditions (Ajzen & Fishbein, 2005; Andrews & Kandel, 1979). The conditions that lead to variation between attitude and behavior are habits (to what extent the issue about which someone has positive or negative attitude is exercised regularly), norms (to what extent the issue about which someone has positive or negative attitude is exercised and has a standard shared by others) and expected consequences of behaviors (the perceived outcomes of the issue about which one has negative or positive attitude) (Schafer & Tait, 1986). Therefore, as a result of the interplay between or among habits, norms and expected consequences in the practices of the one-to-five students' network, the positive attitudes of teachers and students towards the one-to-five students' network may not guarantee positive behaviors.

Nevertheless, it is also worth analyzing the findings from another perspective. The observed positive attitudes of teachers and students towards the one-to-five students' network could be taken as indicative of positive behavior of teachers and students in the actual implementations

of the one-to-five students' network. That is, if obstacles that deter people's attitudes to change into behavior are appropriately dealt with, the positive attitudes of teachers and students could predict positive behaviors of teachers and students in the actual implementations of the one-to-five students' network because "people's behavior follows reasonably from their belief, attitude and intentions" (Ajzen & Fishbein, 2005, p. 174).

Attitude Differences towards the one-to-five students' network

As described above, upper primary school teachers and students were found to have higher positive attitudes towards the one-to-five students' network as compared to their secondary school counterparts. The findings seem to be consistent with other findings that assessed primary and secondary school teachers' and students' attitudes towards teamwork. After making a survey on 111 primary and 173 secondary school teachers that taught in the primary and secondary inclusive classrooms, Gebhardt et.al., (2015) have found that primary school teachers' ratings of teamwork was significantly higher than the ratings given by secondary school teachers. Moreover, previous studies seem to reveal that students' engagement and the use of cooperative learning strategies tend to decline with the increase in grade levels. Race and Powell (2000) have revealed that the use of the non-traditional teaching approach tends to decline as one moves from the lower to the higher grade levels.

Previous researchers have attempted to identify the factors that explain the attitude differences in students and teachers towards teamwork. These factors could be related to teachers' and students' experiences with teamwork (Tucker & Abbasi, 2016), work load distributed among team members, the methods of assessment (Pfaff & Huddleston, 2003; Ruiz Ulloa & Adams, 2004). These factors have considerable roles either in weakening or strengthening someone's attitude towards teamwork. That is, if there is appropriate workload distribution among team members, if appropriate assessment mechanisms are there, if conducive conditions are arranged to gain good experiences from working together, the attitude of team members towards the teamwork will likely be strengthened. On the contrary, if these factors are not rightly directed, the likelihood of team members to have negative or weak attitude towards the team work will be high.

In light of this, therefore, the differences in the attitudes of upper primary teachers and students, and secondary school teachers and students towards the one-to-five students' network could be explained in terms of the indicated factors that strengthen or weaken one's attitude towards teamwork. The lower positive attitude of secondary school teachers and students as compared to their upper primary school counterparts may emanate from their differences in work load distribution, assessment and other experiences in the one-to-five students' network. Reda and Hagos (2015) after making a survey on 471 teachers have found that the practice of student network in line with the principles of cooperative learning is significantly higher in the primary than the secondary schools.

Implications for Learning

Students' learning, at least in the Ethiopian context, is defined as a change in knowledge, skill and attitude and is specifically assessed as the achievements of minimum learning competencies (National Agency for Examinations (NAE), 2010). Since the quality of education in the country has been deteriorating from time to time (see, Negash, 2006), it has been a point of concern among stakeholders and the government. For example, a study on early grade assessment in Ethiopia revealed that 34% of students in grade two were unable to read a single word in a story relevant for that grade level; 48% of students were unable to answer a single comprehension question on a reading comprehension test; and only 5% of students were able to reach 60 words per minute in reading fluency (the then expected standard) (MoE, 2015, p. 15). Moreover, over 50 % of the students in grade ten and 10+2 have performed below the national minimum standard which is 50% in the basic subject areas such as physics, mathematics, English, chemistry and biology in the national learning assessment (NAE, 2010). Indeed, the problems in early grade reading and academic achievement are not an exception to Ethiopia. Many countries are duly concerned about it. The World Bank document, for example, noted the following:

