

DOES SATELLITE TELEVISION PROGRAM SATISFY ETHIOPIAN SECONDARY SCHOOL STUDENTS?

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ABSTRACT

The Ethiopian development plans have dealt with education sector as a key strategic pillar. There have been a lot of educational efforts. Especially to cope with lack of qualified teachers, lack of good teaching models, and remote rural regions separated from educational benefits, Ethiopian Ministry of Education has made efforts in utilizing educational media such as satellite TV program for improving quality of secondary education for last decades of years. However, there was lack of national investigation in the aspect of systemic evaluation, for measuring the effectiveness of satellite TV program. This study aims to investigate the actual practice and effectiveness of satellite TV program in Ethiopian secondary schools. To achieve the goal, one questionnaire was developed based on CIPP model. Two secondary schools are selected and 228 students (Grade 9-12) participated in the survey. Data collected from them were utilized for descriptives & frequencies analysis, chi-square test, and multiple regression analysis. The results indicated that Ethiopian students utilizing satellite TV program scored highly in the evaluation areas of context, input, process, and product of the program. It was also found that learning demand, learning content, and class management were factors affecting the satisfaction in satellite TV program. These findings suggested that satellite TV program could play an important role in improving the quality of in Ethiopian secondary education. As a conclusion, several educational and administrative strategies to improve the TV program were recommended.

KEYWORDS

Educational ICT, Satellite TV Program, Secondary Education, Ethiopia.

1. INTRODUCTION

Located in the Horn of Africa, Ethiopia has made a lot of efforts for the better national economy, especially poverty eradication. The main national development plans are as followings (MoFED, 2013); Agricultural-Development-Led Industrialization (ADLI)(2002), Sustainable Development and Poverty Reduction Program (SDPRP) (2002/03-2004/05), Plan for Accelerated and Sustained Development to End (PASDEP) (2005/06-2009/10), Growth and Transformation Plan (GTP) (2010/11-2014/15). Through the PASDEP, Ethiopian economic growth reached average 11 percent per annum and mobile telecom network capacity increased 0.5M users (2005/06) to 25M users (2009/10). The number of telecom customer grew from 0.56M users (2004/05) to 6.5M users (2009/10). CDMA wireless network covered 90 percent of Ethiopia and 10,000km fiber optic cable and National Network Operation Center was established. And GTP aims to eradicate poverty and to reach the level of a middle-income economy as of 2020-2023. These plans are aligned with Millennium Development Goals (MDGs).

The Ethiopian development plans have dealt with education sector as a key strategic pillar. For example, GTP has goals to achieve in general education area; Scaling up educational quality by building communities' sense of ownership of educational quality by initiating integrated community mobilization, at all levels, using every media, digitalized (plasma based) secondary education, more Alternative Basic Education Centers. For supporting those plans in the educational sector, several national educational plans have been implemented; Education & Training Policy (ETP) (1994), General Education Quality Improvement Package (GEQIP) I & II, Education Sector Development Program (ESDP) I (1997/98-2001/02), II (2002/03-2004/05), III(2005/06-2009/10), IV(2010/11-2014/15).

Due to these educational plans, the system of Ethiopian education which consists of preschool, primary education, secondary education, TVET, and higher education, has sharply developed. Especially a lot of educational indicators of general education (primary & secondary education) have been on the increase. Net Enrollment Ratio (NER) of primary education (Grade 1 to 8) rapidly increased from 24.9% in 1996/07 to 85.9% in 2012/13 (Grade 1-4: 95.5%; Grade 5-8: 47.3%). ESDP IV plans to achieve 100% of NER until 2015. But there is relative distribution of each region to the national NER (Educational Statistics Annual Abstract, 2013). Afar has the lowest achievement (41.5%) compared with other regions (Gambella: 98%, Addis Ababa: 69.4%). In case of secondary education, NER (2012/13) falls sharply (Grade 9-10: 19.4%, Grade 11-12: 5.3%). This may be due to delayed graduation from primary school, examination barrier and financial barrier. And enrollment of children with special educational needs (blind, physically & intellectually disabled, deaf, etc.) was 6,551. Five year (2008/09-2012/13) trend of Pupil-Teacher Ratio (PTR) for grades 9-12 shows that PTR has been continually reduced from 41 to 28.7. But still there is regional difference in PTR (Somali : 47.4%; Benishangul Gumuz: 19.9%).

In contrast with primary education, the percentage of qualified teachers is higher in secondary education. Nationally, of all the secondary teachers, 91.5% are qualified for their level of secondary teaching. There is, however, considerable variation by region in the percentage of qualified teachers (Tigray: 96.2%; Afar: 20.8%).

Even though there have been a lot of educational efforts, many problems still have happened in the Ethiopian educational sector. Especially to cope with lack of qualified teachers, lack of good teaching models, and remote rural regions separated from educational benefits, Ethiopian Ministry of Education has made efforts in utilizing educational media such as satellite TV program for improving quality of secondary education.

However, up to now, there was lack of national investigation and more systemic evaluation, for measuring the effectiveness of satellite TV program. Accordingly, this study aims to investigate the actual practice and effectiveness of satellite TV program in Ethiopian secondary schools. Research problems are as follows:

What is the present status of satellite television program in Ethiopia?

What are the factors which are influential in students' satisfaction in satellite TV program?

2. CHALLENGES OF EXISTING SATELLITE TELEVISION PROGRAM AND NEW OPPORTUNITY

Ethiopian government launched satellite TV program as part of the national SchoolNet Initiative in 2004, which is a nationwide network of Ethiopia's secondary schools. Today, Center for Education ICT (CEICT), ICT-leading organization for general education under Ministry of Education (MOE), broadcasts 2978 television programs of 10 subjects (English, mathematics, chemistry, biology, physics, geography, civics, economics, technical drawing, general business) for grade 9-12. This program is broadcasted via satellite and secondary students in class watch the programs in plasma television for 20 minutes or so out of the 40 minutes class ([Figure 1]).

As of 2014, there are about 2000 secondary schools including preparatory schools (Grade 11 & 12), of which 1278 schools are well equipped to receive the television broadcast from the center, however only 69 % (893 secondary schools) among 1278 secondary schools are utilizing properly the satellite TV program. Even though satellite TV program has contributed in improving the quality of the secondary education in Ethiopia, there are several main constraints in the program. First, the basic problem is a lack of electricity power. There are many cases where each school is not equipped with generators for frequent blackouts. Second, there is a lack of maintenance and accessories for the Plasma TVs and VSAT apparatus installed in the schools. Third, there is still a lack of proper collaboration among CEICT, Ethio Telecom, regional educational bureaus and schools. And the critical problem is that the TV program is delivered one way, not considering the teacher-student and student-student interaction. In addition, there is a limitation in satisfying a variety of special education needs such as cognitive & physical disability, although the program provides the service of sign language for students with hearing disability.

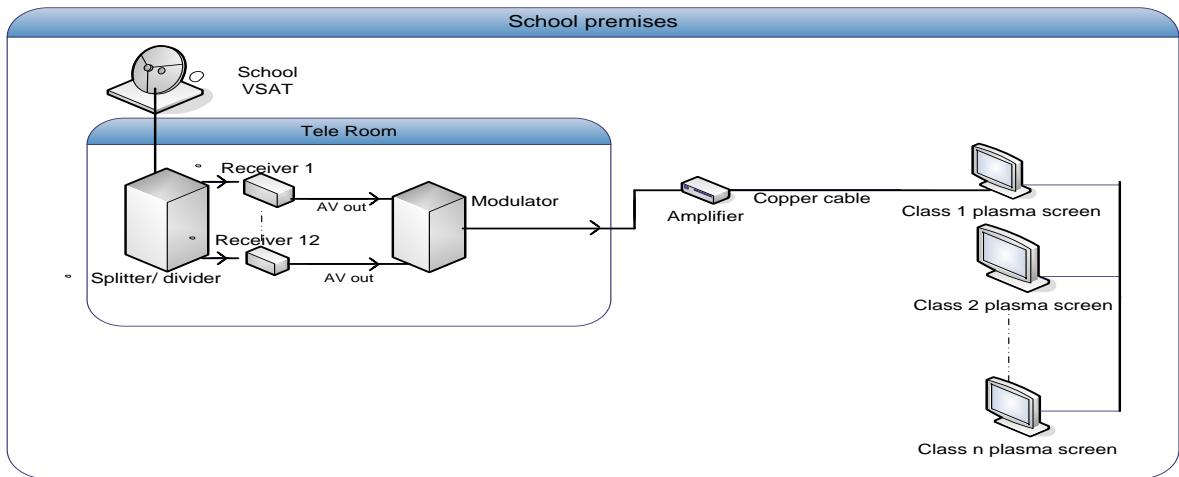


Figure 1. Structure of Operating Satellite TV Program for Ethiopian Secondary Education

Ethiopian educational ministry continues to take efforts for overcoming these shortcomings in secondary education ([Figure 2]).