For too many students, however, more schooling has not resulted in more knowledge and skills. The results of substantial resources spent on education have thus been disappointing in terms of learning outcomes. Youth are leaving school and entering the workforce without the knowledge, skills, or competencies necessary to adapt to a competitive and increasingly globalized economy. As a result, to find employment they may need remedial, second-chance, and job training programs. (World Bank, 2011, p. 17)

Therefore, the challenge in student learning calls for practical actions supported by teachers. Even if teachers have huge responsibilities, the endeavor to improve student learning should not be left to teachers or the government alone. Students have a great responsibility, too. Encouraging students to support each other is an important strategy in the endeavor in improving students' learning. Thus, the positive attitudes of teachers and students towards the one-to-five students' network could have implications for ways of improving students' learning. It will specifically help to sustain and strengthen the practices of one-to-five students' network as a tool for improving students' learning.

Teachers and students are integral parts of any education system. Teachers have immense responsibility to shape the skill, attitude and knowledge of students towards the desirable outcomes. They are the ones at the lower level of the system, but conversely among the basic pillars needed for any success in education. Nothing can be done without the positive attitude, value, engagement and commitment of teachers in the education system. For example, teachers are believed to have two to three times more of an impact than any other school related factors on students' learning (RAND corporation, 2012). Therefore, teachers' positive attitude towards any pedagogical endeavor and innovations is important. There is a general agreement about teachers' attitude and its relationship with teaching success. That is,

positive attitude of teachers is significantly correlated with teachers teaching success (Latchanna & Dagnew, 2009). Similarly, students are also important to be considered in the realizations of any educational strategies such as the one-to-five students' network. Young people, as they are the future hopes of any country, need to be educated and nurtured appropriately and their attitudes towards a certain teaching methodology or strategy need to be considered to improve their learning. Therefore, the attitudes of students are instrumental in strengthening the endeavor for students learning.

The attitudes of teachers and students towards an educational strategy undertaken in the school would likely lead to a successful accomplishment of tasks related to the endeavor to improve students' learning through the help of one-to-five students' network. Having a positive attitude, even if it is not a necessary and sufficient precondition, could lead to commitment and consistent progress. For example, focusing on the attitude of students, Robert(1992) asserted that 'without positive attitudes and perceptions, students have little chance of learning proficiently, if at all'(p. 18). In the same analogy, one can also argue that without positive attitude, teachers hardly realize new pedagogical tools in their teaching practices. Therefore, the positive attitudes of teachers and students towards the one-to-five students' network seems important for the improvement of students' learning through the one-to-five students' network.

CONCLUSIONS

Understanding people's attitudes is important to devise appropriate strategies related to behaviors and practices. Especially, for the newly introduced educational strategies such as the one-to-five students' network, exploring the attitudes of different actors could help to gauge to what extent the educational strategy is accepted or preferred. Nevertheless, despite the fact that the one-to-five students' network has been widely propagated, previous research endeavors have not explored the attitudes of students and teachers. Thus, assessing the attitudes of students and teachers towards the one-to-five students' network and whether or not there exists attitude differences among students and teachers that belong to different educational levels were the research questions which this research set out to address. Therefore, it was understood that teachers and students of both cycles had positive attitudes towards the one-to-five students' network. The results imply that even though both teachers and students had positive attitudes towards the one-to-five students' network, upper primary school teachers and students have shown higher preferences as compared to their secondary school counterparts. In light of these, the researchers have recommended the following:

- ✓ As having a positive attitude alone doesn't guarantee positive behaviors and practices, further research that relates the attitudes of teachers and students with the actual behaviors in the practices of one-to-five students' network is important.
- ✓ Education bureaus and schools should undertake awareness raising programs to maintain and boost the positive attitudes of teachers and students towards the students' network.

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