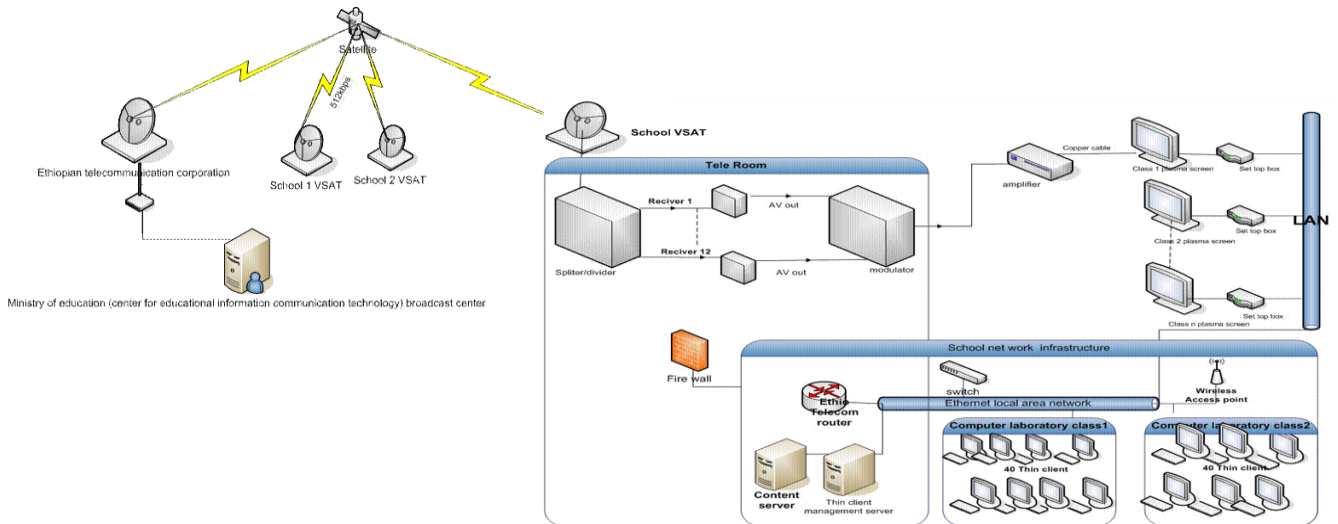


Figure 2. Future Structure of Satellite TV Program in Ethiopian Secondary Education

As one strategy, the ministry has launched an initiative to build a Local Area Network (LAN) in the first phase for 120 secondary schools. Each school computer laboratory will be equipped with a minimum of 80 thin client computers throughout the country. The ministry already carried out the pilot test for its effectiveness. Nowadays the ministry is designing another e-learning project under the General Education Quality Improvement Program II (GEQUIP II), which is supported by World Bank. As a part of the efforts to enhance the quality of general education, especially individual, self-directed, and self-paced learning environments through ICT, the MOE and CEICT has designed a program targeting 300 secondary schools nationwide. This program hopes to enhance the existing in-class video learning service, establish a computer laboratory-based learning experience managed through a private cloud service, and expand the reach of online-based out-of-class learning using mobile devices. An extension to this program will include the participation of twelve secondary schools in innovative programs to explore the use of mobile-based technologies for strengthening the quality of general education in emerging regions.

3. METHOD

3.1 Participants

This study aims to investigate the actual practice and effectiveness of satellite TV program in Ethiopian secondary schools. To achieve the goal, two secondary schools including preparatory schools are selected. A school is located at the urban area in Addis Ababa City and B school is located at rural area in Oromia state. 228 students (Grade 9-12) from two regions participated in the survey.

Table 1. Participants' Information

		Number (%)
Location	Urban	114 (50)
	Rural	114 (50)
Gender	Male	122 (53.5)
	Female	106 (46.5)
Grade	Grade 9	40 (21.1)
	Grade10	71 (31.1)
	Grade11	75 (32.9)
	Grade12	34 (14.9)
Total		228 (100)

3.2 Instrumentation

To investigate the actual practice and effectiveness of satellite TV program in Ethiopia, a questionnaire was developed. It was based on the CIPP (Context, Input, Process, Product) model, which was designed by Stufflebeam (1985). Based on Figure 3 below, 23 items are developed (See Appendix). They are validated through reviewing of 3 program experts from Center for Educational ICT (CEICT), Ministry of Education and 10 students from a secondary school.

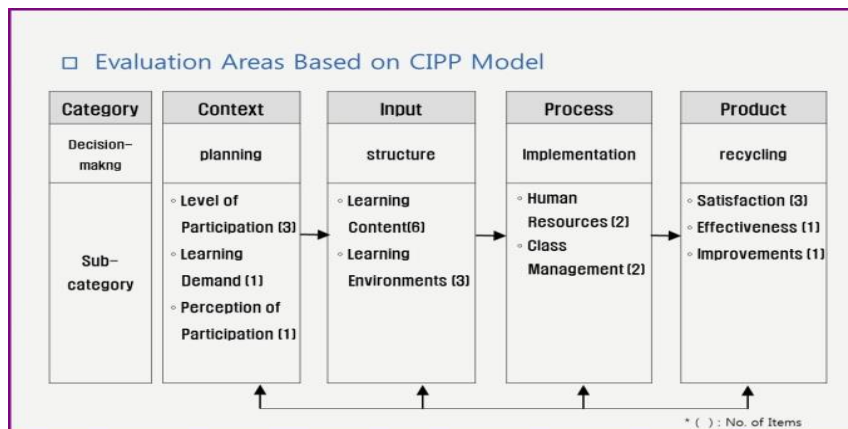


Figure 3. Structure questionnaire for student

3.3 Procedures

Reading official documents for literature reviews, personal interviews with related officials from CEICT, and searching for internet sites of Ministry of Education and Ministry of Communication Information Technology, Ethiopia were carried out. Based on these and CIPP model, a questionnaire was developed and validated.

Data gathered from secondary school students were analyzed by SPSS. Descriptives & frequencies analysis, chi-square test, and multiple regression analysis were performed for answering to the research questions

4. RESULTS

The scores from some items (a 5-point Likert-type) of the survey for evaluating the effectiveness of satellite TV program ranged from 3.11 to 4.12, indicating that most of the students agreed that the satellite TV program was satisfactory (Table 2). And students responded to other questions as follows; 41.7% of students selected “the program is helpful for understanding the class” as the most important motive participating in the satellite TV program. And as a reason why the program is interrupted during their class, they chose ‘plasma TV trouble’ (40.4%), lack of electricity (28.1%), and others (23.6%) in order. They also responded that the program was helpful in the aspect of ‘more understandable in learning’(30.3%), improving English skills (23.2%), rich learning materials (10.5%), and more attention to the class (10.1%) in order. For a strategy of improving the program, they responded ‘more interesting lesson (30.7%)’, ‘better stability of program transmission (13.4%)’, better quality of screen design (11.8%), and more faster maintenance service of plasma TV (11.8%) in order. And 38.2% of respondents answered that they never watched satellite TV program in their class per week. 34.1% of students chose ‘no attention of teacher’ to the question ‘why they did not watch the program even though it was broadcasted’.

Table 2. Mean and Standard Deviation (SD) for Main Variables Related with Satisfaction of Satellite TV Program

Area	Sub-Area	N	Mean	SD
Learning Demand	Learner’s level	216	3.96	1.114
Learning Content	Interests	226	4.00	1.170
	Customized learning	226	3.57	1.404
	Appropriateness	221	4.06	1.208
	Compensation of face-to-face class	219	3.61	1.313
	Understanding	219	3.55	1.282
	Usefulness	224	3.87	1.349
Learning Environments	Safety	224	3.61	1.490
	Interaction with TV program	219	3.52	1.342
Human Resources	Perception of teacher	221	4.03	1.232
	Knowledge of teacher	224	4.12	1.157
Class Management	Interaction with TV teacher	221	3.57	1.339
	Affirmative class environment	220	3.11	1.384
Satisfaction	General satisfaction of TV program	222	3.54	1.268
	Learning contents	156	3.91	1.132
	TV teacher	157	3.94	1.102

A chi-square test was performed to determine whether the levels of satisfaction (general satisfaction, learning contents, TV teacher) were equal irrespective of location (urban and rural), gender (male and female), and grade (Grade 9-12). Only levels of general satisfaction of satellite TV program were not equal at the variables of location ($\chi^2=16.270$, $df=4$, $p=.003$) (Table 3) and gender ($\chi^2=15.146$, $df=4$, $p=.004$) (Table 4).

Table 3. Chi-square test of location and general satisfaction of satellite TV program

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree	Total
Urban	11 (9.7%)	12 (10.6%)	30 (26.5%)	42 (37.2%)	18 (15.9%)	113 (100%)
Rural	12 (11%)	12 (11%)	12 (11%)	34 (31.2%)	39 (35.8%)	109 (100%)
Sub-total	23 (10.4%)	24 (10.8%)	42 (18.9%)	76 (34.2%)	57 (25.7%)	222 (100%)

$\chi^2=16.270, df=4, p=.003$

Table 4. Chi-square test of gender and general satisfaction of satellite TV program

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree	Total
Male	12 (10%)	9 (7.57%)	24 (20%)	33 (27.5%)	42 (35%)	120 (100%)
Female	11 (10.8%)	15 (14.7%)	18 (17.6%)	43 (42.2%)	15 (14.7%)	102 (100%)
Sub-total	23 (10.4%)	24 (10.8%)	42 (18.9%)	76 (34.2%)	57 (25.7%)	222 (100%)

$\chi^2=15.146, df=4, p=.004$

Multiple regression was conducted to determine the accuracy of the independent variables (learning demand, learning content, learning environments, human resources, class management) predicting the dependent variable (satisfaction). Regression results in Table 5 indicate that the overall model of the five independent variables significantly predicts satisfaction of satellite TV program. A summary of regression coefficients is presented in Table 6 and indicates that only three variables, learning demand, learning content, and class management, significantly contributed to the model. This model accounts for 37% of the variance in satisfaction of satellite TV program.

Table 5. ANOVA Table

	SS	Df	MS	F	Sig.
Regression	45.947	5	9.189	17.026*	.00
Residual	72.325	134	.540		
Total	118.272	139			

*p<.01

Table 6. Results of Multiple Regression

Variable	Unstandardized Coefficients		Standardized Coefficients	T	P
	B	Std. Error	Beta		
(constant)	.637	.366		1.739	.08
Learning demand	.159	.064	.192	2.461*	.02
Learning content	.327	.105	.273	3.129*	.00
Learning environments	.038	.065	.043	.578	.56
Human resources	.095	.080	.096	1.193	.24
Class management	.224	.061	.282	3.675*	.00

R²_{adj}=.37, *p<.05

5. CONCLUSION

This study investigated the actual practice and effectiveness of satellite TV program in Ethiopian secondary schools. The results indicated that Ethiopian secondary school students utilizing satellite TV program scored highly in the evaluation areas of context, input, process, and product of the program. It was also found that learning demand, learning content (interests, customized learning, appropriateness, supporting face-to-face class, understanding, usefulness) and class management (interaction with TV teacher, affirmative class environment) were factors affecting satisfaction in satellite TV program. These findings suggest that satellite TV program can play an important role in improving the quality of Ethiopian secondary education.

As a conclusion of this study, several educational and administrative strategies are recommended as follows; First, each secondary school should be equipped with basic infrastructure such as regular electricity and generator in blackout.

Second, immediate technical service should be provided by regional technicians when plasma TV has a trouble.

Third, motivational instructional design should be considered for improving students' active participation in satellite TV program. For a strategy of improving quality of the program, 30.7% of respondents chose 'more interesting lesson.' Especially for the preparation of future satellite TV program in Ethiopian secondary education serving e-learning utilizing clouding systems, teachers in schools and program experts in Center of Educational ICT, institution leading educational ICT under the Ethiopian ministry of education, need to have the competences of instructional design.

Fourth, factors such as location (urban and rural) and gender should be considered carefully when designing, developing, and operating satellite TV program. This is why they may effect on the satisfaction of the program.

Fifth, there should be countermeasures for raising teacher's integration of the satellite TV program to the class. As mentioned above, 34.1% of students responded 'no attention of teacher' to the question 'why they did not watch the program even though it was broadcasted'. It is educator's perceived barrier to technology to be overcome (Robinson, 2007). As a strategy for this, the concept of homophily (Rogers, 1995) needs to be applied. That is, for equal colleague teacher to introduce it or to be successful at using the technology increases the possibility of adoption of integrating the technology into the class. It is important to share best practices in utilizing satellite TV program in class.

Sixth, leadership training of ICT for principals as well as teachers can be suggested. Diffusion of an innovation cannot be accomplished without teachers' and educational administrators' engagement and attention.

And many students have complained about lack of interaction of TV teacher-student, student-student and student-learning contents. Although radical change is difficult due to financial and technical reasons, alternative instructional TV such as 'one-way video with two-way audio may be chosen; According to a study (Simpson, et al., 1993), the most successful instructional TV technologies were those allowing continuous two-way audio communication between classrooms with either one-way or two-way video, which were effective both in terms of student performance and acceptance. For Ethiopian satellite TV program having a shortcoming of one way delivery, using two-way audio may be good alternative. And for improving one way delivery of learning contents, individual, self-directed, self-paced learning environments should be designed and developed.

Fortunately Ethiopian educational ministry continues to take efforts for overcoming the shortcoming in secondary education. Nowadays Ethiopian educational ministry is designing an e-learning project under the General Education Quality Improvement Program II. As a part of the efforts to enhance the quality of secondary education, it has designed a program targeting 300 secondary schools nationwide, which hopes to enhance the existing in-class video learning service, establish a computer laboratory-based learning experience managed through a private cloud service, and expand the reach of online-based out-of-class learning using mobile devices. It will be very helpful for providing satellite TV program appropriate for learner's learning demands and level. Education utilizing ICT has the potential to overcome the issues of cost, less number of teachers, and poor quality of education as well as overcome time and distance barriers (McGorry, 2002). However, although the use of ICT in educational settings by itself may act as a catalyst for change, the change does not happen always. More instructional and administrative efforts are needed for its successful performance.

More researches are needed to discover more details of strategies for improving the effectiveness of the satellite TV program in the context of e-learning in future and to understand why secondary teachers have failed to integrate satellite TV program into the class.

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APPENDIX

Category	Area	Sub-Area	Item
Context (5)	Level of Participation (3)	Frequency of Use	How often do you watch Satellite TV programs in your class per week?
		Duration of time	How long do you watch Satellite TV programs per one class?
		Reason of No use	Why don't you watch the program?
	Learning Demand (1)	Learner's level	Is satellite TV program appropriate at learning level of learner?
	Perception on Participation(1)	Motive of Participation	What is your most important motive participating in the satellite TV program?
Input (9)	Learning Content (6)	Interests	Is learning content in satellite TV program interesting?
		Customized learning	Can you study learning contents in satellite TV program customized at your level of learning?
	Appropriateness	Does learning content in satellite TV program give rich and reliable information?	
		Compensation of Face-to-Face class	Does satellite TV program compensate for face-to-face class?
		Understanding	Is learning content in satellite TV program understandable clearly?
	Usefulness	Does satellite TV program supply enough related material and cases?	
		Safety	Is there any problem such as disconnection of transmission? Why is satellite TV program interrupted during your class?
Learning Environments (3)	Interaction with TV program	Is there enough interaction with satellite TV program?	
Process (4)	Human Resources (2)	Perception of teacher	Is the television teacher helpful for understanding learning contents?
		Knowledge of teacher	Does the television teacher have enough knowledge in the subject?
	Class Management (2)	Interaction with TV teacher	Can you interact with the television teacher?
		Affirmative class environment	Do you feel close relationship with the television teacher?
Product (5)	Satisfaction(3)	Overall level of satisfaction	Is satellite TV program generally satisfactory? Is learning content in satellite TV program satisfactory? Is television teacher satisfactory?
		Effectiveness(1)	Level of help
	Improvements(1)	Overall improvements	What is your opinion of improvements?